

EXHIBIT NO. ___(RAM-16T)
DOCKET NO. UE-121697/UG-121705
DOCKET NO. UE-130137/UG-130138
WITNESS: DR. ROGER A. MORIN

**BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PUGET SOUND ENERGY, INC.,

Respondent.

DOCKET NOS. UE-121697
and UG-121705 (*consolidated*)

WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION,

Complainant,

v.

PUGET SOUND ENERGY, INC.,

Respondent.

DOCKET NOS. UE-130137
and UG-130138 (*consolidated*)

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

DECEMBER 19, 2014

PUGET SOUND ENERGY, INC.

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

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1 **PUGET SOUND ENERGY, INC.**

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

4 **I. INTRODUCTION**

5 **Q. Are you the same Dr. Roger A. Morin who provided prefiled direct testimony**
6 **and supporting exhibits on behalf of Puget Sound Energy, Inc. (“PSE”) in**
7 **these proceedings?**

8 A. Yes. I filed prefiled direct testimony, Exhibit No. ___(RAM-1T), and supporting
9 exhibits, Exhibit No. ___(RAM-2) through Exhibit No. ___(RAM-15), on
10 November 5, 2014.

11 **Q. Please summarize the purpose of your prefiled rebuttal testimony.**

12 A. I have been asked by PSE to respond to each of the following cost of capital
13 testimonies:

- 14 (i) the Prefiled Testimony of David C. Parcell, Exhibit
15 No. ___(DCP-1T), on behalf of the Staff of Washington
16 Utilities and Transportation Commission (“Commission
17 Staff”);
- 18 (ii) the Prefiled Direct Testimony of Stephen G. Hill, Exhibit
19 No. ___(SGH-2T), on behalf of the Public Counsel Section
20 of the Washington Attorney General’s Office (“Public
21 Counsel”), and supporting exhibits thereto; and
- 22 (iii) the Prefiled Response Testimony of Michael P. Gorman,
23 Exhibit No. ___(MPG-23T), on behalf of the Industrial
24 Customers of Northwest Utilities (“ICNU”), and supporting
25 exhibits thereto.

1 **Q. What rate of return on common equity (“ROE”) are the witnesses**
2 **recommending for PSE?**

3 A. The ROE recommendations for PSE from the three witnesses are as follows:

4 Mr. Parcell 9.0% – 10.0%

5 Mr. Hill 8.65%

6 Mr. Gorman 9.0% – 9.6%

7 **Q. Before you begin, do you have a general observation to make on the ROE**
8 **recommendations of these witnesses?**

9 A. Yes, I do. My understanding is that the purpose this proceeding is to determine if
10 the return on equity (“ROE”) of 9.8% authorized by the Commission in Order 08
11 in Dockets UE-111048 and UG-111049¹ remained within the range of
12 reasonableness when the Commission issued its Order 07 in these proceedings²
13 and remains within the range of reasonableness through the rate plan period. As
14 stated in my prefiled direct testimony, I have found that PSE’s current ROE of
15 9.8%:

- 16 (i) remains fair to customers,
17 (ii) allows PSE to attract capital on reasonable terms,
18 (iii) maintains PSE’s financial integrity, and

¹ *WUTC v. Puget Sound Energy, Inc.*, Order 08 Rejecting Tariff Sheets; Authorizing and Requiring Compliance Filing, Dockets UE-111048 and UG-111049 (consolidated) (May 7, 2012).

² *WUTC v. Puget Sound Energy, Inc.*, Order 07 Final Order Granting Petition, Dockets UE-121697, et al. (consolidated) (June 25, 2013).

1 (iv) remains comparable to returns offered on comparable risk
2 investments.

3 Commission Staff, relying on witness Mr. Parcell's recommended range of 9.0% -
4 10.0% concludes that the ROE of 9.8% authorized by the Commission lies within
5 that range, and is therefore reasonable. In that regard, Commission Staff's
6 recommendation is largely consistent with my own conclusion, and I will focus
7 this prefiled rebuttal testimony on the testimonies offered by Mr. Hill and
8 Mr. Gorman.

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

10 **Q. Please summarize Mr. Hill's recommended ROE in this proceeding.**

11 A. Mr. Hill recommends an ROE for PSE for the first half of 2013 of only 8.65%,
12 which includes a 35 basis points reduction in order to account for what Mr. Hill
13 perceives to be the risk reducing impact of decoupling.³ Mr. Hill relies primarily
14 on a traditional constant growth Discounted Cash Flow ("DCF") methodology
15 applied to a group of fifteen electric and combination electric and gas companies.⁴
16 Mr. Hill also performs three checks on his DCF estimate: (i) the Modified
17 Earnings Price methodology; (ii) Market-to-Book Ratio methodology, and (iii) the
18 Capital Asset Pricing Model ("CAPM") methodology. Mr. Hill summarizes his
19 results for each of these methodologies in tabular form at page 42 of his
20 testimony.

³ See, e.g., Hill, Exh. No. ___(SGH-2T), at page 7, line 16, through page 8, line 4.

⁴ See Hill, Exh. No. ___(SGH-2T), at page 16, line 19, through page 32, line 4.

1 Giving primacy to his DCF results⁵ and taking into account that interest rates are
2 expected to rise,⁶ Mr. Hill suggests an ROE range of 8.5% - 9.5%, with a
3 midpoint of 9.0%.⁷ With decoupling, Mr. Hill reduces his recommended
4 midpoint of 9.0% by 35 basis points and concludes that the PSE's allowed ROE at
5 mid-year 2013 should be 8.65%.⁸

6 **Q. Please summarize your specific concerns with Mr. Hill's recommendation.**

7 A. The ROE recommended by Mr. Hill significantly understates an appropriate ROE
8 for PSE for the following reasons:

- 9 (i) Mr. Hill's recommended ROE for PSE is outside of the
10 mainstream for electric and combination electric and gas
11 utilities. The ROE recommended by Mr. Hill for PSE is
12 well outside the range of currently authorized ROEs for
13 electric and combination electric and gas utilities in the
14 United States and outside the zone of currently authorized
15 ROEs for Mr. Hill's own sample of comparable companies.
- 16 (ii) Mr. Hill uses an ambiguous and arbitrary growth rate for
17 each utility in his DCF analysis. Mr. Hill's DCF estimates
18 are unreliable because he has selected a growth rate for
19 each company in his comparable group that is ambiguous,
20 arbitrary, and nearly impossible to replicate.
- 21 (iii) Mr. Hill relies on the Retention Growth methodology in his
22 DCF analysis. Mr. Hill relies heavily on the Retention
23 Growth methodology in the DCF analysis, whereby he is
24 forced to assume the answer to implement the method.

⁵ Hill, Exh. No. ____ (SGH-2T), at page 42, lines 14-19.

⁶ Hill, Exh. No. ____ (SGH-2T), at page 43, lines 4-7.

⁷ See, e.g., Hill, Exh. No. ____ (SGH-2T), at page 43, lines 7-10; see also Hill, Exh. No. ____ (SGH-2T), at page 7, lines 16-21.

⁸ See, e.g., Hill, Exh. No. ____ (SGH-2T), at page 44, lines 6-8; see also Hill Exh. No. ____ (SGH-2T), at page 7, line 21, through page 8, line 4.

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- (iv) Mr. Hill erroneously relies on historical growth rates in his DCF analysis. Mr. Hill relies on historical growth rates that have questionable relevance as proxies for future long-term growth forecasts in the DCF model.
- (v) Mr. Hill uses disguised versions of the DCF. Mr. Hill improperly uses disguised versions of the DCF as supplements on his DCF analysis and, as a result, are redundant.
- (vi) The Modified Earnings Price Ratio and M/B methodologies applied by Mr. Hill are disguised versions of the DCF model and do not constitute independent stand-alone checks.
- (vii) Mr. Hill’s CAPM results should be given very little weight, if any, because Mr. Hill has relied on erroneous data inputs to implement the method.
- (viii) The Commission should reject Mr. Hill’s downward ROE adjustment of 35 basis points for decoupling. The impact of risk-reducing mechanisms such as decoupling on the Company’s risk profile is already reflected in the capital market data of the comparable companies, and the risk impact of these mechanisms is offset by several factors that work in the reverse direction.
- (ix) Mr. Hill’s criticisms of my testimony are unfounded and without merit, and should be ignored by the Commission.

A. Mr. Hill’s Recommended ROE for PSE is Outside the Mainstream for Electric and Combination Electric and Gas Utilities

Q. Are allowed ROEs of electric and combination electric and gas utilities important determinants of investor growth perceptions and investor expected returns?

A. Yes. Allowed ROEs—although not a precise indication of a utility’s cost of equity capital—are nevertheless important determinants of investor growth perceptions and investor expected returns. They also serve to provide some

1 perspective on the validity and reasonableness of Mr. Hill's recommended ROE
2 for PSE. Using data reported by Regulatory Research Associates (now SNL) for
3 ROE decisions rendered for the twelve months ending in December 2013, the
4 average allowed ROE for electric utilities was 10.0%.⁹ For the first three quarters
5 of 2014, the average allowed ROE for electric utilities is identical at 10.0%.¹⁰

6 These results suggest two things:

7 (i) capital market conditions did not change materially during
8 the period January 1, 2013, through September 30, 2014,
9 given that the average allowed ROEs of electric utilities
10 granted by state regulatory agencies during this period
11 remained unchanged; and

12 (ii) the average allowed ROEs of electric utilities granted by
13 state regulatory agencies during the period January 1, 2013,
14 through September 30, 2014, are well in excess of
15 Mr. Hill's recommended ROE of 8.65% for PSE.

16 **Q. Is Mr. Hill's recommended ROE for PSE consistent with the average allowed**
17 **ROE for the electric and combination electric and gas utilities that comprise**
18 **Mr. Hill's comparable group?**

19 A. No. Mr. Hill's recommended ROE for PSE is substantially lower than the
20 allowed ROEs for the electric and combination electric and gas utilities that
21 comprise Mr. Hill's comparable group. Data reported by AUS Utility Reports in
22 *AUS Monthly Reports* demonstrate that

⁹ Regulatory Research Associates, *Major Rate Case Decisions—Calendar 2013* at page 6 (Jan. 15, 2014).

¹⁰ Regulatory Research Associates, *Major Rate Case Decisions—January-September 2014* at page 5 (Oct. 10, 2014).

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- (i) the average allowed ROE in May 2013 for electric utilities and combination electric and gas utilities was 10.52% and 10.27%, respectively;¹¹ and
- (i) the average allowed ROE in December 2014 for electric utilities and combination electric and gas utilities was 10.45% and 10.33%, respectively.¹²

Indeed, *AUS Monthly Reports* for each of May 2013 and December 2014 demonstrate that each of the electric utilities and combination electric and gas utilities reported has an allowed ROE that exceeds Mr. Hill's recommended ROE of 8.65% for PSE.¹³

Moreover, Mr. Hill's recommended allowed ROE for PSE is below the allowed ROE of each electric and combination electric and gas utility in Mr. Hill's comparable group and far below the average allowed ROEs of 10.57% and 10.51% reported by *AUS Monthly Reports* for the same utilities in May 2013 and December 2014, respectively:

¹¹ AUS Utility Reports, *AUS Monthly Reports* (May 2013).
¹² AUS Utility Reports, *AUS Monthly Reports* (Dec. 2014).
¹³ AUS Utility Reports, *AUS Monthly Reports* (May 2013).

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Table 1
Allowed ROEs of Utilities in Mr. Hill's Comparable Group

Company	Allowed ROE May 2013¹⁴	Allowed ROE December 2014¹⁵
ALLETE, Inc.	10.38%	10.38%
Alliant Energy Corporation	10.34%	10.34%
American Electric Power Co.	10.63%	10.50%
Cleco Corporation	10.70%	10.70%
Edison International	10.63%	10.50%
Entergy Corporation	10.62%	10.50%
IDACORP, Inc.	10.18%	10.18%
Northwestern Corporation	10.90%	10.79%
PG&E Corporation	10.40%	10.40%
Pinnacle West Capital Corp.	11.00%	11.00%
Portland General Electric Company	10.00%	9.75%
Southern Company	11.46%	11.46%
Westar Energy, Inc.	10.20%	10.20%
Wisconsin Energy Corporation	10.43%	10.43%
Xcel Energy Inc.	10.70%	10.48%
AVERAGE	10.57%	10.51%

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Although decisions of other regulatory bodies regarding allowed ROEs do not bind this Commission, one cannot ignore the significant differences between Mr. Hill's recommended ROE for PSE and

- (i) the average allowed ROEs of electric and combination electric and gas utilities granted by state regulatory agencies during the period January 1, 2013, through September 30, 2014; and

¹⁴ AUS Utility Reports, *AUS Monthly Reports* (May 2013).

¹⁵ AUS Utility Reports, *AUS Monthly Reports* (Dec. 2014).

1 (ii) Mr. Hill's recommended ROE for PSE and the allowed
2 ROEs for the electric and combination electric and gas
3 utilities that comprise Mr. Hill's comparable group.

4 **B. Mr. Hill's DCF Results Should be Given Very Little, If Any, Weight**
5 **Because Mr. Hill Has Relied on Erroneous Data Inputs**

6 **1. Mr. Hill's DCF Analysis Relies Upon an Unnecessarily Small**
7 **Sample Group of Comparable Utilities**

8 **Q. What sample group of utilities does Mr. Hill use for his DCF analyses?**

9 A. Mr. Hill applies a DCF analysis to the following sample of fifteen electric and
10 combination electric and gas utilities: ALLETE, Inc.; Alliant Energy
11 Corporation; American Electric Power Co.; Cleco Corporation; Edison
12 International; Entergy Corporation; IDACORP, Inc.; Northwestern Corporation;
13 PG&E Corporation; Pinnacle West Capital Corp.; Portland General Electric
14 Company; Southern Company; Westar Energy, Inc.; Wisconsin Energy
15 Corporation; and Xcel Energy Inc.¹⁶

16 **Q. Do you agree with Mr. Hill's sample group of utilities?**

17 A. No, not necessarily. I acknowledge that each of the utilities included in Mr. Hill's
18 sample group of utilities are arguably comparable to PSE. Mr. Hill's criteria for
19 selection of this sample group, however, are unduly restrictive in some areas,
20 thereby creating a smaller sample of utilities than may otherwise be warranted.
21 For example, Mr. Hill restricted his group to utilities with senior bond ratings
22 between "BBB" and "A" (or "Baa2" and "A2"), with 70 percent or more of

¹⁶ Hill Exh. No. ____ (SGH-2T) at page 21, lines 6-13.

1 revenues generated by utility operations.¹⁷ Although these criteria are not
2 inappropriate (and PSE satisfies each of them), the use of the criteria does exclude
3 some utilities that are also arguably comparable to PSE. As a comparison,
4 I restricted my group of utilities to investment grade companies with 50 percent or
5 more revenues generated by utility operations.¹⁸ If Mr. Hill would have relaxed
6 his restrictions in Exhibit No. ____ (SGH-5) to also include investment grade
7 companies with 50 percent or more revenues generated by utility operations (but
8 kept all other restrictions the same), then he would also have included the
9 following utilities as comparable utilities: Avista Corporation; Black Hills
10 Corporation; Dominion Resources, Inc.; DTE Energy Company; FirstEnergy
11 Corporation; Hawaiian Electric Industries, Inc.; MGE Energy, Inc.; Nextera
12 Energy; OGE Energy Corp.; PPL Corporation; SCANA Corporation; TECO
13 Energy, Inc.; and UNS Energy Corp. Many of these utilities are included in my
14 sample group and the sample groups used by Mr. Parcell and Mr. Gorman.

15 **Q. Why is it important to not be unduly restrictive in the selection of**
16 **comparable utilities for purposes of cost of capital studies?**

17 A. As discussed in my prefiled direct testimony, the use of a handful of companies in
18 a highly fluid and unstable industry produces fragile and statistically unreliable
19 results. A far safer procedure is to employ large sample sizes representative of

¹⁷ Hill Exh. No. ____ (SGH-2T), at page 20, lines 20-22.

¹⁸ See, e.g., Morin, Exh. No. ____ (RAM-1T), at page 24, line 11, through page 25, line 1.

1 the industry as a whole and apply subsequent risk adjustments to the extent that
2 the company's risk profile differs from that of the industry average.¹⁹

3 **2. Mr. Hill's Average Dividend Yield Projection is a Function of**
4 **the Unnecessarily Small Sample Group of Comparable Utilities**
5 **in His Analyses**

6 **Q. How does Mr. Hill calculate the dividend yield component for his DCF**
7 **analysis?**

8 A. Mr. Hill bases the expected dividend yield component of his DCF analysis on the
9 daily closing average stock price for each of the fifteen utilities over the six-week
10 period ending June 21, 2013.²⁰ From this data, Mr. Hill calculates an average
11 dividend yield of 3.83 percent for the fifteen utilities in his comparable group.²¹

12 **Q. Do you agree with Mr. Hill's calculation of the dividend yield component in**
13 **his DCF analysis?**

14 A. Yes. Mr. Hill's calculation of a 3.83 percent average dividend yield for the
15 fifteen utilities in his comparable group is correct. As stated above, however,
16 Mr. Hill's DCF analysis relies upon an unnecessarily small sample group of
17 comparable utilities. If Mr. Hill were to expand the number of utilities in the
18 sample group, then his dividend yield component would be more likely to
19 generate an accurate projection.

¹⁹ Morin, Exh. No. ___(RAM-1T), at page 21, line 14, through page 24, line 9.

²⁰ Hill Exh. No. ___(SGH-2T), at page 30, lines 7-8.

²¹ Hill Exh. No. ___(SGH-2T), at page 30, lines 8-10; *see also* Hill Exh. No. ___(SGH-8).

1 **3. Mr. Hill's DCF Analysis Uses Ambiguous and Arbitrary**
2 **Growth Rates, Improperly Relies Upon the Sustainable**
3 **Growth Methodology, and Erroneously Uses Historical**
4 **Growth Rates**

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

7 **Q. How does Mr. Hill calculate the growth rate component for his DCF**
8 **analysis?**

9 **A.** For the growth component, Mr. Hill examines a broad array of growth rate
10 estimates, including the following:

- 11 (i) historical and forecast sustainable growth rates,²²
12 (ii) historical growth rates in book value, earnings, and
13 dividends,²³
14 (iii) 5-year historic and projected earnings, dividends, and book
15 value growth rates from Value Line;²⁴
16 (iv) earnings growth rate projections from Zacks or IBES;²⁵
17 (v) the average of Value Line and Zacks or IBES growth
18 rates;²⁶ and
19 (vi) the 5-year historical compound growth rates for earnings,
20 dividends and book value.²⁷

21 Exhibit No. ____ (SGH-5) and Exhibit No. ____ (SGH-6) provide the myriad growth
22 data. Exhibit No. ____ (SGH-7) provides a description of the Mr. Hill's growth

22 Hill Exh. No. ____ (SGH-2T), at page 19, lines 10-11.

23 Hill Exh. No. ____ (SGH-2T), at page 19, lines 13-14.

24 Hill Exh. No. ____ (SGH-2T), at page 25, lines 5-6.

25 Hill Exh. No. ____ (SGH-2T), at page 25, line 7.

26 Hill Exh. No. ____ (SGH-2T), at page 25, lines 7-8.

27 Hill Exh. No. ____ (SGH-2T), at page 25, lines 8-9.

1 rate analyses for each of the fifteen electric and combination electric and gas
2 utilities in Mr. Hill's sample group. From this array of data, Mr. Hill then
3 arbitrarily selects a growth rate for each utility.

4 Adding the dividend yield component to the arbitrary growth component selected
5 for each company, Mr. Hill produces a DCF estimate of 8.69% for the group of
6 electric utilities.

7 **Q. Do you agree with Mr. Hill's growth component in the DCF analysis?**

8 A. No, I do not. Mr. Hill's selected growth rate for each of the electric and
9 combination electric and gas utilities in his sample group is arbitrary and virtually
10 impossible to replicate scientifically.

11 **Q. Did you attempt to replicate Mr. Hill's DCF analysis for a specific company
12 in order to illustrate Mr. Hill's methodology?**

13 A. Yes, I tried but was unable to replicate the convoluted analysis. Mr. Hill selects
14 Southern Company ("Southern") as his "case study" to derive his DCF growth
15 rate forecast, and cites the following growth rate estimates for Southern:

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Table 2
Mr. Hill's Various Growth Rates for Southern

Growth Proxies	Estimate	Exhibit	Page
5-yr Historical Sustainable 2008-2012	3.28%	Exh. No. __ (SGH-5)	1
Sustainable 2013	3.45%	Exh. No. __ (SGH-5)	1
Sustainable 2014	3.42%	Exh. No. __ (SGH-5)	1
Projected Sustainable 2016-18	3.46%	Exh. No. __ (SGH-5)	1
5-yr Historical Earnings	3.00%	Exh. No. __ (SGH-6)	2
5-yr Historical Dividend	4.00%	Exh. No. __ (SGH-6)	2
5-yr Historical Book Value	5.50%	Exh. No. __ (SGH-6)	2
5-yr Compound Hist Earnings	4.10%	Exh. No. __ (SGH-6)	2
5-yr Compound Hist Dividends	4.00%	Exh. No. __ (SGH-6)	2
5-yr Compound Hist Book Value	4.95%	Exh. No. __ (SGH-6)	2
VL Projected Earnings	4.50%	Exh. No. __ (SGH-6)	2
VL Projected Dividend	4.00%	Exh. No. __ (SGH-6)	2
VL projected Book Value	4.50%	Exh. No. __ (SGH-6)	2
Analyst IBES Projection	4.84%	Exh. No. __ (SGH-10)	1
Analyst Zacks Projection	4.76%	Exh. No. __ (SGH-10)	1

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Mr. Hill somehow concludes from this array of fifteen growth rates that a long-term growth rate of 4.25% is a reasonable expectation for Southern. Adding 77 basis points to account for growth through external stock issues, Mr. Hill's final growth estimate for Southern is 5.02%.²⁸

Q. Were you able to determine how Mr. Hill arrives at a DCF benchmark growth rate forecast of 4.25% for Southern?

A. No. As shown on Table 2 above, the fifteen growth rates provided by Mr. Hill for Southern range from 3.0% to 5.5%, with an average of 4.1% and a median of

²⁸ Hill Exh. No. __ (SGH-2T), at page 24, lines 6-15.

1 4.0%. I was unable to replicate or decipher how Mr. Hill arrived at a 4.25%
2 growth rate forecast from this vast list of growth rates. I was even more confused
3 when Mr. Hill states that the simple five-year average sustainable growth value of
4 3.28% for Southern “*is used as a benchmark against which I measure the*
5 *company’s most recent growth rate trends.*”²⁹ It is not clear how Mr. Hill went
6 from a benchmark growth rate for Southern of 3.28% to a final estimate growth
7 rate for Southern of 4.25% (without growth from external financing) and
8 eventually 5.02% (including growth from external financing).

9 In short, from a vast array of fifteen growth estimates for each company, Mr. Hill
10 arbitrarily selects a growth rate with little quantitative support or academic
11 empirical evidence as to the optimal growth rate proxy in the DCF model.

12 **Q. Were you able to replicate Mr. Hill’s growth rate forecasts for any of the**
13 **companies contained in Mr. Hill’s sample?**

14 A. No. I was unable to replicate Mr. Hill’s final choice of growth rate estimates of
15 any utility in Mr. Hill’s sample of electric utilities from the vast array of growth
16 rate estimates provided in Exhibit No. ___(SGH-5), Exhibit No. ___(SGH-6), and
17 Exhibit No. ___(SGH-10). The final growth rate estimates selected by Mr. Hill
18 simply appear without scientific foundation, derivation or ability to be replicated.
19 The choice of optimal growth rate proxy should be guided by objective scientific
20 research and be easily reproducible, unlike Mr. Hill’s growth proxies. Moreover,
21 the empirical finance literature shows that analysts’ growth forecasts produce

²⁹ Hill Exh. No. ___(SGH-2T), at page 22, lines 6-8.

1 superior proxies for the expected growth term in the DCF model.³⁰ These
2 forecasts influence investor expectations and are appropriate to consider here.
3 Mr. Hill's shotgun approach to growth rates, on the other hand, is unreliable and
4 arbitrary.

5 **b. Mr. Hill Relies on the Sustainable Growth Methodology**
6 **in the DCF Analysis Whereby He is Forced to Assume**
7 **the Answer to Implement the Methodology.**

8 **Q. What is the sustainable (a.k.a. internal or retention) growth methodology**
9 **used by Mr. Hill to implement the DCF model?**

10 A. Mr. Hill relies heavily on the sustainable growth methodology in order to arrive at
11 his growth estimates in the DCF analysis.³¹ The growth rate forecast using this
12 methodology is based on the equation $g = b(\text{ROE})$, where "b" is the percentage of
13 earnings retained and "ROE" is the expected rate of return on book equity
14 (ROE).³² Mr. Hill also accounts for the impact of external stock financing on
15 growth by adding an external growth term ($g = sv$).³³

³⁰ See, e.g., Lawrence D. Brown & Michael S. Rozeff, *The Superiority of Analyst Forecasts as Measures of Expectations: Earnings from Evidence*, 33 *Journal of Finance* 1-16 (1978); Michael S. Rozeff, *Predicting Long-Term Earnings Growth: Comparisons of Expected Return Models, Submartingales and Value Line Analysts*, 2 *Journal of Forecasting* 425-35 (1983); R. Charles Moyer, et al., *The Accuracy of Long-Term Earnings Forecasts in the Electric Utility Industry*, 1 *International Journal of Forecasting* 241-52 (1985); and Robert E. Chatfield, et al., *The Accuracy of Long-Term Earnings Forecasts for Industrial Firms*, 28 *Quarterly Journal of Business and Economics* 91-104 (1989).

³¹ See, e.g., Hill, Exh. No. ____ (SGH-2T), at page 22, line 2, through page 3, line 16, and Hill, Exh. No. ____ (SGH-5).

³² See, e.g., Hill, Exh. No. ____ (SGH-3), at page 1.

³³ See, e.g., Hill, Exh. No. ____ (SGH-3), at pages 2-3.

1 **Q. Please comment on Mr. Hill's sustainable growth methodology.**

2 A. I disagree with the sustainable growth methodology for the following four
3 reasons:

4 (i) the sustainable growth methodology is logically circular
5 because it requires an estimate of the expected rate of
6 return on equity to estimate the cost of equity using the
7 DCF model;

8 (ii) the sustainable growth methodology is inconsistent with the
9 academic empirical evidence;

10 (iii) the potential lack of representativeness of Value Line's
11 forecasts as proxies for the market consensus; and

12 (iv) a technical error.

13 I will now discuss each of these points in turn.

14 **Q. Is the sustainable growth methodology logically consistent?**

15 A. No, the sustainable growth methodology is not logically consistent and contains a
16 puzzling logical contradiction. The contradiction arises because the methodology
17 requires an explicit assumption on the ROE expected from the retained earnings
18 that produce future growth. Mr. Hill bases his ROE estimate on Value Line's
19 current and forecast ROE for the 2016-2018 period as shown on the second
20 column of numbers on each panel of Exhibit No. ___(SGH-5). The ROEs used
21 by Mr. Hill in calculating the sustainable growth rate, however, do not match
22 Mr. Hill's own ROE recommendation.

23 As shown on Table 3 below, the average expected ROE of 9.7% for the 2013
24 period used in Mr. Hill's sustainable growth rate computation exceeds Mr. Hill's
25 recommended ROE for PSE of 8.65%. The same is true for the 2014 average

1 expected ROE of 9.9% and the 2016-18 average expected ROE of 10.2%.
 2 Mr. Hill's analysis thus assumes that the earned returns (ROE) of the sample
 3 companies exceed what he has determined to be their cost of equity forever. In
 4 other words, Mr. Hill is assuming that these companies will earn ROEs higher
 5 than that granted by their regulators and reflected in their rates.

6 **Table 3**
 7 **Expected ROEs Reflected in Exhibit No. ___ (SGH-5)**

Company	2013 Expected ROE	2014 Expected ROE	2016-2018 Expected ROE	Page
ALLETE, Inc.	8.0%	8.5%	9.5%	1
Alliant Energy Corporation	11.5%	11.5%	11.0%	1
American Electric Power Co.	9.5%	10.0%	10.0%	2
Cleco Corporation	9.5%	10.5%	11.0%	2
Edison International	11.5%	11.5%	11.0%	3
Entergy Corporation	9.0%	9.0%	9.5%	2
IDACORP, Inc.	9.0%	8.5%	8.0%	4
Northwestern Corporation	9.5%	9.5%	9.5%	4
PG&E Corporation	6.0%	7.5%	9.0%	4
Pinnacle West Capital Corp.	9.5%	9.5%	10.0%	5
Portland General Electric Company	8.0%	8.0%	8.0%	5
Southern Company	13.0%	13.0%	12.5%	1
Westar Energy, Inc.	9.0%	9.0%	9.5%	3
Wisconsin Energy Corporation	13.0%	13.0%	14.0%	3
Xcel Energy Inc.	10.0%	9.5%	10.0%	5
AVERAGE	9.7%	9.9%	10.2%	N/A

8 While this scenario implicit in Mr. Hill's sustainable growth methodology may be
 9 imaginable for an unregulated company, it is implausible to assume that a
 10 regulated company whose rates are set by its regulator at a level designed to

1 permit the company to earn a return equal to its cost of capital. This logical flaw
2 compromises the integrity of Mr. Hill's analysis and should be a sufficient basis
3 for rejecting the results produced by this methodology.

4 In essence, by using an ROE that differs from its final recommended cost of
5 equity, Mr. Hill requires the Commission to make two inconsistent findings
6 regarding ROE. I am perplexed as to why Mr. Hill assumes that his group of
7 comparable electric utilities is expected to earn 9.7%, 9.9%, or 10.2% forever,
8 while at the same time he recommends an ROE of 8.65% for PSE. The only way
9 that these utilities can earn an average expected ROE of 9.7%, 9.9%, or 10.2% is
10 if rates are set so that utilities will in fact earn ROEs of 9.7%, 9.9%, or 10.2%.

11 The only logical conclusion to be drawn from the data is that the group's cost of
12 equity is significantly higher than Mr. Hill's DCF analysis projects because
13 Mr. Hill uses much larger ROEs in his sustainable growth methodology.

14 In brief, Mr. Hill's implementation of the sustainable growth methodology is
15 logically circular because it assumes a ROE in a regulatory process that is
16 designed to estimate the fair and reasonable ROE.

17 **Q. Is the sustainable growth methodology consistent with the empirical financial**
18 **evidence?**

19 A. No, it is not. The second difficulty with the sustainable growth methodology is
20 that the empirical finance literature demonstrates this particular methodology of
21 determining growth (i) is a very poor explanatory variable of market value and
22 (ii) is not as significantly correlated to measures of value, such as stock price and
23 price/earnings ratios.

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

3 A. No, not necessarily. The third difficulty with Mr. Hill's sustainable growth
4 methodology is that exclusive reliance on Value Line forecasts of ROE and
5 retention ratios run the risk that such forecasts are not representative of investors'
6 consensus forecast.

7 **Q. What is the fourth problem with Mr. Hill's sustainable growth methodology?**

8 A. The fourth difficulty with Mr. Hill's sustainable growth methodology is that the
9 forecasts of the expected return on equity published by Value Line are based on
10 end-of-period book equity rather than on average book equity. The following
11 formula adjusts the reported end-of-year values so that they are based on average
12 common equity, which is the common regulatory practice:³⁴

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

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

17 The result of this error is that Mr. Hill's DCF estimates are understated by some
18 10-20 basis points, depending on the magnitude of the book value growth rate.

³⁴ See Roger A. Morin, *The New Regulatory Finance*, at chapter 9 (2006) for a discussion of this formula.

1 **c. Mr. Hill Erroneously Relies on Historical Growth Rates**
2 **in His DCF Analysis**

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

4 A. Mr. Hill inappropriately considers historical growth rates in arriving at proxies for
5 the DCF growth forecast component. Indeed, seven of the fifteen growth proxies
6 referred to by Mr. Hill are historical. It may be reasonable to assume that
7 historical growth rates in dividends/earnings influence investors' assessment of
8 the long-run growth rate forecast of future dividends/earnings if the company and
9 industry are stable. Because of structural changes in the energy industry,³⁵
10 however, historical growth rates have little relevance as proxies for long-term
11 growth forecasts. Moreover, historical growth rates are largely redundant because
12 such historical growth patterns are already incorporated in analysts' growth
13 forecasts that should be used in the DCF model.

14 **Q. What do you conclude from Mr. Hill's use of historical growth rates?**

15 A. Although Mr. Hill reports and discusses historical growth rates and growth rate
16 forecasts, it is difficult to discern from the discussion of each company's growth
17 rate to what extent, if any, Mr. Hill relies on historical growth rates and dividend
18 growth rate forecasts. (Admittedly, given the arbitrary nature of his final choice
19 of growth estimates, it is not clear as to what weight Mr. Hill accords any of his
20 cited growth rates, let alone historical growth rates.) If, however, Mr. Hill relies

³⁵ Examples of structural changes in the energy industry include, without limitation, the following: enhanced focus on and falling costs of distributed generation and other distributed energy resources; increasing customer, regulatory, and political interest in demand side management technologies; government programs to incentivize selected technologies; the declining price of natural gas; slowing economic growth trends; and variability in electricity prices in certain areas of the country.

1 on historical growth rates and dividend growth rate forecasts reported by Value
2 Line, he does so perilously.

3 One would expect that averages of analysts' earnings growth forecasts, such as
4 those contained in IBES, First Call, Reuters, or Zacks, are more reliable estimates
5 of the investors' consensus expectations than either historical growth rates or one
6 particular firm's dividend growth forecast. As discussed in my direct testimony,
7 the empirical finance literature³⁶ has demonstrated that consensus analysts'
8 growth forecasts (i) are reflected in stock prices, (ii) possess a high explanatory
9 power of equity values, and (iii) are used by investors.

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

14 **C. Mr. Hill's CAPM Results Should be Given Very Little, If Any, Weight**
15 **Because Mr. Hill Has Relied on Erroneous Data Inputs.**

16 **Q. Did Mr. Hill implement a CAPM analysis?**

17 A. Yes, he did. Mr. Hill performs a CAPM analysis of ROE.³⁷ Mr. Hill uses a risk-
18 free rate of 3.4%,³⁸ a Value Line beta estimates of 0.67,³⁹ and a market risk
19 premium of 6.0%.⁴⁰

³⁶ See footnote 30, *supra*.

³⁷ See Hill, Exh. No. ___(SGH-2T), at page 32, line 5, through page 35, line 2; *see also* Hill, Exh. No. ___(SGH-11).

1 **1. Mr. Hill Uses an Inappropriate Risk-Free Rate In His CAPM**
2 **Analysis**

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

4 A. No. Mr. Hill's risk-free rate estimate of 3.4%⁴¹ is far too low for purposes of
5 applying the CAPM. As shown in my prefiled direct testimony in this
6 proceeding, Global Insight, Value Line and Consensus Forecasts all project higher
7 long-term Treasury interest rates rising to an average of 4.6%.⁴²
8 Mr. Hill should have relied on projected long-term Treasury interest rates for the
9 simple reason that investors price securities on the basis of long-term
10 expectations, including interest rates. The CAPM is a prospective (i.e., forward-
11 looking) model. Mr. Hill himself concedes that "[c]ost of capital is not set for
12 ratemaking purposes by looking back at what happened in the past"⁴³ and that
13 "[e]quity capital cost estimates are forward-looking and must take into account
14 current market expectations for the future."⁴⁴ Mr. Hill should have heeded his
15 own advice. Instead, Mr. Hill significantly understates his CAPM projections by
16 using a risk-free rate that is approximately 1.2% (4.6% - 3.4% = 1.2%) lower than
17 projected.

³⁸ Hill, Exh. No. ___(SGH-2T), at page 33, lines 14-21; *see also* Hill, Exh. No. ___(SGH-11).

³⁹ Hill, Exh. No. ___(SGH-2T), at page 34, lines 14-19; *see also* Hill, Exh. No. ___(SGH-11).

⁴⁰ Hill, Exh. No. ___(SGH-2T), at page 33, line 23, through page 34, line 12; *see also* Hill, Exh. No. ___(SGH-11).

⁴¹ Hill, Exh. No. ___(SGH-2T), at page 33, lines 14-21; *see also* Hill, Exh. No. ___(SGH-11).

⁴² Morin, Exh. No. ___(RAM-1T), at page 44, line 4, through page 45, line 4.

⁴³ Hill, Exh. No. ___(SGH-2T), at page 50, lines 7-8.

⁴⁴ Hill, Exh. No. ___(SGH-2T), at page 51, lines 9-10.

1 **2. Mr. Hill's Average Beta is a Function of the Unnecessarily**
2 **Small Sample Group of Comparable Utilities in Analyses**

3 **Q. How does Mr. Hill calculate the beta component for his CAPM analysis?**

4 A. Mr. Hill uses the average beta coefficient of 0.67 derived from the fifteen utilities
5 in his comparable group.⁴⁵ Mr. Hill's calculation of an average beta coefficient of
6 0.67 is correct. As stated above, however, Mr. Hill's analysis relies upon an
7 unnecessarily small sample group of comparable utilities. If Mr. Hill were to
8 expand the number of utilities in the sample group, then his beta coefficient would
9 be more likely to generate an accurate projection. I relied on a beta estimate of
10 0.74, Mr. Parcell relied on 0.74, and Mr. Gorman relied on 0.75, all of which
11 exceed Mr. Hill's low estimate of 0.67.

12 **3. Mr. Hill Uses an Inappropriate Market Risk Premium Rate In**
13 **His CAPM Analysis**

14 **Q. Do you agree with Mr. Hill's market risk premium estimate in his CAPM**
15 **analysis?**

16 A. No, I do not. In order to determine the market risk premium component of his
17 CAPM analysis, Mr. Hill uses the long-term 6.0% historical market risk premium
18 reported in the Morningstar (formerly Ibbotson Associates) 2011 edition of
19 *Stocks, Bonds, Bills and Inflation*.⁴⁶

⁴⁵ Hill, Exh. No. ___(SGH-2T), at page 34, lines 14-19.

⁴⁶ Hill, Exh. No. ___(SGH-2T), at page 33, line 23, through page 34, line 12; *see also* Hill, Exh. No. ___(SGH-11).

1 This market risk premium of 6.0% is incorrect for two reasons. First, the
2 Morningstar (formerly Ibbotson Associates) 2011 edition of *Stocks, Bonds, Bills*
3 *and Inflation* on which Mr. Hill relies reports returns for the period ending in
4 2010, and therefore is quite stale. Mr. Hill should have instead relied on the
5 2013 edition of *Stocks, Bonds, Bills and Inflation*, which reports historical returns
6 for the period ending in 2012.

7 Second, the proper way to estimate the market risk premium from historical data
8 is to use the income return, not total returns, on government bonds. The long-
9 term (1926-2012) market risk premium based on income returns, as required, is
10 6.7%, and not the 6.0% used by Mr. Hill.

11 Morningstar recommends use of the income return on government bonds as a
12 more reliable estimate of the historical market risk premium because the income
13 component of total bond return (i.e., the coupon rate) is a better estimate of
14 expected return than the total return (i.e., the coupon rate + capital gain).⁴⁷ In
15 other words, bond investors focus on income rather than realized capital
16 gains/losses. This correction alone increases Mr. Hill's CAPM estimate by
17 47 basis points (i.e., the product of (a) the difference between the long-term
18 market risk premium of 6.7% and Mr. Hill's market risk premium of 6.0%
19 multiplied by (b) Mr. Hill's average beta of 0.67).

⁴⁷ See Morningstar 2014 Yearbook: Valuation Edition.

1 **D. Mr. Hill Improperly Uses a Modified Earning Price Ratio and**
2 **Market-to-Book Ratio Analyses, Each of Which is a Disguised**
3 **Versions of the DCF**

4 **Q. Does Mr. Hill rely on additional approaches in arriving at his final**
5 **recommended ROE for PSE?**

6 A. Yes. Mr. Hill employs both a Modified Earnings-Price Ratio analysis⁴⁸ and a
7 Market-To-Book Ratio analysis⁴⁹ in arriving at his final recommended ROE for
8 PSE.

9 **1. Mr. Hill's Modified Earnings-Price Ratio Analysis is**
10 **Inappropriate and Inapplicable**

11 **Q. Is the Modified Earnings-Price Ratio methodology appropriate and**
12 **applicable?**

13 A. No. The Modified Earnings-Price Ratio methodology is inappropriate and
14 inapplicable. According to the Modified Earnings-Price Ratio methodology, the
15 return of earnings to shareholders is the cost to the company of equity funds, and
16 the same rate of return must be earned on equity-financed assets to equal the cost
17 rate. The corporate finance literature in the 1960s extensively discussed the
18 Earnings-Price Ratio methodology that lies at the root of Mr. Hill's Modified
19 Earnings-Price Ratio method. Indeed, the Earnings-Price Ratio methodology
20 enjoyed some brief notoriety in regulatory proceedings during that period.

⁴⁸ Hill, Exh. No. ____ (SGH-2T), at page 35, line 3, through page 39, line 17.

⁴⁹ Hill, Exh. No. ____ (SGH-2T), at page 39, line 18, through page 42, line 5.

1 Today, however, the Earnings-Price Ratio methodology has vanished from use
2 because it produces unreliable results. In fact, the Earnings-Price Ratio
3 methodology constitutes an accurate measure of the cost of equity (and collapses
4 into the standard constant-growth DCF model) only under two very limited
5 circumstances:

- 6 (1) the company must pay all earnings out in dividends, and
- 7 (2) the company must be an “ordinary” firm, (i.e., a company
8 without profitable opportunities earning a return on new
9 investments equal to the cost of equity).

10 Neither of these circumstances is present here. Therefore, the Commission should
11 reject Mr. Hill’s Modified Earnings-Price Ratio methodology.

12 Furthermore, the Modified Earnings-Price Ratio methodology, like the sustainable
13 growth rate methodology discussed above, is logically circular because it requires
14 an assumed ROE, which is the very quantity the model is trying to estimate.

15 **Q. Is Mr. Hill’s Modified Earning-Price Ratio methodology any different from**
16 **the traditional Earning-Price Ratio methodology?**

17 A. No, Mr. Hill’s Modified Earning-Price Ratio methodology and the traditional
18 Earning-Price Ratio methodology are equivalent. The relationship between the
19 Modified Earnings-Price Ratio and the traditional Earnings-Price Ratio can easily
20 be seen from Mr. Hill’s testimony.⁵⁰ Professors Edwin Elton and Martin Gruber

⁵⁰ Hill, Exh. No. ____ (SGH-2T), at page 36, line 2, through page 38, line 16.

1 posit the following formula,⁵¹ which appears as equation (3) on page 37 of
2 Mr. Hill's testimony.

$$k = \frac{(1-b)E}{(1-cb)P}$$

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

9 Because the process of regulation sets the return on equity equal to the cost of
10 equity (i.e., ROE is set equal to "k" by the regulator), "c" equals 1.0 in the above
11 formula. Thus $k = E/P$, and the two methodologies are equivalent.

12 **2. Mr. Hill's Market-to-Book Ratio Analysis is Also**
13 **Inappropriate and Inapplicable**

14 **Q. Is the Market-to-Book Ratio methodology appropriate and applicable?**

15 A. No. The Market-to-Book Ratio methodology is inappropriate and inapplicable.
16 Indeed, Mr. Hill admits that the Market-to-Book Ratio methodology is redundant:
17 "This method is derived algebraically from the DCF model and therefore, cannot
18 be considered a strictly independent check of that method."⁵² Furthermore, the
19 Market-to-Book Ratio methodology, like both the sustainable growth
20 methodology and the Modified Earnings Price Ratio methodology discussed

⁵¹ Edwin J. Elton & Martin J. Gruber, *Modern Portfolio Theory and Investment Analysis* 401-04 (5th ed. 1995).

⁵² Hill, Exh. No. ____ (SGH-2T), at page 39, line 23, through page 40, line 2.

1 above, is logically circular because it requires an assumed ROE, which is the very
2 quantity the model is trying to estimate.

3 **E. The Commission Should Reject Mr. Hill's Downward ROE**
4 **Adjustment Of 35 Basis Points For Decoupling.**

5 **Q. Do you agree with Mr. Hill's 35 basis points downward adjustment to ROE**
6 **for decoupling?**

7 A. No, I do not. Mr. Hill devotes eighteen pages of his testimony in an attempt to
8 quantify the impact of decoupling on PSE's risk. Although risk-mitigating
9 mechanisms, such as decoupling, may reduce risk on an absolute basis, they do
10 not necessarily do so on a relative basis (i.e., compared to other utilities). For
11 example, an energy cost adjustment mechanism may reduce absolute risk, but it
12 does not reduce relative risk because most utilities in the industry have some form
13 of energy cost adjustment mechanism. The approval of adjustment clauses, ROE
14 incentives riders, trackers, forward test years, and cost recovery mechanisms by
15 regulatory commissions is widespread in the utility business and is already largely
16 embedded in financial data, such as bond rating and business risk scores.

17 Although adjustment clauses, riders, and cost tracking mechanisms may mitigate
18 (on an absolute basis but not on a relative basis) a portion of the risk and
19 uncertainty related to the day-to-day management of PSE's operations, there are
20 other significant factors to consider that work in the reverse direction for PSE, for
21 example, PSE's dependence on substantial capital spending program to refurbish
22 an aging infrastructure and regulatory risks, particularly in light of PSE's inability

1 to earn its allowed return in recent years. These additional factors largely offset
2 the presence of the aforementioned risk-mitigating mechanisms.

3 My own view is that any risk-mitigating impact that decoupling could have on
4 PSE's risk profile is reflected in the capital market data of the comparable
5 companies and that the risk impact of these mechanisms is offset by several
6 factors that work in the reverse direction. As explained in my direct testimony,
7 the market-derived cost of common equity for other utility companies already
8 incorporates the results of decoupling and/or similar mechanisms so that no
9 further adjustment is appropriate or reasonable in determining the cost of common
10 equity for PSE.⁵³ Decoupling and other similar risk-mitigating mechanisms are
11 becoming the norm for regulated utilities across the U.S. In short, a downward
12 ROE adjustment as recommended by Mr. Hill, if applied, would constitute
13 double-counting.

⁵³ Morin, Exh. No. ____ (RAM-1T), at page 68, lines 3-13.

1 **F. Mr. Hill’s Criticisms Of My Testimony Are Unfounded And Without**
2 **Merit, And Should Be Ignored By The Commission.**

3 **1. Mr. Hill’s Criticisms Of My DCF Analyses Are Unfounded**
4 **And Without Merit**

5 **a. The Dividend Yield Used in My DCF Analyses Does Not**
6 **Double-Count the Expected Dividend Yield for Growth**

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

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

18 **Q. Did you double-count the expected dividend yield for growth?**

19 A. No. Contrary to assertions of Mr. Hill,⁵⁴ I did not overstate the dividend yield by
20 double-counting the dividend increase. This is because I used the “current
21 dividend yield” as defined by Value Line in the Value Line Investment Analyzer
22 software and not the dividend yield figure to which Mr. Hill refers, and then

⁵⁴ Hill, Exh. No. ___(SGH-2T), at page 56, lines 9-23.

1 grossed up the current dividend yield to produce the expected dividend yield
2 required by the DCF model.

3 **b. Analysts' Growth Rate Forecasts Are Reasonable**
4 **Indicators Of Investor Expectations**

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

7 A. No. Mr. Hill criticizes my DCF results because they rely solely on projected
8 earnings growth.⁵⁵ As discussed above, published studies in peer-reviewed
9 academic literature demonstrate that (i) analysts' growth rate forecasts are
10 reasonable indicators of investor expectations, and (ii) investors rely on such
11 forecasts. There is an abundance of evidence attesting to the importance of
12 earnings in assessing investors' expectations.

13 First, the sheer volume of earnings forecasts available from the investment
14 community relative to the scarcity of dividend forecasts attests to their
15 importance. To illustrate, Value Line, Zacks Investment, First Call Thompson,
16 Reuters, Yahoo Finance, and Multex provide comprehensive compilations of
17 investors' earnings forecasts, to name some. The fact that these investment
18 information providers focus on growth in earnings rather than growth in dividends
19 indicates that the investment community regards earnings growth as a superior
20 indicator of future long-term growth.

⁵⁵ Hill, Exh. No. ____ (SGH-2T), at page 53, line 22, through page 54, line 4.

1 Second, Value Line's principal investment rating assigned to individual stocks,
2 Timeliness Rank, is based primarily on earnings, accounting for 65% of the
3 ranking.

4 Third, published studies in the academic literature demonstrate that growth
5 forecasts made by security analysts are reasonable indicators of investor
6 expectations, and that investors rely on analysts' forecasts. Professors John G.
7 Cragg and Burton G. Malkiel present detailed empirical evidence that the average
8 analysts' expectation is more similar to expectations being reflected in the
9 marketplace than are historical growth rates, and represents the best possible
10 source of DCF growth rates.⁵⁶ Professors Cragg and Malkiel also show that
11 historical growth rates do not contain any information that is not already
12 impounded in analysts' growth forecasts.⁵⁷ A study by Professors James H
13 Vander Weide and Willard T. Carleton also confirms the superiority of analysts'
14 forecasts over historical growth extrapolations.⁵⁸ Another study by Professors
15 Stephen G. Timme and Peter C. Eisemann produced similar results.⁵⁹

⁵⁶ John G. Cragg & Burton G. Malkiel, *Expectations and the Structure of Share Prices* (1982).

⁵⁷ *Id.*

⁵⁸ James H Vander Weide & Willard T. Carleton, *Investor Growth Expectations: Analysts vs. History*, 15 *The Journal of Portfolio Management* 78-83 (1988).

⁵⁹ Stephen G. Timme & Peter C. Eisemann, *On the Use of Consensus Forecasts of Growth in the Constant Growth Model: The Case of Electric Utilities*, 18 *Financial Management* 23-35 (1989).

1 **Q. How do you respond to Mr. Hill’s criticism that earnings growth projections**
2 **are overly optimistic?**

3 A. Mr. Hill denounces the use of financial analysts’ earnings forecasts on the
4 grounds that such forecasts are “rosy”.⁶⁰ I disagree, at least for utility stocks.
5 Using virtually all publicly available analyst earnings forecasts for a large sample
6 of companies (over 23,000 individual forecasts by 100 analyst firms), Professors
7 Lys and Sohn show that stock returns respond to individual analyst earnings
8 forecasts, even when they are closely preceded by earnings forecasts made by
9 other analysts or by corporate accounting disclosures.⁶¹ Using actual and IBES
10 data from 1982-1995, Professors Easterwood and Nutt regress the analysts’
11 forecast errors against either historical earnings changes or analysts’ forecasting
12 errors in the prior years.⁶² Results show that analysts tend to under-react to
13 negative earnings information, but overreact to positive earnings information.
14 The more recent studies provide evidence that analysts make biased forecasts and
15 misinterpret the impact of new information.⁶³ For example, several studies in the
16 early 1990s suggest that analysts either systematically underreact or overreact to

⁶⁰ Hill, Exh. No. ____ (SGH-2T), at page 27, line 8, through page 28, line 23.

⁶¹ Thomas Lys & Sungkyu Sohn, *The Association Between Revisions of Financial Analysts’ Earnings Forecasts and Security Price Changes*, 13 *Journal of Accounting and Economics* 341-363 (1990).

⁶² John Easterwood & Stacey Nutt, *Inefficiency in Analysts’ Earnings Forecasts: Systematic Misreaction or Systematic Optimism?*, 54 *Journal of Finance* 1777-1797 (1999).

⁶³ Other relevant papers corroborating the superiority of analysts forecasts as predictors of future returns versus historical growth rates include: Dan Fried & Dov Givoly, *Financial Analysts Forecasts of Earnings: A Better Surrogate for Earning Expectations*, 4 *Journal of Accounting and Economics* 85-107 (1982); R. Charles Moyer, *et al.*, *The Accuracy of Long-Term Earnings Forecasts in the Electric Utility Industry*, 1 *International Journal of Forecasting* 241-52 (1985); and David Gordon, *Choice Among Methods of Estimating Share Yield*, 15 *Journal of Portfolio Management* 50-55 (1989).

1 new information. Professors Easterwood and Nutt discriminate between these
2 different reactions and reported that analysts underreact to negative information,
3 but overreact to positive information.

4 The recent studies do not necessarily contradict the earlier literature. The earlier
5 research focused on whether analysts' earnings forecasts are better at forecasting
6 future earnings than historical averages, whereas the recent literature investigates
7 whether the analysts' earnings forecasts are unbiased estimates of future earnings.
8 It is possible that even if the analysts' forecasts are biased, they are still closer to
9 future earnings than the historical averages, although this hypothesis has not been
10 tested in the recent studies. One way to assess the concern that analysts' forecasts
11 may be biased upward is to incorporate into the analysis the growth forecasts of
12 independent research firms, such as Value Line, in addition to the analyst
13 consensus forecast. Unlike investment banking firms and stock brokerage firms,
14 independent research firms such as Value Line have no incentive to distort
15 earnings growth estimates in order to bolster interest in common stocks.

16 The magnitude of the optimism bias for large rate-regulated companies in stable
17 segments of an industry is likely to be very small. Empirically, the severity of the
18 optimism problem is unclear for regulated utilities, if a problem exists at all. It is
19 interesting to note that Value Line forecasts for utility companies made by
20 independent analysts with no incentive for over- or understating growth forecasts
21 are not materially different from those published by analysts in security firms with
22 incentives not based on forecast accuracy, and may in fact be more robust.

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

3 A. No. In his testimony, Mr. Hill argues that the 1984 edition of my book (thirty
4 years ago) failed to criticize the ability of the DCF model to accurately estimate
5 the cost of equity depending on the Market-to-Book ratio of utilities.⁶⁵ Mr. Hill
6 fails to recognize, however, that the ability of the DCF model to estimate the cost
7 of equity accurately depending on the Market-to-Book ratio of utilities was
8 simply not an issue for utilities more than a quarter century ago because utilities
9 were trading at market prices very close to book value. Similarly, it was not an
10 important issue when Professor Gordon developed the DCF model in the mid-
11 1960s. Instead of reaching back some 30 years, perhaps Mr. Hill should have
12 consulted the 1994 and 2006 editions of my book, each of which discusses at
13 length the chronic inability of the DCF model to accurately estimate investor
14 returns when Market-to-Book ratios deviate markedly from unity.

15 **Q. Is Mr. Hill's contention that your views on the applicability of the DCF have**
16 **changed since 1984 correct?**

17 A. No. Mr. Hill has distorted my views from my 1984 book. Mr. Hill falsely asserts
18 that there is no reference to the DCF understating the cost of equity in my 1984
19 text when Market-to-Book ratios are below one. In late 1984 when the book was
20 published, Market-to-Book ratios were at nearly one. Indeed, Market-to-Book
21 ratios have been well above one for over thirty years.

⁶⁵ Hill, Exh. No. ____ (SGH-2T), at page 58, line 6, through page 60, line 11.

1 The reference to the understatement of the cost of equity when Market-to-Book
2 ratios are slightly below one referred to the dilutive effects of issuing stock below
3 book value and the necessity of allowing for flotation cost.

4 **Q. How do you respond to Mr. Hill's discussion of your numerical example**
5 **regarding the reliability of DCF estimates?**

6 A. Mr. Hill reaches back to old testimonies and digs out a numerical example from
7 an old PSE rebuttal and concludes that this particular numerical example does not
8 show that the DCF understates the cost of equity when the Market-to-Book ratio
9 exceeds one.⁶⁶

10 Mr. Hill appears to be confused on this subject. First, the allowed return of 10%
11 is not assumed to be determined by the DCF, as claimed by Mr. Hill.⁶⁷ Such an
12 assumption would be circular. The allowed return of 10% is assumed to be
13 determined exogenously by the CAPM or the Risk Premium method, for example.

14 The numerical example is quite simple despite Mr. Hill's attempts to confuse the
15 issue. A stock is trading at \$100 and the investor requires a 10% return, so that
16 \$10 of earnings are needed. But the regulatory body applies the 10% return to a
17 \$50 book value. So, there are only \$5 of earnings available to the investor, and
18 the realized return is only 5%. It is that simple.

⁶⁶ Hill, Exh. No. ___(SGH-2T), at page 60, line 12, through page 64, line 10.

⁶⁷ Hill, Exh. No. ___(SGH-2T), at page 62, lines 9-13.

1 To pursue the analogy provided by Mr. Hill,⁶⁸ imagine a broker trying to sell to
2 an investor with a return requirement of 10%, a utility stock priced at \$100 per
3 share, and whose Market-to-Book ratio is 2.0. The broker would say to the
4 investor: “I’ve got a stock for you that’s going to pay a 10% return on a \$50 book
5 value – in other words one share will get you \$5 but each share has to drop from
6 \$100 to \$50 in order for the price to drop to book value. Are you interested?” No
7 rational investor would pay \$100 for a stock that is going to drop to \$50. In short,
8 the analogy defies logic.

9 **2. Mr. Hill’s Criticisms Of My CAPM Analyses Are Unfounded**
10 **And Without Merit**

11 **a. Use of Projected Long-Term Treasury Interest Rates as**
12 **the Risk-Free Rate for CAPM is Entirely Appropriate**

13 **Q. Do you agree with Mr. Hill’s criticism of your risk-free rate in your CAPM**
14 **analysis?**

15 A. No, I do not. Mr. Hill argues that I should have relied on current yields rather
16 than on yield forecasts.⁶⁹ As discussed above, the CAPM is a prospective
17 (i.e., forward-looking) model, and the use of projected long-term Treasury interest
18 rates is entirely appropriate because investors price securities on the basis of long-
19 term expectations, including interest rates. Mr. Hill himself concedes that “[c]ost
20 of capital is not set for ratemaking purposes by looking back at what happened in

⁶⁸ Hill, Exh. No. ___(SGH-2T), at page 63, lines 3-21.

⁶⁹ Hill, Exh. No. ___(SGH-2T), at page 70, lines 6, through page 72, line 5.

1 the past”⁷⁰ and that “[e]quity capital cost estimates are forward-looking and must
2 take into account current market expectations for the future.”⁷¹ Therefore, the use
3 of current yields rather than yield forecasts is appropriate.

4 **b. Mr. Hill Does Not Take Issue With the Beta of 0.72 for**
5 **Purposes of the CAPM**

6 **Q. Does Mr. Hill criticize your use of a beta of 0.72 for the CAPM?**

7 A. No. Mr. Hill does not criticize the use of a beta of 0.72 for the CAPM.

8 **c. CAPM Market Risk Premium**

9 **Q. How do you respond to Mr. Hill’s criticism of your historical Market Risk**
10 **Premium estimate in the CAPM analysis?**

11 A. Mr. Hill criticizes my use of historical market risk premia on two grounds. First,
12 Mr. Hill criticizes my reliance on interest rate forecasts instead of current interest
13 rates for the risk-free rate.⁷² I have already addressed above the fact that the use
14 of projected long-term Treasury interest rates is entirely appropriate because
15 investors price securities on the basis on long-term expectations, including
16 interest rates

17 Second, Mr. Hill asserts that the market risk premium of 7.2% is overstated.⁷³

18 For example, Mr. Hill asserts that “much of the market risk premium discussion
19 in the literature of financial economics over the past two decades has supported

⁷⁰ Hill, Exh. No. ___(SGH-2T), at page 50, lines 7-8.

⁷¹ Hill, Exh. No. ___(SGH-2T), at page 51, lines 9-10.

⁷² Hill, Exh. No. ___(SGH-2T), at page 70, line 6, through page 72, line 5.

⁷³ Hill, Exh. No. ___(SGH-2T), at page 65, lines 19, through page 70, line 5.

1 the notion that investors' market risk premium expectations are likely to be below
2 those long-term historical averages (4 percent-6.0 percent)".⁷⁴ Mr. Hill cites the
3 work of Dimson, Staunton and Marsh, in which the authors reviewed a longer-
4 term data set than that used by Morningstar and concluded that market risk
5 premiums expected in the future are below the historical averages published by
6 Morningstar.⁷⁵

7 **Q. Can you comment on the materials published by Dimson, Staunton, and**
8 **March and cited by Mr. Hill?**

9 A. As stated above, Mr. Hill cites the published work by Dimson, Marsh, and
10 Staunton, which concludes that current Market Risk Premia are less than
11 historical Market Risk Premia. This study, however, reports returns over the
12 period 1900 to 2000 for twelve countries, representing 90% of today's world
13 market capitalization. In that study, the authors report an average Market Risk
14 Premium of 5.6% for all countries, but an average Market Risk Premium of 7.0%
15 for the United States. Moreover, Market Risk Premia were generally higher for
16 the second half of the twentieth century than for the first. For example, the
17 average Market Risk Premium in the first half of the twentieth century was 5% for
18 the United States, and the average Market Risk Premium in the second half of the
19 twentieth century was 7.5% for the United States.

⁷⁴ Hill, Exh. No. ___(SGH-2T), at page 66, lines 3-6.

⁷⁵ Elroy Dimson, *et al.*, *Triumph Of The Optimists: 101 Years of Global Investment Returns* (2002).

1 A second approach to estimate the Market Risk Premium is prospective in nature
2 and consists of applying the DCF model to an aggregate equity index, as I did in
3 my direct testimony. A prospective study by Harris, Marston, Mishra, and
4 O'Brien cited in my direct study provides estimates of the *ex ante* expected
5 returns for S&P 500 companies over the period 1983-1998.⁷⁶ From that study,
6 the average Market Risk Premium estimate for the overall period is 7.2%, the
7 same as used in my CAPM analysis and higher than the historical Market Risk
8 Premium reported in Morningstar.

9 **Q. How do you respond to Mr. Hill's criticism that the Market Risk Premium**
10 **estimate of 7.2% is the upper end of a range espoused by Brealey & Myer's**
11 **textbook?**

12 A. Mr. Hill argues that the Market Risk Premium estimate of 7.2% is at the upper
13 end of a range espoused by the 2006 edition of the Brealey and Myers textbook
14 and is thus overstated.⁷⁷ I have several responses.

15 First, the 2010 edition of the Brealey, Myers, and Allen textbook takes no official
16 position with respect to any "official" Market Risk Premium estimate and
17 acknowledges the various disagreeing data:

18 Even with over 100 years of data, we can't estimate the market risk
19 premium exactly; nor can we be sure that investors today are
20 demanding the same reward for risk that they were 50 or 100 years

⁷⁶ R. S. Harris, *et al.*, *Ex Ante Cost of Equity Estimates of S&P 500 Firms: The Choice Between Global and Domestic CAPM*, 32 *Financial Management* 51-66 (2003).

⁷⁷ Hill, Exh. No. ____ (SGH-2T), at page 66, line 8, through page 67, line 6.

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ago. All this leaves plenty of room for argument about what the risk premium *really* is.⁷⁸

Indeed, the closest that the 2010 edition comes to endorsing an “official” Market Risk Premium estimate is when the text acknowledges that the Market Risk Premium has averaged 7.1% a year since 1900:

The difference between the return on the market and the interest rate is termed the *market risk premium*. Since 1900 the market risk premium ($r_m - r_f$) has averaged 7.1% a year.⁷⁹

Second, even if the Market Risk Premium estimate of 7.2% were at the upper end of a range (which it is not), it would not be surprising that the Market Risk Premium estimate has reached the upper end of the historical range, given the fundamental structural upward shift in risk aversion that occurred and the re-pricing of risk following the 2008-9 financial crisis and given the continuing uncertainties related to the domestic and European economies.

Finally, I did not rely solely on the historical Market Risk Premium estimate in my CAPM analysis. I also applied a prospective (forward-looking) analysis which indicated a much higher Market Risk Premium estimate than history would suggest.

⁷⁸ Richard A. Brealey, *et al.*, *Principles of Corporate Finance* 160 (10th ed. 2010) (italics in original).

⁷⁹ *Id.* at page 192 (italics in original).

1 **Q. How do you respond to Mr. Hill's criticism that you have mismatched stock**
2 **returns and bond returns?**

3 A. Mr. Hill asserts that I have mismatched stock returns and bond returns because the
4 former are realized returns while the latter are expected returns.⁸⁰ Mr. Hill would
5 be correct if I had relied on short time periods. Obviously, over very long time
6 periods on which I relied, investor expectations are realized. Otherwise, investors
7 would never invest money in stocks.

8 **Q. How do you respond to Mr. Hill's claims that research by Fama and French**
9 **in 2003 was based on long-term expected returns of stocks and bonds, and**
10 **indicated returns in the range of 2.6% - 4.3%?⁸¹**

11 A. I have several responses. First the Fama and French research on historical
12 returns⁸² is not based on expected returns, contrary to Mr. Hill's assertion.
13 Rather, the research is based on returns drawn from the Center for Research in
14 Security Prices (the well known "CRSP" files), as is most of the published
15 empirical research on returns. Those returns are measured as change in stock
16 price over a given period plus dividend, and are indeed historical returns.
17
18 Second, if the Fama and French research cited by Mr. Hill indicated returns in the
range of 2.6% - 4.3%, it is puzzling as to why Mr. Hill would have selected a

⁸⁰ Hill, Exh. No. ___(SGH-2T), at page 68, line 3, through page 69, line 11.

⁸¹ Hill, Exh. No. ___(SGH-2T), at page 68, line 18, through page 69, line 4.

⁸² Eugene F. Fama & Kenneth R. French, *The Equity Premium*, 57 *Journal of Finance* 637-59 (2002).

1 Market Risk Premium estimate of 6% for his CAPM analysis and not 2.6% -
2 4.3%.

3 Third, the Market Risk Premium estimate of 6% reported in the Morningstar
4 study and used by Mr. Hill is based on historical bond returns and historical stock
5 returns, the very thing he accuses me of doing.

6 Finally, the reference to a Market Risk Premium estimate in the 2.6% - 4.3%
7 range is puzzling when Mr. Hill acknowledges as follows:

8 Brealey and Meyers [sic] conclude, based on their review of the
9 recent evidence regarding the market risk premium, that a
10 reasonable range of arithmetic equity premiums above short-term
11 Treasury Bills is 5 percent to 8 percent.⁸³

12 This acknowledgement is highly contradictory to any suggestion that the Market
13 Risk Premium estimate falls in the 2.6% - 4.3% range.

14 **c. Empirical CAPM**

15 **Q. Please comment on Mr. Hill's assessment of the Empirical CAPM used in**
16 **your testimony.**

17 A. Mr. Hill erroneously asserts that use of "adjusted" betas with an Empirical CAPM
18 analysis double-counts the effect of changing the slope of the capital market
19 line.⁸⁴ Contrary to such suggestion, the Empirical CAPM is not an adjustment
20 (increase or decrease) in beta. Instead, the Empirical CAPM is a formal

⁸³ Hill, Exh. No. ___(SGH-2T), at page 66, lines 17-19.

⁸⁴ Hill, Exh. No. ___(SGH-2T), at page 73, lines 9-11.

1 recognition of the fact that empirical evidence demonstrates that the observed
2 risk-return tradeoff is flatter than predicted by the plain vanilla CAPM.

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

9 The graph presented in my prefiled direct testimony⁸⁵ demonstrates that the
10 Empirical CAPM is a return (vertical axis) adjustment and not a beta (horizontal
11 axis) adjustment. Moreover, the use of adjusted betas compensates for interest
12 rate sensitivity of utility stocks not captured by unadjusted betas.

13 With respect to the empirical validity of the plain vanilla CAPM, empirical
14 studies of the plain vanilla CAPM to determine to what extent security returns and
15 betas are related in the manner predicted by the plain vanilla CAPM have
16 supported the conclusion that (i) beta is related to security returns, (ii) the risk-
17 return tradeoff is positive, and (iii) the relationship is linear. The contradictory
18 finding is that the risk-return tradeoff is not as steeply sloped as predicted by
19 CAPM. In other words, low-beta securities earn returns somewhat higher than the
20 CAPM would predict, and high-beta securities earn returns somewhat less the

⁸⁵ Morin, Exh. No. ___(RAM-1T), at page 41.

1 CAPM would predict. This is one of the most celebrated finding in the finance
2 literature

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

6 **3. Mr. Hill's Criticisms Of My Risk Premium Analyses Are**
7 **Unfounded And Without Merit**

8 **Q. How do you respond to Mr. Hill's criticism of your historical risk premium**
9 **studies?**

10 A. Mr. Hill directs two criticisms at my historical risk premium studies. First,
11 Mr. Hill asserts that I should have relied on current interest rates rather than
12 forecasts.⁸⁶ I have already rebutted Mr. Hill on that issue numerous times in this
13 prefiled rebuttal testimony.

14 Second, Mr. Hill questions the well-known inverse relationship between interest
15 rates and risk premium and cites a study by Professors John Graham and
16 Campbell Harvey published in a trade magazine in 1999.⁸⁷ Notwithstanding the
17 fact that trade magazine articles are hardly the kind of serious evidence the
18 Commission should rely on when examining this issue, there is an abundance of
19 published academic evidence supporting the relationship.

⁸⁶ Hill, Exh. No. ____ (SGH-2T), at page 75, lines 10-16.

⁸⁷ Hill, Exh. No. ____ (SGH-2T), at page 77, lines 6-15.

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

3 A. Contrary to Mr. Hill's contention that the finance literature does not endorse the
4 notion that the risk premium shrinks as interest rates decline, there is an
5 abundance of studies that support the notion. Published studies by Brigham,
6 Shome, and Vinson;⁸⁸ Harris;⁸⁹ Harris and Marston;⁹⁰ Carleton, Chambers, and
7 Lakonishok;⁹¹ Maddox, Pippert and Sullivan;⁹² and others demonstrate that,
8 beginning in 1980, risk premiums varied inversely with the level of interest rates,
9 rising when rates fell and declining when interest rates rose. Regulators have
10 recognized this tendency as well. The California Public Utility Commission also
11 recognizes that the cost of equity does not move in tandem with interest rates, and
12 its long-standing practice has been to adjust the cost of equity by one-half to two-
13 thirds of the change in bond yields.

14 The reason for this relationship is that when interest rates rise, bondholders,
15 whose interest rates are fixed, often suffered a decrease in the market value of
16 their bonds, experiencing a capital loss. This is referred to as interest rate risk.
17 Stockholders, on the other hand, are more concerned with the firm's earning

⁸⁸ Eugene F. Brigham, *et al.*, *The Risk Premium Approach to Measuring a Utility's Cost of Capital*, 14 *Financial Management* 33-45 (1985).

⁸⁹ Robert S. Harris, *Using Analysts' Growth Forecasts to Estimate Shareholder Required Rates of Return*, 15 *Financial Management* 58-67 (1986).

⁹⁰ Robert S. Harris & Felicia C. Marston, *Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts*, 21 *Financial Management* 63-70 (1992),

⁹¹ Willard T. Carleton, *et al.*, *Inflation Risk and Regulatory Lag*, 38 *Journal of Financial* 419-31 (1983).

⁹² Farris M. Maddox, *et al.*, *An Empirical Study of Ex Ante Risk Premiums for the Electric Utility Industry*, 24 *Financial Management* 89-95 (1995).

1 power. In order to avoid interest rate risk in an environment of rising interest
2 rates, investors tend to become more willing to undertake equity investments
3 which, although subject to some fear of loss of earning power, are less sensitive to
4 the fear of interest rate risk. The resulting increase in the supply of funds
5 available for such equity investments causes a downward pressure on the market
6 price for equity.

7 Generally, it is observed that if bondholders' fear of interest rate risk exceeds
8 shareholders' fear of loss of earning power, the risk differential will narrow and
9 hence the risk premium will shrink. This is particularly true in high inflation
10 environments. Interest rates rise as a result of accelerating inflation, and the
11 interest rate risk of bonds intensifies more than the earnings risk of common
12 stocks, which are partially hedged from the ravages of inflation. This
13 phenomenon has been termed as a "lock in" premium. Conversely, in low interest
14 rate environments, as is the case currently, when bondholders' interest rate fears
15 subside and shareholders' loss of earning power dominate, the risk differential
16 will widen and hence the risk premium will increase.

17 In short, the empirical evidence from the published academic literature
18 demonstrates that the risk premium varies inversely with the level of interest
19 rates, and not proportionately, as Mr. Hill suggests.

1 **G. Conclusions**

2 **Q. What returns are investors expecting for Mr. Hill's group of companies?**

3 A. As shown in Table 3 above, investors are expecting an average ROE of 9.7%,
4 9.9%, and 10.2% in 2013, 2014, and 2016-18, respectively, for Mr. Hill's group
5 of companies.

6 **Q. What is the average authorized ROE for Mr. Hill's group of companies?**

7 A. The average allowed ROEs for Mr. Hill's sample group of comparable electric
8 and combination electric and gas utilities were 10.57% and 10.51% reported by
9 *AUS Monthly Reports* for the same utilities in May 2013 and December 2014,
10 respectively:

11 **Q. What is the average allowed ROE for electric utilities in recent orders?**

12 A. Using data reported by Regulatory Research Associates (now SNL) for ROE
13 decisions rendered for the twelve months ending in December 2013, the average
14 allowed ROE for electric utilities was 10.0%.⁹³ For the first three quarters of
15 2014, the average allowed ROE for electric utilities is identical at 10.0%.⁹⁴

⁹³ Regulatory Research Associates, *Major Rate Case Decisions—Calendar 2013* at page 6 (Jan. 15, 2014).

⁹⁴ Regulatory Research Associates, *Major Rate Case Decisions—January-September 2014* at page 5 (Oct. 10, 2014).

1 **Q. What is the average currently allowed ROE for electric utilities?**

2 A. The average allowed ROE in May 2013 for electric utilities and combination
3 electric and gas utilities was 10.52% and 10.27%, respectively.⁹⁵ The average
4 allowed ROE in December 2014 for electric utilities and combination electric and
5 gas utilities was 10.45% and 10.33%, respectively.⁹⁶

6 **Q. What ROE does Mr. Hill recommend?**

7 A. Mr. Hill's recommended ROE is only 8.65%, well below the above benchmark
8 returns.

9 **Q. What do you conclude from Mr. Hill's recommended ROE?**

10 A. Mr. Hill understates the appropriate ROE for PSE. The inability to scientifically
11 replicate his DCF growth rates, the mainstay of his recommendation, casts a
12 serious doubt on the reasonableness and statistical validity of his
13 recommendation. Leaving alone the inability to replicate Mr. Hill's arbitrary
14 DCF growth rates, Table 4 below summarizes additional reasons why Mr. Hill's
15 ROE understates an appropriate ROE for PSE:

⁹⁵ AUS Utility Reports, *AUS Monthly Reports* (May 2013).

⁹⁶ AUS Utility Reports, *AUS Monthly Reports* (Dec. 2014).

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Table 4
Sources of Understatement in Mr. Hill’s Recommended ROE

Source	Basis Points Understatement
CAPM Risk-Free Rate	120
CAPM MRP	47
Sustainable Growth Calculation	10
Decoupling Adjustment	35

3
4

Correction of these understatements would increase Mr. Hill’s recommended ROE to at least the 9.8% ROE authorized by the Commission in 2013.

5
6

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

7

A. No, he has not.

8

III. REBUTTAL TO MR. GORMAN’S TESTIMONY

9

Q. Please summarize Mr. Gorman’s recommended ROE.

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A. Mr. Gorman recommends an ROE for PSE of 9.30%, which is at the midpoint of his estimated range of 9.00% to 9.60%.⁹⁷ Mr. Gorman relies on a traditional constant growth DCF, a three-stage DCF analysis, a CAPM analysis, and a Risk Premium analysis. His results are summarized in tabular form on page 36 of his testimony.

⁹⁷ Gorman, Exh. No. ____ (MPG-23T), at page 2, lines 7-9.

1 **Q. Do you have a general comment on Mr. Gorman's position in this**
2 **proceeding?**

3 A. Yes, I do. On April 26, 2013, Mr. Gorman filed response testimony in Dockets
4 UE-121697 concerning PSE's current cost of equity at that time. At that time, he
5 recommended a ROE of 9.3%. Mr. Gorman's ROE recommendation of 9.3%
6 under current capital market conditions is identical at 9.3%. To quote
7 Mr. Gorman:

8 This information clearly supports the same finding for a current
9 return on equity in this case as existed in April 2013.⁹⁸

10 . . .

11 My recommended return on equity was made in an environment
12 where utility bond yields and Treasury bond yields were nearly
13 comparable to where they are today.⁹⁹

14 **A. Mr. Gorman's Recommended ROE for PSE is Outside the**
15 **Mainstream for Electric and Combination Electric and Gas Utilities**

16 **Q. Please comment on recent decisions regarding allowed ROEs for electric**
17 **utilities.**

18 A. As was the case with Mr. Hill, the ROE recommended by Mr. Gorman is outside
19 the range of currently authorized ROEs for electric and combination electric and
20 gas utilities in the United States and outside the zone of currently authorized
21 ROEs for Mr. Gorman's own sample of comparable companies. As discussed
22 above, data reported by Regulatory Research Associates (now SNL) for ROE

⁹⁸ Gorman, Exh. No. ___(MPG-1T), at page 2, lines 1-2.

⁹⁹ Gorman, Exh. No. ___(MPG-1T), at page 2, lines 14-15.

1 decisions rendered for the twelve months ending in December 2013 provides that
2 the average allowed ROE for electric utilities was 10.0%.¹⁰⁰ For the first three
3 quarters of 2014, the average allowed ROE for electric utilities is identical at
4 10.0%.¹⁰¹ These results suggest two things:

5 (i) capital market conditions did not change materially during
6 the period January 1, 2013, through September 30, 2014,
7 given that the average allowed ROEs of electric utilities
8 granted by state regulatory agencies during this period
9 remained unchanged; and

10 (ii) the average allowed ROEs of electric utilities granted by
11 state regulatory agencies during the period January 1, 2013,
12 through September 30, 2014, are in excess of
13 Mr. Gorman's recommended ROE of 9.3% for PSE.

14 **B. Mr. Gorman's DCF Results Should be Given Very Little, If Any,**
15 **Weight Because Mr. Gorman Has Relied on Erroneous Data Inputs**

16 **1. Mr. Gorman Relies on the Sustainable Growth Methodology in**
17 **the DCF Analysis Whereby He is Forced to Assume the**
18 **Answer to Implement the Methodology.**

19 **Q. Please comment on Mr. Gorman's sustainable growth estimate in the DCF**
20 **model.**

21 A. Like Mr. Hill, Mr. Gorman relied on the sustainable growth approach to estimate
22 the growth component of the DCF model. Earlier in my rebuttal of Mr. Hill, I
23 discussed four reasons why I disagree with the internal growth technique, mainly
24 the inherent circularity of the method.

¹⁰⁰ Regulatory Research Associates, *Major Rate Case Decisions—Calendar 2013* at page 6 (Jan. 15, 2014).

¹⁰¹ Regulatory Research Associates, *Major Rate Case Decisions—January-September 2014* at page 5 (Oct. 10, 2014).

1 **2. Mr. Gorman’s Multi-Stage DCF Analysis Relies Upon an**
2 **Artificially Low Gross Domestic Product (“GDP”) Growth**
3 **Rate for the Long-Term Growth Rate**

4 **Q. What DCF third-stage growth rate for the overall economy does**
5 **Mr. Gorman adopt in his multi-stage DCF analysis?**

6 A. Mr. Gorman adopts a range of 4.45% - 4.75% as his long-term growth of the
7 gross domestic product (“GDP”) based on the projection from Blue Chip
8 Economic Indicators October 2014.¹⁰²

9 **Q. Do you agree with this estimate of GDP growth?**

10 A. No, I do not agree with this estimate of GDP growth because it is too low.
11 Mr. Gorman should have used 5.0% as the long-term GDP growth rate. A long-
12 term forecast of nominal growth in GDP can be formulated by combining a long-
13 term inflation estimate with a long-term real growth rate forecast as follows:

14
$$(1 + \text{nominal GDP growth}) = (1 + \text{inflation})(1 + \text{real GDP growth})$$

15 Two quantities are therefore needed: (i) a long-term inflation forecast and
16 (ii) a long-term real GDP forecast. The equation is then solved for the nominal
17 GDP growth.

18 **Q. How did you determine the long-term GDP growth and inflation forecasts?**

19 A. As shown in Table 5 below, I examined the long-term real GDP growth, the real
20 GDP deflator and the Consumer Price Index (“CPI”) forecasts from several
21 sources.

¹⁰² Gorman, Exh. No. ____ (MPG-23T), at page 22, lines 5-12.

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Table 5
Long-Term Real GDP and Inflation Forecasts

	(1)	(2)	(3)	(4)
	Real GDP Gth	GDP Deflator	CPI	30-yr - TIPS
Value Line	3.2%	1.8%	2.3%	2.4%
Global Insight	2.4%	2.0%	2.3%	2.4%
EIA	2.4%	1.8%	2.1%	2.4%
World Bank	3.0%	--	2.2%	2.4%
CBO	2.1%	2.0%	2.4%	2.4%

Column 1 of Table 5 displays the real GDP growth forecasts from five prominent sources: Value Line, Global Insight, Energy Information Administration (“EIA”), World Bank and the Congressional Budget Office (“CBO”). Column 2 of Table 5 shows the GDP deflator forecast from the same sources (other than the World Bank). Column 3 of Table 5 shows the long-term CPI forecast from all five sources. Column 4 of Table 5 calculates the long-term inflation rate implied in current 30-year U.S. Treasury bond yields by subtracting the yield on 30-year inflation-protected bonds (“TIPS”) from the nominal yield on 30-year bonds.

Table 6 below shows the nominal GDP growth forecast obtained by substituting the real GDP growth forecast and the long-term inflation forecast in the following equation for each of the five forecasters:

$$(1 + \text{nominal GDP growth}) = (1 + \text{inflation})(1 + \text{real GDP growth})$$

1
2

**Table 6
Nominal GDP Forecasts**

	(1)	(2)	(3)	(4)
	GDP Nom Gth	GDP Nom Gth	GDP Nom Gth	Average
	GDP Deflat	CPI	TIPS	
Value Line	5.1%	5.6%	5.7%	5.4%
Global Insight	4.4%	4.8%	4.9%	4.7%
EIA	4.2%	4.6%	4.9%	4.6%
World Bank		5.3%	5.5%	5.4%
CBO	4.1%	4.6%	4.6%	4.4%
			Average	4.9%

3

This produces an average long-term expected GDP nominal growth rate of 4.9%

4

Q. How does this estimate compare with the actual long-term nominal GDP growth?

5

6

A. As shown on Exhibit RAMREB-1, the actual GDP growth over the past 39 years is 5.0%, which is almost identical to the 4.9% forecast.

7

8

Q. In light of those results, what GDP growth forecast should Mr. Gorman have adopted in his multiple-stage DCF model?

9

10

A. A reasonable estimate is 5.0% rather than Mr. Gorman's range of 4.45% - 4.75%.

1 **C. Mr. Gorman’s CAPM Results Should be Given Very Little, If Any,**
2 **Weight Because Mr. Gorman Has Relied on Erroneous Data Inputs.**

3 **1. Mr. Gorman’s Uses a Risk-Free Rate in His CAPM Analysis**
4 **that is Far Too Low**

5 **Q. What risk-free rate does Mr. Gorman adopt in his CAPM and risk premium**
6 **analyses?**

7 A. Mr. Gorman uses Blue Chip Financial Forecasts’ projected 30-year Treasury bond
8 yield of 4.10% as his risk-free input in the CAPM and Risk Premium analyses.¹⁰³

9 This risk-free rate is far too low. Mr. Gorman should have used the same risk-
10 free rate estimate of 5.0% that I used for purposes of my CAPM analyses based
11 on several projections.

12 Table 7 below reports the forecast yields on 30-year U.S. Treasury bonds from
13 various prominent sources, including Global Insight, Value Line, CBO, and EIA
14 Energy Outlook

15 **Table 6**
16 **30-Year Treasury Bond Yield Forecasts**

	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2020</u>	long- term
Global Insight	4.2%	4.5%	4.6%	4.6%	4.6%	4.6%
Value Line	3.8%	4.3%	4.8%	4.8%	--	--
CBO	4.2%	4.8%	5.2%	5.5%	5.5%	5.5%
EIA	3.4%	4.4%	5.1%	5.4%	4.6%	5.0%
AVERAGE	3.9%	4.5%	4.9%	5.1%	4.9%	5.0%

¹⁰³ Gorman, Exh. No. ___(MPG-23T), at page 31, lines 19-22.

1 The forecasts are remarkably consistent, pointing to a 5.0% yield on U.S.
2 Treasury Bonds in the next several years. It is also noteworthy that the historical
3 return on long-term U.S. Treasury bonds has averaged 5.1% over the long period
4 1926-2013.

5 The average 30 year long-term bond yield forecast for the next several years from
6 the four sources is 5.0%. The rising yield forecasts are also quite consistent with
7 the sharply upward-sloping yield curve observed at this time.

8 As a result, Mr. Gorman's CAPM and Risk Premium estimates are understated by
9 approximately 90 basis points ($5.0\% - 4.1\% = 0.9$). That in itself would raise his
10 recommended ROE of 9.3% to well above PSE's current allowed ROE of 9.8%.

11 **2. Mr. Gorman's CAPM Analyses Relies Upon an Artificially**
12 **Low Market Risk Premium**

13 **Q. How does Mr. Gorman estimate the Market Risk Premium component of the**
14 **CAPM?**

15 A. In order to determine the Market Risk Premium component of his CAPM
16 analysis, Mr. Gorman relies on the Morningstar study of historical returns which
17 estimates that the average total return on the S&P 500 was 12.1%, and the total
18 return on long-term Treasury bonds was 5.9%, indicating a MRP of 6.2%
19 ($12.1\% - 5.9\% = 6.2\%$).¹⁰⁴

20 Although it is correct that over the period 1926 through 2013, the Morningstar
21 study estimated that the average total return on the S&P 500 was 12.1%, and the

¹⁰⁴ Gorman, Exh. No. ___(MPG-23T), at page 33, lines 11-17.

1 total return on long-term Treasury bonds was 5.9%, indicating a Market Risk
2 Premium of 6.2% (12.1% - 5.9% = 6.2%), this is not the proper way to estimate
3 the Market Risk Premium as the Morningstar study recommends. The more
4 accurate way to estimate the Market Risk Premium from historical data is to use
5 the income return, not total returns, on government bonds. The long-term (1926-
6 2013) Market Risk Premium (based on income returns, as required) is 7.0%,
7 rather than 6.2%.

8 The income return on government bonds is a more reliable estimate of the
9 historical market risk premium because the income component of total bond
10 return (i.e., the coupon rate) is a better estimate of expected return than the total
11 return (i.e., the coupon rate + capital gain). In other words, bond investors focus
12 on income rather than realized capital gains/losses. Coupling this estimate of
13 7.0% with Mr. Gorman's prospective estimate of 7.3%, the average Market Risk
14 Premium becomes 7.15% rather than Mr. Gorman's 6.8% estimate. This
15 correction alone increases Mr. Gorman's CAPM estimate by 30 basis points (the
16 difference between 6.8% and 7.2% times Mr. Gorman's average beta of 0.75 for
17 the companies in his peer groups.

18 **D. Mr. Gorman's Historical Risk Premium Analysis Relies Upon an**
19 **Artificially Low Interest Rate and Fails to Recognize the Inverse**
20 **Relationship Between the Risk Premium and Interest Rates**

21 **Q. Do you agree with Mr. Gorman's historical risk premium analysis?**

22 A. No, I do not. Mr. Gorman estimated the difference between the required return on
23 utility common equity investments and both U.S. Treasury and A-rated utilities

1 bonds over the 1986- 2014 period to arrive at two risk premia.¹⁰⁵ Based on this
2 analysis, as shown in his Exhibit No. ___(MPG-34), the average indicated equity
3 risk premium over U.S. Treasury bond yields has been 5.36% and 3.98% over
4 Moody's utility bond yield.¹⁰⁶

5 **Q. What is wrong with Mr. Gorman historical risk premium estimates?**

6 A. Mr. Gorman historical risk premium estimates suffers two problems. First,
7 Mr. Gorman erroneously based his historical risk premium estimates on a forecast
8 Treasury Bond yield of 4.1% rather than 5.0%, thereby understating his cost of
9 equity estimates by approximately 90 basis points. I discussed the appropriate
10 yield forecast above. Second, Mr. Gorman failed to recognize the inverse
11 relationship between the risk premium and interest rates, as I did in my prefiled
12 direct testimony. Recognizing this well-known inverse relationship increases his
13 cost of equity estimates by approximately another 30 basis points.

14 **E. Mr. Gorman's Prefiled Response Testimony Contains Two Minor**
15 **Inconsistencies Regarding Beta and Projected Inflation Rates**

16 **Q. Did you notice any inconsistencies in Mr. Gorman's testimony?**

17 A. Yes, I noticed two minor inconsistencies. First, Mr. Gorman erroneously refers to
18 a beta estimate of 0.76 in his CAPM analysis.¹⁰⁷ The CAPM analyses in the

¹⁰⁵ Gorman, Exh. No. ___(MPG-23T), at page 24, line 12, through page 25, line 17.

¹⁰⁶ Gorman, Exh. No. ___(MPG-23T), at page 25, line 18, through page 26, line 6.

¹⁰⁷ Gorman, Exh. No. ___(MPG-23T), at page 35, line 14.

1 remainder of his testimony and supporting exhibits (most notably, Exhibit
2 No. ___(MPG-38), relies on a beta of 0.75.

3 Second, in deriving his Market Risk Premium estimate for his CAPM analyses,
4 Mr. Gorman relies on both (i) a current consensus analysts' inflation projection,
5 as measured by the Consumer Price Index, of 2.3% estimate¹⁰⁸ and (ii) a GDP
6 inflation rate of 2.1% over the 5-year and 10-year projection periods, respectively,
7 as provided by *Blue Chip Economic Indicators*.¹⁰⁹ It is unclear why Dr. Gorman
8 used two different but relatively similar projected inflation rates. He should have
9 used one or the other—but not both—projected interest rates for purposes of
10 consistency.

11 IV. CONCLUSION

12 **Q. Does that conclude your prefiled rebuttal testimony?**

13 A. Yes, it does.

¹⁰⁸ Gorman, Exh. No. ___(MPG-23T), at page 33, line 7.

¹⁰⁹ Gorman, Exh. No. ___(MPG-23T), at page 22, lines 8-10.