

Application No.: A.12-04-015 et al.

Exhibit No.: SCG-9

Witness: Roger A. Morin

Date: August 29, 2012

**SOUTHERN CALIFORNIA GAS COMPANY  
AMENDED PREPARED REBUTTAL TESTIMONY OF  
ROGER A. MORIN, Ph.D.**

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**

**SEPTEMBER 12, 2012**



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1  
2 **AMENDED PREPARED REBUTTAL TESTIMONY OF ROGER A. MORIN**

3 **ON BEHALF OF SOUTHERN CALIFORNIA GAS COMPANY**

4  
5 **INTRODUCTION AND PURPOSE**

6 **Q. WHAT IS THE PURPOSE OF THIS REBUTTAL TESTIMONY?**

7 A. I have been asked to respond to the cost of capital testimonies of Mr. Daniel  
8 Lawton and William Marcus [The Utility Reform Network (TURN)], Mr. Randall  
9 Woolridge [Division of Ratepayer Advocates (DRA)], and Mr. Stephen Hill  
10 [Federal Executive Agencies (FEA)].

11 **Q. WHAT RATE OF RETURN ON COMMON EQUITY (ROE) ARE THE**  
12 **WITNESSES RECOMMENDING FOR SOUTHERN CALIFORNIA GAS**  
13 **COMPANY (SCG)?**

14 A. The ROE recommendations for SCG from the three witnesses are as follows:

15 Mr. Lawton (TURN) 9.25%

16 Mr. Woolridge (DRA) 8.50%

17 Mr. Hill (FEA) 8.75%

18 **Q. HOW IS YOUR REBUTTAL TESTIMONY ORGANIZED?**

19 A. My testimony is organized in four sections, corresponding to each of the four  
20 aforementioned witnesses.

21 **Q. DR. MORIN, BEFORE YOU BEGIN, DO YOU HAVE A GENERAL**  
22 **OBSERVATION TO MAKE ON DRA ROE RECOMMENDATIONS?**

23 A. Yes, I do. In an ongoing proceeding involving California Pacific Electric  
24 Company (Docket A.12-02-014), DRA witness Tom Renaghan recommends a

1 ROE of 9.25% for this small distribution-only electric utility. In another ongoing  
2 proceeding involving Bear Valley Electric Service Division (Docket A.12-02-  
3 013), DRA witness Tom Renaghan recommends a ROE of 9.35%. It is very  
4 puzzling as to why DRA would recommend ROEs of 9.25% - 9.35% for  
5 contemporaneous utility proceedings while Mr. Woolridge on behalf of DRA  
6 recommends only 8.5% in this proceeding.

7 The quality of regulation, the reasonableness of rate of return awards, and  
8 the consistency of regulation in a given jurisdiction clearly have implications for  
9 regulatory climate, economic development and job creation in a given territory. It  
10 is my belief that inconsistencies in DRA's recommended returns for energy  
11 utilities have negative implications on these grounds and are not consistent with  
12 the economic well-being of the State of California.

13  
14 **I. REBUTTAL TO MR. LAWTON'S TESTIMONY**

15 **Q. PLEASE SUMMARIZE THE RECOMMENDED ROE OF MR. LAWTON.**

16 A. TURN's witness, Mr. Lawton, recommends an ROE for SCG of 9.25%, which is  
17 the least draconian recommendation of the three witnesses I am rebutting. Mr.  
18 Lawton relies on a traditional DCF analysis of two groups of utilities, virtually  
19 identical to my own two groups. Mr. Lawton also presents a two-stage DCF  
20 analysis applied to the same two groups. As summarized on page 81 of his  
21 testimony, the DCF analysis for both groups centers around 9.4%.

22 Mr. Lawton also performs two risk premium analyses, namely a Historical  
23 Risk Premium and a Capital Asset Pricing Model/Empirical Capital Asset Pricing

1 Model (CAPM/ECAPM) analysis. As summarized on page 81 of his testimony,  
2 the CAPM/ECAPM and Risk Premium results center around 9.2%.

3 Based on these results, Mr. Lawton concludes that the cost of common  
4 equity for SCG is 9.25%.

5 **Q. PLEASE SUMMARIZE YOUR GENERAL REACTION TO MR.**  
6 **LAWTON'S RECOMMENDATION.**

7 A. My principal reaction is that despite several areas of agreement between Mr.  
8 Lawton and I, the ROE recommended by Mr. Lawton understates an appropriate  
9 ROE for SCG. My rebuttal will show that Mr. Lawton's ROE recommendation is  
10 quite consistent with my own once the proper inputs into the DCF and the CAPM  
11 models are used and SCG's higher investment risk is recognized.

12

13

**A. DCF ANALYSIS**

14 **Q. DO YOU AGREE WITH MR. LAWTON'S TWO GROUPS OF**  
15 **COMPARABLE UTILITIES?**

16 A. Yes, I do, for Mr. Lawton has essentially adopted the same two groups of utilities  
17 used in my direct testimony, with two very minor updates.

18 **Q. DO YOU AGREE WITH MR. LAWTON'S SPOT DIVIDEND YIELD**  
19 **CALCULATION IN THE DCF ANALYSES?**

20 A. Yes, I agree with the magnitude.

21 **Q. DO YOU HAVE ANY COMMENT ON MR. LAWTON'S EXPECTED**  
22 **DIVIDEND YIELD COMPONENT IN THE DCF ANALYSIS?**

23 A. Yes. I disagree with Mr. Lawton's dividend yield calculation in his DCF analysis

1 (Schedule DJL-6 page 1 column E) because he multiplied the spot dividend yield  
2 by one plus one half the expected growth rate ( $1 + 0.5g$ ) rather than the  
3 conventional one plus the expected growth rate ( $1 + g$ ). This procedure  
4 understates the return expected by the investor.

5 The fundamental assumption of the basic annual DCF model is that  
6 dividends are received annually at the end of each year and that the first dividend is  
7 to be received one year from now. Thus the appropriate dividend to use in a DCF  
8 model is the full prospective dividend to be received at the end of the year. Instead,  
9 Mr. Lawton calculates the first dividend by multiplying the current dividend by  
10 only one plus one-half the growth rate instead of multiplying by one plus the  
11 growth rate. Since the appropriate dividend to use in a DCF model is the  
12 prospective dividend one year from now rather than the dividend one-half year  
13 from now, Mr. Lawton's approach understates the proper dividend yield. This  
14 creates a downward bias in his dividend yield component, and underestimates the  
15 cost of equity by approximately 20 basis points. For example, for a spot dividend  
16 yield of 5% and a growth rate of 5%, Mr. Lawton's estimated dividend yield is  $5\% \times (1 + .05/2) = 5.1\%$ .  
17 The correct dividend yield to employ is  $5\% \times (1 + .05) =$   
18  $5.3\%$ , which is about 20 basis points higher.

19 Moreover, the basic annual DCF model ignores the time value of quarterly  
20 dividend payments and assumes dividends are paid once a year at the end of the  
21 year. Multiplying the spot dividend yield by  $(1 + g)$  is actually a conservative  
22 attempt to capture the reality of quarterly dividend payments and understates the  
23 expected return on equity. Use of this method is conservative in the sense that the

1 annual DCF model ignores the more frequent compounding of quarterly  
2 dividends.

3  
4 **DCF GROWTH RATES**

5 **Q. DO YOU AGREE WITH MR. LAWTON'S GROWTH COMPONENT OF**  
6 **4.52% IN THE DCF ANALYSIS OF HIS FIRST GROUP OF**  
7 **COMPANIES?**

8 A. No, I do not. As shown on Schedule DJL-5, Mr. Lawton relies on two proxies for  
9 the DCF growth rate: analyst forecasts (Column M) and the sustainable growth  
10 methodology (Column N). He averages the two proxies to arrive at his final DCF  
11 growth rate in Column O.

12 **Q. DO YOU AGREE WITH THE SUSTAINABLE (A.K.A. INTERNAL)**  
13 **GROWTH RATE TECHNIQUE USED BY MR. LAWTON TO**  
14 **IMPLEMENT THE DCF MODEL?**

15 A. No, I do not. In order to estimate the growth component of the DCF model, Mr.  
16 Lawton relies on the sustainable growth method, also known as the internal  
17 growth method, as one of his two final proxies for growth, as shown on Schedule  
18 DJL-5. According to this method, the growth rate is based on the equation  $g =$   
19  $b(\text{ROE})$ ;  $b$  is the percentage of earnings retained and ROE is the expected rate of  
20 return on book equity (ROE).

21 While I certainly agree with the analyst forecast growth proxy, I disagree  
22 with the sustainable growth proxy for four reasons: 1) the method is logically  
23 circular, for it requires the user to assume the ROE answer to begin with; 2)



1 inconsistency with the academic empirical evidence; 3) the potential lack of  
2 representativeness of Value Line's forecasts as proxies for the market consensus;  
3 and 4) a technical error. I will now discuss each of these points in turn.

4 **Q. IS THE INTERNAL GROWTH METHODOLOGY USED BY MR.**  
5 **LAWTON LOGICALLY CONSISTENT?**

6 A. No, it is not. Mr. Lawton's internal growth methodology contains a logical  
7 contradiction. The contradiction arises because the method requires an explicit  
8 assumption on the ROE expected from the retained earnings that produce future  
9 growth. Mr. Lawton bases his ROE estimate on Value Line's historical and  
10 forecast ROE for the 2011-2017 period (Column Q Schedule DJL-5 page 2). But  
11 the ROEs used by Mr. Lawton in calculating the retention growth rate do not  
12 match Mr. Lawton's ROE recommendation.

13 The average expected ROE of 10.1% used in Mr. Lawton's retention  
14 growth computation and reported on Column Q of Schedule DJL-5, page 2  
15 exceeds Mr. Lawton's recommended 9.25%. Mr. Lawton's analysis thus assumes  
16 that the earned returns (ROE) of the sample companies exceed what he has  
17 determined to be their cost of equity forever. That is, Mr. Lawton is assuming  
18 that these companies will earn a ROE higher than that granted by their regulators  
19 and reflected in their rates.

20 While this scenario implicit in Mr. Lawton's retention growth method may  
21 be imaginable for an unregulated company, it is implausible to assume for a  
22 regulated company whose rates are continually re-set by its regulator at a level  
23 designed to permit the company to earn a return equal to its cost of capital. This

1 logical flaw compromises the integrity of Mr. Lawton's analysis, and should be a  
2 sufficient basis for rejecting the results produced by this method. In essence, by  
3 using an ROE that differs from its final recommended cost of equity, Mr. Lawton  
4 requires the Commission to make two inconsistent findings regarding ROE. It is  
5 perplexing why Mr. Lawton assumes that his group of comparable utilities is  
6 expected to earn 10.1% forever, while at the same time he recommends an ROE  
7 of 9.25% for the Company. The only way that these utilities can earn an ROE of  
8 10.1% is if rates are set so that they will in fact earn 10.1%.

9 **Q. IS THE INTERNAL GROWTH RATE TECHNIQUE CONSISTENT WITH**  
10 **THE EMPIRICAL EVIDENCE?**

11 A. No, it is not. The second difficulty with the internal growth rate approach is that  
12 the empirical finance literature demonstrates this particular method of  
13 determining growth is a very poor explanatory variable of market value, and is not  
14 as significantly correlated to measures of value, such as stock price and  
15 price/earnings ratios. This evidence is discussed later in my rebuttal of Messrs.  
16 Woolridge and Hill.

17 **Q. ARE VALUE LINE'S ROE AND RETENTION RATIO ESTIMATES**  
18 **REPRESENTATIVE OF THE MARKET CONSENSUS?**

19 A. No. The third difficulty with Mr. Lawton's internal growth rates is that exclusive  
20 reliance on Value Line forecasts of ROE and retention ratio runs the risk that such  
21 forecasts are not representative of investors' consensus forecasts.

22 **Q. PLEASE DISCUSS THE FOURTH PROBLEM WITH MR. LAWTON'S**  
23 **INTERNAL GROWTH ESTIMATES.**

1 A. The fourth difficulty with Mr. Lawton's internal growth approach is that the  
2 forecasts of the expected return on equity published by Value Line are based on  
3 end-of-period book equity rather than on average book equity. The following  
4 formula, discussed and derived in Chapter 9 of my book, *The New Regulatory*  
5 *Finance*, adjusts the reported end-of-year values so that they are based on average  
6 common equity, which is the common regulatory practice:

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

7  
8  
9  
10  
11 Where:  $r_a$  = return on average equity  
12  $r_t$  = return on year-end equity as reported  
13  $B_t$  = reported year-end book equity of the current year  
14  $B_{t-1}$  = reported year-end book equity of the previous year

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

18 **Q. WHAT GROWTH RATES SHOULD MR. LAWTON HAVE USED?**

19 A. Mr. Lawton should have relied on his first proxy, namely, analyst growth forecast.  
20 As shown on Schedule DJL-5 page 1, the average analyst growth forecast of  
21 4.93% for the group shown at the bottom of Column M should have been used  
22 and not the 4.52% in Column N used by Mr. Lawton. As a result, Mr. Lawton's  
23 DCF estimates are understated by 41 basis points (4.93% - 4.52%) for the first  
24 group of companies. The same reasoning applies to Mr. Lawton's second group  
25 of companies. From Schedule DJL-20, page 1, the DCF estimates are understated

1 by 50 basis points, the difference between 4.97% and 4.47%.<sup>1</sup>

2 **Q. DOES MR. LAWTON EMPLOY A TWO-STAGE DCF METHOD?**

3 A. Yes, he does.

4 **Q. DO YOU AGREE WITH MR. LAWTON'S IMPLEMENTATION OF THE**  
5 **TWO-STAGE DCF METHOD?**

6 A. While I do not have a problem with the methodology itself, Mr. Lawton has not  
7 implemented the method correctly. For the first growth stage, he relies on Value  
8 Line's dividend growth forecast over the next five years. So far, so good, but for  
9 the second stage beyond year 5, he relies on analysts' growth forecast over the  
10 same five-year period as in the first stage, rather than rely on forecasts beyond  
11 year 5. This is clearly incorrect. The results produced by the two-stage DCF  
12 model should be ignored by the Commission.

13

14 **B. CAPM/ECAPM ESTIMATES**

15 **Q. DOES MR. LAWTON EMPLOY CAPM/ECAPM ESTIMATES?**

16 A. Yes. Mr. Lawton performs a CAPM and ECAPM analyses of ROE summarized  
17 on page 81. The results center on 9.2% for the groups of comparable companies.

18 **Q. WHAT INPUT DATA DOES A CAPM/ECAPM ANALYSIS REQUIRE?**

19 A. To implement the CAPM and ECAPM, three quantities are required: the risk-free  
20 rate ( $R_F$ ), beta ( $\beta$ ), and the market risk premium, ( $R_M - R_F$ ). As shown on  
21 Schedules DJL-9 and DJL-23, Mr. Lawton uses a risk-free rate of 3.9%, Value  
22 Line betas of 0.73 for the first group, 0.68 for the second group, and a MRP of

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<sup>1</sup> The outlying growth rate of 10.73% for South Jersey Gas was removed from computing the average internal growth rate of 4.47%

1 6.8%.

2 **Q. DR. MORIN, DO YOU AGREE WITH MR. LAWTON'S RISK-FREE**  
3 **RATE ESTIMATE IN THE CAPM ANALYSIS?**

4 A. No, I do not. Mr. Lawton's risk-free rate is too low for purposes of applying the  
5 CAPM and fails to reflect the projected increase in interest rates. All the  
6 economic forecasts that I am aware anticipate a substantial and steady increase in  
7 interest rates from 2013 onward. For example, Global Insight, Value Line and  
8 Blue Chip Economic Forecasts all project higher long-term Treasury interest rates  
9 in 2013-2015 and beyond. Value Line's quarterly economic review forecasts a  
10 yield of ~~4.13.7%~~ in 2013, ~~4.05%~~ in 2014, and ~~4.85.0%~~ in 2015. Global  
11 Insight's July 2012 edition forecasts a yield on 30-year Treasury bonds of 3.27%  
12 in 2013, 4.05% in 2014, and 4.58 in 2015, rising to a long-term level of 5.37%.

13 The average 30-year long-term bond yield forecast of 4.2% for 2014 is a  
14 reasonable, albeit conservative, estimate of the risk-free rate for purposes of a  
15 forward-looking CAPM and ECAPM.

16 In short, Mr. Lawton's risk-free rate proxy of 3.9% is too low and the  
17 average forecast of 4.20% for 2014 is far more relevant. Investors price securities  
18 on the basis on long-term expectations, including interest rates. As a result, Mr.  
19 Lawton's CAPM and ECAPM estimates are understated by 30 basis points  
20 (4.20% - 3.9% = 0.30%). The same understatement applies to Mr. Lawton's  
21 Historic Risk Premium estimates which also require an estimate of the risk-free  
22 rate as an input.

23 **Q. DR. MORIN, DO YOU AGREE WITH MR. LAWTON'S BETA**

1           **ESTIMATES IN THE CAPM ANALYSIS?**

2    A.    Yes, I do.

3    **Q.    HOW DOES MR. LAWTON ESTIMATE THE MARKET RISK**  
4    **PREMIUM (MRP) COMPONENT OF THE CAPM?**

5    A.    In order to determine the MRP component of the CAPM, Mr. Lawton computes  
6           an average of two estimates, as shown on page 41 of his testimony. The first  
7           estimate of 5.7% is the historical difference between realized stock returns and  
8           realized bond returns over 1926-2011 period. The second estimate of 7.9% is  
9           alleged to be a forward-looking estimate derived by subtracting the current risk-  
10          free rate of 3.9% from the historical return on common stocks of 11.8%. The  
11          average of the two estimates, 6.8%, is Mr. Lawton's estimate of the MRP in his  
12          CAPM analyses.

13   **Q.    DR. MORIN, DO YOU AGREE WITH MR. LAWTON'S SUGGESTION**  
14   **THAT THE CURRENT EXCEPTIONALLY LOW INTEREST RATE**  
15   **ENVIRONMENT NECESSITATES A DRASTIC DECLINE TO SCG'S**  
16   **ROE?**

17   A.    No, I do not agree. Mr. Lawton suggests that the low interest rate levels  
18          necessitate a drastic decline in SoCalGas' authorized ROE because the cost of  
19          capital has declined, as evidenced by the historically low bond yields.<sup>2</sup> Mr.  
20          Lawton's argument should be rejected because it fails to take into consideration  
21          several important and relevant factors.

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<sup>2</sup> Prepared Direct Testimony of Daniel Lawton at 9.

1 First, if Mr. Lawton is right and the economy is improving, the current low  
2 level interest rate environment is only temporary. Investors are aware that the  
3 Federal Reserve is temporarily suppressing interest rates to encourage economic  
4 growth. Investors recognize that once the government changes its expansive  
5 monetary strategy when the economy rebounds, interest rates could increase  
6 quickly and borrowing costs could increase significantly.<sup>3</sup> Second, the fact that  
7 long-term Treasury bond yields and utility bond yields are at historically low  
8 levels does not demonstrate that the cost of equity is likewise at historically low  
9 levels. Rather, the current low levels of long-term Treasury bond yields are the  
10 result of investors' continued risk aversion or a "flight to quality."<sup>4</sup> Mr. Lawton  
11 fails to recognize that reduced interest rates on safe investments do not mean that  
12 equity market risks have decreased or that investors have materially reduced their  
13 return requirements. Despite the low interest rate climate, equity investors expect  
14 that their investments in utilities will provide adequate returns. Morgan Stanley  
15 Research reports:

16 While interest rates have fallen substantially, we believe  
17 regulators will lower ROEs only modestly....Relative to the  
18 significant move in Treasuries, the ROEs allowed by regulators  
19 have come down modestly. In our opinion, this is due to the  
20 'long view' nature of utility regulators, as they prefer to set a  
21 return level indicative of longer-term required return levels.<sup>5</sup>  
22

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<sup>3</sup> Morgan Stanley posits, "regulators appear to view the current interest rate environment as sustainable, and as an indication of market instability and a flight from riskier assets." Morgan Stanley Research, "Regulated Utilities," Jan. 17, 2012 at 11.

<sup>4</sup> Flight to quality refers to a sudden shift in investment behaviors in a period of financial turmoil where investors seek to sell assets perceived as risky and instead purchase safe assets. See Attachment A for further explanation of flight to quality.

<sup>5</sup> Morgan Stanley Research, "Regulated Utilities," Jan. 17, 2012 at 11.

1           By contrast, Mr. Lawton’s recommendation to overemphasize the low  
2 interest rate climate fails to reflect the accurate cost of equity for SCG. Therefore,  
3 the Commission should continue to “assess utility returns against our continuing  
4 policy to not let utility ROEs be driven in lock step with the interest rate.”<sup>6</sup> As  
5 the Commission recognized “it would be unwise to attempt to adjust rates every  
6 time interest rates rise or fall.”<sup>7</sup>

7   **Q.   DR. MORIN, DO YOU AGREE WITH MR. LAWTON’S MRP ESTIMATE**  
8   **IN THE CAPM ANALYSIS?**

9   A.   No, I do not. For the historical MRP estimate, Mr. Lawton subtracted bond  
10 returns from stock returns rather than subtracting the income component of bond  
11 returns from stock returns. As I discussed in my direct testimony, the income  
12 component (i.e., the coupon rate) is a far better estimate of expected return than  
13 the total return (i.e., the coupon rate plus capital gains), because realized capital  
14 gains/losses are largely unanticipated by investors. For that very reason, the  
15 Morningstar (formerly Ibbotson Associates) publication on which Mr. Lawton  
16 relied recommends use of the *income* return on government bonds. In other  
17 words, bond investors focus on income rather than realized capital gains/losses.  
18 This correction increases Mr. Lawton’s MRP estimate by 70 basis points, which is  
19 the historical difference in the MRP based on total bond returns and the MRP  
20 based on bond income returns.

21           For his second “forward-looking” MRP estimate, Mr. Lawton simply  
22 subtracts the current risk-free rate from the historical stock return average. This is

---

<sup>6</sup> 1996 Cal. PUC LEXIS 1184, \*22.

<sup>7</sup> *Id.*



1 not a forward-looking estimate, for it relies on historical stock returns rather than  
2 prospective stock returns. One cannot subtract a current risk-free rate from a  
3 historical return figure and call it a forward-looking estimate. What Mr. Lawton  
4 should have done is subtract the current risk-free rate from a prospective stock  
5 return estimate based on DCF for example, as I did in my direct testimony.

6  
7 **C. FLOTATION COSTS**

8  
9 **Q. WHAT ALLOWANCE FOR FLOTATION COSTS DOES MR. LAWTON  
10 MAKE WITH RESPECT TO HIS RECOMMENDED ROE FOR SCG?**

11 A. Mr. Lawton fails to include any allowance whatsoever for flotation costs in his  
12 recommended ROE for SCG. Mr. Lawton is silent on the subject so that I can  
13 only assume that he believes such an allowance is unwarranted. Mr. Lawton's  
14 ROE estimates are therefore downward-biased by approximately 30 basis points  
15 as a result of that omission, as shown in Appendix A of my direct testimony.

16 Mr. Lawton's disregard of flotation costs is inconsistent with (i) Value Line  
17 forecasts that show that utilities will be issuing new common stock in the future,  
18 and (ii) Mr. Lawton's own Schedule DJL-5 page 2, which shows that Mr.  
19 Lawton's comparable companies are scheduled to issue considerable amounts of  
20 new equity. I discuss the issue of flotation costs more fully in my rebuttal of  
21 Messrs. Woolridge and Hill.

22  
23 **D. RISK ADJUSTMENT**

24  
25 **Q. DID MR. LAWTON ADJUST HIS RECOMMENDED ROE UPWARD IN**

1           **ORDER TO ACCOUNT FOR THE COMPANY'S HIGHER RELATIVE**  
2           **RISK?**

3    A.    No, he did not. Mr. Lawton ignores the fact that SCG's risks are higher than  
4           those of his sample of utilities as evidenced by its higher beta risk measure.  
5           SCG's parent company beta is 0.80 compared to the average beta of 0.71 for Mr.  
6           Lawton's two comparable groups of companies, a difference of 0.09.<sup>8</sup> Higher risk  
7           necessarily means that a higher return is required by investors in order to invest in  
8           a higher risk company. As I discussed fully in my direct testimony, an upward  
9           ROE adjustment of 40 basis points is required to reflect the Company's higher  
10          risk, as evidenced by its higher than average beta risk measure and lower stock  
11          valuation multiples.

12   **Q.    HOW DOES MR. LAWTON VIEW SCG'S RISK AND IS HE CORRECT?**

13   A.    Mr. Lawton, as well as the other two witnesses I am rebutting, views SCG's risk  
14          as below average based on its favorable bond ratings. This view is inappropriate.  
15          This proceeding is mainly concerned with common stock returns, and not bond  
16          returns. Bondholders are concerned with creditworthiness, and bond ratings  
17          measure of creditworthiness. Common shareholders on the other hand are  
18          concerned with variability of returns, typically measured by beta risk measures. It  
19          is inappropriate to measure a common stock's riskiness on the basis of its bond  
20          rating alone. In short, Mr. Lawton has confounded the risk of bonds and the risk  
21          of common stocks. As a practical matter, as shown below, there is little, if any,  
22          correlation between DCF returns and bond ratings.

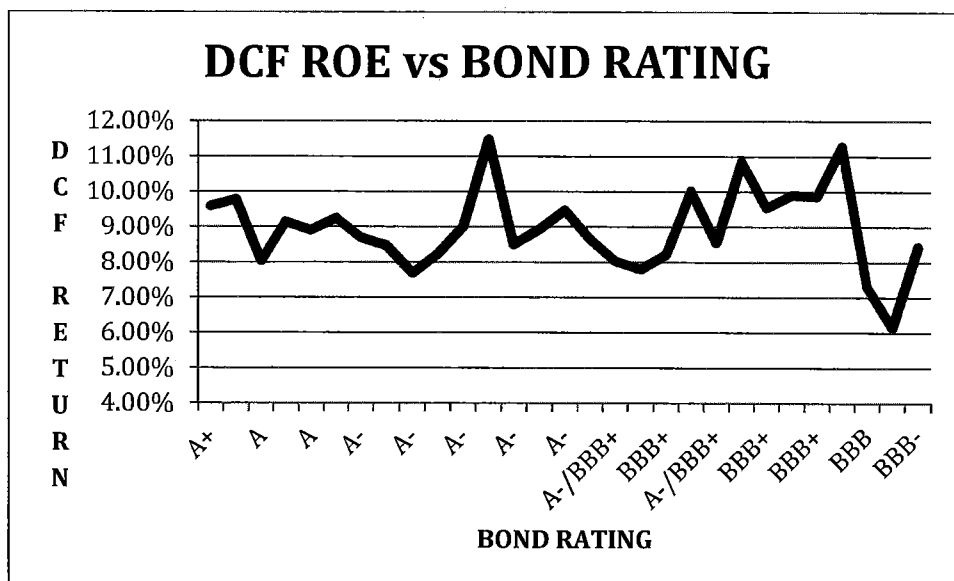
23   **Q.    DID YOU FIND ANY RELATIONSHIP BETWEEN THE DCF RETURN**

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<sup>8</sup> See Direct Testimony of Daniel Lawton at Exhibit Schedules DL-16 and DL-18.

1 **ESTIMATES OF MR. LAWTON AND BOND RATINGS?**

2 A. No, I did not. As shown on the graph below, there is no relationship at all  
3 between common stock returns and bond ratings for Mr. Lawton's group of 16  
4 companies. If Mr. Lawton were correct, one would expect an upward-sloping  
5 positive relationship between returns and bond ratings in Mr. Lawton's group of  
6 companies. No such pattern exists.



7  
8  
9 **Q. DO YOU AGREE WITH MR. LAWTON THAT VARIOUS RISK-**  
10 **MITIGATING MECHANISMS IN CALIFORNIA, SUCH AS**  
11 **DECOUPLING, REDUCE SCG'S RISK?**

12 A. While I certainly agree that risk-mitigating mechanisms such as decoupling  
13 reduce risk on an absolute basis, they do not necessarily do so on a relative basis;  
14 that is, compared to other utilities. For example, a purchased gas cost adjustment  
15 clause does not reduce relative risk since most natural gas utilities in the industry  
16 possess such a clause. The same is true for decoupling mechanisms. As I discuss

1 more fully later in my rebuttal, the approval of adjustment clauses, decoupling,  
2 ROE incentives riders, trackers, forward test years, and cost recovery mechanisms  
3 by regulatory commissions is widespread in the utility business and is already  
4 largely embedded in financial data, such as stock prices, bond rating and business  
5 risk scores.<sup>9</sup>

6 **Q. FINALLY, DR. MORIN, DO YOU AGREE WITH MR. LAWTON'S**  
7 **FINANCIAL RATIO/METRIC ANALYSIS WHEN EVALUATING HIS**  
8 **RECOMMENDED ROE?**

9 A. No, I do not. Mr. Lawton has not accurately evaluated the potential financial ratio  
10 impacts based on his ROE recommendation. Rating agencies develop rating  
11 guidelines when determining key metrics to evaluate a company's cash flows and  
12 ability to service debt obligations. Mr. Lawton attempts to calculate his own  
13 financial integrity analysis using S&P and Moody's benchmark ranges as shown  
14 on page 49 of his direct testimony and Schedule DJL-24. While I agree that these  
15 benchmarks are not precise guarantees of future ratings outcomes given the  
16 various qualitative and quantitative factors considered, however, Mr. Lawton  
17 neglects to make the appropriate adjustments to his analysis that the rating  
18 agencies consider, such as imputed debt.

19 To illustrate, instead of calculating adjusted Funds From Operations (FFO)  
20 in accordance to S&P methodology, Mr. Lawton employs a high level EBITDA  
21 Cash Flow calculation that doesn't take into account all the S&P adjustments.

22 According to S&P methodology, adjusted FFO is calculated by adjusting Net  
23 income by non-cash items, capitalized interest, operating lease depreciation, post

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<sup>9</sup> See Rebuttal Testimony of SCG Witness Cheryl Shepherd at Section IV.

1 retirement obligations, and imputed PPA depreciation. The imputed debt  
2 adjustment translates into a significant impact on the credit ratio benchmarks  
3 when properly adhering to S&P methodology.

4 In short, by not adhering to the proper methodological adjustments  
5 actually made by credit agencies, Mr. Lawton erroneously concludes that his low  
6 ROE recommendation will not negatively impact SCG's financial integrity.

7  
8 **E. CONCLUSIONS**

9  
10 **Q. DR. MORIN, PLEASE PROVIDE A SUMMARY OF THE**  
11 **RECOMMENDED CHANGES TO MR. LAWTON'S RATE OF RETURN**  
12 **TESTIMONY.**

13 **A.** Yes. But before I do, however, I reiterate that I have identified several areas of  
14 agreement between Mr. Lawton's testimony and my own. The following table  
15 summarizes the principal reasons why Mr. Lawton's DCF-based results  
16 understate an appropriate ROE for SCG:

17 Correction of these understatements would increase Mr. Lawton's DCF  
18 results by 131 – 140 basis points, from his original DCF estimate of 9.4% to  
19 10.7% - 10.8%. The corrected range is quite consistent with my own  
20 recommendation of 10.5% and the Company's recommended 10.9%.

Source	Basis Points
Dividend yield adjustment	20
Flotation Cost Allowance	30
Growth Rate Adjustment	41-50
Risk Adjustment	40

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1 unsubstantiated analytically of the three, and nor is it consistent with the ROE  
2 recommendations of another DRA witness for ongoing utility proceedings in the  
3 state as discussed earlier. Mr. Woolridge recommends an ROE allowance of only  
4 8.5% for SCG. In determining the cost of equity, Mr. Woolridge applies a DCF  
5 analysis to a small group of only 8 gas utilities. This study, summarized on page  
6 4-38 of his testimony, produces a result of 8.4%. Mr. Woolridge also performs a  
7 CAPM analysis, although he does not rely on the results of this analysis in spite of  
8 devoting more a substantial part of his testimony to the CAPM and its proper  
9 inputs. The CAPM analysis, summarized on Page 4-44 of his testimony,  
10 produces a result of 7.4%. Based on his sole DCF analysis, Mr. Woolridge  
11 concludes that SCG's cost of equity is only 8.5%.

12 **Q. WHAT IS YOUR GENERAL REACTION TO MR. WOOLRIDGE'S COST**  
13 **OF COMMON EQUITY RECOMMENDATION?**

14 A. My general reaction to his recommendation, before I engage in a more technical  
15 critique, is that there are two major infirmities in Mr. Woolridge's testimony.  
16 First, I find that Mr. Woolridge's recommended 8.5% ROE for SCG lies well  
17 outside the zone of reasonableness and outside the zone of currently authorized  
18 rates of return for utilities in the United States. Mr. Woolridge's recommended  
19 reduction in the Company's ROE down to only 8.5%, if ever adopted, would  
20 result in one of the lowest, if not the lowest, rate of return award for a utility in the  
21 country. Of the 87 utilities covered monthly in AUS Utility Reports, none have  
22 an allowed return anywhere near Mr. Woolridge's recommended 8.5%. There  
23 would be dramatic adverse consequences on the Company's credit ratings, its

1 financial integrity, the stock of its parent company, the company's capital raising  
2 ability, and ultimately ratepayers. Moreover, Mr. Woolridge's single-digit  
3 recommended ROE lies well below the zone of his own comparable companies'  
4 authorized ROEs and expected ROEs. These facts provide clear proof that his  
5 ROE recommendation for SCG is far too low.

6 The second major structural flaw of Mr. Woolridge's testimony is that his  
7 recommendation of 8.5% rests exclusively on the questionable results of a DCF  
8 model. Moreover, his CAPM analysis, on which he places little, if any, weight is  
9 flawed, as discussed later.

10 **Q. IS MR. WOOLRIDGE'S VERY LOW RECOMMENDED ROE**  
11 **APPROPRIATE AT THIS TIME?**

12 **A.** Certainly not. Mr. Woolridge's recommended ROE of only 8.5%, which would  
13 be among the lowest, if not the lowest, allowed ROE in the country is untimely  
14 and contrary to customers' best interests to provide reliable and reasonably-priced  
15 natural gas service. The Commission's approval of the ROE that I have  
16 recommended along with supportive regulation will buttress these goals and  
17 provide measurable benefits to SCG customers.

18 Maintaining the Company's strong investment-grade status decreases  
19 utility bond borrowing costs, improves access to capital and the availability of  
20 longer-term debt maturities, and enables the Company to absorb any negative  
21 volatility in its financial performance. Maintaining a strong investment-grade  
22 bond rating will have beneficial long-term cost implications for the Company and  
23 its customers as the Company re-finances existing debt, issues new capital and



1 enters into new contractual arrangements. Clearly, SCG's customers have a  
2 vested interest in a strong financial position for the utility. The interests of  
3 customers and shareholders are consistent, not mutually exclusive. They both  
4 benefit from a financially sound utility. Mr. Woolridge's very low recommended  
5 ROE is detrimental toward maintaining a strong investment-grade status and  
6 contrary to customers' interests.

7 **Q. WHAT ARE THE BASIC CONCLUSIONS OF YOUR REBUTTAL TO**  
8 **MR. WOOLRIDGE'S COST OF EQUITY TESTIMONY?**

9 A. Mr. Woolridge seriously understates SCG's cost of common equity. A proper  
10 application of cost of capital methodologies would give results substantially  
11 higher than those that he obtained.

12 **Q. PLEASE SUMMARIZE YOUR SPECIFIC CRITICISMS OF MR.**  
13 **WOOLRIDGE'S TESTIMONY.**

14 A. On technical and methodological grounds, I have eleven specific criticisms:

15 **1. Return Recommendation Well Out of the Mainstream.** As  
16 summarized above, Mr. Woolridge's recommended return is outside the zone of  
17 currently allowed rates of return for major utilities and in the United States and  
18 for his own sample of companies. The average currently allowed ROE in the  
19 utility industry as reported in the August 2012 edition of AUS Utility Reports is  
20 10.34% in the combination gas and electric utility industry, 10.54% in the electric  
21 utility industry, and 10.6% in the gas utility industry. These authorized returns  
22 exceed by a significant margin Mr. Woolridge's very low 8.5% recommended  
23 return for SCG. Moreover, the currently authorized ROE for Mr. Woolridge's

1 own comparable companies averages 10.4%, which again is much higher than his  
2 recommended ROE for SCG.

3 **2. Comparable Companies.** A sample consisting of only eight utilities is  
4 statistically suspect. It is important to select relatively large sample sizes as  
5 opposed to small sample sizes consisting of a handful of companies in applying  
6 the CAPM and DCF methods. In prior utility cases, Mr. Woolridge has relied on  
7 more than one sample. It is not clear as to why he chose to limit his  
8 methodologies to only one small sample in this proceeding.

9 **3. Understated Dividend Yield.** Mr. Woolridge's dividend yield component  
10 is understated because it is not consistent with the annual form of the DCF model.  
11 As discussed earlier, it is inappropriate to increase the dividend yield by adding  
12 one-half the future growth rate to the spot dividend yield.

13 **4. DCF Dividend Yield and Flotation Costs.** Mr. Woolridge's dividend  
14 yield component is understated because it does not allow for flotation costs, and,  
15 as a result, a legitimate expense is left unrecovered.

16 **5. DCF Historical Growth Rates.** In order to estimate the growth  
17 component of the DCF model, Mr. Woolridge relies on thirteen growth proxies,  
18 including historical growth rates, despite substantial changes occurring in the  
19 energy utility industry that have made history questionable. Moreover, historical  
20 growth rates are somewhat redundant since historical growth patterns are already  
21 reflected in analysts' growth forecasts, which he also uses. Also, the stock price  
22 Mr. Woolridge uses in his DCF analysis is predicated on analysts' growth  
23 forecasts and not on historical growth rates.

1           **6. DCF Dividend Growth Rates.** For estimating the growth component of  
2 the DCF model, Mr. Woolridge also examines historical and projected dividend  
3 growth in his DCF analysis even though energy utilities are reducing dividend  
4 payouts. Because energy utilities are expected to lower their dividend payout  
5 ratio over the next several years in response to heightened business risk and need  
6 for financing large capital budgets, the use of dividend growth projections is  
7 inappropriate in the DCF model. Earnings growth projections are far more  
8 relevant at this point. Besides, dividend growth is driven by earnings growth.

9           **7. Internal Growth Method.** There are logical inconsistencies in the  
10 internal growth technique employed by Mr. Woolridge. The internal growth  
11 approach for estimating the growth component in the DCF formula is logically  
12 inconsistent because one is forced to assume the answer to implement the method.  
13 Moreover, Mr. Woolridge's retention growth methodology fails to account for  
14 external stock financing.

15           **8. Analysts' Growth Forecasts.** The best proxy for the growth component  
16 of the DCF model is analysts' long-term earnings growth forecasts.

17           **9. CAPM MRP.** Mr. Woolridge's estimate of the MRP is far too low  
18 because: 1) he has erroneously included the results of studies which employ  
19 geometric means instead of the correct arithmetic means, and because of his  
20 arbitrary choice of the literature on which he relies; and 2) he has misrepresented  
21 the literature on the subject.

22           **10. CAPM and the ECAPM.** The plain vanilla version of the CAPM used  
23 by Mr. Woolridge understates the Company's cost of equity for low-beta

1 securities.

2 **11. Risk Adjustment.** Mr. Woolridge did not adjust his recommended ROE  
3 upward to reflect SCG' greater than average risk.

4 **12. Unfounded criticisms.** Mr. Woolridge's criticisms of my testimony are  
5 unfounded.

6 I shall now discuss each criticism in turn.

7

8 **B. ALLOWED RETURNS**

9

10 **Q. IS MR. WOOLRIDGE'S RATE OF RETURN RECOMMENDATION**  
11 **COMPATIBLE WITH CURRENTLY ALLOWED RETURNS IN THE**  
12 **UTILITY INDUSTRY?**

13 **A.** No, not all. Allowed returns, while certainly not a precise indication of a  
14 company's cost of equity capital, are nevertheless important determinants of  
15 investor growth perceptions and investor expected returns. They also serve to  
16 provide some perspective on the validity and reasonableness of Mr. Woolridge's  
17 recommendation.

18 The average currently allowed ROE in the utility industry as reported in  
19 the August 2012 edition of AUS Utility Reports is 10.34% in the combination gas  
20 and electric utility industry, 10.54% in the electric utility industry, and 10.6% in  
21 the gas utility industry. These ROE awards and currently authorized ROEs  
22 exceed by a substantial margin Mr. Woolridge's recommended single-digit ROE  
23 of only 8.5% for SCG.

24 I have also examined the currently allowed ROEs for the 8 gas utilities in

1 Mr. Woolridge's comparable group as reported in AUS Utility Reports survey for  
2 August 2012. The currently authorized ROEs for Mr. Woolridge's sample, shown  
3 in Table 1 below, average 10.4%.

4  
5 **Table 1 Authorized Returns**

Company	Allowed ROE
AGL Resources	10.17
Atmos Energy	11.71
Laclede Group	
Northwest Nat'l Gas	10.20
Piedmont Nat'l Gas	10.40
South Jersey Industries	10.30
Southwest Gas Corp	10.22
WGL Holdings	9.85
<b>AVERAGE:</b>	<b>10.40%</b>

6 Source: AUS Utility Reports 8/2012

7  
8  
9  
10 In short, Mr. Woolridge's unsubstantiated recommendation is well outside  
11 the mainstream of the allowed rates of return and lies outside the zone of recently  
12 authorized returns for electric and gas utilities and for his own sample of  
13 companies.<sup>10</sup>

14 Unreasonable rate treatment for a utility, if implemented, may have  
15 serious public policy implications and repercussions that are not mentioned in Mr.  
16 Woolridge's testimony. For example, the quality of regulation and the  
17 reasonableness of rate of return awards clearly have implications for regulatory  
18 climate, economic development and job creation in a given territory. The

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<sup>10</sup> Consistently, Fitch reports that it "expects authorized returns at the end of the CoC proceeding to remain well above the industry average authorized ROE of approximately 10.1%. An unexpectedly large adjustment downward to authorized ROEs by the commission would be an adverse development, in Fitch's opinion." FitchRating Ltd., "California Regulation Still Waiting," August 23, 2012 at 5. See Attachment B for the full report.

1 consistency of regulation in a given jurisdiction has similar implications. It is my  
2 belief that Mr. Woolridge's recommended return has negative implications on  
3 these grounds and is not consistent with the economic well-being of the State of  
4 California. It provides a disincentive to investment in California and undermines  
5 the ability of SCG to invest in the equipment and other resources needed to  
6 operate a utility company in California.

7 **Q. IS SCG COMPARABLE IN RISK TO MR. WOOLRIDGE'S SAMPLE**  
8 **COMPANIES?**

9 A. No, it is not. As I discussed in my direct testimony, SCG's investment risk is  
10 above average with a Sempra beta of .8 compared to the proxy group average of  
11 .73. Mr. Woolridge failed to recognize SCG's higher than average risk profile  
12 and adjust his recommended ROE upward accordingly. As I discussed earlier,  
13 SCG's bond rating does not constitute an appropriate proxy for the risk associated  
14 with the common equity capital of SCG.

15  
16 **C. COMPARABLE COMPANIES**

17  
18 **Q. DID MR. WOOLRIDGE DEVELOP ANY SAMPLES OF COMPARABLE**  
19 **RISK COMPANIES IN ORDER TO ARRIVE AT HIS**  
20 **RECOMMENDATION?**

21 A. Yes, he did. As shown on Exhibit JRW-4 page 2, Mr. Woolridge presents a very  
22 small sample of only eight natural gas utilities that he deems comparable to SCG.  
23 No other comparable sample of companies is presented in contrast to Mr.  
24 Woolridge's past recent testimonies where he has relied on more than one

1 sample.<sup>11</sup>

2 **Q. CAN YOU COMMENT ON MR. WOOLRIDGE'S SAMPLE OF**  
3 **COMPANIES?**

4 A. Yes. A sample consisting of only eight utilities is statistically suspect and fragile.  
5 It is important to select relatively large sample sizes as opposed to small sample  
6 sizes consisting of a handful of companies in applying the CAPM, Risk Premium,  
7 and DCF methods. This is particularly important when industry capital market  
8 data and equity market conditions are unstable, as is the case presently.  
9 Confidence in the statistical reliability of the model results is considerably  
10 enhanced when applying financial models to a large group of companies.  
11 Moreover, small samples are subject to measurement error, in violation of the  
12 Central Limit Theorem of statistics.<sup>12</sup> From a statistical standpoint, reliance on  
13 robust sample sizes mitigates the impact of possible measurement errors and  
14 vagaries in individual companies' market data. I believe that Mr. Woolridge's  
15 small sample size is deficient on those grounds and, therefore, unreliable.

---

<sup>11</sup> For example, in the recent cost of capital proceeding for the California Class A water utilities, Mr. Woolridge used two proxy groups. (A.11-05-001*et al.*) Likewise, when estimating an ROE for the Municipality of Anchorage, Mr. Woolridge used two proxy groups. (U-10-101).

<sup>12</sup> The Central Limit Theorem (CLT) describes the characteristics of the distribution of values we would obtain if we were able to draw an infinite number of random samples of a given size from a given population and we calculated the mean of each sample. The CLT asserts: [1] The mean of the sampling distribution of means is equal to the mean of the population from which the samples were drawn. [2] The variance of the sampling distribution of means is equal to the variance of the population from which the samples were drawn divided by the size of the samples. [3] If the original population is distributed normally, the sampling distribution of means will also be normal. If the original population is not normally distributed, the sampling distribution of means will increasingly approximate a normal distribution as sample size increases.

1 **D. DCF ANALYSIS**

2  
3 **1. UNDERSTATED DIVIDEND YIELD**

4 **Q. DO YOU HAVE ANY COMMENT ON MR. WOOLRIDGE'S DIVIDEND**  
5 **YIELD COMPONENT IN THE DCF ANALYSIS?**

6 A. Yes. I disagree with Mr. Woolridge's dividend yield calculation in his DCF  
7 analysis (Exhibit JRW-10 page 1) because he multiplied the spot dividend yield  
8 by one plus one half the expected growth rate ( $1 + 0.5g$ ) rather than the  
9 conventional one plus the expected growth rate ( $1 + g$ ). This procedure  
10 understates the return expected by the investor, as discussed earlier in my rebuttal  
11 of Mr. Lawton.

12  
13 **2. DCF DIVIDEND YIELD AND FLOTATION COSTS**

14 **Q. IN YOUR DIRECT TESTIMONY, YOU STATED THAT THE RETURN**  
15 **ON EQUITY SHOULD BE ADJUSTED TO INCLUDE AN ALLOWANCE**  
16 **FOR FLOTATION COSTS. PLEASE COMMENT ON FLOTATION**  
17 **COSTS.**

18 A. Flotation costs are very similar to the closing costs on a home mortgage. In the  
19 case of issues of new equity, flotation costs represent the discounts that must be  
20 provided to place the new securities. Flotation costs have a direct and an indirect  
21 component. The direct component represents monetary compensation to the  
22 security underwriter for marketing/consulting services, for the risks involved in  
23 distributing the issue, and for any operating expenses associated with the issue  
24 (printing, legal, prospectus, etc.). The indirect component represents the  
25 downward pressure on the stock price as a result of the increased supply of stock



1 from the new issue. The latter component is frequently referred to as "market  
2 pressure."

3 Flotation costs for common stock are analogous to the flotation costs  
4 associated with past bond issues which, as a matter of routine regulatory policy,  
5 continue to be amortized over the life of the bond, even though no new bond  
6 issues are contemplated. In the case of common stock, which has no finite life,  
7 flotation costs are not amortized. Therefore, the recovery of flotation cost  
8 requires an upward adjustment to the allowed return on equity.<sup>13</sup>

9 As demonstrated in my direct testimony, the expected dividend yield  
10 component of the DCF model must be adjusted for flotation cost by dividing it by  
11  $(1 - f)$ , where  $f$  is the flotation cost factor.

12 **Q. WHAT FLOTATION COST TREATMENT DID MR. WOOLRIDGE**  
13 **RECOMMEND IN THIS CASE?**

14 A. Mr. Woolridge's common equity return recommendation does not include any  
15 allowance whatsoever for common stock issuance expense. Because Mr.  
16 Woolridge fails to include any allowance for flotation costs, his DCF estimates of  
17 equity costs are understated.

18 I am surprised by Mr. Woolridge's reluctance to accept flotation costs.

---

<sup>13</sup>In recognition of the fact that "flotation costs are not accounted for elsewhere in a company's cost of service," the Federal Energy Regulatory Commission (FERC) includes flotation costs in the cost of common equity. 56 F.E.R.C. ¶ 61,276 \*62,085 (1991). Likewise, the Illinois Public Service Commission adjusted Iowa-Illinois Gas and Electric Company's ROE to reflect flotation cost adjustments, reasoning "if these costs are not reflected in the Company's allowed rate of return, its investors will not have a fair opportunity to earn their required rate of return." 1993 Ill. PUC LEXIS 245 at \*126-127. Similarly, the Virginia Public Utilities Commission authorized Northern Virginia Gas Company flotation cost adjustments, holding "flotation costs are a cost of obtaining capital which support its inclusion in the allowed return on equity." 1988 Va. PUC LEXIS 329 at \*15. See also *Petition of PSI Energy, Inc. for Authority To Increase Its Rates And Charges For Electric Service*, 2004 Ind. PUC LEXIS 150; *In the Matter of the Petition of Northern States Power Gas Utility for Authority to Change Its Schedule of Gas Rates for Retail Customers Within the State of Minnesota*, 1993 Minn. PUC LEXIS 198.

1 Obviously, the issuance of common equity capital is not free. The flotation cost  
2 allowance to the cost of common equity capital is routinely discussed and applied  
3 in most corporate finance textbooks.

4 Mr. Woolridge's position concerning flotation costs is inconsistent with  
5 the Value Line forecasts that show that utilities will be issuing new common stock  
6 in the future. Later in my rebuttal when I respond to his criticisms of my  
7 testimony, I provide additional reasons why Mr. Woolridge's arguments against a  
8 flotation cost allowance are unfounded.

9

10

### **3. DCF GROWTH RATES**

11

**Q. WHAT GROWTH RATES DID MR. WOOLRIDGE EMPLOY IN HIS  
12 DCF ANALYSIS?**

13

A. Mr. Woolridge employs a veritable smorgasbord of thirteen growth rates as  
14 proxies for the DCF growth component. The thirteen proxies are shown on Table  
15 2 below.

16

**Table 2 Mr. Woolridge's DCF Growth Rates**

1	10-yr historical Earnings	6.3%
2	10-yr historical Dividend	2.5%
3	10-yr historical Book Value	5.0%
4	5-yr historical Earnings	4.5%
5	5-yr historical Dividend	4.0%
6	5-yr historical Book Value	5.0%
7	Value Line Projected earnings	4.0%
8	Value Line Projected dividend	2.8%
9	Value Line projected Book Value	5.3%
10	Value Line Internal Growth	4.7%
11	Yahoo analysts forecasts	4.5%
12	Zacks analysts forecasts	4.6%
13	Reuters analyst forecasts	5.0%
	<b>MEDIAN</b>	<b>4.6%</b>

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**Q. PLEASE COMMENT ON MR. WOOLRIDGE'S GROWTH PROXIES.**

A. As shown on Table 2 above, the overall median growth from all the proxies is 4.6% and for the group, in contrast to Mr. Woolridge's final estimate of 4.4%. It is not clear as to why Mr. Woolridge chose 4.4% when the average growth rate from all the proxies is 4.6%. Actually, if we remove the outlying 10-year historical growth rate, the average growth is 4.7%.

**Q. WHAT ARE THE PROBLEMS WITH MR. WOOLRIDGE'S DCF GROWTH RATES?**

- A. There are five problems with Mr. Woolridge's approach to DCF growth rates:
1. Difficulty in replicating scientifically.
  2. Unrepresentative and redundant historical growth rates.
  3. Inappropriate dividend growth rates.
  4. Circularity in the Internal Growth method.
  5. Technical error.

**Q. WERE YOU ABLE TO SCIENTIFICALLY REPLICATE MR. WOOLRIDGE'S GROWTH ESTIMATE FROM THE DATA?**

A. No, I was not. Mr. Woolridge reports a compendium of 13 growth rates duplicated in Table 2 above. Somehow, from all this historical and projected growth data ranging from 2.5% to 6.3%, he derives an arbitrary growth rate of 4.4% for his natural gas comparable group.

The choice of optimal growth rate proxy should be guided by objective scientific research and be easily reproducible, unlike Mr. Woolridge's growth

proxies. Moreover, the empirical finance literature shows that analysts' growth forecasts produce superior proxies for the expected growth term in the DCF model.<sup>14</sup> Mr. Woolridge's approach to growth rates is unreliable and arbitrary.

**Q. PLEASE ELABORATE ON THE LACK OF RELIABILITY OF MR. WOOLRIDGE'S GROWTH PROXIES.**

A. Table 3, Column 1 below replicates the average growth estimates for Mr. Woolridge's sample of gas utilities obtained from each proxy (*see* Woolridge Exhibit JRW-10, pages 3-5). The second column shows the growth average excluding dividend growth rates, the third column shows the growth average using dividend growth proxies only.

**Table 3 Mr. Woolridge's DCF Growth Rates**

<b>Growth Proxies</b>	<b>All (1)</b>	<b>Excl Divid (2)</b>	<b>Only Divid (3)</b>
10-yr historical Earnings	6.3%	6.3%	
10-yr historical Dividend	2.5%		2.5%
10-yr historical Book Value	5.0%	5.0%	
5-yr historical Earnings	4.5%	4.5%	
5-yr historical Dividend	4.0%		4.0%
5-yr historical Book Value	5.0%	5.0%	
Value Line Projected earnings	4.0%	4.0%	
Value Line Projected dividend	2.8%		2.8%
Value Line projected Book Value	5.3%	5.3%	
Value Line Internal Growth	4.7%	4.7%	
Yahoo analysts forecasts	4.5%	4.5%	
Zacks analysts forecasts	4.6%	4.6%	
Reuters analyst forecasts	5.0%	5.0%	
<b>Median</b>	<b>4.6%</b>	<b>4.9%</b>	<b>2.8%</b>

<sup>14</sup> See *infra* at 40-41.

1           The overall central growth rate from all the proxies, as shown at the  
2 bottom of Column 1, is 4.6% for the group. It is clear from this table that the  
3 dividend growth proxies median of 2.8% shown at the bottom of Column 3 is an  
4 outlier, compared to the average of 4.9% computed by excluding the dividend  
5 proxies (Column 2). I show below that dividend growth rates are inappropriate  
6 proxies for expected growth at this time.

7  
8                                   **4. HISTORICAL GROWTH RATES**

9   **Q. PLEASE DISCUSS THE USE OF HISTORICAL GROWTH RATES IN**  
10 **APPLYING THE DCF MODEL TO NATURAL GAS UTILITIES.**

11   A. In arriving at his proxies for the DCF growth component, six of the thirteen  
12 proxies on which Mr. Woolridge relies on are historical growth rates. Although  
13 he reports and discusses these historical growth rates averaging 4.6% (see the first  
14 six estimates from Table 3 above), he ends up using 4.4%, so that it is difficult to  
15 tell to what extent he places reliance, if any, on historical growth rates. To the  
16 extent that he relied on history, I disagree.

17           Under circumstances of stability, it is reasonable to assume that historical  
18 growth rates in dividends/earnings influence investors' assessment of the long-run  
19 growth rate of future dividends/earnings. However, because of substantial  
20 changes in the energy industry, historical growth rates have little relevance as  
21 proxies for future long-term growth. They are downward-biased by the sluggish  
22 earnings performance in the last decade, due to the structural transformation of  
23 the energy utility business from a regulated monopoly to a more competitive

1 environment. Moreover, historical growth rates are largely redundant because  
2 such historical growth patterns are already incorporated in analysts' growth  
3 forecasts that should be used in the DCF model. I therefore recommend that the  
4 Commission reject historical growth rates as proxies for expected growth in the  
5 DCF calculation.

6 Incidentally, it is ironic that Mr. Woolridge devotes a considerable amount  
7 of space in his testimony to denounce the use of historical data when estimating  
8 the MRP component of the CAPM, but yet is willing to incorporate into his DCF  
9 analysis six growth proxies out of thirteen, almost half, that are historical in  
10 nature. Nowhere does Mr. Woolridge explain this inconsistency.

## 11 **5. DIVIDEND GROWTH RATES**

12 **Q. SHOULD MR. WOOLRIDGE HAVE CONSIDERED DIVIDEND**  
13 **GROWTH PROXIES IN APPLYING THE DCF MODEL?**

14 **A.** No, he should not. It is abundantly clear from Table 3 that the 2.8% average of  
15 the dividend growth proxies is an outlier, when compared with the other proxies  
16 showing growth rates that average 4.9%. Mr. Woolridge should not have  
17 considered dividend growth in applying the DCF model.

18 In short, dividend growth rates are unlikely to provide a meaningful guide  
19 to investors' growth expectations for energy utilities. Therefore, earnings growth  
20 provides a more meaningful guide to investors' long-term growth expectations.  
21 After all, it is growth in earnings that will support future dividends and share  
22 prices.  
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**6. INTERNAL GROWTH METHOD**

**Q. PLEASE COMMENT ON MR. WOOLRIDGE'S INTERNAL GROWTH ESTIMATE IN THE DCF MODEL.**

A. In order to estimate the growth component of the DCF model, Mr. Woolridge also relies on the internal growth approach, where the growth rate is based on the equation  $g = b(\text{ROE})$ ;  $b$  is the percentage of earnings retained and ROE is the expected rate of return on book equity (ROE).

Earlier in my rebuttal of Mr. Lawton, I discussed four reasons why I disagree with the internal growth technique, mainly the inherent circularity of the method. There is one more reason why I disagree with the method in the case of Mr. Woolridge's implementation.

**Q. DOES MR. WOOLRIDGE'S INTERNAL GROWTH METHODOLOGY ACCOUNT FOR EXTERNAL STOCK FINANCING?**

A. No, Mr. Woolridge does not account for the impact of external stock financing on growth, thus understating growth rates. Utilities engage in two kinds of operations: 1) investment decisions on which they earn the rate of return 'r', and 2) stock financing operations on which they earn at the rate 'vs'. If a utility is expected to finance stock at the rate 's', the standard DCF model:

$$K = D_1/P + g$$

is altered as follows. Since growth in book value per share results from both types of operations, now  $g = br + sv$  and not simply  $br$ , where:

$s$  = funds raised from the sale of stock as a fraction of

1 existing common equity  
2  $v$  = fraction of the funds raised from sale of stock that  
3 accrues to shareholders at the start of the period  
4

5 Mr. Woolridge's internal growth methodology failed to recognize growth  
6 stemming from external stock financing. The expectation of continuous stock  
7 financing at the rate 's' changes the expected rate of growth from 'br' to 'br + sv'.  
8 By omitting the latter component of growth, Mr. Woolridge understates the  
9 growth of his sample of utilities.

10

11 **7. ANALYSTS' GROWTH FORECASTS**

12 **Q. IS THERE ANY EMPIRICAL EVIDENCE DOCUMENTING THE**  
13 **IMPORTANCE OF EARNINGS IN EVALUATING INVESTORS'**  
14 **EXPECTATIONS IN THE INVESTMENT COMMUNITY?**

15 A. On Pages 2-11 and 5-53 of his testimony, Mr. Woolridge denounces the use of  
16 financial analysts' earnings forecasts, and chastises my own use of such forecasts.  
17 Mr. Woolridge also laments the fact that I did not rely on dividend growth  
18 forecasts. I have already discussed the impropriety of relying on dividend growth  
19 since utilities are lowering their dividend payout ratios for reasons stated  
20 previously.

21 There is an abundance of evidence attesting to the importance of earnings  
22 in assessing investors' expectations. First, the sheer volume of earnings forecasts  
23 available from the investment community relative to the scarcity of dividend  
24 forecasts attests to their importance. To illustrate, Value Line, Zacks Investment,



1 First Call Thompson, Reuters, Yahoo Finance, and Multex provide  
2 comprehensive compilations of investors' earnings forecasts, to name some. The  
3 fact that these investment information providers focus on growth in earnings  
4 rather than growth in dividends indicates that the investment community regards  
5 earnings growth as a superior indicator of future long-term growth. Second,  
6 Value Line's principal investment rating assigned to individual stocks, Timeliness  
7 Rank, is based primarily on earnings, accounting for 65% of the ranking.

8 **Q. PLEASE DISCUSS THE USE OF ANALYSTS' FORECASTS IN**  
9 **APPLYING THE DCF MODEL TO UTILITIES.**

10 A. The best proxy for the growth component of the DCF model is analysts' long-  
11 term earnings growth forecasts. These forecasts are made by large reputable  
12 organizations, and the data are readily available to investors and are representative  
13 of the consensus view of investors.

14 **Q. WHAT DOES THE PUBLISHED ACADEMIC LITERATURE SAY ON**  
15 **THE SUBJECT OF GROWTH RATES IN THE DCF MODEL?**

16 A. Published studies in the academic literature demonstrate that growth forecasts  
17 made by security analysts are reasonable indicators of investor expectations, and  
18 that investors rely on analysts' forecasts. Cragg and Malkiel ["Expectations and  
19 the Structure of Share Prices," Chicago: University of Chicago Press, 1982]  
20 present detailed empirical evidence that the average analysts' expectation is more  
21 similar to expectations being reflected in the marketplace than are historical  
22 growth rates, and represents the best possible source of DCF growth rates. Cragg  
23 and Malkiel show that historical growth rates do not contain any information that

1 is not already impounded in analysts' growth forecasts. A study by Professors  
2 Vander Weide and Carleton, "Investor Growth Expectations: Analysts vs.  
3 History" (*The Journal of Portfolio Management*, Spring 1988), also confirms the  
4 superiority of analysts' forecasts over historical growth extrapolations. Another  
5 study by Timme & Eiseman, "On the Use of Consensus Forecasts of Growth in  
6 the Constant Growth Model: The Case of Electric Utilities," *Financial*  
7 *Management*, Winter 1989, produces similar results.

8 Mr. Woolridge's denunciation of analysts' growth forecasts as  
9 unreasonable proxies for the DCF growth rate is without foundation and quite  
10 inconsistent with the empirical finance literature on the subject. It is paradoxical  
11 that Mr. Woolridge employs analysts' earnings forecasts from the Yahoo Finance,  
12 Reuters, and Zacks websites (*see* Exhibit JRW-10 page 5) for three of his growth  
13 proxies for the DCF growth rate, and again relies on analysts' forecasts in his  
14 implementation of the "building block" approach to estimate the MRP in a CAPM  
15 analysis, yet criticizes my own use of earnings growth forecast from similar  
16 sources. Mr. Woolridge cannot have it both ways, and does not explain this  
17 inconsistency in his approach.

18 **Q. WHAT DO YOU CONCLUDE FROM MR. WOOLRIDGE'S DCF**  
19 **GROWTH RATE ANALYSES?**

20 A. They are: 1) difficult to replicate scientifically, 2) rely in part on unrepresentative  
21 and redundant historical growth rates, 3) rely in part on inappropriate dividend  
22 growth rates, 4) rely in part on a circular methodology which requires Mr.  
23 Woolridge to assume the answer, and 5) omit growth from external financing.

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**E. CAPM MARKET RISK PREMIUM**

**Q. DOES MR. WOOLRIDGE PERFORM A CAPM ANALYSIS?**

A. Yes, he does, although he does not rely on the results of this methodology:

*“Since I rely primarily on the DCF approach.....”*

(Woolridge page 4-47 line 24)

Nevertheless Mr. Woolridge devotes an enormous amount of space to the CAPM in his testimony despite the fact that he did not rely on its results. The results of his CAPM study are summarized on Page 4-44 and Exhibit JRW-11, page 1 of his testimony.

**Q. WHAT INPUT DATA DOES A CAPM ANALYSIS REQUIRE?**

A. To implement the CAPM, three quantities are required: the risk-free rate ( $R_F$ ), beta ( $\beta$ ), and the market risk premium, ( $R_M - R_F$ ). As shown on page 4-44, Mr. Woolridge uses a risk-free rate of 4.00%, a beta of 0.68, and a MRP of only 5.01%.

**Q. DR. MORIN, DO YOU AGREE WITH MR. WOOLRIDGE’S RISK-FREE RATE ESTIMATE IN THE CAPM ANALYSIS?**

A. No, I do not. All the economic forecasts that I am aware of call for a substantial increase in interest rates in 2013-2014 as I discussed earlier in my rebuttal.

**Q. DR. MORIN, DO YOU AGREE WITH MR. WOOLRIDGE’S BETA ESTIMATE IN THE CAPM ANALYSIS?**

A. Yes, I do.

**Q. HOW DOES MR. WOOLRIDGE ESTIMATE THE MRP COMPONENT**

1           **OF THE CAPM?**

2    A.    In order to determine the MRP component of the CAPM, Mr. Woolridge compiles  
3           a list of selected empirical studies of equity risk premiums published in academic  
4           and trade publications. The average MRP from all these studies cited on Exhibit  
5           JRW-11, page 5, is 5.1%. If the studies are limited to the 2010-2011 period, the  
6           average MRP is 5.01%, which is Mr. Woolridge's estimate of the MRP in his  
7           CAPM analysis.

8    **Q.    DR. MORIN, DO YOU AGREE WITH MR. WOOLRIDGE'S MRP**  
9           **ESTIMATE IN THE CAPM ANALYSIS?**

10   A.    No, absolutely not. I find Mr. Woolridge's MRP estimate of 5.01% far too low,  
11           especially following the unprecedented financial crisis of 2008-2009 and the  
12           upward re-pricing of risk by investors as a result of the crisis and the ongoing  
13           economic uncertainties both at home and abroad.

14   **Q.    WHAT IS THE PREVALENT ACADEMIC CONSENSUS ON THE**  
15           **MAGNITUDE OF THE MRP?**

16   A.    In their widely-used authoritative textbook, following a comprehensive review of  
17           the rich and fertile MRP literature, Brealey & Myers & Allen state:<sup>15</sup>

18                   *Brealey, Myers, and Allen have no official position on the issue, but we*  
19                   *believe that a range of 5 to 8 percent is reasonable for the risk premium in*  
20                   *the United States.*

21           I certainly concur with this view, although the recent financial crisis,  
22           economic uncertainties at home and in Europe and consequent repricing of risk by

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<sup>15</sup> Richard A. Brealey, Stewart C. Myers, and Paul Allen, Principles of Corporate Finance, 8<sup>th</sup> Edition, Irwin McGraw-Hill, 2006.

1 investors suggests that the upper part of the MRP range identified by Brealey,  
2 Myers, and Allen is far more relevant.

3 **Q. WHAT IS FUNDAMENTALLY WRONG WITH MR. WOOLRIDGE'S**  
4 **MRP ESTIMATE OF 5.01%?**

5 A. The fundamental flaw of this estimate is that it is based on a summary of  
6 historical results from a selected variety of academic and trade studies based on a  
7 different set of capital market conditions, and is certainly not representative of  
8 current market conditions or of what is likely to occur prospectively, especially  
9 following the unprecedented financial crisis of 2008-2009 and the ongoing  
10 economic uncertainties both at home and abroad. In his criticism of my risk  
11 premium studies in a recent Duke Energy case in Kentucky (Case No. 2009-  
12 00202), it is interesting that Mr. Woolridge himself provides the fundamental  
13 argument against his entire MRP analysis on page 66 line 21 of that testimony,  
14 and I quote:

15 *"Market conditions today are significantly different than in the past."*

16 I do not believe Mr. Woolridge included this particular important passage in this  
17 testimony. I also note that Mr. Woolridge relied on a MRP of 4.37% in the  
18 aforementioned 2009 case, versus 5.1% in a recent Source Gas case, and versus  
19 5.01% in this case. No explanation is offered as to the sudden change in MRP.

20 **Q. WHAT ELSE IS WRONG WITH THIS ESTIMATE?**

21 A. Several things. First, there are several studies of MRPs that imply considerably  
22 larger estimates that are not reported by Mr. Woolridge. Second, many of the  
23 historical studies selected by Mr. Woolridge rely on geometric average returns

1 rather than arithmetic average returns. Third, many of the historical studies  
2 selected by Mr. Woolridge rely on the total return component of bond returns  
3 rather than on the income component. Fourth, there is a serious logical  
4 contradiction in Mr. Woolridge's MRP estimate. Fifth, Mr. Woolridge's MRP  
5 estimate is inconsistent with the MRPs implied in regulatory decisions. I shall  
6 now discuss each of these flaws in turn.

7 **A. Economic Reasonableness**

8 **Q. DOES MR. WOOLRIDGE'S ESTIMATE OF THE MRP MAKE**  
9 **ECONOMIC SENSE?**

10 A. No, it does not. Twenty eight (28) of the thirty-nine (39) studies reported on Mr.  
11 Woolridge's Exhibit JRW-11, page 5, report a MRP of 5.01% or less.  
12 Multiplying the MRP of 5.01% by Mr. Woolridge's beta estimate of 0.73 for his  
13 proxy group produces a risk premium of at most 3.6% for SCG. Adding Mr.  
14 Woolridge's risk free rate of 4% to the risk premium of 3.6% produces a CAPM  
15 estimate of 7.6% which is closer to SCG's cost of debt than it is to an appropriate  
16 ROE, and appears out of the mainstream and unreasonably low and should be  
17 accorded no weight. In short, Mr. Woolridge's CAPM estimate is unreasonably  
18 low and should be accorded no weight.

19 **B. Comments on Studies Cited by Mr. Woolridge**

20 **Q. ARE THERE STUDIES OF MRPs THAT ARE EITHER**  
21 **MISREPRESENTED AND/OR NOT REPORTED BY MR. WOOLRIDGE**  
22 **THAT IMPLY CONSIDERABLY LARGER ESTIMATES?**

23 A. Yes, there are several studies that suggest much higher MRPs than Mr.

1 Woolridge's 5.01%, and that are well within the established range of 6% - 8%  
2 espoused in the conventional literature. Let me cite some examples.

3 Mr. Woolridge cites a 2005 study by Dimson, Marsh, and Staunton<sup>16</sup> on  
4 Exhibit JRW-11, page 5. The authors report returns over the period 1900 to 2005  
5 for twelve countries, representing 90% of today's world market capitalization.  
6 They report an average risk premium over long bond returns of 6.5% for the U.S.,  
7 and that risk premium was generally higher for the second half century than for  
8 the first. For example, the U.S. had 5% in the first half, compared to 7.5% in the  
9 second half, well in excess of Mr. Woolridge's 5.01% estimate. Brealey, Myers,  
10 and Allen op. cit. updated the Dimson study and found an average MRP of 6.5%  
11 for the U.S..

12 Another study of MRPs not mentioned by Mr. Woolridge was published  
13 by Mehra,<sup>17</sup> who concludes that the MRP over the 1889-2000 period is likely to  
14 be similar to its historical estimate of 6%-7%, notwithstanding the unprecedented  
15 ongoing financial crisis which has undoubtedly increased the MRP.

16 Yet another study by Constantinides<sup>18</sup> presented in his presidential address  
17 to the American Finance Association in 2001 found MRP estimates of 8% and 6%  
18 over the 1926-2000 and 1951-2000 periods, respectively. I note that these  
19 estimates do not even include the major stock market disaster of 2008-9.

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<sup>16</sup>Dimson, Elroy, Paul Marsh and Mike Staunton (2000) "Risk and Return in the 20<sup>th</sup> and 21<sup>st</sup> centuries." *Business Strategy Review* 11(2): 1-18.

<sup>17</sup> Mehra, R., "The Equity Risk Premium: Why Is It a Puzzle?" *Financial Analysts' Journal*, Jan-Feb. 2003.

<sup>18</sup> Constantinides, G. M., "Rational Asset Prices," *Journal of Finance* 57:1567-1591, 2002.

1           Finally, a study by Kaplan and Ruback<sup>19</sup> based on investment studies of  
2           companies involved in management buyouts and leveraged recapitalization found  
3           a median MRP estimate of 7.8% based on a careful analysis of actual major  
4           investment decisions rather than on realized market returns. This estimate again  
5           far exceeds Mr. Woolridge's 5.01% estimate.

6   **Q.   DO YOU HAVE ANY COMMENT ON THE HISTORICAL STUDIES**  
7   **CITED BY MR. WOOLRIDGE?**

8   A.   Yes, I do. On Exhibit JRW-11, page 5, Mr. Woolridge cites several studies based  
9           on very long time data series, including historical data prior to 1900, some even  
10          dating back to 1802, for example, the Siegel and the Goyal & Welsh studies. An  
11          obvious question is whether data on capital market behavior from the 19<sup>th</sup> century  
12          is relevant for estimating return in the 21<sup>st</sup> century. The major concern with data  
13          for a period beginning in 1802 is the reliability of the data. The stock market of  
14          the early 1800's was severely limited, embryonic in scope, with very few issues  
15          trading, and few industries represented. Dividend data were unavailable over  
16          most of this early period and stock prices were based on wide bid-ask spreads  
17          rather than on actual transaction prices. The difficulties inherent in stock market  
18          data prior to the Great Depression are discussed by Schwert.<sup>20</sup>

19   **Q.   WHAT DO YOU THINK OF MR. WOOLRIDGE'S VIEW THAT**  
20   **HISTORICAL STUDIES ARE INAPPROPRIATE?**

21   A.   I disagree. In the latest edition of Morningstar's (formerly Ibbotson Associates)

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<sup>19</sup> Kaplan and Ruback, "The Valuation of Cash Flow Forecasts: An Empirical Analysis," *Journal of Finance*, 50, September 1995, pp. 1059-1093.

<sup>20</sup> Schwert, G. W., "Indexes of U.S. Stock Prices from 1802 to 1987," *Journal of Business*, 1990, Vol. 63, no. 3.



1 Valuation 2011 Yearbook, a prospective MRP study by Ibbotson and Chen on  
2 which Mr. Woolridge relies on page 45, reports a MRP of 6.0% on an arithmetic  
3 basis. It is noteworthy that the authors' MRP estimate is far closer to the  
4 historical premium than being zero or negative, contradicting Mr. Woolridge's  
5 view that historical MRPs are unrepresentative and somehow irrelevant.

6 **Q. DR. MORIN, WHAT DO YOU THINK OF MR. WOOLRIDGE'S**  
7 **ARGUMENT THAT HISTORICAL MRP STUDIES ARE UPWARDLY-**  
8 **BIASED DUE TO THE SO-CALLED "SURVIVORSHIP BIAS?"**

9 A. On page 4-46, Mr. Woolridge argues that historical estimates are upwardly-biased  
10 because the S&P 500 index includes only companies that have survived, and as a  
11 result the average realized excess return is overestimated. However, a recent  
12 study by Jorion & Goetzmann not discussed by Mr. Woolridge finds that the  
13 "survivorship bias" is only 29 basis points.<sup>21</sup> A more recent working paper by  
14 Dimson, Marsh, and Staunton<sup>22</sup> find a survivorship bias of only 0.1%.

15 **Q. DR. MORIN, CAN YOU COMMENT ON THE SURVEY-BASED**  
16 **TECHNIQUES USED TO QUANTIFY THE MRP?**

17 A. Surveys of academics and investment professionals, for example, the Welch  
18 surveys cited by Mr. Woolridge on Exhibit JRW-11, page 5, provide another  
19 technique of estimating the MRP. While this technique has the benefit of being  
20 forward-looking, it is subject to the well-known shortcomings of survey  
21 techniques. There are several reasons to place little weight on survey results

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<sup>21</sup> Jorion, P., and Goetzmann, W., "Global Stock Markets in the Twentieth Century," *Journal of Finance* 54:953-980, 1999.

<sup>22</sup> Dimson, E., Marsh, P., and Staunton, M., "The Worldwide Equity Premium: A Smaller Puzzle," Working Paper, London Business School, April 2006, p. 22.

1 relative to the results from other approaches. First, return definitions and risk  
2 premium definitions differ widely. Second, survey responses are subject to bias.  
3 Thirdly, subjective assessments about long-term market behavior may well place  
4 undue weight on recent events and immediate prospects. Fourth, the results of  
5 such surveys are notoriously volatile from year to year.

6 Keeping these limitations in mind, Welch surveyed finance professors on  
7 their views about the long-term equity premium in 1998 and again in 2001. The  
8 arithmetic mean long-term expected risk premium of respondents for the U.S. was  
9 7.1% in 1998 and 5.5% in 2001, again a long way from Mr. Woolridge's 5.1%.  
10 Given the deplorable behavior of equity markets in the 2000-2002 period, and  
11 given the re-pricing of risk that followed the unprecedented financial crisis of  
12 2008-2009, one would reasonably expect a substantial upward reassessment of  
13 those risk premiums. In fact the most comprehensive and recent 2011 MRP  
14 survey by Fernandez reports a MRP of 6.0% for the U.S., which again exceeds  
15 Mr. Woolridge's 5.01% estimate.

16 **Q. DR. MORIN, CAN YOU COMMENT ON THE MEHRA & PRESCOTT**  
17 **STUDY CITED BY MR. WOOLRIDGE?**

18 A. Yes. On page 4-41, lines 22-24 of his testimony, Mr. Woolridge refers to a  
19 "famous" study by Mehra and Prescott in which the authors first questioned the  
20 magnitude of historic equity risk premiums relative to fundamentals. I shall end this  
21 section of my rebuttal by citing two passages from Professors Mehra and Prescott's  
22 review of the theoretical literature on the MRP which squarely contradicts Mr.  
23 Woolridge's view that historical MRPs should not be relied upon:

1                    *Even if the conditional equity premium given*  
2                    *current market conditions is small, and there*  
3                    *appears to be general consensus that it is, this in*  
4                    *itself does not imply that it was obvious either*  
5                    *that the historical premium was too high or that*  
6                    *the equity premium has diminished.*

7  
8                    *In the absence of this [knowledge of the future],*  
9                    *and based on what we currently know, we can*  
10                   *make the following claim: over the long horizon*  
11                   *the equity premium is likely to be similar to what*  
12                   *it has been in the past and the returns to*  
13                   *investment in equity will continue to substantially*  
14                   *dominate that in T-bills for investors with a long*  
15                   *planning horizon.*

16  
17                   Mr. Woolridge should heed these authors' advice on the magnitude of the  
18                   MRP. Moreover, it is well known that the echoes of the 2008-2009 financial crisis,  
19                   European debt crises, and economic uncertainty at home has precipitated a flight to  
20                   quality which has driven long-term Treasury bond yields lower, and not higher, thus  
21                   increasing the MRP even beyond historical levels.

22                   **C.     Arithmetic vs. Geometric Averages**

23     **Q.     IS IT APPROPRIATE TO USE GEOMETRIC AVERAGES IN**  
24     **MEASURING HISTORICAL MRPs?**

25     A.     No, it is not. Amidst the 39 studies cited by Mr. Woolridge on his Exhibit JRW-  
26                   11, page 5, some studies report arithmetic mean returns over a given period while  
27                   several others rely on geometric mean returns over that same period. Only  
28                   arithmetic means are appropriate for forecasting and estimating the cost of capital,  
29                   while geometric means are not.<sup>23</sup> Indeed, the "Ibbotson approach" (Morningstar,  
30                   formerly Ibbotson Associates publications) alluded to on page 4-41 of Mr.

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<sup>23</sup> See Roger A. Morin, *The New Regulatory Finance*, chapter 4 (2006); Brealey, Myers, and Allen, *Principles of Corporate Finance* (8th ed. 2006).

1 Woolridge's testimony contain a detailed and rigorous discussion of the  
2 impropriety of using geometric averages in estimating the cost of capital. There is  
3 no theoretical or empirical justification for the use of geometric mean rates of  
4 return. Briefly, the disparity between the arithmetic average return and the  
5 geometric average return raises the question as to what purposes should these  
6 different return measures be used. The answer is that the geometric average  
7 return should be used for measuring historical returns that are compounded over  
8 multiple time periods. The arithmetic average return should be used for future-  
9 oriented analysis, where the use of expected values is appropriate.

10 It is inappropriate to average the arithmetic and geometric average return;  
11 they measure different quantities in different ways. See Morin, R. A., *The New*  
12 *Regulatory Finance*, chapter 4 (2006) for a discussion regarding the theoretical  
13 underpinnings, empirical validation, and the consensus of academics on why  
14 geometric means are inappropriate for forecasting and estimating the cost of  
15 capital.

16 **Q. WHAT IS THE EFFECT OF MR. WOOLRIDGE'S REFERENCE TO THE**  
17 **GEOMETRIC MEAN INSTEAD OF THE ARITHMETIC MEAN MRP?**

18 A. For four of the seven historical MRP studies referenced on the upper panel of  
19 Exhibit JRW-11, page 5, Mr. Woolridge reports the geometric mean MRP rather  
20 than the arithmetic mean MRP, thus significantly understating the MRP by some  
21 150 basis points for five of the ten historical studies based on the geometric mean.  
22 The 150 basis points is the historical difference between the geometric and  
23 arithmetic mean typically reported in historical studies, for example in the

1       aforementioned Morningstar study. Since approximately half of the studies rely  
2       on geometric means, the net impact is that Mr. Woolridge has understated the  
3       MRP by 75 basis points from historical studies. The average historical MRP of  
4       5.50% reported on his Exhibit JRW-11, page 5, is understated by 75 basis points  
5       and becomes 6.25% instead of 5.50%. The impact on SCG's cost of equity  
6       CAPM estimate is by 50 basis points (0.52%) using Mr. Woolridge's beta for  
7       SCG of 0.73:

$$\beta_{SCG} \times (\text{Arithmetic Mean} - \text{Geometric Mean})$$

$$0.68 \times (6.25\% - 5.50\%) = 0.68 \times (0.75\%) = 0.50\%$$

10    **Q. DO YOU AGREE WITH MR. WOOLRIDGE THAT ARITHMETIC**  
11    **MEAN RETURNS ARE BIASED AND SHOULD BE DISREGARDED?**

12    A. No, absolutely not. On pages 57-60, Mr. Woolridge argues that arithmetic mean  
13    return measures are biased and should be disregarded. Mr. Woolridge's  
14    arguments reflect a fundamental misunderstanding of how geometric and  
15    arithmetic means are used in financial analysis. Geometric means are properly  
16    used in evaluating historic performance of stocks or portfolios of stocks, whereas  
17    determining investor expectations, which define the cost of equity capital,  
18    requires use of arithmetic means. Chapter 6 of my recent book The New  
19    Regulatory Finance explains this issue in detail, provides illustrative mathematical  
20    examples, and cites authoritative financial texts, all of which confirm the need to  
21    use arithmetic means, and not geometric means, to properly estimate a utility's  
22    cost of equity. I summarize key points of that chapter in response to questions  
23    below.

1 **Q. PLEASE EXPLAIN HOW THE ISSUE OF WHAT IS THE PROPER**  
2 **“MEAN” ARISES IN THE CONTEXT OF ANALYZING THE COST OF**  
3 **EQUITY.**

4 A. The issue arises in applying methods that derive estimates of a utility’s cost of  
5 equity from historical relationships between bond yields and earned returns on  
6 equity for individual companies or portfolios of several companies. Those  
7 methods produce series of numbers representing the annual difference between  
8 bond yields and stock returns over long historical periods. The question is how to  
9 translate those series into a single number which can be added to a current bond  
10 yield to estimate the current cost of equity for a stock or a portfolio. Calculating  
11 geometric and arithmetic means are two ways of converting series of numbers to a  
12 single, representative figure.

13 **Q. IF BOTH ARE “REPRESENTATIVE” OF THE SERIES, WHAT IS THE**  
14 **DIFFERENCE BETWEEN THE TWO?**

15 A. Each represents different information about the series. The geometric mean of a  
16 series of numbers is the value which, if compounded over the period examined,  
17 would have made the starting value to grow to the ending value. The arithmetic  
18 mean is simply the average of the numbers in the series. Where there is any  
19 annual variation (volatility) in a series of numbers, the arithmetic mean of the  
20 series, which reflects volatility, will always exceed the geometric mean, which  
21 ignores volatility. Because investors require higher expected returns to invest in a  
22 company whose earnings are volatile than one whose earnings are stable, the  
23 geometric mean is not useful in estimating the expected rate of return which

1 investors require to make an investment.

2 **Q. CAN YOU PROVIDE A NUMERICAL EXAMPLE TO ILLUSTRATE**  
3 **THIS DIFFERENCE BETWEEN GEOMETRIC AND ARITHMETIC**  
4 **MEANS?**

5 A. Yes. The following table compares the geometric and arithmetic mean returns of  
6 a hypothetical Stock A, whose yearly returns over a ten-year period are very  
7 volatile, with those of a hypothetical Stock B, whose yearly returns are perfectly  
8 stable during that period. Consistent with the point that geometric returns ignore  
9 volatility, the geometric mean returns for the two series are identical (11.6% in  
10 both cases), whereas the arithmetic mean return of the volatile stock (26.7%) is  
11 much higher than the arithmetic mean return of the stable stock (11.6%):

12  
13 **GEOMETRIC VS. ARITHMETIC RETURNS**  
14

YEAR	STOCK A	STOCK B
2012	50.0%	11.6%
2013	-54.7%	11.6%
2014	98.5%	11.6%
2015	42.2%	11.6%
2016	-32.3%	11.6%
2017	-39.2%	11.6%
2018	153.2%	11.6%
2019	-10.0%	11.6%
2020	38.9%	11.6%
2021	20.0%	11.6%
Arithmetic		
Mean	<b>26.7%</b>	<b>11.6%</b>
Return		
Geometric		
Mean	<b>11.6%</b>	<b>11.6%</b>
Return		

15  
16 If Mr. Woolridge were correct in arguing for the use of geometric means,

1 investors would require the same expected return to invest in both of these stocks,  
2 even though the volatility of returns in Stock A is very high while Stock B  
3 exhibits perfectly stable returns. That is clearly contrary to the most basic  
4 financial theory, that is, the higher the risk the higher the expected return.

5 **Q. DOES MR. WOOLRIDGE PROVIDE AN EXAMPLE WHICH**  
6 **ATTEMPTS TO SHOW THAT GEOMETRIC MEANS ACCURATELY**  
7 **COMPUTE THE RETURN THAT AN INVESTOR MIGHT REALIZE**  
8 **FROM INVESTING IN A VOLATILE PORTFOLIO?**

9 A. Yes, he does. In Appendix C on pages C-3 and C-4, Mr. Woolridge offers a  
10 numerical example aimed at justifying the use of the geometric mean. As I show  
11 below, the example fails miserably. The example posits a scenario where the  
12 return on a portfolio declines by 50% in one year and doubles the next. The  
13 investor in that portfolio will realize a return equal to the geometric mean of the  
14 two returns, i.e., zero %. However, that example addresses achieved returns, not  
15 expected returns. Based on experience, an investor may expect returns to vary  
16 between -50% and +100%, but will be uncertain in any future year what the  
17 outcome will be. Assuming a 50% chance of either outcome, the investor's  
18 expected return in any single year will be the arithmetic mean, or average, of the  
19 two possible outcomes, i.e., 25%  $(-50\% + 100\%)/2$ . Thus, the required expected  
20 return, or cost of equity, is equal to the arithmetic mean return of 25%, even  
21 though in hindsight, the achieved return could turn out to be zero percent. Stated  
22 in everyday practical terms, it seems unlikely that an investor viewing the  
23 volatile returns on an investment of -50% in year one and +100% in year two



1 would conclude that the expected return in year three is zero as Mr. Woolridge  
2 would. This is clearly absurd.

3 **D. Income Components of Bond Return**

4 **Q. SHOULD THE HISTORICAL MRP BE ESTIMATED USING THE**  
5 **INCOME COMPONENT OF BOND RETURNS?**

6 A. Yes, it should. As I discussed in my direct testimony and earlier in my rebuttal,  
7 the income component (i.e., the coupon rate) is a far better estimate of expected  
8 return than the total return (i.e., the coupon rate plus capital gains).

9 **E. Regulatory Decisions**

10 **Q. IS MR. WOOLRIDGE'S MRP ESTIMATE OF 5.1% CONSISTENT WITH**  
11 **REGULATORY DECISIONS?**

12 A. No, it is not. It is useful to examine the MRP estimates implicit in regulatory  
13 ROE decisions. The CAPM framework can be used to quantify the MRP implicit  
14 in the allowed risk premiums for regulated utilities. According to the CAPM, the  
15 risk premium is equal to beta times the market risk premium:

16 Risk Premium =  $\beta (R_M - R_F)$

17 Risk Premium =  $\beta \times \text{MRP}$

18 Solving for MRP, we obtain:

19 
$$\text{MRP} = \text{Risk Premium} / \beta$$

20  
21 I examined the MRPs implied in several hundred regulatory decisions for  
22 electric utilities in the United States over the period 1986-2011.<sup>24</sup> Using the  
23 allowed average risk premium of 5.2% in these decisions and a beta of 0.73 for

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<sup>24</sup> The analysis was performed for electric utilities rather than gas utilities as there are far more decisions for electric utilities than gas utilities, thus increasing the statistical reliability of the exercise.

1 U.S. electric utilities, the implied MRP is 7.7%, that is,  $5.6\%/0.73 = 7.7\%$ , again a  
2 long way from Mr. Woolridge's 5.01%.

3 **Q. WHAT DO YOU CONCLUDE FROM MR. WOOLRIDGE'S MRP**  
4 **ESTIMATE OF 5.01%?**

5 A. This estimate is vastly understated, makes little economic sense, relies in part on  
6 technical errors, and is inconsistent with regulatory decisions. All in all, I echo  
7 Professors Brealey, Myers, and Allen's official position and my own position  
8 espoused in my aforementioned text on the MRP that a range of around 6% to 8%  
9 is reasonable for the MRP in the United States, with the upper end of the range  
10 highly likely following the ongoing financial crisis. In short, Mr. Woolridge's  
11 criticisms are unfounded and my MRP estimate is quite consistent with the  
12 literature on the subject and even very conservative in light of the increase in  
13 investor risk aversion following the 2008-9 financial crisis and the ongoing  
14 European and domestic economic uncertainties.

15

16 **F. CAPM AND THE ECAPM**

17

18 **Q. DO YOU AGREE WITH MR. WOOLRIDGE'S USE OF THE RAW FORM**  
19 **OF THE CAPM TO ESTIMATE THE COST OF CAPITAL?**

20 A. No, I do not. I believe that the basic version of the CAPM should be  
21 supplemented by the more refined version of the CAPM. There have been  
22 countless empirical tests of the CAPM to determine to what extent security  
23 returns and betas are related in the manner predicted by the CAPM. The results of  
24 the tests support the idea that beta is related to security returns, that the risk-return

1 tradeoff is positive, and that the relationship is linear. The contradictory finding  
2 is that the risk-return tradeoff is not as steeply sloped as the predicted CAPM.  
3 That is, low-beta securities earn returns somewhat higher than the CAPM would  
4 predict, and high-beta securities earn less than predicted. In other words, a  
5 CAPM-based estimate of the cost of capital underestimates the return required  
6 from low-beta securities and overstates the return from high-beta securities, based  
7 on the empirical evidence.<sup>25</sup> I was surprised that Mr. Woolridge was unaware of  
8 this important financial literature, for this is one of the most well-known results in  
9 finance, and was astonished by Mr. Woolridge's statement on page 5-63 lines 2-3  
10 that the ECAPM has not been tested empirically.

11 The empirical form of the CAPM that I used in my direct testimony  
12 refines the standard form of the CAPM to account for this phenomenon. I will  
13 address this issue further in a later part of my testimony.

14 As discussed in Appendix A of my direct testimony, my own empirical  
15 investigation of the relationship between return and Value Line adjusted betas is  
16 quite consistent with the general findings of the literature referred to above.

17 The downward-bias inherent in the CAPM is particularly significant for  
18 low-beta securities, such as the electric utilities used by Mr. Woolridge. Mr.  
19 Woolridge's CAPM estimates of equity costs are understated by about 50 basis  
20 points from this bias alone.

21 **Q. PLEASE COMMENT ON MR. WOOLRIDGE'S ASSESSMENT OF THE**

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<sup>25</sup> TURN's witness Mr. Lawton likewise employed ECAPM to calculate alternate estimates, noting "It is argued that the CAPM estimate of equity cost will underestimate the return required for low-beta securities and overstate the required return for high-beta securities." Direct Testimony of Daniel Lawton at 42, lines 982-984.



1 estimated empirically. The use of a lower value for alpha leads to a lower  
2 estimate of the cost of capital for low-beta stocks such as regulated utilities.  
3 This is because the use of a long-term risk-free rate rather than a short-term risk-  
4 free rate already incorporates some of the desired effect of using the ECAPM.  
5 That is, the long-term risk-free rate version of the CAPM has a higher intercept  
6 and a flatter slope than the short-term risk-free version which has been tested.  
7 Moreover, the use of adjusted betas rather than raw betas also incorporates  
8 some of the desired effect of using the ECAPM. Thus, it is reasonable to apply  
9 a conservative alpha adjustment.

10 In short, I do not share Mr. Woolridge's view that the ECAPM is  
11 equivalent to a beta adjustment. The ECAPM is a return adjustment and not a  
12 beta adjustment. For utility stocks with betas less than one, the CAPM  
13 understates the return. The downward-bias is particularly significant for low-beta  
14 securities such as the sample utilities used by Mr. Woolridge and myself. The  
15 ECAPM is consistent with both theory and with a huge body of empirical  
16 evidence, and has the added advantage of computational simplicity.

17 My own empirical investigation of the relationship between return and  
18 Value Line adjusted betas is quite consistent with the general findings of the  
19 literature referred to above. In short, Mr. Woolridge errs in his view that the use  
20 of the ECAPM results in double-counting risk. A plain vanilla CAPM will  
21 understate the return required for low-beta securities and overstate the return  
22 required for high-beta securities. The Empirical CAPM refines the plain vanilla  
23 CAPM to account for this phenomenon.

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**G. RISK ADJUSTMENT**

**Q. DID MR. WOOLRIDGE ADJUST HIS RECOMMENDED ROE UPWARD IN ORDER TO ACCOUNT FOR THE COMPANY’S HIGHER RELATIVE RISK?**

A. No, he did not. Mr. Woolridge ignores the fact that SCG’s risks are higher than those of his sample of utilities as I demonstrated in my direct testimony. Higher risk necessarily means that investors require a higher return in order to invest capital in a higher risk company. As I discussed fully in my direct testimony, an upward ROE adjustment of 40 basis points is required to reflect the Company's higher risk.

**Q. HOW DOES MR. WOOLRIDGE VIEW SCG’S RISK AND IS HE CORRECT?**

A. Mr. Woolridge, as well as the other two witnesses I am rebutting, views SCG’s risk as below average based on its bond ratings. This is inappropriate. The determination of a fair and reasonable ROE in this proceeding is concerned with common stock returns, and not bond returns. Bondholders are concerned with creditworthiness, and bond ratings constitute a measure of creditworthiness. Common shareholders on the other hand are concerned with variability of returns, typically measured by beta risk measures. It is incorrect to measure a common stock’s riskiness on the basis of its bond rating. In short, Mr. Woolridge has confused the risk of bonds and the risk of common stocks. As a practical matter,

1 as I showed earlier in my rebuttal, there is little, if any, correlation between DCF  
2 returns and bond ratings.

3  
4 **H. ADDITIONAL RESPONSES TO MR. WOOLRIDGE'S CRITICISMS**

5  
6 **1. Flotation Cost Adjustment**

7 **Q. WHAT IS MR. WOOLRIDGE'S POSITION ON THE ISSUE OF**  
8 **FLOTATION COSTS?**

9 A. According to Mr. Woolridge, such costs are unwarranted.

10 **Q. HOW DOES MR. WOOLRIDGE RATIONALIZE THE OMISSION OF**  
11 **FLOTATION COSTS?**

12 A. Mr. Woolridge offers four arguments as to why a flotation cost allowance is  
13 unwarranted. As I show below, these arguments are unfounded.

14 **Q. DO YOU AGREE WITH MR. WOOLRIDGE'S FIRST ARGUMENT**  
15 **AGAINST A FLOTATION COST ALLOWANCE?**

16 A. No, I do not. Mr. Woolridge's first argument (page 5-70) is that the flotation cost  
17 adjustment should be downward and not upward because the market values of  
18 utilities are in excess of book values, as is the case for bonds.

19 This argument defies common sense, implying that stock issues are cost-  
20 free. As I indicated in my direct testimony, unlike the case of bonds, common  
21 stock has no finite life so that flotation costs cannot be amortized and must  
22 therefore be recovered via an upward adjustment to the allowed return on equity.  
23 Moreover, as I show below, a stock's market-to-book value is irrelevant. That  
24 market prices are above book value does not change the fact that a portion of the

1 capital contributed by equity investors is not available to earn a return because it  
2 is paid out as flotation costs.

3 **Q. DO YOU AGREE WITH MR. WOOLRIDGE'S SECOND ARGUMENT**  
4 **AGAINST A FLOTATION COST ALLOWANCE?**

5 A. No, I do not. Mr. Woolridge's second argument (page 5-70) is that when new  
6 stock is issued above book value there is no need to compensate stockholders for  
7 a hypothetical dilution of book value that does not exist. I disagree. The simple  
8 fact of the matter is that in issuing common stock, the company's common equity  
9 account is credited by an amount less than the market value of the issue, so that  
10 the company must earn slightly more on its reduced rate base in order to produce  
11 a return equal to that required by shareholders. The stock's market-to-book value  
12 is irrelevant. The costs are there irrespective of whether the stock trades above,  
13 below, or at book value.

14 **Q. DO YOU AGREE WITH MR. WOOLRIDGE'S THIRD ARGUMENT**  
15 **AGAINST A FLOTATION COST ALLOWANCE?**

16 A. No, I do not. Mr. Woolridge's third objection (page 5-71) is that flotation costs  
17 are not out-of-pocket expenses incurred by the issuing utility and, as such, should  
18 not be recovered. This argument, if taken to a logical conclusion, would suggest  
19 that depreciation expenses associated with the construction of plant should not be  
20 recovered because depreciation expenses are not out-of-pocket expenses.

21 In theory, flotation costs could be expensed and recovered through rates as  
22 they are incurred. This procedure is not considered appropriate, however, because  
23 the equity capital raised in a given stock issue remains on the utility's common



1 equity account and continues to provide benefits to ratepayers indefinitely. The  
2 expense and recovery of flotation costs would burden current ratepayers with the  
3 full costs of raising capital when the benefits of that capital extend indefinitely.  
4 Moreover, as discussed in my pre-filed direct testimony, common stocks, unlike  
5 bonds, have no finite life over which flotation costs could be amortized.  
6 Therefore, the most appropriate method to recover flotation costs is via an upward  
7 adjustment to the authorized ROE.

8 Mr. Woolridge then makes the circular argument on page 5-71 that the  
9 flotation cost allowance is unwarranted because investors factor these costs in the  
10 stock price. Such circular reasoning could be used to justify any regulatory  
11 policy, regardless of the propriety of the policy. For example, under Mr.  
12 Woolridge's reasoning, it would be appropriate to authorize a clearly confiscatory  
13 ROE, such as of 1%, because investors would reflect this fact in the stock price.

14 **Q. DO YOU AGREE WITH MR. WOOLRIDGE'S FOURTH ARGUMENT**  
15 **AGAINST A FLOTATION COST ALLOWANCE?**

16 A. No, I do not. Mr. Woolridge's fourth objection (see page 5-71) is that flotation  
17 costs are only one component of costs involved in issuing common stock. There  
18 are also other transaction costs, notably brokerage fees, that should be included in  
19 a DCF analysis. Transaction costs incurred by investors in purchasing common  
20 stock have absolutely nothing to do with the fact that when a company issues  
21 common stock, its book equity account is credited by the net proceeds of a  
22 common stock issue after issuance costs and not by the gross proceeds. In other  
23 words, the common stock investment recorded on the balance sheet is less than

1 the amount of money actually put up by the investor by the amount of issuance  
2 costs, regardless of whether the net issue price is less than, equal to or greater than  
3 book value, and regardless of any transaction costs incurred by the investor. If the  
4 investor is to earn the required return on a reduced book equity base, the allowed  
5 return needs to exceed the required return by an amount sufficient to cover the  
6 discrepancy between gross and net proceeds from a common stock issue.

7 **2. Historical Risk Premium**

8 **Q. PLEASE COMMENT ON MR. WOOLRIDGE'S CRITICISM THAT**  
9 **HISTORICAL RISK PREMIUMS ARE SUBJECT TO FORECASTING**  
10 **ERRORS, ARE BIASED, AND HAVE TRENDED DOWNWARD.**

11 A. Mr. Woolridge argues in Appendix C that historical risk premium analyses are  
12 suspect because risk premiums are subject to forecasting error, are biased, and  
13 have trended downward in recent years. I disagree. To the extent that the  
14 historical equity risk premium estimate follows what is known in statistics as a  
15 random walk, one should expect the equity risk premium to remain at its historical  
16 mean. Therefore, the best estimate of the future risk premium is the historical  
17 mean, which is what I used in my testimony. Contrary to Mr. Woolridge' belief,  
18 there are no statistically significant trends in historical risk premiums. Since the  
19 aforementioned Morningstar (formerly Ibbotson Associates) study finds very little  
20 serial correlation between successive annual risk premiums and no evidence that  
21 the market price of risk or the amount of risk in common stocks has changed over  
22 time, it is reasonable to assume that these quantities will remain stable in the  
23 future.

1           There is an extensive discussion on the stability of the MRP in the annual  
2 yearbook published by Morningstar (formerly Ibbotson Associates). I cite the  
3 relevant passage from the 2009 edition:

4                   *“A proper estimate of the equity risk premium requires a data*  
5                   *series long enough to give a reliable average without being*  
6                   *unduly influenced by very good and very poor short-term*  
7                   *returns. When calculated using a long data series, **the historical***  
8                   ***equity risk premium is relatively stable.**”*  
9

10 **Q. PLEASE COMMENT ON MR. WOOLRIDGE’S ASSERTION THAT**  
11 **HISTORICAL RISK PREMIUMS ARE IMPERFECT PROXIES FOR**  
12 **EXPECTED RISK PREMIUMS.**

13 A. Mr. Woolridge argues on page 1 of Appendix C that the historical risk premiums  
14 run the danger of being unrepresentative of expected risk premiums in today’s  
15 market conditions. While it is true that the historical risk premium approach  
16 fundamentally assumes that average realized return is an appropriate surrogate for  
17 expected return, or in other words that investors’ expectations are realized,  
18 historical return studies over long periods still provide a useful guide for the  
19 future. This is because over long periods investors’ expectations and realizations  
20 converge. Otherwise investors would never commit investment capital.  
21 Investors’ expectations are eventually revised to match historical realizations, as  
22 market prices adjust to bring anticipated and actual investment results into  
23 conformity. In the long-run, the difference between expected and realized risk  
24 premiums will decline because short-run periods during which investors earned a  
25 lower risk premium than they expected are offset by short-run periods during  
26 which investors earned a higher risk premium than they expected.

1 I have ignored realized risk premiums measured over short time periods,  
2 since they are heavily dependent on short-term market movements. Instead, I  
3 have relied on results over periods of enough length to smooth out short-term  
4 aberrations, and to encompass several business and interest rate cycles. The use  
5 of the entire study period for which reliable data are available in estimating the  
6 appropriate market risk premium minimizes subjective judgment and  
7 encompasses many diverse regimes of inflation, interest rate cycles, and economic  
8 cycles.

9 **Q. ARE HISTORICAL BOND RETURNS BIASED DOWNWARDS AS**  
10 **CLAIMED BY MR. WOOLRIDGE?**

11 A. No, they are not. On page C-2 of Appendix C, Mr. Woolridge claims that  
12 historical bond return are biased downward as a measure of expected return  
13 because of capital losses suffered by bondholders in the past, and therefore risk  
14 premiums derived from this data are biased upwards. In fact, the opposite is more  
15 likely to be true. Declining interest rates are associated with rising bond prices  
16 and high achieved bond returns, which, in turn, reduce the risk premium between  
17 utility stocks and bonds. As a result of declining interest rates and reduced  
18 inflation expectations over the past decade, the historical bond returns have been  
19 unusually high because of capital gains, and the risk premium unusually low. In  
20 any event, the lengthy historical period used in my risk premium studies is long  
21 enough to smooth out short-term aberrations and encompass several business and  
22 interest rate cycles.

23 **3. DCF Growth Rates**

1 **Q. PLEASE COMMENT ON MR. WOOLRIDGE’S CRITICISM OF YOUR**  
2 **DCF ANALYSIS.**

3 A. On page 5-53 of his testimony, Mr. Woolridge maligns the use of analysts’  
4 earnings growth forecasts as proxies for the growth component, and claims that I  
5 have ignored historical and projected growth rates in dividends and book value. I  
6 have previously discussed the impropriety of relying on “near-term” dividend  
7 growth because it is widely expected that energy utilities will continue to lower  
8 their dividend payout ratio over the next several years in response to increased  
9 business risk, and that earnings and dividends will not grow at the same rate in the  
10 future. In my direct testimony and earlier in my rebuttal, I discussed the merits of  
11 using consensus analysts’ earnings growth forecasts in the DCF model and the  
12 supportive empirical literature.

13 I find Mr. Woolridge’s criticism surprising, given that he himself relies on  
14 Value Line forecasts and analysts’ growth forecasts contained in the Yahoo,  
15 Reuters, and Zacks Web sites. He also relies on Value Line forecasts in his  
16 internal growth approach to specifying the growth component of the DCF model.

17 **Q. WHAT DOES THE PUBLISHED ACADEMIC LITERATURE SAY ON**  
18 **THE SUBJECT OF ANALYSTS’ GROWTH RATE FORECASTS IN THE**  
19 **DCF MODEL?**

20 A. As I discussed earlier, published studies in the academic literature demonstrate  
21 that (i) analysts’ growth rate forecasts are reasonable indicators of investor  
22 expectations and (ii) investors rely on such forecasts.

23 **Q. MR. WOOLRIDGE CRITICIZES YOUR DCF ANALYSIS BECAUSE IT**

1           **RELIES ON EARNINGS GROWTH PROJECTIONS AND THAT SUCH**  
2           **FORECASTS ARE OVERLY OPTIMISTIC. HOW DO YOU RESPOND?**

3    A.    In several instances in his testimony (page 5-54, lines 2-17; page 5-59, line 28;  
4           page 5-62, line 31, and Appendix A), Mr. Woolridge denounces the use of  
5           financial analysts' earnings forecasts on the grounds that such forecasts are  
6           overly-optimistic. I disagree, at least for utility stocks. Using virtually all  
7           publicly available analyst earnings forecasts for a large sample of companies  
8           (over 23,000 individual forecasts by 100 analyst firms), Lys and Sohn (1990)  
9           show that stock returns respond to individual analyst earnings forecasts, even  
10          when they are closely preceded by earnings forecasts made by other analysts or  
11          by corporate accounting disclosures.<sup>26</sup> Using actual and IBES data from 1982-  
12          1995, Easterwood and Nutt (1999) regress the analysts' forecast errors against  
13          either historical earnings changes or analysts' forecasting errors in the prior years.  
14          Results show that analysts tend to under-react to negative earnings information,  
15          but overreact to positive earnings information.<sup>27</sup>

16                 The more recent studies provide evidence that analysts make biased  
17                 forecasts and misinterpret the impact of new information. For example, several  
18                 studies in the early 1990's suggest that analysts either systematically underreact  
19                 or overreact to new information. Easterwood and Nutt (1999) discriminate  
20                 between these different reactions and reported that analysts underreact to negative

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<sup>26</sup> Lys, T. and Sohn, S. "The Association between Revisions of Financial Analysts' Earnings Forecasts and Security-Price Changes." *Journal of Accounting and Economics*, Vol. 13, 1990, pp. 341-363.

<sup>27</sup> Easterwood, J.C. and Nutt, S.R. "Inefficiency in Analysts' Earnings Forecasts: Systematic Misreaction or Systematic Optimism?" *Journal of Finance*, Vol. LIV, No. 5, 1999, pp. 1777-1797.

1 information, but overreact to positive information. The recent studies do not  
2 necessarily contradict the earlier literature. The earlier research focused on  
3 whether analysts' earnings forecasts are better at forecasting future earnings than  
4 historical averages, whereas the recent literature investigates whether the analysts'  
5 earnings forecasts are unbiased estimates of future earnings. One way to assess  
6 the concern that analysts' forecasts may be biased upward is to incorporate into  
7 the analysis the growth forecasts of independent research firms, such as Value  
8 Line, in addition to the analyst consensus forecast. Unlike investment banking  
9 firms and stock brokerage firms, independent research firms such as Value Line  
10 have no incentive to distort earnings growth estimates in order to bolster interest  
11 in common stocks.

12 Mr. Woolridge argues that analysts tend to forecast earnings growth rates  
13 that exceed those actually achieved and that this optimism biases the DCF results  
14 upward. The magnitude of the optimism bias for large rate-regulated companies in  
15 stable segments of an industry is likely to be very small. Empirically, the severity of  
16 the optimism problem is unclear for regulated utilities, if a problem exists at all. It is  
17 interesting to note that Value Line forecasts for utility companies, made by  
18 independent analysts with no incentive for over- or understating growth forecasts,  
19 are not materially different from those published by analysts in security firms with  
20 incentives not based on forecast accuracy, and may in fact be more robust.

21  
22 **I. CONCLUSIONS**  
23

1 Q. WHAT DO YOU CONCLUDE FROM MR. WOOLRIDGE'S  
2 TESTIMONY?

3 A. There are major analytical deficiencies in Mr. Woolridge's methodology. His  
4 ROE recommendation is highly unreliable and should be rejected by the  
5 Commission.

6 Q. HAS MR. WOOLRIDGE PRESENTED ANY ARGUMENTS IN HIS  
7 TESTIMONY THAT WOULD CAUSE YOU TO ALTER ANY OF YOUR  
8 RECOMMENDATIONS AND METHODOLOGIES?

9 A. No, he has not.

10 III. REBUTTAL TO MR. HILL'S TESTIMONY

11 Q. PLEASE SUMMARIZE THE RECOMMENDED ROE OF MR. HILL.

12 A. FEA witness Mr. Hill recommends a ROE for SCG of only 8.75%, which is at the  
13 low end of his range of 8.50% – 9.50%. Mr. Hill relies primarily on a traditional  
14 constant DCF analysis of a group of seven natural gas utilities. Surprisingly, Mr.  
15 Hill does not present the same two-stage DCF analysis he presented in a recent  
16 Hawaiian Electric Company testimony and nor does he present his usual Modified  
17 Earnings and Market-to-Book methodologies as he has in most, if not all, his past  
18 testimonies.<sup>28</sup> No explanations are offered for these significant departures from  
19 past practices. As summarized on page 37 of his testimony, the DCF study  
20 produces an estimated ROE of 8.83% for his sample of gas utilities, although he  
21 reports a different number on Schedule 6 page 2. It is not clear which number is  
22 Mr. Hill's DCF estimate.

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<sup>28</sup> See *In the Matter of the Application of Hawaiian Electric Company, Inc. For Approval of Rate Increases and Revised Rate Schedules and Rules* (Docket No. 2009-0164).





1 introduces the Historical Risk Premium in his arsenal for this proceeding.<sup>29</sup> Then,  
2 he throws out his Modified Earning-Price Ratio method and his Market-to-Book  
3 method on which he has consistently relied in past testimonies. The CAPM is  
4 given significant weight in this proceeding, unlike previous testimonies where Mr.  
5 Hill uses the CAPM as a check on the DCF results. No explanations are provided  
6 for these departures from past practice, casting a shadow on the credibility of his  
7 recommendation. My second concern is that the ROE recommended by Mr. Hill  
8 significantly understates an appropriate ROE for SCG for the following reasons:

- 9 (i) **Mr. Hill's recommended ROE for SCG is outside of the mainstream for**  
10 **utilities.** The ROE recommended by Mr. Hill for SCG is well outside the  
11 range of currently authorized ROEs for gas and electric utilities in the  
12 United States and the zone of currently authorized ROEs for his own  
13 sample of comparable companies.
- 14 (ii) **Comparable Companies. A sample consisting of only seven utilities is**  
15 **statistically suspect.** It is important to select relatively large sample sizes  
16 as opposed to small sample sizes consisting of a handful of companies in  
17 applying the CAPM and DCF methods.
- 18 (iii) **Mr. Hill uses an ambiguous and arbitrary growth rate for each utility in**  
19 **his DCF analysis.** Mr. Hill's DCF estimates are unreliable because he

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<sup>29</sup> Interestingly in the Union Electric Company rate case, Mr. Hill criticized my use of the historical risk premium, stating, "the practical impact of the volatility of historical risk premium data is that, with the selection of any particular period over which to average the historical data, virtually any risk premium result can be produced. In addition, the use of historical earned-return data to estimate current equity capital costs has been questioned in the financial literature." Rebuttal Testimony of Stephen G. Hill on Behalf of the Missouri Public Service Commission, (ER-2008-0318) at 22.

1 has selected a growth rate for each company in his comparable group that  
2 is ambiguous, arbitrary and impossible to replicate scientifically.

3 (iv) **Mr. Hill erroneously relies on historical growth rates in his DCF**  
4 **analysis.** Mr. Hill understates his DCF estimates by erroneously using  
5 historical growth rates that are redundant and have little relevance as  
6 proxies for future long-term growth forecasts in the DCF model.

7 (v) **Mr. Hill erroneously relies on dividend growth forecasts in his DCF**  
8 **analysis.** Mr. Hill understates his DCF estimates by improperly using  
9 dividend growth forecasts during a period in which energy utilities are  
10 expected to continue to lower their dividend payout ratio over the next  
11 several years.

12 (vi) **Mr. Hill's recommended ROE improperly ignores flotation costs.** Mr.  
13 Hill understates his recommended ROE because it does not allow for  
14 flotation costs and, as a result, leaves a legitimate expense unrecovered.  
15 Clearly, common equity capital is not free.

16 (vii) **Mr. Hill fails to recognize that SCG is a higher than average risk utility.**

17 (viii) **Actuarial data utilized for pension fund accounting are irrelevant in**  
18 **estimating a utility's cost of capital.** Actuarial data utilized for pension  
19 fund accounting are by nature very conservative, consistent with  
20 Generally Accepted Accounting Principles ("GAAP") guidelines, and are  
21 not suited for assessing the cost of equity capital in a rate proceeding.

1 Correction of the above-described infirmities would increase the  
2 ROE recommended by Mr. Hill by at least 70 basis points, from a range of  
3 8.50% – 9.50% to a range of 9.5% – 10.5%, as I discuss later.

4 (ix) **Mr. Hill's criticisms of my testimony are unfounded and without merit,**  
5 **and should be ignored by the Commission.**

6  
7 **MR. HILL'S RECOMMENDED ROE FOR SCG IS OUTSIDE OF**  
8 **THE MAINSTREAM FOR UTILITIES**

9 **Q. DR. MORIN, PLEASE COMMENT ON CURRENTLY ALLOWED ROEs**  
10 **FOR ENERGY UTILITIES.**

11 A. The average currently allowed ROE in the utility industry as reported in the  
12 August 2012 edition of AUS Utility Reports is 10.34% in the combination gas and  
13 electric utility industry, 10.54% in the electric utility industry, and 10.6% in the  
14 gas utility industry. Mr. Hill's recommended ROE for SCG is well below the  
15 authorized ROE of each gas utility in Mr. Hill's comparable group, as shown on  
16 the table below.

17  
18 **Authorized Returns**

<b>Company</b>	<b>Allowed ROE</b>
AGL Resources	10.17
Atmos Energy	11.71
Laclede Group	
Northwest Nat'l Gas	10.20
Piedmont Nat'l Gas	10.40
South Jersey Industries	10.30
Southwest Gas Corp	10.22
<b>AVERAGE:</b>	<b>10.50%</b>

19 Source: AUS Utility Reports 8/2012

1  
2 Although decisions of other regulatory bodies regarding authorized ROEs do  
3 not bind this Commission, one cannot overlook the significant difference between  
4 Mr. Hill's recommended ROE and the ROEs currently authorized for the gas and  
5 electric utility industry. Moreover, as discussed in my direct testimony and earlier  
6 in my rebuttal, SCG is riskier than the average utility in Mr. Hill's group.<sup>30</sup>

7 **B. COMPARABLE COMPANIES**

8  
9 **A SAMPLE CONSISTING OF ONLY SEVEN UTILITIES IS**

10 **STATISTICALLY UNRELIABLE**

11 **Q. DID MR. HILL DEVELOP A SAMPLE OF COMPARABLE RISK**  
12 **COMPANIES IN ORDER TO ARRIVE AT HIS RECOMMENDATION?**

13 **A.** Yes, he did. As shown on Schedule 2 page 2, Mr. Hill presents a very small  
14 sample of only seven natural gas utilities. No other comparable sample of  
15 companies is presented. While I agree with Mr. Hill's gas company sample, for  
16 it is the same as my own, Mr. Hill should have relied on more than one sample as  
17 I did in my direct testimony. That is because, as I discussed earlier, a sample  
18 consisting of only seven utilities is statistically unreliable. Reliance on robust  
19 sample sizes mitigates the impact of possible measurement errors and vagaries in  
20 individual companies' market data. I believe that Mr. Hill's small sample size is  
21 statistically deficient on those grounds and, therefore, unreliable, and should have  
22 been complemented with a broader sample of comparable companies as I did in  
23 my direct testimony.

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<sup>30</sup> See also Direct and Rebuttal Testimony of SCG witness Cheryl Shepherd.

1 C. DCF ANALYSIS

2  
3 1. MR. HILL USES AN AMBIGUOUS AND ARBITRARY

4 GROWTH RATE FOR EACH UTILITY IN HIS DCF ANALYSIS

5 Q. WHAT SPECIFIC DCF METHODOLOGY DOES MR. HILL USE TO  
6 ESTIMATE A ROE FOR SCG EQUITY?

7 A. Mr. Hill applies a DCF analysis to one sample of seven gas utilities. Mr. Hill  
8 bases the expected dividend yield component on a 6-week average stock price.  
9 For the growth component, Mr. Hill examines a broad array of growth rate  
10 estimates, including (i) historical and forecast sustainable growth rates, (ii)  
11 historical growth rates in book value, earnings, and dividends, (iii) Value Line  
12 growth forecasts, and (iv) the consensus growth forecasts reported in Zacks and  
13 IBES. This is shown on his Schedule 6 page 2 for each company and in summary  
14 form on Schedule 5 page 2. Mr. Hill then selects a growth rate for each company.  
15 However, as I will explain below, his selection method is arbitrary and impossible  
16 to replicate scientifically.

17 As shown on Schedule 5 page 2, Mr. Hill produces a DCF estimate of 8.83%  
18 for the group of gas utilities. But on Schedule 6 page 2, he reports a different  
19 DCF estimate of 8.78%. It is not at all clear which of the two is Mr. Hill's DCF  
20 estimate.

21 Q. DO YOU AGREE WITH MR. HILL'S DIVIDEND YIELD COMPONENT  
22 IN THE DCF ANALYSIS?

23 A. Yes, I agree with its magnitude.

1 Q. DO YOU AGREE WITH MR. HILL'S GROWTH COMPONENT IN THE  
2 DCF ANALYSIS?

3 A. No, I do not.

4 Q. DID YOU ATTEMPT TO REPLICATE MR. HILL'S DCF ANALYSIS  
5 FOR A SPECIFIC COMPANY IN ORDER TO ILLUSTRATE MR. HILL'S  
6 METHODOLOGY?

7 A. Yes, I did try, but I was unable to replicate the convoluted analysis. Starting on  
8 page 34, Mr. Hill selects American Electric Power ("AEP") as his "case study" to  
9 derive his DCF growth rate forecast, and cites the following growth rate estimates  
10 for AEP as reported on page 2 of Schedule 4 and page 2 of Schedule 5:

11

12

	<u>AEP Growth Proxies</u>	<u>Estimate</u>
1	5-yr historical sustainable 2007-11	5.10%
2	2012 sustainable	3.97%
3	2013 sustainable	3.97%
4	projected sustainable 2014-16	4.27%
5	5-yr historical Book Value	5.00%
6	5-yr historical Dividend	4.00%
7	5-yr historical Earnings	1.50%
8	5-yr Compound Hist Book Value	4.69%
9	5-yr Compound Hist Earnings	1.95%
10	5-yr Compound Hist Dividends	3.76%
11	VL Projected dividend	3.50%
12	VL Projected earnings	4.50%
13	VL projected Book Value	4.50%
14	analyst IBES projection	3.54%
15	analyst Zacks projection	3.60%
	<b>average</b>	<b>3.86%</b>
	<b>median</b>	<b>3.97%</b>
	<b>minimum</b>	<b>1.50%</b>
	<b>maximum</b>	<b>5.10%</b>
	<b>midpoint</b>	<b>3.30%</b>

1           On page 32 lines 18-19, Mr. Hill somehow concludes from this vast array of  
2 fifteen growth rates that a long-term growth rate of 4.25% is a reasonable  
3 expectation for AEP. Adding 18 basis points to account for growth through  
4 external stock issues, Mr. Hill's final growth estimate for AEP is 4.43%.

5 **Q. WERE YOU ABLE TO DETERMINE HOW MR. HILL ARRIVES AT A**  
6 **DCF BENCHMARK GROWTH RATE FORECAST OF 4.25% FOR AEP?**

7 A. No. As shown in the above table, the fifteen growth rates for AEP range from  
8 1.5% to 5.1% with an average of 3.9%, a median of 4.0%, and a midpoint of  
9 3.3%. I was unable to scientifically replicate or decipher how Mr. Hill arrived at  
10 a 4.25% growth rate forecast from this vast list of growth rates.

11 **Q. WERE YOU ABLE TO DETERMINE HOW MR. HILL ARRIVES AT A**  
12 **DCF ESTIMATE OF 9.62% FOR AEP?**

13 A. No. On Schedule 5 page 1, Mr. Hill asserts that the DCF estimate of ROE for  
14 AEP is 9.62%, the sum of a dividend yield of 5.19% plus a growth rate forecast of  
15 4.43%. Mr. Hill derives the growth rate forecast of 4.43% directly from the last  
16 column of page 1 of Schedule 4, which computes the sustainable growth rate  
17 forecast ( $g = br + sv$ ) for AEP as the sum of a sustainable internal growth rate  
18 (4.25%) and a sustainable external growth rate (0.18%). The sustainable internal  
19 growth rate of 4.25% is not derived on any schedule but is contained within the  
20 qualitative narrative of AEP's sustainable growth rate in Mr. Hill's Appendix C  
21 page 2, and is arbitrarily characterized as "reasonable".



1           In short, from a vast array of fifteen growth estimates, Mr. Hill arbitrarily  
2 selects a growth rate forecast of 4.25% for AEP with little quantitative support or  
3 academic empirical evidence as to the optimal growth rate proxy in the DCF  
4 model.

5 **Q. WERE YOU ABLE TO REPLICATE MR. HILL'S GROWTH RATE**  
6 **FORECASTS FOR ANY OF THE COMPANIES CONTAINED IN MR.**  
7 **HILL'S SAMPLE?**

8 A. No. I was unable to replicate Mr. Hill's final choice of growth rate estimates of  
9 any utility in Mr. Hill's sample from the vast array of growth rate. The growth  
10 estimates simply appear without scientific foundation, derivation, or ability to be  
11 replicated.

12 **Q. WHAT IS THE SUSTAINABLE (A.K.A. INTERNAL) GROWTH RATE**  
13 **TECHNIQUE USED BY MR. HILL TO IMPLEMENT THE DCF**  
14 **MODEL?**

15 A. Mr. Hill relies heavily on the so-called sustainable growth method, also known as  
16 the internal growth method (*See* pages 29-30 and Schedules 4 to 6 in his direct  
17 testimony), which is also one of the methods used by Mr. Woolridge. I disagree  
18 with the internal growth technique for the same reasons discussed earlier in my  
19 rebuttal of Mr. Woolridge: 1) the method is logically circular, for it requires Mr.  
20 Hill to assume the ROE answer to begin with; 2) inconsistency with the academic  
21 empirical evidence; 3) the potential lack of representativeness of Value Line's  
22 forecasts as proxies for the market consensus; and 4) a technical error. I  
23 discussed each these points in earlier in my rebuttal of Mr. Woolridge.

1 **2. MR. HILL ERRONEOUSLY RELIES ON HISTORICAL**  
2 **GROWTH RATES IN HIS DCF ANALYSIS**

3 **Q. PLEASE DISCUSS THE USE OF HISTORICAL GROWTH RATES IN**  
4 **APPLYING THE DCF MODEL TO ENERGY UTILITIES.**

5 A. Although it is not clear as to what weight Mr. Hill accords historical growth rates  
6 given the arbitrary nature of his final choice of growth estimates, Mr. Hill  
7 considers historical growth rates in arriving at proxies for the DCF growth  
8 forecast component. Seven of the fifteen growth proxies reported on Schedule 4  
9 are historical. As discussed earlier, historical growth rates have little relevance as  
10 proxies for long-term growth forecasts and are largely redundant because such  
11 historical growth patterns are already incorporated in analysts' growth forecasts  
12 that should be used in the DCF model.

13 **3. MR. HILL ERRONEOUSLY RELIES ON DIVIDEND GROWTH**  
14 **FORECASTS IN HIS DCF ANALYSIS**

15 **Q. SHOULD THE VALUE LINE DIVIDEND GROWTH FORECASTS BE**  
16 **CONSIDERED IN APPLYING THE DCF MODEL TO GAS UTILITIES?**

17 A. No. As discussed earlier, reliance on "near-term" dividend growth is improper  
18 because first it is expected that energy utilities will continue to lower their  
19 dividend payout ratio over the next several years in response to increased business  
20 risk. Second, in the current environment where utilities, including SCG, are  
21 increasing their capital expenditures, dividends cannot be expected to grow at the  
22 same rate that investors expect earnings to grow.

1 **Q. WHAT DO YOU CONCLUDE FROM MR. HILL'S DCF GROWTH RATE**  
2 **ANALYSIS?**

3 A. Although Mr. Hill reports and discusses historical growth rates and dividend  
4 growth rate forecasts, it is difficult to discern from the discussion of each  
5 company's growth rate to what extent, if any, Mr. Hill relies on historical growth  
6 rates and dividend growth rate forecasts reported by Value Line. To the extent  
7 Mr. Hill relies on either of historical growth rates and Value Line's dividend  
8 growth forecasts, he does so in error.

9 One would expect that averages of analysts' earnings growth forecasts, such  
10 as those contained in IBES, First Call, Reuters, or Zacks, are more reliable  
11 estimates of the investors' consensus expectations than either historical growth  
12 rates or one particular firm's dividend growth forecast. As discussed earlier in my  
13 direct testimony, the empirical finance literature has demonstrated that consensus  
14 analysts' growth forecasts (i) are reflected in stock prices, (ii) possess a high  
15 explanatory power of equity values, and (iii) are used by investors. Moreover, as  
16 a practical matter, it is necessary to use earnings forecasts rather than dividend  
17 forecasts because of the extreme scarcity of dividend forecasts compared to the  
18 availability of earnings forecasts. Given the paucity and variability of dividend  
19 forecasts, use of dividend forecasts produces unreliable DCF results.

20 **D. MR. HILL'S RECOMMENDED ROE IMPROPERLY IGNORES**  
21 **FLOTATION COSTS**

22  
23 **Q. WHAT ALLOWANCE FOR FLOTATION COSTS DOES MR. HILL**  
24 **MAKE WITH RESPECT TO HIS RECOMMENDED ROE FOR SCG?**

1 A. Mr. Hill fails to include any allowance whatsoever for flotation costs in his  
2 recommended ROE for SCG. Mr. Hill's testimony is inconsistent with regard to  
3 flotation costs. In a discussion of sustainable growth in the DCF model on page  
4 35 lines 18-19, Mr. Hill recognizes that "*investor expectations regarding growth*  
5 *from external sources (sales of stock) must also be considered and examined.*"  
6 Indeed, Mr. Hill quantifies the effect of such issues on company growth in his  
7 Schedule 3 under the heading "external growth."

8 Finally, Mr. Hill's disregard of flotation costs is inconsistent with (i) Value  
9 Line forecasts that show that utilities will be issuing new common stock in the  
10 future, and (ii) Mr. Hill's own Schedule, which demonstrates that Mr. Hill's  
11 comparable companies are scheduled to issue considerable amounts of new  
12 equity. See Schedule 3 at pages 1-9, under the heading "external growth" for  
13 2012, 2013 and 2015-2017.

14 **Q. DOES MR. HILL EXPLAIN WHY HE DOES NOT PROVIDE AN**  
15 **ALLOWANCE FOR FLOTATION COSTS IN HIS RECOMMENDED**  
16 **ROE FOR SCG?**

17 A. Mr. Hill offers four spurious reasons as to why he fails to include an allowance  
18 for flotation costs.

19 First, Mr. Hill erroneously asserts that flotation costs on common stocks are  
20 analogous to bonds sold at a premium to par value (i.e., the company's cost of  
21 debt is less than the coupon rate).<sup>31</sup> In practice, the calculation of the embedded  
22 cost of debt accounts for issuance costs, premium or discounts at the time of issue,  
23 and recognizes sinking fund and call provisions. This is because premiums or

---

<sup>31</sup> Prepared Direct Testimony of Stephen Hill at 61 lines 13-28.

1 discounts and flotation costs influence the effective yield to the investor and cost  
2 to the utility and are typically allowed to be recovered by regulators.

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

13 **Q. WHAT IS THE SECOND RATIONALE PROVIDED BY MR. HILL**  
14 **REGARDING HIS OMISSION OF FLOTATION COSTS?**

15 A. Mr. Hill argues, on page 62 lines 4-6, that "*the reduction of the book value of*  
16 *stockholder investment due to issuance expenses can occur only when the utility's*  
17 *stock is selling at a market price at or below its book value.*" This argument,  
18 however, fails to address the simple fact that, in issuing common stock, a  
19 company's common equity account is credited by an amount less than the market  
20 value of the issue. Therefore, the company must earn slightly more on its reduced  
21 rate base to produce a return equal to that required by shareholders. The stock's  
22 M/B ratio is irrelevant because flotation costs are present, irrespective of whether

1 the stock trades above, below, or at book value. I shall revisit Mr. Hill's views on  
2 the M/B ratio later in my rebuttal.

3 **Q. WHAT IS THE THIRD RATIONALE PROVIDED BY MR. HILL**  
4 **REGARDING HIS OMISSION OF FLOTATION COSTS?**

5 A. Mr. Hill on page 62, lines 11-26 then argues that the majority of the flotation  
6 costs are not out-of-pocket expenses incurred by the issuing utility and, as such,  
7 should not be recovered. This argument, if taken to a logical conclusion, would  
8 suggest that depreciation expenses associated with the construction of plant  
9 should not be recovered because depreciation expenses are not out-of-pocket  
10 expenses.

11 In theory, flotation costs could be expensed and recovered through rates as  
12 they are incurred. This procedure is not considered appropriate, however, because  
13 the equity capital raised in a given stock issue remains on the utility's common  
14 equity account and continues to provide benefits to ratepayers indefinitely. The  
15 expense and recovery of flotation costs would burden current ratepayers with the  
16 full costs of raising capital when the benefits of that capital extend indefinitely.  
17 Moreover, as discussed in my pre-filed direct testimony, common stocks, unlike  
18 bonds, have no finite life over which flotation costs could be amortized.  
19 Therefore, the most appropriate method to recover flotation costs is via an upward  
20 adjustment to the authorized ROE.

21 Mr. Hill then makes the circular argument on page 62, lines 22-26 that the  
22 flotation cost allowance is unwarranted because investors factor these costs in the  
23 stock price. Such circular reasoning could be used to justify any regulatory

1 policy, regardless of the propriety of the policy. For example, under Mr. Hill's  
2 reasoning, it would be appropriate to authorize a clearly confiscatory ROE, such  
3 as of 1%, because investors would reflect this return in the stock price.

4 **Q. WHAT IS THE FOURTH RATIONALE PROVIDED BY MR. HILL**  
5 **REGARDING THE OMISSION OF FLOTATION COSTS?**

6 A. Mr. Hill's fourth argument on page 62 line 27 continuing on page 63 lines 1-16 is  
7 that "*research has shown that a specific adjustment for issuance expenses is*  
8 *unnecessary.*" In support of this assertion, Mr. Hill cites a sole source - an  
9 "unpublished note" in a relatively obscure bulletin. Indeed, Mr. Hill's statement  
10 stands in sharp contrast to (i) most finance textbooks and (ii) the myriad articles  
11 published in peer-reviewed academic journals documenting and quantifying the  
12 flotation cost allowance. Please see Appendix B of my direct testimony for a  
13 review of this considerable literature.

14 **E. RISK ADJUSTMENT**

15 **THE COMMISSION SHOULD REJECT MR. HILL'S CLAIM THAT SCG**  
16 **IS A LOWER THAN AVERAGE RISK GAS UTILITY**

17  
18 **Q. DO YOU AGREE WITH MR. HILL'S VIEW THAT SCG IS LESS RISKY**  
19 **THAN AVERAGE ON ACCOUNT OF ITS DECOUPLING MECHANISM**  
20 **AND BALANCING ACCOUNTS?**

21 A. No, I do not. As I showed in my testimony, SCG is riskier than average as  
22 evidenced by its higher than average beta and lower than average M/B and P/E  
23 ratios. I added 40 basis points to recognize the Company's higher risk. Mr. Hill

1 fails to recognize this fact and even argues that the Company is less risky than  
2 average.

3 Mr. Hill devotes several pages of his testimony discussing the risk  
4 mitigation impact of decoupling and balancing accounts on the Company's risk.  
5 While I certainly agree that risk-mitigating mechanisms such as decoupling  
6 reduce risk on an absolute basis, they do not necessarily do so on a relative basis,  
7 that is, compared to other utilities. For example, a purchase gas adjustment clause  
8 does not reduce relative risk since most natural gas distribution utilities in the  
9 industry are under some form of energy cost adjustment mechanism. The  
10 approval of adjustment clauses, decoupling, ROE incentives riders, trackers,  
11 forward test years, and cost recovery mechanisms by regulatory commissions is  
12 widespread in the utility business and is already largely embedded in financial  
13 data,<sup>32</sup> such as bond rating and business risk scores.

14 My own view is that any risk-mitigating impact that decoupling could  
15 have on the Company's risk profile is reflected to some extent in the capital  
16 market data of the comparable companies, and that the risk impact of these  
17 mechanisms is partially offset by several factors that work in the reverse  
18 direction. If Mr. Hill was right on this issue, SCG's parent company beta should  
19 be below the industry average. This is certainly not the case, as Sempra Energy's  
20 beta exceeds the industry average.

21 **Q. IS A REDUCTION OF ROE WARRANTED IN ORDER TO ACCOUNT**  
22 **FOR THE RISK-MITIGATING EFFECT OF THE REVENUE**  
23 **DECOUPLING MECHANISM?**

---

<sup>32</sup> See Rebuttal Testimony of SCG witness Cheryl Shepherd at Section IV.



1 A. No, it is not. Mr. Hill's final ROE recommendation of 8.75% lies in the lower  
2 half of his recommended range of 8.5% - 9.5% presumably on account of the  
3 salutary risk impact of decoupling and balancing accounts. Such a reduction in  
4 ROE as espoused by Mr. Hill is not warranted. The market-derived cost of  
5 common equity for other utility companies already incorporates the results of  
6 decoupling and/or similar mechanisms so that no further adjustment is appropriate  
7 or reasonable in determining the cost of common equity for SCG. In short, a  
8 downward ROE adjustment constitutes double-counting. Decoupling and other  
9 similar risk-mitigating mechanisms are fast becoming the norm for regulated  
10 utilities across the U.S.<sup>33</sup>

11 Finally, a recent comprehensive study by the Brattle Group cited by Mr.  
12 Hill investigated the impact of revenue decoupling mechanisms on risk and the  
13 cost of capital and found that its effect on risk and cost of capital, if any, is  
14 undetectable statistically.

15 **F. PENSION FUND DATA**

16 **ACTUARIAL DATA UTILIZED FOR PENSION FUND ACCOUNTING**

17 **ARE IRRELEVANT IN ESTIMATING A UTILITY'S COST OF**

18 **CAPITAL.**

19  
20 **Q. DO YOU AGREE WITH MR. HILL THAT UTILITY ROEs SHOULD BE**  
21 **CONSISTENT WITH PENSION FUND ACTUARIAL RETURNS?**

22 A. No, I do not. On page 11 lines 11-16 of his testimony, Mr. Hill argues that his  
23 recommended ROE should be compared with, and be consistent with, long-term  
24 expected return implied in pension fund actuarial data. Such return expectations

---

<sup>33</sup> Rebuttal Testimony of SCG witness Cheryl Shepherd at Section IV.

1 according to Mr. Hill are in the 9% range. Mr. Hill therefore concludes that his  
2 proposed cost of equity of 8.75% is not only consistent with such data but it is  
3 conservative. This viewpoint is incorrect for several reasons.

4 The return figures cited by Mr. Hill are for the total equity market. SCG  
5 and utilities generally are less risky than the overall market. SCG's beta is 0.68  
6 according to Mr. Hill, meaning that SCG is 68% as risky as the overall stock  
7 market, and, therefore, should have a lower expected return than the overall  
8 market. Yet, Mr. Hill's recommended ROE of 8.75% for SCG lies very near the  
9 aforementioned 9% expected return for the market as a whole. This is patently  
10 illogical. In order to be consistent with his view of stock market returns of 9.0%  
11 and with SCG's beta of 0.68, Mr. Hill should have recommended a ROE of 6.1%,  
12 that is 0.68 times 9.0%. That result is preposterous, of course, as it is barely equal  
13 to the cost of debt for utilities.

14 **Q. IS ACTUARIAL DATA RELEVANT IN ESTIMATING THE COST OF**  
15 **EQUITY CAPITAL?**

16 A. No, I do not believe it is. Mr. Hill tests the reasonableness of his recommended  
17 ROE of 8.75% by comparing this recommendation to expected stock market  
18 returns of 9.0% that he claims are implied in pension fund actuarial data. This  
19 comparison, in the context of a rate proceeding, is highly unusual. In my entire  
20 career, I cannot recall any cost of capital witness other than Mr. Hill comparing an  
21 individual utility's ROE to its pension fund's actuarial data. Nor I am aware of  
22 any pension fund producing internal return projections based on allowed ROEs in  
23 utility rate cases. Additionally, I am unaware of any regulatory commission that

1 has relied on such data. Indeed, the California Public Utilities Commission  
2 considered similar arguments and concluded as follows:

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

8  
9 *More importantly, pension fund returns are related to market value of*  
10 *assets held in the pension fund while a utility's ROE is applied to a book*  
11 *value rate base. This difference can best be illustrated by dividing an*  
12 *average pension fund return by PG&E's market-to-book ratio. Based on*  
13 *ATU's 9.62% calculated average pension fund return and DRA's market-*  
14 *to-book ratio of 1.9 for PG&E, PG&E would only need to earn a 5.06%*  
15 *ROE on its rate base to equal the 9.62% average pension fund return.*  
16 *However, a 5.06% ROE is 116 basis points below its long-term debt cost,*  
17 *effectively eliminating PG&E's ability to support its credit and to raise the*  
18 *equity necessary to fulfill its public utility responsibilities as required by*  
19 *Bluefield and Hope. Pension return assumptions are not comparable to*  
20 *the ROE used in utility ratemaking. Having resolved this issue, PG&E*  
21 *should not be required to continue comparing its pension return*  
22 *assumptions to its ratemaking ROE in future ROE proceedings.*

23  
24 *In re S. Cal. Edison Co., 262 P.U.R. 4th 53, 72 (California Public Utility*  
25 *Commission, 2007).*  
26

27 **Q. DO YOU FIND THE REASONING OF THE CALIFORNIA PUBLIC**  
28 **UTILITIES COMMISSION CONVINCING?**

29 A. Yes. Actuarial data utilized for pension fund accounting are by nature very  
30 conservative, consistent with Generally Accepted Accounting Principles (GAAP)  
31 guidelines, and are not well suited for assessing the cost of equity capital in a rate  
32 proceeding. By virtue of the very long-term nature of pension fund assets,  
33 projected returns on pension fund assets are not indicative of the cost of equity in  
34 the context of a regulatory proceeding. Moreover, the actuarial data on which Mr.  
35 Hill relies, namely, a handful of investment advisors, is highly selective.

1 **Q. ARE ACTUARIAL PENSION FUND PROJECTED RETURNS BASED ON**  
2 **ARITHMETIC OR GEOMETRIC AVERAGES?**

3 A. The actuarial pension data arbitrarily selected by Mr. Hill are often based on  
4 geometric mean returns rather than on arithmetic mean returns because of the very  
5 long-term nature of pension fund assets. As discussed earlier in my rebuttal  
6 testimony, only arithmetic means are appropriate for forecasting and estimating  
7 the cost of capital.

8 **Q. WHAT ELSE IS WRONG WITH MR. HILL'S RELIANCE ON PENSION**  
9 **FUND ACTUARIAL DATA AND FINANCIAL ADVISORS' ESTIMATES?**

10 A. The return figures cited by Mr. Hill are market returns and not book returns. The  
11 manner in which the regulator applies market-based returns to book equity  
12 understates the cost of equity under current capital market conditions.  
13 Application of market-based returns produces estimates of common equity cost  
14 that are consistent with investors' expected return only when stock price and book  
15 value are reasonably similar, that is, when the M/B ratio is close to unity.  
16 Application of market-based returns to equity book values does not account for  
17 the investor's expected return when the M/B ratio of a given stock deviates from  
18 unity. The reason for the distortion is that the market-based return is applied to a  
19 book value rate base by the regulator, that is, a utility's earnings are limited to  
20 earnings on a book value rate base. The return given to equity investors is lower  
21 than what they actually require when M/B ratios exceed unity. This is neither  
22 equitable for the existing stockholders nor efficient from the point of view of

1 attracting capital to cover the significant capital expenditures that need to be  
2 undertaken.

3 In short, the Commission should ignore Mr. Hill's views on the applicability  
4 of actuarial pension returns and individual financial advisory returns to  
5 determining a utility's allowed ROE.

6 **G. RESPONSES TO MR. HILL'S CRITICISMS**

7  
8 **1. DCF Dividend Yield**

9 **Q. IS MR. HILL'S CRITICISM THAT YOU MULTIPLIED THE SPOT**  
10 **DIVIDEND YIELD BY ONE PLUS THE EXPECTED GROWTH RATE**  
11 **(1 + g) WARRANTED?**

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

21 **Q. DOES MR. HILL MULTIPLY THE SPOT DIVIDEND YIELD BY ONE**  
22 **PLUS THE EXPECTED GROWTH RATE (1 + g)?**

1 A. Yes. Mr. Hill multiplies the spot dividend yield by one plus the expected growth  
2 rate (1 + g) for those companies expected to raise their quarterly dividends in the  
3 second quarter of calendar year 2012.

4 **2. DCF Growth Rates**

5 **Q. ON PAGE 39 MR. HILL CRITICIZES YOUR DCF ANALYSIS BECAUSE**  
6 **IT RELIES ON EARNINGS GROWTH PROJECTIONS AND HE**  
7 **BELIEVES THAT SUCH FORECASTS ARE OVERLY OPTIMISTIC.**  
8 **HOW DO YOU RESPOND?**

9 A. I refer to my criticism of Mr. Woolridge on this issue earlier in my rebuttal.

10 **3. CAPM Risk-Free Rate**

11 **Q. DO YOU AGREE WITH MR. HILL'S RISK-FREE RATE OF 4.0% IN HIS**  
12 **CAPM ANALYSIS?**

13 A. I find Mr. Hill's risk-free rate assumption of 4.0% too low. Interest rate forecasts  
14 are much higher. Value Line's quarterly economic review forecasts an increase in  
15 the yield on ~~10-year~~long term Treasury ~~Notes~~bonds from 3.2% in 2012 to 5.3%  
16 in 2016. Global Insight's August 2012 edition forecasts a yield of 5.~~3827~~% on  
17 30-year Treasury Bonds. Mr. Hill's risk-free rate is stale and fails to reflect the  
18 projected increase in interest rates.

19 **4. CAPM Beta Estimates**

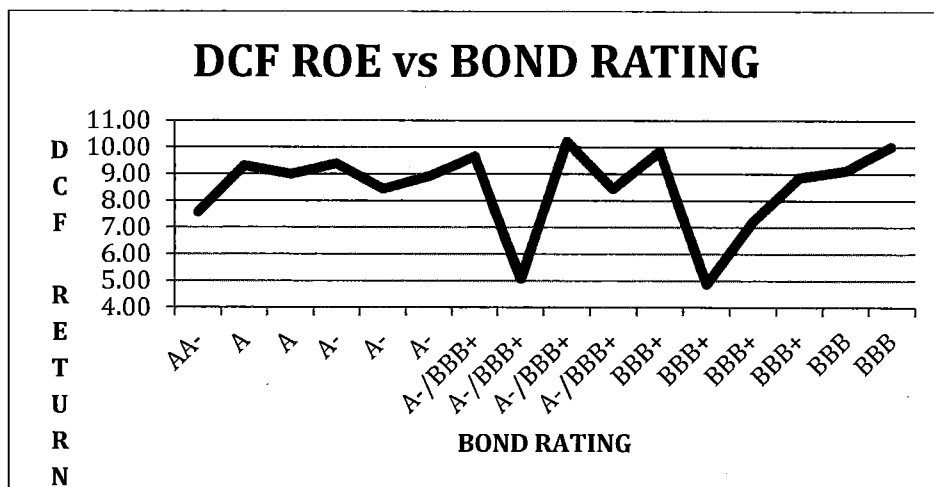
20 **Q. DO YOU AGREE WITH MR. HILL'S BETA ESTIMATE OF 0.68?**

21 A. Yes, I do, at least for his comparable group of natural gas utilities. I note that  
22 both Sempra Energy's and Edison's beta is 0.80 which exceeds Mr. Hill's group  
23 average of 0.68 by a significant amount. This certainly contradicts Mr. Hill's

1 view that California utilities are less risky than average on account of their  
 2 superior bond ratings and risk-mitigating mechanisms on which I commented  
 3 earlier. The problem is that Mr. Hill has confounded the risk of bonds and the  
 4 risk of common stocks. The former is related to the creditworthiness of the issuer  
 5 while the latter is related to variability.

6 **Q. IS THERE A RELATIONSHIP BETWEEN MR. HILL'S DCF RETURN**  
 7 **ESTIMATES AND BOND RATINGS?**

8 A. No, there is not. The graph below shows the relationship between Mr. Hill's DCF  
 9 return estimates for the 16 electric companies<sup>34</sup> in his comparable group taken  
 10 from his Schedule 5 page 1 and these companies' bond ratings taken from his  
 11 Schedule 1. If Mr. Hill were correct, one would expect a strong positive  
 12 relationship between returns and bond ratings. As the graph makes abundantly  
 13 clear, there is no such relationship. As I showed earlier, the same is true for Mr.  
 14 Lawton's group of companies.



<sup>34</sup> There are too few companies in Mr. Hill's gas group to perform a similar analysis.

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**5. CAPM MRP**

**Q. HOW DO YOU RESPOND TO MR. HILL'S CRITICISM OF YOUR HISTORICAL MRP ESTIMATE IN THE CAPM ANALYSIS?**

A. On page 100-102, Mr. Hill criticizes historical MRPs on three grounds. First, I have mismatched stock returns and bond returns because the former are realized returns while the returns are expected returns. Mr. Hill would be correct if I had relied on short time periods. Obviously, over very long time periods on which I relied, investor expectations are realized. Otherwise, investors would never invest money in stocks.

Second, Mr. Hill argues that I have completely ignored geometric market risk premium (MRP) data in deriving my own estimate of the proper MRP in a CAPM analysis, and focused on arithmetic MRP.

As I discussed extensively earlier in my rebuttal of Mr. Woolridge, only arithmetic means are appropriate for forecasting and estimating the cost of capital, while geometric means are not.

Third, Mr. Hill argues on page 102 lines 5-7 that my MRP estimate of 7.9% is at the upper end of a range espoused by Brealey & Myer's textbook and is thus overstated. I have two responses. First, it not surprising that the MRP 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. Second, I did not rely solely on historical



1 MRPs in my CAPM analysis. I also applied a prospective (forward-looking)  
2 analysis which indicated much higher MRPs than history would suggest.

3 **6. Historical Risk Premiums**

4 **Q. MR. HILL DISAGREES WITH HISTORICAL RISK PREMIUM**  
5 **STUDIES. HOW DO YOU RESPOND?**

6 A. On page 116 of his testimony lines 8-9 and lines 12=14, Mr. Hill critiques the risk  
7 premium method on two grounds: 1) the method assumes that past is prologue,  
8 and 2) the method assumes that the risk premium is constant over time. I  
9 employed returns realized over long time periods rather than returns realized over  
10 more recent time periods. Realized returns can be substantially different from  
11 prospective returns anticipated by investors, especially when measured over short  
12 time periods. A risk premium study should consider the longest possible period  
13 for which data are available. Short-run periods during which investors earned a  
14 lower risk premium than they expected are offset by short-run periods during  
15 which investors earned a higher risk premium than they expected. Only over long  
16 time periods will investor return expectations and realizations converge, or else,  
17 investors would never commit any funds.

18 I have ignored realized risk premiums measured over short time periods,  
19 since they are heavily dependent on short-term market movements. Instead, I  
20 have relied on results over periods of enough length to smooth out short-term  
21 aberrations, and to encompass several business and interest rate cycles. The use  
22 of the entire study period in estimating the appropriate market risk premium  
23 minimizes subjective judgment and encompasses many diverse regimes of

1 inflation, interest rate cycles, and economic cycles.

2 Mr. Hill's second concern is unwarranted as well. To the extent that the  
3 historical equity risk premium estimated follows what is known in statistics as a  
4 random walk, one should expect the equity risk premium to remain at its historical  
5 mean. The best estimate of the future risk premium is the historical mean. As I  
6 explained in my direct testimony, since I found no evidence that the market price  
7 of risk or the amount of risk in common stocks has changed over time, that is, no  
8 significant serial correlation in the successive market risk premiums from year to  
9 year, it is reasonable to assume that these quantities will remain stable in the  
10 future.

11 **7. ECAPM**

12 **Q. PLEASE COMMENT ON MR. HILL'S ASSESSMENT OF THE**  
13 **EMPIRICAL CAPM USED IN YOUR TESTIMONY.**

14 **A.** On page 103 lines 12-17 of his direct testimony, Mr. Hill erroneously asserts that  
15 use of "adjusted" betas with an ECAPM analysis double-counts the effect of  
16 changing the slope of the capital market line. Contrary to such suggestion, the  
17 ECAPM is not an adjustment (increase or decrease) in beta. Instead, the ECAPM  
18 is a formal recognition of the fact that empirical evidence demonstrates that the  
19 observed risk-return tradeoff is flatter than predicted by the CAPM.

20 In sum, a plain vanilla CAPM will understate the return required for low-  
21 beta securities and overstate the return required for high-beta securities. The  
22 ECAPM refines the plain vanilla CAPM to account for this phenomenon. I refer  
23 to my earlier discussion of this issue in my rebuttal of Mr. Woolridge.

1 **8. Market-to-Book Ratios**

2 **Q. PLEASE DISCUSS MR. HILL'S VIEWS ON MARKET-TO-BOOK (M/B)**  
3 **RATIOS.**

4 A. Mr. Hill argues on pages 15-16 of his testimony that because the current M/B  
5 ratio for electric utilities exceeds one, allowed returns by regulators exceed the  
6 cost of equity capital for utilities. In other words, Mr. Hill is implying that the  
7 regulating authority should lower the allowed return on equity, so that the stock  
8 price will decline to book value. I presume from these statements that Mr. Hill  
9 finds it desirable that stock prices drop from the current M/B value of well above  
10 1.0 for most electric and gas utilities, to the desired M/B ratio range of near 1.0.  
11 There are several reasons why M/B ratios are largely irrelevant and why I  
12 seriously disagree with Mr. Hill's views on the role of M/B ratios in regulation.

13 First, Mr. Hill's position implies that regulators should set an ROE so as to  
14 produce a M/B ratio of near 1.0. This is erroneous. The stock price is set by the  
15 market, not by regulators. The M/B ratio is the *result* of regulation, not its  
16 starting point. The regime of regulation envisioned by Mr. Hill, that is, that the  
17 regulator will set an allowed rate of return so as to produce a M/B ratio of close to  
18 1.0, presumes that investors commit capital to a utility with a M/B in excess of  
19 1.0, knowing full well that they will be inflicted a capital loss by regulators. Such  
20 behavior on the part of investors is certainly not a realistic or accurate view of  
21 investment or regulation.

22 Second, the traditional M/B ratio does not reflect the replacement cost of a  
23 company's assets. Consistent with *Bluefield* and *Hope*, The fundamental goal of

1 regulation should be to set the expected economic profit for a public utility equal  
2 to the level of profits expected to be earned by firms of comparable risk, in short,  
3 to emulate the competitive result, so as to assure the firm's credit and to attract  
4 needed capital. For unregulated firms, the natural forces of competition will  
5 ensure that in the long-run the market value of these firm's securities equals the  
6 replacement cost of their assets. This suggests that a fair and reasonable price for  
7 a public utility's common stock is one that produces equality between the market  
8 price of its common equity and the replacement cost of its physical assets. The  
9 latter circumstance will not necessarily occur when the M/B ratio is near 1.0.  
10 Only when the market value of the firm's common equity equals the value of the  
11 firm's equity at replacement cost will equality hold.

12 In an inflationary period, the replacement cost of a firm's assets may  
13 increase more rapidly than its book equity. To avoid the resulting economic  
14 confiscation of shareholders' investment in real terms, the allowed rate of return  
15 should produce a M/B ratio which provides a Q-ratio of 1 or a Q-ratio equal to  
16 that of comparable firms.<sup>35</sup> It is quite likely that M/B ratios will exceed one if  
17 inflation increases the replacement cost of a firm's assets at a faster pace than  
18 book equity. This explains in part why utility M/B ratios have remained well  
19 above 1.0 over the past two decades.

20 Stock prices above book value are common for utility stocks, and indeed

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<sup>35</sup> The relationship between the market value of a firm's securities and the replacement cost of its assets is embodied in the Q-ratio. The Q-ratio is defined as the market value of a firm's securities divided by the replacement cost of its assets. If  $Q > 1.0$ , a firm has an incentive to invest because the value of the firm's securities exceeds the replacement cost of assets, that is, the firm's return on its investments exceeds its cost of capital. Conversely, if  $Q < 1.0$ , a firm has a disincentive to invest in new plant. In final long-run equilibrium, the Q-ratio is driven to 1.0.

1 for all of the major market indexes. It is obvious that investors and regulators  
2 through their rate case decisions do not subscribe to Mr. Hill's position that  
3 utilities that have market prices above book value are over-earning. Otherwise,  
4 regulators would not grant rate increases for any utility whose stock price was  
5 above book value, and investors would never bid up the price of stock above book  
6 value.

7 Mr. Hill's views on the role of M/B are certainly not corroborated by the  
8 historical facts. Utility M/B ratios have been consistently above 1.00 for over  
9 two decades.

10 **Q. IS MR. HILL CORRECT IN HIS CLAIMS THAT THERE ARE**  
11 **INCONSISTENCIES IN YOUR PUBLISHED WORKS REGARDING THE**  
12 **DCF MODEL AND MARKET-TO-BOOK RATIOS?**

13 A. No. In his testimony, on page 49 lines 13-24, Mr. Hill argues that the 1984  
14 edition of my book (nearly thirty years ago) did not criticize the ability of the  
15 DCF model to accurately estimate the cost of equity depending on the M/B ratio  
16 of utilities. Mr. Hill asserts the following:

17 *Dr. Morin's first text on the cost of capital, Utilities' Cost of*  
18 *Capital, was published in 1984, more than 20 years after Professor*  
19 *Myron Gordon's seminal DCF test, and was conceived and written*  
20 *during a time period in which interest rates were very high and*  
21 *market prices were generally below book value. There is nothing*  
22 *in that text that indicates when market prices are below book value*  
23 *(as they were at that time), the DCF overstates the cost of equity*  
24 *(as is now Dr. Morin's claim).*  
25

26 Mr. Hill fails to recognize, however, that the ability of the DCF model to  
27 estimate the cost of equity accurately depending on the M/B ratio of utilities was

1 simply not an issue for utilities more than a quarter century ago because utilities  
2 were trading at market prices very close to book value. Similarly, it was not an  
3 important issue when Professor Gordon developed the DCF model in the mid-  
4 1960's. Instead of reaching back some 30 years, perhaps Mr. Hill should have  
5 consulted the 1994 and 2006 editions of my book,<sup>36</sup> each of which discusses at  
6 length the chronic inability of the DCF model to accurately estimate investor  
7 returns when Market-to-Book ratios deviate markedly from unity.

8 **Q. IS MR. HILL'S CONTENTION THAT YOUR VIEWS ON THE**  
9 **APPLICABILITY OF THE DCF HAVE CHANGED SINCE 1984**  
10 **CORRECT?**

11 A. No. Mr. Hill has once more distorted my views and cited passages from my 1984  
12 book out of context. Mr. Hill falsely asserts that there is no reference to the DCF  
13 understating the cost of equity in my 1984 text when Market-to-Book ratios are  
14 below one. In late 1984 when the book was published, M/B ratios were at nearly  
15 1.0. Indeed, M/B ratios have been well above 1.0 for over twenty years.

16 The reference to the understatement of the cost of equity when M/B ratios  
17 are slightly below one referred to the dilutive effects of issuing stock below book  
18 value and the necessity of allowing for flotation cost.

19 **9. DCF UNDERSTATEMENT OF INVESTOR RETURNS**

20 **Q. HOW DO YOU RESPOND TO MR. HILL'S DISCUSSION OF YOUR**  
21 **NUMERICAL EXAMPLE REGARDING THE RELIABILITY OF DCF**  
22 **ESTIMATES?**

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<sup>36</sup> See Roger A. Morin, *Regulatory Finance: Utilities' Cost of Capital*, chapter 10 (1st ed. 1994);  
Roger A. Morin, *The New Regulatory Finance: Utilities' Cost of Capital*, ch.12 (1st ed. 2006).

1 A. On pages 46-49, Mr. Hill is criticizing Edison Company witness Dr. Hunt for  
2 relying on a rationale published in my 1996 and 2006 textbooks whereby the DCF  
3 understates investor returns when M/B ratios exceed 1.0. Mr. Hill concludes on  
4 page 46 that the numerical example from my book cited by Dr. Hunt does not  
5 show that the DCF understates the cost of equity when the M/B ratio exceeds 1.0.

6 Mr. Hill appears to be confused on this subject. First, the allowed return  
7 of 10% is not assumed to be determined by the DCF, as claimed by Mr. Hill on  
8 page 47 lines 24-25. Such an assumption would render the whole example  
9 circular. The allowed return of 10% is assumed to be determined exogenously by  
10 the CAPM or the Risk Premium method, for example.

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

16 To pursue the analogy provided by Mr. Hill at page 48 of his testimony,  
17 imagine a broker trying to sell to an investor with a return requirement of 10% a  
18 utility stock priced at \$100 per share and whose M/B ratio is 2.0. The broker  
19 would say to the investor: *"I've got a stock for you that's going to pay a 10%  
20 return on a \$50 book value – in other words one share will get you \$5 but each  
21 share has to drop from \$100 to \$50 in order for the price to drop to book value.  
22 Are you interested?"* No rational investor would pay \$100 for a stock that is  
23 going to drop to \$50. In short, Mr. Hill's analogy defies logic.





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3 **I. CONCLUSIONS**

4 **Q. WHAT DO YOU CONCLUDE FROM MR. HILL'S RECOMMENDED**  
5 **ROE?**

6 A. Mr. Hill seriously understates the appropriate ROE for SCG. The inability to  
7 scientifically replicate his DCF growth rates, the mainstay of his recommendation,  
8 and its dependence on one very small sample of companies cast serious doubts on  
9 the reasonableness of his recommendation.

10 **Q. WOULD THE ADOPTION OF MR. HILL'S RECOMMENDED ROE**  
11 **ENDANGER SCG'S CREDIT QUALITY?**

12 A. Yes, it certainly increases the probability of a deterioration in SCG's credit  
13 quality. Decreases in SCG's authorized ROE, such as the decreases  
14 recommended by Mr. Hill, could alarm the investment community, lower stock  
15 price, and threaten SCG's credit ratings. A weakening of SCG's credit ratings,  
16 stock price, and earnings power at a time when the SCG needs to attract  
17 significant external capital on reasonable terms is ill-advised in the current  
18 volatile equity market environment.

19 **Q. HAS MR. HILL PRESENTED ANY ARGUMENTS IN HIS TESTIMONY**  
20 **THAT WOULD CAUSE YOU TO ALTER ANY OF YOUR**  
21 **RECOMMENDATIONS AND METHODOLOGIES?**

22 A. No, he has not.

23 **IV. REBUTTAL TO MR. MARCUS**  
24  
25

1 Q. DO YOU AGREE WITH MR. MARCUS' TESTIMONY (ON BEHALF OF  
2 TURN) THAT RATEPAYERS WOULD BE BETTER OFF WITH A  
3 LOWER ROE, EVEN AT THE RISK OF HIGHER COSTS OF DEBT?

4 A. No, I do not. Mr. Marcus' analysis is flawed and his conclusion misguided. In  
5 discussing the impact of a lower ROE, Mr. Marcus correctly notes that if a utility  
6 ROE is lowered below investor expectations and credit ratings are affected, the  
7 cost of debt (or the bond interest rate) will rise. He asserts, however, that "[i]t is  
8 not reasonable to authorize a utility's elevated ROE in order to insulate it from a  
9 hypothetical credit rating decrease if the revenue requirement increment resulting  
10 from the elevated ROE increment will be more than the revenue requirement  
11 increment resulting from the cost of debt increment that might result from a lower  
12 authorized ROE."<sup>37</sup> He then offers analysis purporting to show that  
13 "...ratepayers would be better off even with lowered debt ratings...caused by  
14 lower ROEs in almost any conceivable case."<sup>38</sup> The analysis presented by Mr.  
15 Marcus regarding the harm caused to ratepayers by a lower ROE is overly-  
16 simplistic, however, and fails to take into account several important  
17 considerations.

18 While Mr. Marcus acknowledges the relationship between low ROE and  
19 increased credit costs, his analysis entirely ignores additional factors relevant to  
20 the analysis of the impact of a lower ROE, such as the amount of leverage and  
21 investor's flight to quality, the utility's need to remain flexible over its current  
22 capital intensive period, the negative impact on preferred stock costs, costs of

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<sup>37</sup> Prepared Direct Testimony of William Marcus at 6-7.

<sup>38</sup> Prepared Direct Testimony of William Marcus at 9.

1 bond issuances, and the long term effect of future debt issuances. As a practical  
2 matter, the lower the utility ROE, the greater the negative impact of these factors.

3 **Q. CAN YOU DESCRIBE THE RELATIONSHIP BETWEEN A LOWER**  
4 **ROE AND THE FACTORS REFERENCED ABOVE?**

5 A. I briefly address each of these factors below.

6 a. Increased Amount of Leverage: A lower ROE will cause the amount of  
7 leverage to increase, making it more difficult to attract investor capital. If a  
8 utility's ROE is reduced, the amount of capital offered by investors would  
9 decline, as shareholders seek alternative investment options. Reasonable  
10 investors move their capital to the most optimal security in order to receive  
11 the best return for the risk they are willing to accept (this is often referred to as  
12 the "flight to quality"). For the utility, this would mean that the amount of  
13 funds that would need to be obtained by financing would increase. The  
14 capital structure would then be affected as the utility would be more levered.  
15 This scenario results in a much riskier utility – one that is more heavily  
16 financed by debt as opposed to equity. It creates a paradoxical situation in  
17 which the utility would require a higher ROE to attract investors but, in the  
18 absence of that higher ROE authority, would be unable to attract them and  
19 would therefore be required to issue more debt, thereby creating an investment  
20 levered "spiral" of sorts. In short, Mr. Marcus' analysis ignores the long-term  
21 impact of a lower ROE. While the immediate effect of lowering the ROE  
22 might, as Mr. Marcus suggests, be a lowering of ratepayers' costs, in the long  
23 run, ratepayers will pay *higher* costs in the form of higher levels of debt costs

1 (that would be added to the higher credit costs Mr. Marcus acknowledges  
2 would result from a lower utility ROE).

3 b. Reduction in Flexibility of the Utility: The increase in the level of debt that  
4 would result from the loss of equity investors would cause a corresponding  
5 reduction in the utility's flexibility in terms of how and in what it can invest.  
6 This is because the utility would have less capital available from equity  
7 holders and would be required to tap into a more expensive debt market to  
8 attract funds. A utility would then have to make a decision regarding tapping  
9 into a less-than-optimal debt market or forgoing an investment. To take this  
10 further, at such high levels of debt, it may be difficult to find bond holders to  
11 lend SoCalGas the money. To the extent utility investments are intended to  
12 promote policy goals, reduced investment flexibility will interfere with  
13 achievement of these policy goals. SoCalGas witnesses Foster, for example,  
14 discusses the role of SoCalGas' goal to effectively support its solid "A" credit  
15 rating under current and prospective market conditions: "The authorized cost  
16 of capital should "both reflect a prudent use of debt and support its internal  
17 policy of managing toward a solid "A" credit rating as influenced by capital  
18 market conditions...and that minimizes capital costs to ratepayers over the  
19 long term."<sup>39</sup> Likewise, SoCalGas witness Schlax explains that SoCalGas'  
20 proposed ROE is necessary to "enable the Company to raise a significant  
21 amount of capital in furtherance of its efforts to maintain a safe, reliable, and

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<sup>39</sup> Prepared Direct Testimony of Michael Foster at 6 lines 1-5.

1 modern gas system at reasonable costs to its customers.”<sup>40</sup> Mr. Marcus’  
2 analysis fails to account for the reduction in investment flexibility that would  
3 result from a lower ROE and corresponding greater level of debt, or for the  
4 resulting impact on the public interest in the long-term.

5 c. Increase in Preferred Stock Costs: Mr. Marcus also ignores the fact that as  
6 debt interest rates rise with decreasing credit ratings caused by a reduced  
7 ROE, the cost of Preferred Stock would rise as well. The cost of this type of  
8 financing would rise along with the reduced ratings.

9 d. Increased Cost of Issuing Debt: Mr. Marcus’ analysis fails to address the  
10 impact of a lower ROE on the cost of issuing bonds. Part of the embedded  
11 cost of debt comes from the cost to issue debt. As a utility becomes more  
12 risky, or experiences a decrease in its debt ratings, the cost of issuing debt also  
13 rises. The utility would therefore have to raise debt rates on ratepayers to pay  
14 for this additional cost while receiving no additional capital to fund projects in  
15 return.

16 **Q. CAN YOU SUMMARIZE YOUR THOUGHTS ON THE ASSERTION MR.**  
17 **MARCUS MAKES ABOUT RATEPAYER IMPACT OF A LOWER ROE?**

18 **A.** In sum, Mr. Marcus fails to address the important and highly relevant  
19 considerations described above. Accordingly, his conclusion that ratepayers are  
20 best served by lowering the ROE is not credible. As the ROE is lowered, both  
21 credit costs and debt costs increase and, in the long-term, negatively impact  
22 ratepayers.

23 **Q. DOES THIS COMPLETE YOUR REBUTTAL TESTIMONY?**

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<sup>40</sup> Prepared Direct Testimony of Robert M. Schlax at 1 lines 17-19.

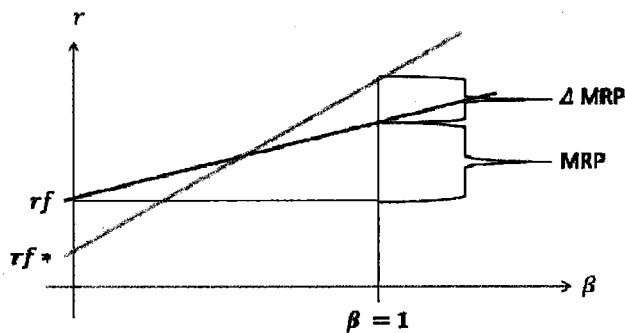
1 A. Yes, it does.

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**Attachment A**  
**Flight to Quality**

## ATTACHMENT A: Flight to Quality

The flight to quality can be shown graphically using the traditional CAPM model. A security market line is the relationship between the expected rate of return of a security and its systematic, non-diversifiable risk (beta). The initial security market line (red line) on the graph below has a risk-free rate  $r_f$  and market risk premium of  $MRP$ . In a time of market uncertainty, investors flee to risk-free assets driving the price of  $r_f$  down to  $r_f^*$ . However, the market's level of uncertainty has increased driving the security market line *steeper* (green line). As such, there is increased market risk premium ( $\Delta MRP$ ). This is why we see large risk premiums when interest rates are low as we do now.



This can be empirically demonstrated by looking at how credit spreads have increased while interest rates have fallen:

	<b>July 31, 2012</b>	<b>July 29, 2011 (One Year Ago)</b>	<b>Pre-Recession (Jan'06-Nov'07)</b>
<b>Credit Spreads</b> (Moody's Utility Bond Index) Baa-rated bond to A-rated bond	0.88%	0.45%	0.25%
<b>Risk-Free Rate</b> (30 year Treasury yield)	2.55%	4.12%	4.87%







**ATTACHMENT B**

**FITCH REPORT**



**ERRATA/AMENDMENTS TO THE PREPARED REBUTTAL TESTIMONY OF SOUTHERN CALIFORNIA GAS COMPANY WITNESS DR. ROGER MORIN<sup>41</sup>**

10	9-10	Value Line's quarterly economic review forecasts a yield of 4.0% in 2013, 4.5% in 2014, and 5.0% in 2015	Value Line's quarterly economic review forecasts a yield of 3.7% in 2013, 4.0% in 2014, and 4.8% in 2015
91	15-19	Value Line's quarterly economic review forecasts an increase in the yield on 10-year Treasury Notes from 3.2% in 2012 to 5.3% in 2016. Global Insight's August 2012 edition forecasts a yield of 5.27 on 30-year Treasury Bonds.	Value Line's quarterly economic review forecasts an increase in the yield on long term Treasury bonds from 3.2% in 2012 to 5.3% in 2016. Global Insight's August 2012 edition forecasts a yield of 5.38% on 30-year Treasury Bonds.
Attachment A		4.88%	4.87%

<sup>41</sup> All page and line references are to Dr. Morin's original prepared Rebuttal Testimony.

