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

Exhibit No.: _____

Witness: Roger A. Morin

AMENDED
PREPARED REBUTTAL TESTIMONY OF
ROGER A. MORIN, Ph.D.
ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

AUGUST 29, 2012

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AMENDED

REBUTTAL TESTIMONY OF DR. ROGER A. MORIN

ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY

DOCKET A.12-04-015 et al.

INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME, ADDRESS, AND OCCUPATION.

A. My name is Mr. Roger A. Morin. My business address is Georgia State University, Robinson College of Business, University Plaza, Atlanta, Georgia, 30303. I am Emeritus Professor of Finance at the College of Business, Georgia State University and Professor of Finance for Regulated Industry at the Center for the Study of Regulated Industry at Georgia State University. I am also a principal in Utility Research International, an enterprise engaged in regulatory finance and economics consulting to business and government.

Q. DID YOU FILE DIRECT TESTIMONY IN THIS PROCEEDING ON BEHALF OF SAN DIEGO GAS & ELECTRIC COMPANY ("SDG&E" OR "COMPANY")?

A. Yes, I did.

Q. WHAT IS THE PURPOSE OF THIS REBUTTAL TESTIMONY?

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

Q. WHAT RATE OF RETURN ON COMMON EQUITY (ROE) ARE THE WITNESSES RECOMMENDING FOR SDG&E?

A. The ROE recommendations for SDG&E from the three ROE witnesses are as follows:

Mr. Lawton TURN	9.40%
Mr. Woolridge DRA	8.50%
Mr. Hill FEA	8.75%

Q. HOW IS YOUR REBUTTAL TESTIMONY ORGANIZED?

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

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

A. Yes, I do. In an ongoing proceeding involving California Pacific Electric Company (Docket A.12-02-014), DRA witness Tom Renaghan recommends a ROE of 9.25% for this small distribution-only electric utility. In another ongoing proceeding involving Bear Valley Electric Service Division (Docket A.12-02-013), DRA witness Tom Renaghan recommends a ROE of 9.35%. It is very puzzling as to why DRA recommends ROEs of 9.25% - 9.35% for contemporaneous electricity distribution utility proceedings while Mr. Woolridge on behalf of DRA recommends only 8.50% in this proceeding, involving a riskier, vertically integrated electric utility.

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

I. REBUTTAL TO MR. LAWTON'S TESTIMONY

Q. PLEASE SUMMARIZE MR. LAWTON'S RECOMMENDED ROE ON BEHALF OF TURN.

A. Mr. Lawton recommends a ROE for SDG&E of 9.4%, which is the least draconian recommendation of the three witnesses I am rebutting. Mr. Lawton relies on a traditional DCF analysis of two groups of electric utilities, virtually identical to my own two groups. Mr. Lawton also presents a two-stage DCF analysis applied to the same two groups. As summarized in on page 70 of his testimony, the DCF results range from 9.0% to 10.0%.

Mr. Lawton also performs two risk premium analyses, namely a Historical Risk Premium and a Capital Asset Pricing Model/Empirical Capital Asset Pricing Model (CAPM/ECAPM) analysis. As summarized on page 70 of his testimony, the CAPM/ECAPM results range from 9.0% to 9.5%, and the Historical Risk Premium results range from 9.5% to 9.75%.

Based on these results, and giving more weight to the DCF and CAPM results, Mr. Lawton concludes that the cost of common equity for SDG&E is 9.4%.

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

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

A. DCF ANALYSIS

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

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

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

A. Yes, I agree with its magnitude.

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

A. Yes. I disagree with Mr. Lawton's dividend yield calculation in his DCF analysis (Schedule DJL-14 page 1 column E) because he multiplied the spot dividend yield by one plus one half the expected growth rate (1 + 0.5g) rather than the conventional one plus the expected growth rate (1 + g). This procedure understates the return expected by the investor.

The fundamental assumption of the basic annual DCF model is that dividends are received annually at the end of each year and that the first dividend is to be received one year from now. Thus the appropriate dividend to use in a DCF model is the full prospective dividend to be received at the end of the year. Instead, Mr. Lawton calculates the first dividend by multiplying the current dividend by only one plus one-half the growth rate instead of multiplying by one plus the growth rate. Since the appropriate dividend to use in a DCF model is the prospective dividend one year from now rather than the dividend one-half year from now, Mr. Lawton's approach understates the proper

dividend yield. This creates a downward bias in his dividend yield component, and underestimates the cost of equity by approximately 20 basis points. For example, for a spot dividend yield of 5% and a growth rate of 5%, Mr. Lawton's estimated dividend yield is 5%(1 + .05/2) = 5.1%. The correct dividend yield to employ is 5%(1 + .05) = 5.3%, which is about 20 basis points higher.

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

DCF GROWTH RATES

Q. DO YOU AGREE WITH MR. LAWTON'S GROWTH COMPONENT OF 4.89% IN THE DCF ANALYSIS?

A. No, I do not. As shown on Schedule DJL-13, Mr. Lawton relies on two proxies for the DCF growth rate: analyst forecasts (Column M) and the sustainable growth methodology (Column N). He averages the two proxies to arrive at his final DCF growth rate in Column O.

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

A. No, I do not. In order to estimate the growth component of the DCF model, Mr. Lawton

relies on the sustainable growth method, also known as the internal growth method, as one of his two final proxies for growth, as shown on Schedule DJL-13. According to this method, the growth rate is based on the equation g = b(ROE); b is the percentage of earnings retained and ROE is the expected rate of return on book equity (ROE).

While I certainly agree with the analyst forecast growth proxy, I disagree with Mr. Lawton's sustainable growth proxy for four reasons: 1) the method is logically circular, for it requires the user to assume the ROE answer to begin with; 2) it is inconsistent with the academic empirical evidence; 3) there is a potential lack of representativeness of Value Line's forecasts as proxies for the market consensus; and 4) Mr. Lawton's analysis contains a technical error. I will now discuss each of these points in turn.

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

A. No, it is not. Mr. Lawton's internal growth methodology contains a logical contradiction. The contradiction arises because the method requires an explicit assumption on the ROE expected from the retained earnings that produce future growth. Mr. Lawton bases his ROE estimate on Value Line's historical and forecast ROE for the 2011-2017 period (Column Q, Schedule DJL-13, page 2). But the ROEs used by Mr. Lawton in calculating the retention growth rate do not match Mr. Lawton's ROE recommendation.

The average expected ROE of 10.2% used in Mr. Lawton's retention growth computation and reported on Column Q of Schedule DJL-13 page 2 exceeds Mr. Lawton's recommended 9.4%. Mr. Lawton's analysis thus assumes that the earned returns (ROE) of the sample companies exceed what he has determined to be their cost of

equity forever. That is, Mr. Lawton assumes that these companies will earn a ROE higher than that granted by their regulators and reflected in their rates.

While this scenario implicit in Mr. Lawton's retention growth method may be imaginable for an unregulated company, it is implausible to assume for a regulated company whose rates are continually re-set by its regulator at a level designed to permit the company to earn a return equal to its cost of capital. This logical flaw compromises the integrity of Mr. Lawton's analysis, and should be a sufficient basis for rejecting the results produced by this method. In essence, by using an ROE that differs from his final recommended cost of equity, Mr. Lawton requires the Commission to make two inconsistent findings regarding ROE. I am perplexed as to why Mr. Lawton assumes that his group of comparable utilities is expected to earn 10.2% forever, while at the same time he recommends an ROE of 9.4% for the Company. The only way that these utilities can earn an ROE of 10.2% is if rates are set so that they will in fact earn 10.2%.

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

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

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

A. No. The third difficulty with Mr. Lawton's internal growth rates is that exclusive

reliance on Value Line forecasts of ROE and retention ratio runs the risk that such forecasts are not representative of investors' consensus forecast.

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

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

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

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

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

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

A. Mr. Lawton should have relied on his first proxy, namely, analyst growth forecast. As shown on Schedule DJL-13 page 1, the average analyst growth forecast of 5.25% for the group shown at the bottom of Column M should have been used and not the 4.60% in Column N used by Mr. Lawton. As a result, Mr. Lawton's DCF estimates are understated by 65 basis points (5.25% - 4.60%) for the first group of companies. The

same reasoning applies to Mr. Lawton's second group of companies. From Schedule DJL-13 page 3, the DCF estimates are understated by 86 basis points, the difference between 5.84% and 4.98%.

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

A. Yes, he does.

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

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

B. CAPM/ECAPM ESTIMATES

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

A. Yes. Mr. Lawton performs a CAPM and ECAPM analyses of ROE summarized on page 81. The results range from 8.70% to 9.75% for the groups of comparable companies.

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

A. To implement the CAPM and ECAPM, three quantities are required: the risk-free rate (R_F), beta (β), and the market risk premium, (R_M - R_F). As shown on Schedule DJL-16, Mr. Lawton uses a risk-free rate of 3.9%, Value Line betas of 0.73-0.75, and a MRP of

6.8%.

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

A. No, I do not. Mr. Lawton's risk-free rate is too low for purposes of applying the CAPM and fails to reflect the projected increase in interest rates. All the economic forecasts of which I am aware anticipate a substantial and steady increase in interest rates from 2013 onward. Global Insight, Value Line and Blue Chip Economic Forecasts all project higher long-term Treasury interest rates in 2013-2015 and beyond. Value Line's quarterly economic review forecasts a yield of 3.7% in 2013, 4.0% in 2014, and 4.8% in 2015. Global Insight's July 2012 edition forecasts a yield on 30-year Treasury bonds of 3.27% in 2013, 4.05% in 2014, and 4.58 in 2015, rising to a long-term level of 5.37%.

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

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

Q. DR. MORIN, DO YOU AGREE WITH MR. LAWTON'S BETA ESTIMATES IN THE CAPM ANALYSIS?

A. Yes, I do.

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

A. In order to determine the MRP component of the CAPM, Mr. Lawton computes an average of two estimates, as shown on page 40 of his testimony. The first estimate of 5.7% is the historical difference between realized stock returns and realized bond returns over the 1926-2011 period. The second estimate of 7.9% is alleged to be a forward-looking estimate derived by subtracting the current risk-free rate of 3.9% from the historical return on common stocks of 11.8%. The average of the two estimates, 6.8%, is Mr. Lawton's estimate of the MRP in his CAPM analyses.

Q. DR. MORIN, DO YOU AGREE WITH MR. LAWTON'S SUGGESTION THAT THE CURRENT EXCEPTIONALLY LOW INTEREST RATE ENVIRONMENT NECESSITATES A DRASTIC DECLINE TO SDG&E'S ROE?

A. No, I do not agree. Mr. Lawton suggests that the low interest rate levels necessitate a drastic decline in SDG&E's authorized ROE because the cost of capital has declined, as evidenced by the historically low bond yields.[1] Mr. Lawton's argument should be rejected because it fails to take into consideration several important and relevant factors.

First, if Mr. Lawton is right and the economy is improving, the current low level interest rate environment is only temporary. Investors are aware that the Federal Reserve is temporarily suppressing interest rates to encourage economic growth. Investors recognize that once the government changes its expansive monetary strategy when the economy rebounds, interest rates could increase quickly and borrowing costs could increase significantly. Second, the fact that long-term Treasury bond yields and utility

[1] Prepared Direct Testimony of Daniel J. Lawton at 9.

bond yields are at historically low levels does not demonstrate that the cost of equity is likewise at historically low levels. Rather, the current low levels of long-term Treasury bond yields are the result of investors' continued risk aversion or a "flight to quality."[2] Mr. Lawton fails to recognize that reduced interest rates on safe investments do not mean that equity market risks have decreased or that investors have materially reduced their return requirements. Despite the low interest rate climate, equity investors expect that their investments in utilities will provide adequate returns.

By contrast, Mr. Lawton's recommendation to overemphasize the low interest rate climate fails to reflect the accurate cost of equity for SCG. Therefore, the Commission should continue to "assess utility returns against our continuing policy to not let utility ROEs be driven in lock step with the interest rate." As the Commission recognized "it would be unwise to attempt to adjust rates every time interest rates rise or fall."[3]

Q. DR. MORIN, DO YOU AGREE WITH MR. LAWTON'S MRP ESTIMATE IN THE CAPM ANALYSIS?

A. No, I do not. For the historical MRP estimate, Mr. Lawton subtracted bond returns from stock returns rather than subtracting the income component of bond returns from stock returns. As I discussed in my direct testimony, the income component (i.e., the coupon rate) is a far better estimate of expected return than the total return (i.e., the coupon rate plus capital gains), because realized capital gains/losses are largely unanticipated by investors. For that very reason, the Morningstar (formerly Ibbotson Associates) publication on which Mr. Lawton relied recommends use of the *income* return on

[2] 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.

[3] D.96-11-060, 96 CPUC 2d 327, 1996 Cal. PUC LEXIS 1184 at *22.

government bonds. In other words, bond investors focus on income rather than realized capital gains/losses. This correction increases Mr. Lawton's MRP estimate by approximately 70 basis points, which is the historical difference in the MRP based on total bond returns and the MRP based on bond income returns.

For his second "forward-looking" MRP estimate, Mr. Lawton simply subtracts the current risk-free rate from the historical stock return average. This is not a forward-looking estimate, for it relies on historical stock returns rather than prospective stock returns. One cannot subtract a current risk-free rate from a historical return figure and call it a forward-looking estimate. What Mr. Lawton should have done is subtract the current risk-free rate from a prospective stock return estimate based on DCF for example, as I did in my direct testimony.

C. FLOTATION COSTS

Q. WHAT ALLOWANCE FOR FLOTATION COSTS DOES MR. LAWTON MAKE WITH RESPECT TO HIS RECOMMENDED ROE FOR SDG&E?

A. Mr. Lawton fails to include any allowance whatsoever for flotation costs in his recommended ROE for SDG&E. Mr. Lawton's ROE estimates are therefore downward-biased by approximately 30 basis points as a result of that omission, as shown in Appendix A of my direct testimony.

Mr. Lawton's disregard of flotation costs is inconsistent with (i) Value Line forecasts that show that electric utilities will be issuing new common stock in the future, and (ii) Mr. Lawton's own Schedule DJL-13 page 2, which shows that Mr. Lawton's comparable companies are scheduled to issue considerable amounts of new equity.

D. RISK ADJUSTMENT

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

A. No, he did not. Mr. Lawton ignores the fact that SDG&E's risks are higher than those of his sample of utilities as evidenced by its higher beta risk measure. Higher risk necessarily means higher return. As I discussed fully in my direct testimony, an upward ROE adjustment of 50 basis points is required to reflect the Company's higher risk as evidenced by its higher than average beta risk measure.

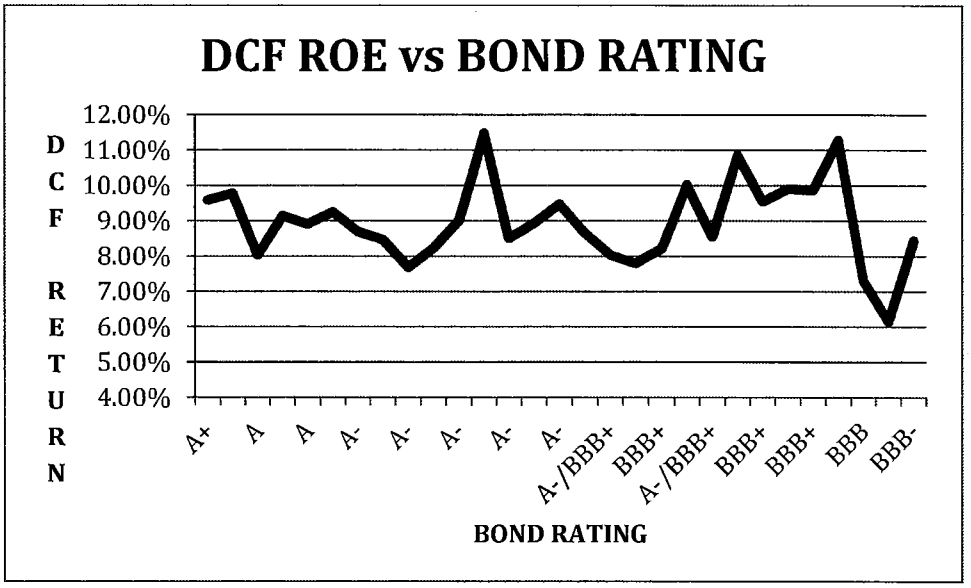
Q. HOW DOES MR. LAWTON VIEW SDG&E'S RISK AND IS HE CORRECT?

A. Mr. Lawton and the other two witnesses I am rebutting view SDG&E's risk as below average based on its favorable bond ratings. This view is inappropriate. This proceeding is mainly concerned with common stock risk/returns, and not bond risk/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 alone. In short, Mr. Lawton has confounded the risk of bonds and the risk of common stocks. As a practical matter, as shown below, there is little, if any, correlation between DCF returns and bond ratings.

Q. DID YOU FIND ANY RELATIONSHIP BETWEEN THE DCF RETURN ESTIMATES OF MR. LAWTON AND BOND RATINGS?

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

returns and bond ratings in Mr. Lawton's group of companies. No such pattern exists.



Q. DO YOU AGREE WITH MR. LAWTON THAT VARIOUS RISK-MITIGATING MECHANISMS IN CALIFORNIA SUCH AS DECOUPLING REDUCE SDG&E'S RISK?

A. While I certainly agree that risk-mitigating mechanisms such as decoupling reduce risk on an absolute basis, they do not necessarily do so on a relative basis, that is, compared to other utilities. For example, a fuel cost adjustment clause does not reduce relative risk since most electric utilities in the industry are under some form of energy cost adjustment mechanism. As I discuss more fully later in my rebuttal, the approval of adjustment clauses, ROE incentives riders, trackers, forward test years, and cost recovery mechanisms by regulatory commissions is widespread in the utility business and is already largely embedded in financial data, such as stock prices, bond rating and business risk scores.

While adjustment clauses, riders, and cost tracking mechanisms may mitigate (on an absolute basis but not on a relative basis) a portion of the risk and uncertainty related

to the day-to-day management of SDG&E's operations, there are other significant factors to consider that work in the reverse direction for SDG&E, for example the weakening of the economy and the Company's dependence on a huge capital spending program requiring external financing.

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

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

To illustrate, instead of calculating adjusted Funds From Operations (FFO) in accordance to S&P methodology, Mr. Lawton employs a high level EBITDA Cash Flow calculation that doesn't take into account all the S&P adjustments. According to S&P methodology, adjusted FFO is calculated by adjusting Net income by non-cash items, capitalized interest, operating lease depreciation, post retirement obligations, and imputed PPA depreciation. As shown in Company Witness Sandra Hrna's direct testimony on

pages 12-14, the imputed debt adjustment translates into a significant impact on the credit ratio benchmarks when properly adhering to S&P methodology.

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

E. CONCLUSIONS

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

A. My testimony has identified several areas of agreement between Mr. Lawton's testimony and my own. The following table summarizes the principal reasons why Mr. Lawton's DCF-based results understate an appropriate ROE for SDG&E:

Source	Basis Points
Dividend yield adjustment	20
Flotation Cost Allowance	30
Growth Rate Adjustment	65-86
Risk Adjustment	50
Total Adjustment	165-186

Correction of these understatements would increase Mr. Lawton's DCF results by 165 – 186 basis points, from his original DCF range of 9.00% - 10.00% to 10.65% - 11.86%. The corrected range is quite consistent with my own recommendation of 10.9% and the Company's recommended 11.0%.

The following table summarizes the principal reasons why Mr. Lawton's CAPM/ECAPM results understate an appropriate ROE for SDG&E:

Source	Basis Points
Risk-Free Rate	30
MRP Income Component	70
Risk Adjustment	50
Total Adjustment	150

Correction of these understatements would increase Mr. Lawton's CAPM results by 150 basis points, from his original range of 9.0% - 9.5% to 10.5% - 11.0% which again is quite consistent with my own recommendation of 10.9% and the Company's recommended 11.0%.

Q. HAS MR. LAWTON PRESENTED ANY MATERIAL IN HIS TESTIMONY THAT WOULD CAUSE YOU TO ALTER ANY OF YOUR RECOMMENDATIONS AND METHODOLOGIES?

A. No, he has not.

II. REBUTTAL OF MR. WOOLRIDGE

A. SUMMARY

Q. PLEASE SUMMARIZE MR. WOOLRIDGE'S RATE OF RETURN RECOMMENDATION.

A. Mr. Woolridge's ROE recommendation on behalf of DRA is the most draconian of the three, and it is inconsistent with other DRA witness ROE recommendations for ongoing electric utilities, as I discussed earlier. Mr. Woolridge recommends a ROE allowance of only 8.5% for SDG&E. In determining the cost of equity, Mr. Woolridge applies a DCF analysis to a group of 34 electric utilities. This study, summarized on page 4-38 of his testimony, produces a result of 8.5%. Mr. Woolridge also performs a CAPM analysis, although he does not rely on the results of this analysis in spite of devoting more a substantial part of his testimony to the CAPM and its proper inputs. The CAPM analysis, summarized on Page 4-44 of his testimony, produces a result of 7.7%. Based on his sole DCF analysis, Mr. Woolridge concludes that SDG&E's cost of equity is only 8.5%.

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

A. My general reaction to his recommendation, before I engage in a more technical critique, is that there are two major flaws in Mr. Woolridge's testimony. First, Mr. Woolridge's recommended 8.5% ROE for SDG&E lies well outside the zone of reasonableness and

outside the zone of currently authorized rates of return for utilities in the United States. Mr. Woolridge's recommended reduction of the Company's ROE down to only 8.5%, if ever adopted, would result in one of the lowest, if not the lowest, rate of return award for a utility in the country. Of the 87 utilities covered monthly in AUS Utility Reports, none have an allowed return anywhere near Mr. Woolridge's recommended 8.5%. Mr. Woolridge's recommendation would cause dramatic adverse consequences on the Company's credit ratings, its financial integrity, the stock of its parent company, the company's capital raising ability, and ultimately ratepayers. Moreover, Mr. Woolridge's single-digit recommended ROE lies well below the zone of his own comparable companies' authorized ROEs, and expected ROEs. These facts provide clear proof that his ROE recommendation for SDG&E is far too low.

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

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

A. Certainly not. Mr. Woolridge's recommended ROE of only 8.5%, which would be among the lowest, if not the lowest, allowed ROE in the country is untimely and contrary to customers' best interests to receive reliable and reasonably-priced electric service. The Commission's approval of the minimum allowed 10.9% ROE that I have recommended along with the Commission's adoption of the Company's proposed 52.0% common

equity ratio and supportive regulation will buttress these goals and provide measurable benefits to SDG&E customers.

Maintaining the Company's strong investment-grade status decreases borrowing costs, improves access to capital and the availability of longer-term debt maturities, and enables the Company to absorb any negative volatility in its financial performance. Maintaining a strong investment-grade bond rating will have beneficial long-term cost implications for the Company and its customers as the Company re-finances existing debt, issues new capital and enters into new contractual arrangements. Clearly, SDG&E's customers have a vested interest in a strong financial position for the utility. The interests of customers and shareholders are consistent, not mutually exclusive. They both benefit from a financially sound utility. Mr. Woolridge's very low recommended ROE is detrimental toward maintaining a strong investment-grade status[4] and contrary to customers' interests.

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

A. Mr. Woolridge seriously understates SDG&E's cost of common equity. A proper application of cost of capital methodologies would give results substantially higher than those that he obtained.

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

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

[4] Mr. Woolridge's recommendation is far below investor expectations. For example, Morgan Stanley reports investors should expect ROEs to "settle around 10.7% as a result of this proceeding." Morgan Stanley Research, "Regulated Utilities." (June 26, 2012) at 4.

1. Return Recommendation Well Outside of the Mainstream. As summarized above, Mr. Woolridge's recommended return is well outside the zone of currently allowed rates of return for major utilities and in the United States and for his own sample of companies. The average currently allowed ROE in the utility industry as reported in the August 2012 edition of AUS Utility Reports is 10.34% in the combination gas and electric utility industry, 10.54% in the electric utility industry, and 10.6% in the gas utility industry. These authorized returns exceed by a significant margin Mr. Woolridge's very low 8.5% recommended return for SDG&E. Moreover, the currently authorized ROE for Mr. Woolridge's own comparable companies averages 10.4%, which again is much higher than his recommended ROE for SDG&E.

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

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

4. DCF Historical Growth Rates. In order to estimate the growth component of the DCF model, Mr. Woolridge relies on thirteen growth proxies, including historical growth rates, despite substantial changes occurring in the energy utility industry that have made use of historical growth rates questionable. Moreover, historical growth rates are redundant since historical growth patterns are already reflected in analysts' growth

forecasts, which he also uses. Also, the stock price Mr. Woolridge uses in his DCF analysis is predicated on analysts' growth forecasts and not on historical growth rates.

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

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

7. Analysts' Growth Forecasts. The best proxy for the growth component of the DCF model is analysts' long-term earnings growth forecasts. Investors expect substantially higher long-term growth rates for electric utilities than what Mr. Woolridge employs in his DCF analysis. Moreover, Mr. Woolridge's final choice of a DCF growth rate is nonsensical because it is less than that of the general economy. In other words, Mr. Woolridge is assuming that utilities will grow at a rate substantially slower than that of the general economy forever.

8. CAPM Market Risk Premium (MRP). Mr. Woolridge's estimate of the MRP is far too low because: 1) he has erroneously included the results of studies which employ geometric means instead of the correct arithmetic means and relied on arbitrarily chosen literature; and 2) he has misrepresented the literature on the subject.

9. CAPM and the Empirical CAPM (ECAPM). The basic version of the CAPM used by Mr. Woolridge understates the Company's cost of equity for low-beta securities.

10. Risk Adjustment. Mr. Woolridge did not adjust his recommended ROE upward to reflect SDG&E's greater than average risk.

11. Unfounded criticisms. Mr. Woolridge's criticisms of my testimony are unfounded.

I shall now discuss each criticism in turn.

B. ALLOWED RETURNS

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

A. No, not at all. Currently allowed returns, while certainly not a precise indication of any individual company's cost of equity capital, are nevertheless important determinants of investor growth perceptions and investor-expected returns. They also serve to provide some perspective on the validity and reasonableness of Mr. Woolridge's recommendation.

As I discussed in my direct testimony, SDG&E's investment risk is above average, as evidenced by its above average beta risk measure. But Mr. Woolridge recommends an ROE well below the average currently allowed ROE of 10.22% in 2011 and 10.36% in 2012 in the electric utility industry [as reported by SNL (formerly

Regulatory Research Associates), in its most recent survey of regulatory decisions dated July 6, 2012]. The average currently allowed ROE in the electric utility industry as reported in the August 2012 edition of AUS Utility Reports is 10.34% in the combination gas and electric utility industry and 10.54% in the electric utility industry. These ROE awards and currently authorized ROEs exceed by a substantial margin Mr. Woolridge's recommended single-digit ROE of only 8.5% for SDG&E.

I have also examined the currently allowed ROEs for the 34 electric utilities in Mr. Woolridge's comparable group as reported in AUS Utility Reports survey for August 2012. The currently authorized ROEs for Mr. Woolridge's sample, shown in Table 1 below, average 10.4%.

Table 1 Authorized Returns

Company	Allowed ROE
ALLETE	10.4
Alliant Energy	10.3
Ameren Corp.	9.5
American Elec Power	10.7
Avista Corp.	10.3
Black Hills	10.7
Cleco Corp	10.7
CMS Energy Corp.	10.3
Consol. Edison	9.9
Dominion Resources	10.5
DTE Energy	10.8
Edison International	10.7
Entergy Corp.	10.7
Exelon Corp.	10.5
First Energy	10.5
Great Plains Energy	10.3
Hawaiian Electric	10.0
IDA Corp	10.2
MGE Energy	10.3
Nextera Energy	10.5
OGE Energy	10.0
Pepco Holdings	10.0
PG&E Corp.	11.4

Pinnacle West Capital	11.0
PNM Resources	10.2
Portland General Elec	10.0
SCANA Corp.	10.7
Southern Company	11.5
TECO Energy	11.0
UIL Holdings	8.8
UNS Energy	9.9
Westar Energy	10.2
Wisconsin Energy	10.4
Xcel Energy Inc.	10.7
AVERAGE:	**10.4%**

Source: AUS Utility Reports 8/2012

In short, Mr. Woolridge's draconian recommendation is well outside the mainstream of the allowed rates of return and lies outside the zone of recently authorized returns for electric utilities and for his own sample of companies.[5]

Unreasonable rate treatment for a utility, if implemented, may have serious public policy implications and repercussions that are not mentioned in Mr. Woolridge's testimony. For example, the quality of regulation and the reasonableness of rate of return awards clearly have implications for regulatory climate, economic development and job creation in a given territory. The consistency of regulation in a given jurisdiction has similar implications. It is my belief that Mr. Woolridge's recommended return has negative implications on these grounds and is not consistent with the economic well-being of the State of California. It provides a disincentive to investment in California and undermines the ability of SDG&E to invest in the equipment and other resources needed to operate an electric utility in California.

[5] 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.

Q. IS SDG&E COMPARABLE IN RISK TO MR. WOOLRIDGE'S SAMPLE COMPANIES?

A. No, it is not. As I discussed in my direct testimony, SDG&E's investment risk is above average, as evidenced by its above average beta risk measure. Mr. Woolridge failed to recognize SDG&E's higher than average risk profile and adjust his recommended ROE upward accordingly. As I discussed earlier, SDG&E's bond rating does not constitute an appropriate proxy for the risk associated with the common equity capital of SDG&E.

C. DCF ANALYSIS

1. UNDERSTATED DIVIDEND YIELD

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

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

2. DCF DIVIDEND YIELD AND FLOTATION COSTS

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

A. Flotation costs are very similar to the closing costs on a home mortgage. In the case of issues of new equity, flotation costs represent the discounts that must be provided to place the new securities. Flotation costs have a direct and an indirect component. The direct component represents monetary compensation to the security underwriter for

marketing/consulting services, for the risks involved in distributing the issue, and for any operating expenses associated with the issue (printing, legal, prospectus, etc.). The indirect component represents the downward pressure on the stock price as a result of the increased supply of stock from the new issue. The latter component is frequently referred to as "market pressure."

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

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

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

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

I am surprised by Mr. Woolridge's reluctance to accept flotation costs. Obviously, common equity capital is not free. The flotation cost allowance to the cost of common equity capital is routinely discussed and applied in most corporate finance textbooks.

Mr. Woolridge's position concerning flotation costs is inconsistent with the Value Line forecasts that show that electric utilities will be issuing new common stock in the future. According to the Value Line data source employed by Mr. Woolridge, the electric utility industry is scheduled to issue substantial amounts of new equity for 2013-2015. Later in my rebuttal when I respond to his criticisms of my testimony, I provide additional reasons why Mr. Woolridge's arguments against a flotation cost allowance are unfounded.

3. DCF GROWTH RATES

Q. WHAT GROWTH RATE PROXIES DID MR. WOOLRIDGE EMPLOY IN HIS DCF ANALYSIS?

A. Mr. Woolridge employs an average of thirteen arbitrary, inapposite, and apparently randomly chosen growth rates as proxies for the DCF growth component. The thirteen proxies are shown on Table 2 below.

Table 2 Mr. Woolridge's DCF Growth Rates

1	10-yr historical Earnings	2.0%
2	10-yr historical Dividend	1.3%
3	10-yr historical Book Value	3.5%
4	5-yr historical Earnings	4.5%
5	5-yr historical Dividend	4.0%
6	5-yr historical Book Value	4.5%
7	Value Line Projected earnings	5.3%
8	Value Line Projected dividend	3.5%
9	Value Line projected Book Value	4.3%
10	Value Line Internal Growth	4.0%
11	Yahoo analysts forecasts	4.6%
12	Zacks analysts forecasts	4.9%
13	Reuters analyst forecasts	4.6%
	AVERAGE	**3.9%**

Source: Woolridge Exhibit JRW-10 Pages 3-5.

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

A. As shown on Table 2 above, the overall average from all the proxies is 3.9%, in contrast to Mr. Woolridge's final estimate of 4.25%. It is not clear as to why Mr. Woolridge chose 4.25% when the average growth rate from all the proxies is 3.9%. Actually, if we remove the outlying 10-year historical growth rates, the average growth is 4.5%.

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

A. In my direct testimony, I examined the consensus growth estimate developed by professional analysts for use as proxies for expected growth, because analysts' growth forecasts influence investor growth expectations and provide a sound basis for estimating the cost of equity with the DCF model. As I stated, these forecasts are made by large reputable organizations, and the data are readily available and are representative of the consensus view of investors.

In contrast, Mr. Woolridge did not employ this type of systematic and well-reasoned approach. Instead, Mr. Woolridge employs many different types of problematic growth rates. Below, I discuss 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 1.3% to 5.3%, he derives an arbitrary growth rate of 4.25% for his electric 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. These forecasts influence investor expectations and are appropriate to consider here. Mr. Woolridge's shotgun approach to growth rates, on the other hand, 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 electric 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

Growth Proxies	All	Excl Divid	Only Divid
	(1)	(2)	(3)
10-yr historical Earnings	2.0%	2.0%	
10-yr historical Dividend	1.3%		1.3%
10-yr historical Book Value	3.5%	3.5%	
5-yr historical Earnings	4.5%	4.5%	
5-yr historical Dividend	4.0%		4.0%
5-yr historical Book Value	4.5%	4.5%	
Value Line Projected earnings	5.3%	5.3%	
Value Line Projected dividend	3.5%		3.5%

Value Line projected Book Value	4.3%	4.3%	
Value Line Internal Growth	4.0%	4.0%	
Yahoo analysts forecasts	4.6%	4.6%	
Zacks analysts forecasts	4.9%	4.9%	
Reuters analyst forecasts	4.6%	4.6%	
Average	**3.9%**	**4.2%**	**2.9%**

The overall central growth rate from all the proxies, as shown at the bottom of Column 1, is 3.9% for the group. It is clear from this table that the dividend growth proxy median of 2.9% shown at the bottom of Column 3 is an outlier, compared to the average of 4.2% computed by excluding the dividend proxies (Column 2). I show below that dividend growth rates are inappropriate proxies for expected growth at this time.

4. HISTORICAL GROWTH RATES

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

A. In arriving at his proxies for the DCF growth component, six of the thirteen proxies on which Mr. Woolridge relies are historical growth rates. Although he reports and discusses these historical growth rates averaging 3.3% (see the first six estimates from Table 3 above), he ends up using 4.25%, so that it is difficult to tell to what extent he places reliance, if any, on historical growth rates. To the extent that he relied on history, I disagree.

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

regulated monopoly to a more competitive environment. Moreover, historical growth rates are largely redundant because such historical growth patterns are already incorporated in analysts' growth forecasts that should be used in the DCF model. I therefore recommend that the Commission reject historical growth rates as proxies for expected growth in the DCF calculation.

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

5. DIVIDEND GROWTH RATES

Q. WAS MR. WOOLRIDGE CORRECT TO CONSIDER DIVIDEND GROWTH PROXIES IN APPLYING THE DCF MODEL?

A. No. It is abundantly clear from Table 3 that the 2.9% average of the dividend growth proxies is an outlier, when compared with the other proxies showing growth rates that average 4.2%. Mr. Woolridge should not have considered dividend growth in applying the DCF model. This is because it is widely expected that electric utilities will continue to lower their dividend payout ratio over the next several years in response to the need to rely more heavily on internal financing sources in light of substantial planned capital expenditures. In other words, earnings and dividends are not expected to grow at the same rate in the future.

In short, dividend growth rates are unlikely to provide a meaningful guide to investors' growth expectations for energy utilities. Therefore, earnings growth provides a

more meaningful guide to investors' long-term growth expectations. After all, it is growth in earnings that will support future dividends and share prices.

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(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

$$K = D_1/P + g$$

would be 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 existing common equity

v = fraction of the funds raised from sale of stock that accrues to shareholders at the start of the period

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

7. ANALYSTS' GROWTH FORECASTS

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

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

There is an abundance of evidence attesting to the importance of earnings in assessing investors' expectations. First, the sheer volume of earnings forecasts available from the investment community relative to the scarcity of dividend forecasts attests to their importance. To illustrate, Value Line, Zacks Investment, First Call Thompson, Reuters, Yahoo Finance, and Multex provide comprehensive compilations of investors' earnings forecasts, to name some. The fact that these investment information providers

focus on growth in earnings rather than growth in dividends indicates that the investment community regards earnings growth as a superior indicator of future long-term growth. Second, Value Line's principal investment rating assigned to individual stocks, Timeliness Rank, is based primarily on earnings, accounting for 65% of the ranking.

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

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

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

A. Published studies in the academic literature demonstrate that growth forecasts made by security analysts are reasonable indicators of investor expectations, and that investors rely on analysts' forecasts. Cragg and Malkiel ["Expectations and the Structure of Share Prices," Chicago: University of Chicago Press, 1982] present detailed empirical evidence that the average analysts' expectation is more similar to expectations being reflected in the marketplace than are historical growth rates, and represents the best possible source of DCF growth rates. Cragg and Malkiel show that historical growth rates do not contain any information that is not already impounded in analysts' growth forecasts. A study by Professors Vander Weide and Carleton, "Investor Growth Expectations: Analysts vs. History" (*The Journal of Portfolio Management*, Spring 1988), also confirms the superiority of analysts' forecasts over historical growth extrapolations. Another study by

Timme & Eiseman, "On the Use of Consensus Forecasts of Growth in the Constant Growth Model: The Case of Electric Utilities," *Financial Management,* Winter 1989, produces similar results.

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

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

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

D. 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)

Mr. Woolridge devotes an enormous amount of his testimony to the CAPM analysis, 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 (β), 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 0.73, 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 of which I am aware call for a substantial increase in interest rates in 2013-2014, as I discuss later 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 OF THE CAPM?

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

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

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

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

A. In their widely-used authoritative textbook, following a comprehensive review of the rich and fertile MRP literature, Brealey & Myers & Allen state:[6]

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

I certainly concur with this view, although the recent financial crisis, economic uncertainties at home and in Europe and consequent repricing of risk by investors suggests that the upper part of the MRP range identified by Brealey, Myers, and Allen is far more relevant.

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

A. The fundamental flaw of this estimate is that it is based on a summary of historical results from a selected variety of academic and trade studies based on a different set of capital market conditions, and it is certainly not representative of current market conditions or of

[6] Richard A. Brealey, Stewart C. Myers, and Paul Allen, Principles of Corporate Finance, 8th Edition, Irwin McGraw-Hill, 2006.

what is likely to occur prospectively, especially following the unprecedented financial crisis of 2008-2009 and the ongoing economic uncertainties both at home and abroad. In his criticism of my risk premium studies in a recent Duke Energy case in Kentucky (Case No. 2009-00202), it is interesting that Mr. Woolridge himself provides the fundamental argument against his entire MRP analysis on page 66 line 21 of that testimony:

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

I do not believe Mr. Woolridge included this particular important passage in his testimony in this proceeding. I also note that Mr. Woolridge relied on a MRP of 4.37% in the aforementioned 2009 case, versus 5.1% in a recent SourceGas case, and versus 5.01% in this case. Mr. Woolridge offers no explanation for this sudden change in MRP.

Q. WHAT ELSE IS WRONG WITH THIS ESTIMATE?

A. Several things. First, there are several studies of MRPs that imply considerably larger estimates that are not reported by Mr. Woolridge. Second, many of the historical studies selected by Mr. Woolridge rely on geometric average returns rather than arithmetic average returns. Third, many of the historical studies selected by Mr. Woolridge rely on the total return component of bond returns rather than on the income component. Fourth, there is a serious logical contradiction in Mr. Woolridge's MRP estimate. Fifth, Mr. Woolridge's MRP estimate is inconsistent with the MRPs implied in regulatory decisions. I shall now discuss each of these flaws in turn.

1. ECONOMIC REASONABLENESS

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

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

2. COMMENTS ON STUDIES CITED BY MR. WOOLRIDGE

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

A. Yes, there are several studies that suggest much higher MRPs than Mr. Woolridge's 5.01%, and that are well within the established range of 6% - 8% espoused in the conventional literature. Let me cite some examples.

Mr. Woolridge cites a 2005 study by Dimson, Marsh, and Staunton[7] on Exhibit JRW-11, page 5. The authors report returns over the period 1900 to 2005 for twelve countries, representing 90% of today's world market capitalization. They report an average risk premium over long bond returns of 6.5% for the U.S., and that risk premium was generally higher for the second half century than for the first. For example, the U.S. had 5% in the first half, compared to 7.5% in the second half, well in excess of Mr.

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

Woolridge's 5.01% estimate. Brealey, Myers, and Allen op. cit. updated the Dimson study and found an average MRP of 6.5% for the U.S.

Another study of MRPs not mentioned by Mr. Woolridge was published by Mehra,[8] who concludes that the MRP over the 1889-2000 period is likely to be similar to its historical estimate of 6%-7%, notwithstanding the unprecedented ongoing financial crisis that has undoubtedly increased the MRP.

Yet another study by Constantinides,[9] presented in his presidential address to the American Finance Association in 2001, found MRP estimates of 8% and 6% over the 1926-200 and 1951-2000 period, respectively. I note that these estimates do not even include the major stock market disaster of 2008-9.

Finally, a study by Kaplan and Ruback[10] based on investment studies of companies involved in management buyouts and leveraged recapitalization found a median MRP estimate of 7.8% based on a careful analysis of actual major investment decisions rather than on realized market returns. This estimate again far exceeds Mr. Woolridge's 5.01% estimate.

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

A. Yes, I do. On Exhibit JRW-11, page 5, Mr. Woolridge cites several studies based on very long time data series, including historical data prior to 1900, some even dating back to 1802, for example, the Siegel and the Goyal & Welsh studies. This raises the obvious

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[8] Mehra, R., "The Equity Risk Premium: Why Is It a Puzzle?" Financial Analysts' Journal, Jan - Feb. 2003.

[9] Constantinides, G. M., "Rational Asset Prices," Journal of Finance 57: 1567-1591, 2002.

[10] Kaplan and Ruback, "The Valuation of Cash Flow Forecasts: An Empirical Analysis," Journal of Finance, 50, September 1995, pp. 1059-1093.

question of whether data on capital market behavior from the 19th century is relevant for estimating return in the 21st century. The major concern with data for a period beginning in 1802 is the reliability of the data. The stock market of the early 1800's was severely limited and embryonic in scope, with very few issues trading and few industries represented. Dividend data were unavailable over most of this early period and stock prices were based on wide bid-ask spreads rather than on actual transaction prices. The difficulties inherent in stock market data prior to the Great Depression are discussed by Schwert.[11]

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

A. I disagree. In the latest edition of Morningstar's (formerly Ibbotson Associates) Valuation 2011 Yearbook, a prospective MRP study by Ibbotson and Chen on which Mr. Woolridge relies on page 45, reports a MRP of 6.0% on an arithmetic basis. It is noteworthy that the authors' MRP estimate is far closer to the historical premium than being zero or negative, contradicting Mr. Woolridge's view that historical MRPs should not be relied upon.

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

A. On page 4-46, Mr. Woolridge argues that historical estimates are upward-biased because the S&P 500 index includes only companies that have survived, and as a result the

[11] Schwert, G. W., "Indexes of U.S. Stock Prices from 1802 to 1987," *Journal of Business*, 1990, Vol. 63, no. 3.

average realized excess return is overestimated. However, a recent study by Jorion & Goetzmann not discussed by Mr. Woolridge finds that the "survivorship bias" is only 29 basis points.[12] A more recent working paper by Dimson, Marsh, and Staunton[13] find a survivorship bias of only 0.1%.

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

A. Surveys of academics and investment professionals, for example the Welch surveys cited by Mr. Woolridge on Exhibit JRW-11, page 5, provide another technique of estimating the MRP. While this technique has the benefit of being forward-looking, it is subject to the well-known shortcomings of survey techniques. There are several reasons to place little weight on survey results relative to the results from other approaches. First, return definitions and risk premium definitions differ widely. Second, survey responses are subject to bias. Third, subjective assessments about long-term market behavior may well place undue weight on recent events and immediate prospects. Fourth, the results of such surveys are notoriously volatile from year to year.

Keeping these limitations in mind, Welch surveyed finance professors on their views about the long-term equity premium in 1998 and again in 2001. The arithmetic mean long-term expected risk premium of respondents for the U.S. was 7.1% in 1998 and 5.5% in 2001, again a long way from Mr. Woolridge's 5.1%. Given the deplorable behavior of equity markets in the 2000-2002 period, and given the repricing of risk that

[12] Jorion, P., and Goetzmann, W., "Global Stock Markets in the Twentieth Century," Journal of Finance 54:953-980, 1999.

[13] Dimson, E., Marsh, P., and Staunton, M., "The Worldwide Equity Premium: A Smaller Puzzle," Working Paper, London Business Scholl, April 2006, p. 22.

followed the unprecedented financial crisis of 2008-2009, one would reasonably expect a substantial upward reassessment of those risk premiums. In fact, the most comprehensive and recent 2011 MRP survey by Fernandez reports a MRP of 6.0% for the U.S., which again exceeds Mr. Woolridge's 5.01% estimate.

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

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

> *Even if the conditional equity premium given current market conditions is small, and there appears to be general consensus that it is, this in itself does not imply that it was obvious either that the historical premium was too high or that the equity premium has diminished.*
>
> *In the absence of this [knowledge of the future], and based on what we currently know, we can make the following claim: over the long horizon the equity premium is likely to be similar to what it has been in the past and the returns to investment in equity will continue to substantially dominate that in T -bills for investors with a long planning horizon.*

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

3. ARITHMETIC VS. GEOMETRIC AVERAGES

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

A. No, it is not. Amidst the 39 studies cited by Mr. Woolridge on his Exhibit JRW-11, page 5, some studies report arithmetic mean returns over a given period while several others rely on geometric mean returns over that same period. Only arithmetic means are appropriate for forecasting and estimating the cost of capital, while geometric means are not.[14] Indeed, the "Ibbotson approach" (Morningstar, formerly Ibbotson Associates publications) alluded to on page 4-41 of Mr. Woolridge's testimony contain a detailed and rigorous discussion of the impropriety of using geometric averages in estimating the cost of capital. There is no theoretical or empirical justification for the use of geometric mean rates of return. Briefly, the disparity between the arithmetic average return and the geometric average return raises the question of how these different return measures should be used. The answer is that the geometric average return should be used for measuring historical returns that are compounded over multiple time periods. The arithmetic average return should be used for future-oriented analysis, where the use of expected values is appropriate.

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

[14] *See* Roger A. Morin, *The New Regulatory Finance*, chapter 4 (2006); Brealey, Myers, and Allen, *Principles of Corporate Finance* (8th ed. 2006).

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

A. For four of the seven historical MRP studies referenced on the upper panel of Exhibit JRW-11, page 5, Mr. Woolridge reports the geometric mean MRP rather than the arithmetic mean MRP, thus significantly understating the MRP by some 150 basis points for five of the ten historical studies based on the geometric mean. The 150 basis points is the historical difference between the geometric and arithmetic mean typically reported in historical studies, for example in the aforementioned Morningstar study. Since approximately half of the studies rely on geometric means, the net impact is that Mr. Woolridge has understated the MRP by 75 basis points from historical studies. The average historical MRP of 5.50% reported on Mr. Woolridge's Exhibit JRW-11, page 5, is understated by 75 basis points and becomes 6.25% instead of 5.50%. The impact on SDG&E's cost of equity CAPM estimate is by 55 basis points, using Mr. Woolridge's beta for SDG&E of 0.73:

$$\beta_{SDG\&E} \times (\text{Arithmetic Mean} - \text{Geometric Mean})$$

$$0.73 \times (6.25\% - 5.50\%) = 0.73 \times (0.75\%) = 0.55\%$$

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

A. No, absolutely not. On pages 57-60, Mr. Woolridge argues that arithmetic mean return measures are biased and should be disregarded. Mr. Woolridge's arguments reflect a fundamental misunderstanding of how geometric and arithmetic means are used in financial analysis. Geometric means are properly used in evaluating historic performance of stocks or portfolios of stocks, whereas determining investor expectations, which define

the cost of equity capital, requires use of arithmetic means. Chapter 6 of my recent book The New Regulatory Finance explains this issue in detail, provides illustrative mathematical examples, and cites authoritative financial texts, all of which confirm the need to use arithmetic means, and not geometric means, to properly estimate a utility's cost of equity. I summarize key points of that chapter in response to questions below.

Q. PLEASE EXPLAIN HOW THE ISSUE OF WHAT IS THE PROPER "MEAN" ARISES IN THE CONTEXT OF ANALYZING THE COST OF EQUITY.

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

Q. IF BOTH ARE "REPRESENTATIVE" OF THE SERIES, WHAT IS THE DIFFERENCE BETWEEN THE TWO?

A. Each represents different information about the series. The geometric mean of a series of numbers is the value which, if compounded over the period examined, would have made the starting value to grow to the ending value. The arithmetic mean is simply the average of the numbers in the series. Where there is any annual variation (volatility) in a series of numbers, the arithmetic mean of the series, which reflects volatility, will always exceed the geometric mean, which ignores volatility. Because investors require higher expected

returns to invest in a company whose earnings are volatile than one whose earnings are stable, the geometric mean is not useful in estimating the expected rate of return which investors require to make an investment.

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

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

GEOMETRIC VS. ARITHMETIC RETURNS

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 Return	**26.7%**	**11.6%**
Geometric Mean Return	**11.6%**	**11.6%**

If Mr. Woolridge were correct in arguing for the use of geometric means, investors would require the same expected return to invest in both of these stocks, even though the volatility of returns in Stock A is very high while Stock B exhibits perfectly

stable returns. That is clearly contrary to the most basic financial theory, that is, the higher the risk the higher the expected return.

Q. DOES MR. WOOLRIDGE PROVIDE AN EXAMPLE ATTEMPTING TO SHOW THAT GEOMETRIC MEANS ACCURATELY COMPUTE THE RETURN AN INVESTOR MIGHT REALIZE FROM INVESTING IN A VOLATILE PORTFOLIO?

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

4. INCOME COMPONENT OF BOND RETURN

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

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

5. REGULATORY DECISIONS

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

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

$$\text{Risk Premium} = \beta (R_M - R_F)$$

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

Solving for MRP, we obtain:

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

I examined the MRPs implied in several hundred regulatory decisions for natural gas utilities in the United States over the period 1986-2011. Using the allowed average risk premium of 5.2% in these decisions over the last decade and a beta of 0.73 for U.S. electric utilities, the implied MRP is 7.7%, that is, 5.6%/0.73 = 7.7%, again a long way from Mr. Woolridge's 5.01%.

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

A. This estimate is vastly understated, makes little to no economic sense, relies in part on technical errors, and is inconsistent with regulatory decisions. All in all, I echo Professors Brealey, Myers, and Allen's official position and my own position espoused in my aforementioned text on the MRP that a range of around 6% to 8% is reasonable for the MRP in the United States, with the upper end of the range highly likely following the ongoing financial crisis. In short, Mr. Woolridge's criticisms are unfounded and my MRP estimate is quite consistent with the literature on the subject and even very conservative in light of the increase in investor risk aversion following the 2008-9 financial crisis and the ongoing European and domestic economic uncertainties.

E. CAPM AND THE EMPIRICAL CAPM

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

A. No, I do not. I believe that the plain vanilla version of the CAPM should be supplemented by the more refined version of the CAPM. There have been countless empirical tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. The results of the tests support the idea that beta is related to security returns, that the risk-return tradeoff is positive, and that the relationship is linear. The contradictory finding is that the risk-return tradeoff is not as steeply sloped as the predicted CAPM. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. In other words, a CAPM-based estimate of the cost of capital underestimates the return required from low-beta securities and overstates the return from high-beta

securities, based on the empirical evidence.[15] I was surprised that Mr. Woolridge was unaware of this important financial literature, for this is one of the most well-known results in finance, and was astonished by Mr. Woolridge's statement on page 5-63 lines 2-3 that the ECAPM has not been tested empirically.

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

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

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

Q. PLEASE COMMENT ON MR. WOOLRIDGE'S ASSESSMENT OF THE EMPIRICAL CAPM USED IN YOUR TESTIMONY.

A. Mr. Woolridge argues, on pages 5-63 and 5-64 of his testimony, that my ECAPM analysis is erroneous because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since I have already used Value Line betas which are adjusted for such trend, my ECAPM analysis somehow results in double-counting. I do not share the view that the ECAPM is equivalent to a beta adjustment.

[15] 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.

In my direct testimony, Appendix A, I provided details relating to the empirical validity of the plain vanilla CAPM and its estimates of cost of capital, which underestimate the return required from low-beta securities and overstate the return required from high-beta securities, based on empirical evidence. A number of variations on the original CAPM theory have been proposed to explain this finding. The ECAPM makes use of these empirical findings. The ECAPM estimates the cost of capital with the equation:

$$K = R_F + \acute{\alpha} + \beta \times (MRP - \acute{\alpha})$$

where K is the expected return, R_F is the risk-free rate, $\acute{\alpha}$ is the "alpha" of the risk-return line, a constant, and MRP is the market risk premium. Inserting the long-term risk-free rate as a proxy for the risk-free rate, an alpha in the range of 1% - 2%, and reasonable values of beta and the MRP in the above equation, produces results that are indistinguishable from the ECAPM used in my testimony:

$$K = R_F + 0.25 (R_M - R_F) + 0.75 \beta (R_M - R_F)$$

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

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

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

F. 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 SDG&E's risks are higher than those of his sample of utilities as evidenced by its higher beta risk measure. Higher risk necessarily means higher return. As I discussed fully in my direct testimony, an upward ROE adjustment of 50 basis points is required to reflect the Company's higher risk.

Q. HOW DOES MR. WOOLRIDGE VIEW SDG&E'S RISK AND IS HE CORRECT?

A. Mr. Woolridge, as well as the other two witnesses I am rebutting, view SDG&E'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 confounded the risk of bonds and the risk of common stocks. As a practical matter, as I showed earlier in my rebuttal, there is little, if any, correlation between DCF returns and bond ratings.

G. ADDITIONAL RESPONSES TO MR. WOOLRIDGE'S CRITICISMS

1. Flotation Cost Adjustment

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

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

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

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

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

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

This argument defies common sense, implying that stock issues are cost-free. As I indicated in my direct testimony, unlike the case of bonds, common stock has no finite

life so that flotation costs cannot be amortized and must therefore be recovered via an upward adjustment to the allowed return on equity. Moreover, as I show below, a stock's market-to-book value is irrelevant. That market prices are above book value does not change the fact that a portion of the capital contributed by equity investors is not available to earn a return because it is paid out as flotation costs.

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

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

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

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

In theory, flotation costs could be expensed and recovered through rates as they

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

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

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

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

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

2. Historical Risk Premium

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

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

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

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

Q. PLEASE COMMENT ON MR. WOOLRIDGE'S ASSERTION THAT HISTORICAL RISK PREMIUMS ARE IMPERFECT PROXIES FOR EXPECTED RISK PREMIUMS.

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

I have ignored realized risk premiums measured over short time periods, since they are heavily dependent on short-term market movements. Instead, I have relied on

results over periods of enough length to smooth out short-term aberrations, and to encompass several business and interest rate cycles. The use of the entire study period for which reliable data are available in estimating the appropriate market risk premium minimizes subjective judgment and encompasses many diverse regimes of inflation, interest rate cycles, and economic cycles.

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

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

3. DCF Growth Rates

Q. PLEASE COMMENT ON MR. WOOLRIDGE'S CRITICISM OF YOUR DCF ANALYSIS.

A. On page 5-53 of his testimony, Mr. Woolridge maligns the use of analysts' earnings growth forecasts as proxies for the growth component and claims that I have ignored

historical and projected growth rates in dividends and book value. I have previously discussed the impropriety of relying on "near-term" dividend growth because it is widely expected that energy utilities will continue to lower their dividend payout ratio over the next several years in response to increased business risk, and that earnings and dividends will not grow at the same rate in the future. In my direct testimony and earlier in my rebuttal, I discussed the merits of using consensus analysts' earnings growth forecasts in the DCF model and the supportive empirical literature.

I find Mr. Woolridge's criticism surprising, given that he himself relies on Value Line forecasts and analysts' growth forecasts contained in the Yahoo Finance, Reuters, and Zacks Web sites. He also relies on Value Line forecasts in his internal growth approach to specifying the growth component of the DCF model. Mr. Woolridge cannot have it both ways with the use of forecasts.

Q. WHAT DOES THE PUBLISHED ACADEMIC LITERATURE SAY ON THE SUBJECT OF ANALYSTS' GROWTH RATE FORECASTS IN THE DCF MODEL?

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

Q. MR. WOOLRIDGE CRITICIZES YOUR DCF ANALYSIS BECAUSE IT RELIES ON EARNINGS GROWTH PROJECTIONS AND THAT SUCH FORECASTS ARE OVERLY OPTIMISTIC. HOW DO YOU RESPOND?

A. In several instances in his testimony (pages 5-54 lines 2-17, 5-59 line 28, 5-62 line 31, and Appendix A), Mr. Woolridge denounces the use of financial analysts' earnings

forecasts on the grounds that such forecasts are overly-optimistic. I disagree, at least for utility stocks. Using virtually all publicly available analyst earnings forecasts for a large sample of companies (over 23,000 individual forecasts by 100 analyst firms), Lys and Sohn (1990) show that stock returns respond to individual analyst earnings forecasts, even when they are closely preceded by earnings forecasts made by other analysts or by corporate accounting disclosures.[16] Using actual and IBES data from 1982 - 1995, Easterwood and Nutt (1999) regress the analysts' forecast errors against either historical earnings changes or analysts' forecasting errors in the prior years. Results show that analysts tend to underreact to negative earnings information, but overreact to positive earnings information.[17]

The more recent studies provide evidence that analysts make biased forecasts and misinterpret the impact of new information. For example, several studies in the early 1990s suggest that analysts either systematically underreact or overreact to new information. Easterwood and Nutt (1999) discriminate between these different reactions and reported that analysts underreact to negative information, but overreact to positive information. The recent studies do not necessarily contradict the earlier literature. The earlier research focused on whether analysts' earnings forecasts are better at forecasting future earnings than historical averages, whereas the recent literature investigates whether the analysts' earnings forecasts are unbiased estimates of future earnings. One way to assess the concern that analysts' forecasts may be biased upward is to incorporate into the analysis the growth forecasts of independent research firms, such as Value Line, in

[16] 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.

[17] 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.

addition to the analyst consensus forecast. Unlike investment banking firms and stock brokerage firms, independent research firms such as Value Line have no incentive to distort earnings growth estimates in order to bolster interest in common stocks.

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

H. CONCLUSIONS

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

A. In summary, there are major infirmities in Mr. Woolridge' methodology. His ROE recommendation is highly unreliable and should be treated with extreme caution by the Commission.

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

A. No, he has not.

III. REBUTTAL TO MR. HILL'S TESTIMONY

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

A. Mr. Hill recommends a ROE for SDG&E of only 8.75%, which is at the low end of his range of 8.50% – 9.50%. Mr. Hill relies primarily on a traditional constant DCF analysis of a group of sixteen electric utilities. Surprisingly, Mr. Hill does not present the same two-stage DCF analysis he presented in a recent Hawaiian Electric Company testimony and nor does he present his usual Modified Earnings and Market-to-Book methodologies as he has in most, if not all, his past testimonies. No explanations are offered for these significant departures from past practices. As summarized on page 37 of his testimony, the DCF study produces an estimated ROE of 8.98% for his sample of electric utilities. Curiously, Sempra, SDG&E's and SoCalGas' parent company, did not meet his screening criteria so that one is left to question the risk comparability of his sample companies.

Mr. Hill also performs a CAPM analysis as a secondary methodology. I note that in past testimonies, Mr. Hill has relied on the CAPM as merely a check on his DCF results. Once more, he has changed course in this proceeding by giving the CAPM significant weight. No explanation is provided for this departure from past practice. As summarized on page 58 of his testimony, the CAPM study produces an estimated ROE of only 7.83% for his sample of electric utilities. Then, Mr. Hill introduces another methodology on which he has not relied upon in past testimonies, namely, the Historical Risk Premium approach. Mr. Hill has changed course again, and no explanation is provided for introducing this methodology in this proceeding. As summarized on page 60 of his testimony, the Historical Risk Premium study produces an estimated ROE of only 7.81%.

Mr. Hill summarizes the results of the three methodologies in table form on page 60. From these various analyses, Mr. Hill also concludes that the cost of common equity for utilities lies in a range of 8.5% - 9.5% with a midpoint of 9.0%. Somehow, Mr. Hill selects 8.75% near the bottom end of his range as a final recommended ROE for SDG&E, presumably on account of SDG&E's alleged lower risk than average, despite the fact that SDG&E's beta risk measure exceeds the industry average and that of his comparable group of companies.

Q. PLEASE SUMMARIZE YOUR SPECIFIC CONCERNS WITH MR. HILL'S RECOMMENDATION.

A. My first major concern is the lack of consistency from testimony to testimony and significant departures from past practices. Contrary to past practices, Mr. Hill introduces the Historical Risk Premium in his arsenal for this proceeding. Then, he throws out his Modified Earning-Price Ratio method and his Market-to-Book method on which he has consistently relied in past testimonies. The CAPM is given significant weight in this proceeding, unlike previous testimonies where Mr. Hill uses the CAPM as a check on the DCF results. No explanations are provided for these departures from past practice, casting a shadow on the credibility of his recommendation. My second concern is that the ROE recommended by Mr. Hill significantly understates an appropriate ROE for SDG&E for the following reasons:

(i) ***Mr. Hill's recommended ROE for SDG&E is outside of the mainstream for electric utilities.*** The ROE recommended by Mr. Hill for SDG&E is well outside the range of currently authorized ROEs for electric utilities in the United States

and the zone of currently authorized ROEs for his own sample of comparable companies.

(ii) ***Mr. Hill uses an ambiguous and arbitrary growth rate for each utility in his DCF analysis***. Mr. Hill's DCF estimates are unreliable because he has selected a growth rate for each company in his comparable group that is ambiguous, arbitrary and impossible to replicate scientifically.

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

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

(v) ***Mr. Hill's recommended ROE improperly ignores flotation costs.*** Mr. Hill understates his recommended ROE by approximately 30 basis points because it does not allow for flotation costs and, as a result, leaves a legitimate expense unrecovered. Clearly, common equity capital is not free.

(vi) ***Mr. Hill fails to recognize that SDG&E is a higher than average risk electric utility as evidenced by its higher than average beta risk measure, understating the ROE by 50 basis points.***

(vii) ***Actuarial data utilized for pension fund accounting are irrelevant in estimating a utility's cost of capital.*** Actuarial data utilized for pension fund accounting are

by nature very conservative, consistent with Generally Accepted Accounting Principles ("GAAP") guidelines, and are not suited for assessing the cost of equity capital in a rate proceeding.

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

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

A. MR. HILL'S RECOMMENDED ROE FOR SDG&E IS OUTSIDE OF THE MAINSTREAM FOR ELECTRIC UTILITIES

Q. DR. MORIN, PLEASE COMMENT ON RECENT DECISIONS REGARDING ALLOWED ROES FOR ELECTRIC UTILITIES.

A. The average authorized ROE for the combination gas and electric industry and the overall electric utility industry at this time is 10.54% and 10.34%, respectively. Mr. Hill's recommended ROE for SDG&E is well below the authorized ROE of each electric utility in Mr. Hill's comparable group, as shown on the table below.

Although decisions of other regulatory bodies regarding authorized ROEs do not bind this Commission, one cannot overlook the significant difference between Mr. Hill's recommended ROE and the ROEs currently authorized for the electric utility industry. Moreover, as discussed earlier, SDG&E is riskier than the average utility in Mr. Hill's group.

Mr. Hill's Group of Electric Utilities

	Company Name	Allowed ROE
1	ALLETE	10.38
2	Alliant Energy	10.34
3	Amercian Elec Power	10.65
4	Cleco Corp	10.70
5	Edison Intern	10.65
6	Entergy Corp	10.66
7	IDA CORP	10.18
8	MGE Energy	10.30
9	Northwestern Corp	10.90
10	PG&E	11.35
11	Pinnacle West	11.00
12	Portland General	10.00
13	Southern Company	11.46
14	Westar Energy	10.20
15	Wisconsin Energy	10.38
16	Xcel Energy	10.70
	AVERAGE	**10.62**

Source: AUS Utility Reports 08/2012

I note that on page 13 of his testimony, Mr. Hill cites currently allowed returns of 10.2% and 10.3% for electric utilities. Despite this fact, his recommended ROE of 8.75% is well below those contemporaneous ROE awards.

B. DCF ANALYSIS

1. MR. HILL USES AN AMBIGUOUS AND ARBITRARY GROWTH RATE FOR EACH UTILITY IN HIS DCF ANALYSIS

Q. WHAT SPECIFIC DCF METHODOLOGY DOES MR. HILL USE TO ESTIMATE A ROE FOR SDG&E EQUITY?

A. Mr. Hill applies a DCF analysis to one sample of sixteen electric utilities. Mr. Hill bases the expected dividend yield component on a 6-week average stock price. For the growth component, Mr. Hill examines a broad array of growth rate estimates, including (i)

historical and forecast sustainable growth rates, (ii) historical growth rates in book value, earnings, and dividends, (iii) Value Line growth forecasts, and (iv) the consensus growth forecasts reported in Zacks and IBES. This is shown on his Schedule 6 for each company and in summary form on Schedule 5 page 2. Mr. Hill then selects a growth rate for each company. However, as I will explain below, his selection method is arbitrary and impossible to replicate scientifically.

Adding the average dividend yield component of 4.09% to the arbitrary average growth component of 4.89%, Mr. Hill produces a DCF estimate of 8.98% for the group of electric utilities.

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

A. Yes, I agree with its magnitude.

Q. DO YOU AGREE WITH MR. HILL'S GROWTH COMPONENT OF 4.89% IN THE DCF ANALYSIS?

A. No, I do not.

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

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

	AEP Growth Proxies	Estimate
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%
	average	**3.86%**
	median	**3.97%**
	minimum	**1.50%**
	maximum	**5.10%**
	midpoint	**3.30%**

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

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

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

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

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

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

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

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

Q. DID MR. HILL PROVIDE ANY ROE ESTIMATE FOR SEMPRA, SDG&E'S AND SOCALGAS' PARENT COMPANY?

A. He did not. Strangely, Sempra was not part of Mr. Hill's sample of comparable companies, casting doubt on the validity/comparability of his sample of companies. This omission is not explained by Mr. Hill.

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

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

I note, as shown on the table below, that the average expected ROE of 10.2% used in Mr. Hill's retention growth computation exceeds Mr. Hill's recommended 8.75%. In brief, Mr. Hill's implementation of the sustainable growth method, the mainstay of his DCF analysis, is logically circular because it *assumes* a ROE in a regulatory process that is *designed to estimate* the fair and reasonable ROE.

	Company	Expected ROE 2014-16
1	ALLETE	10.0%
2	Alliant Energy	10.5%
3	Amercian Elec Power	10.0%
4	Cleco Corp	11.5%
5	Edison Intern	9.0%

6	Entergy Corp	9.5%
7	IDA CORP	8.0%
8	MGE Energy	10.5%
9	Northwestern Corp	10.5%
10	PG&E	10.5%
11	Pinnacle West	9.0%
12	Portland General	9.0%
13	Southern Company	12.5%
14	Westar Energy	8.5%
15	Wisconsin Energy	14.0%
16	Xcel Energy	10.0%
	AVERAGE	**10.2%**

Source: Hill Schedule 4 pages 1-4

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

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

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

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

Q. SHOULD THE VALUE LINE DIVIDEND GROWTH FORECASTS BE CONSIDERED IN APPLYING THE DCF MODEL TO ELECTRIC UTILITIES?

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

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

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

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

variability of dividend forecasts, use of dividend forecasts produces unreliable DCF results.

C. MR. HILL'S RECOMMENDED ROE IMPROPERLY IGNORES FLOTATION COSTS

Q. WHAT ALLOWANCE FOR FLOTATION COSTS DOES MR. HILL MAKE WITH RESPECT TO HIS RECOMMENDED ROE FOR SDG&E?

A. Mr. Hill fails to include any allowance whatsoever for flotation costs in his recommended ROE for SDG&E. Mr. Hill's DCF estimates are therefore downward-biased by approximately 30 basis points as a result of that omission. Mr. Hill's testimony is inconsistent with regard to flotation costs. In a discussion of sustainable growth in the DCF model on page 35 lines 18-19, Mr. Hill recognizes that "*investor expectations regarding growth from external sources (sales of stock) must also be considered and examined.*" Indeed, Mr. Hill quantifies the effect of such issues on company growth in his Schedule 3 under the heading "external growth."

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

Q. DOES MR. HILL EXPLAIN WHY HE DOES NOT PROVIDE AN ALLOWANCE FOR FLOTATION COSTS IN HIS RECOMMENDED ROE FOR SDG&E?

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

First, Mr. Hill erroneously asserts that flotation costs on common stocks are analogous to bonds sold at a premium to par value (i.e., the company's cost of debt is less than the coupon rate).[18] In practice, the calculation of the embedded cost of debt accounts for issuance costs, premium or discounts at the time of issue, and recognizes sinking fund and call provisions. This is because premiums or discounts and flotation costs influence the effective yield to the investor and cost to the utility and are typically allowed to be recovered by regulators.

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

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

A. Mr. Hill argues on page 62 lines 4-6 that "*the reduction of the book value of stockholder investment due to issuance expenses can occur only when the utility's stock is selling at a market price at or below its book value.*" This argument, however, fails to address the

[18] Prepared Direct Testimony of Stephen Hill at 61, lines 13-28.

simple fact that, in issuing common stock, a company's common equity account is credited by an amount less than the market value of the issue. Therefore, the company must earn slightly more on its reduced rate base to produce a return equal to that required by shareholders. The stock's M/B ratio is irrelevant because flotation costs are present, irrespective of whether the stock trades above, below, or at book value. I shall revisit Mr. Hill's views on the M/B ratio later in my rebuttal.

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

A. Mr. Hill then argues that the majority of the flotation costs are not out-of-pocket expenses incurred by the issuing utility and, as such, should not be recovered.[19] This argument, if taken to a logical conclusion, would suggest that depreciation expenses associated with the construction of plant should not be recovered because depreciation expenses are not out-of-pocket expenses.

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

[19] Prepared Direct Testimony of Stephen Hill at 62, lines 11-26.

Mr. Hill then makes the circular argument on page 62, lines 22-26 that the flotation cost allowance is unwarranted because investors factor these costs in the stock price. Such circular reasoning could be used to justify any regulatory policy, regardless of the propriety of the policy. For example, under Mr. Hill's reasoning, it would be appropriate to authorize a clearly confiscatory ROE, such as of 1%, because investors would reflect this return in the stock price.

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

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

D. RISK ADJUSTMENT

THE COMMISSION SHOULD REJECT MR. HILL'S CLAIM THAT SDG&E IS A LOWER THAN AVERAGE RISK ELECTRIC UTILITY

Q. DO YOU AGREE WITH MR. HILL'S VIEW THAT SDG&E IS LESS RISKY THAN AVERAGE ON ACCOUNT OF ITS DECOUPLING MECHANISM AND BALANCING ACCOUNTS?

A. No, I do not. As I showed in my testimony, SDG&E is riskier than average as evidenced by its higher than average beta and lower than average M/B and P/E ratios. I added 50

basis points to recognize the Company's higher risk. Mr. Hill fails to recognize this fact and even argues that the Company is less risky than average.

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

While adjustment clauses, riders, and cost tracking mechanisms may mitigate (on an absolute basis but not on a relative basis) a portion of the risk and uncertainty related to the day-to-day management of SDG&E's operations, there are other significant factors to consider that work in the reverse direction for SDG&E, for example the weakening of the economy and the Company's dependence on a huge capital spending program requiring external financing. These additional factors, ignored by Mr. Hill, largely offset the presence of the aforementioned risk-mitigating mechanisms.

My own view is that any risk-mitigating impact that decoupling could have on the Company's risk profile is reflected to some extent in the capital market data of the comparable companies, and that the risk impact of these mechanisms is partially offset by several factors that work in the reverse direction. If Mr. Hill was right on this issue,

SDG&E's parent company beta should be below the industry average. This is certainly not the case, as Sempra's beta exceeds the industry average. Mr. Hill should have opted for a ROE in the upper end of his range of 8.5% - 9.5% in his final ROE recommendation and not in the lower portion, a 50 basis points understatement in my view.

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

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

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

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

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

A. No, I do not. On page 11 lines 11-16 of his testimony, Mr. Hill argues that his recommended ROE should be compared with, and be consistent with, long-term expected return implied in pension fund actuarial data. Such return expectations according to Mr. Hill are in the 9% range. Mr. Hill therefore concludes that his proposed cost of equity of 8.75% is not only consistent with such data but it is conservative. This viewpoint is incorrect for several reasons.

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

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

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

based on allowed ROEs in utility rate cases. Additionally, I am unaware of any regulatory commission that has relied on such data. Indeed, the California Public Utilities Commission considered similar arguments and concluded as follows:

> *The objectives of a pension fund are fundamentally different from that of an equity investor in a single utility and the risk profiles are not comparable. The Employee Retirement Income Security Act dictates that pension funds must be diversified whereas a utility's ROE is based on risks specific to that utility's operations.*
>
> *More importantly, pension fund returns are related to market value of assets held in the pension fund while a utility's ROE is applied to a book value rate base. This difference can best be illustrated by dividing an average pension fund return by PG&E's market-to-book ratio. Based on ATU's 9.62% calculated average pension fund return and DRA's market-to-book ratio of 1.9 for PG&E, PG&E would only need to earn a 5.06% ROE on its rate base to equal the 9.62% average pension fund return. However, a 5.06% ROE is 116 basis points below its long-term debt cost, effectively eliminating PG&E's ability to support its credit and to raise the equity necessary to fulfill its public utility responsibilities as required by Bluefield and Hope. Pension return assumptions are not comparable to the ROE used in utility ratemaking. Having resolved this issue, PG&E should not be required to continue comparing its pension return assumptions to its ratemaking ROE in future ROE proceedings.*
>
> *In re S. Cal. Edison Co.*, 262 P.U.R. 4th 53, 72 (California Public Utility Commission. 2007).

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

A. Yes. Actuarial data utilized for pension fund accounting are by nature very conservative, consistent with Generally Accepted Accounting Principles (GAAP) guidelines, and are not well suited for assessing the cost of equity capital in a rate proceeding. By virtue of the very long-term nature of pension fund assets, projected returns on pension fund assets are not indicative of the cost of equity in the context of a regulatory proceeding.

Moreover, the actuarial data on which Mr. Hill relies, namely, a handful of investment advisors, is highly selective.

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

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

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

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

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

F. RESPONSES TO MR HILL'S CRITICISMS

1. DCF DIVIDEND YIELD

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

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

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

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

2. DCF GROWTH RATES

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

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

3. CAPM RISK-FREE RATE

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

A. I find Mr. Hill's risk-free rate assumption of 4.0% too low. Interest rate forecasts are much higher. 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. Mr. Hill's risk-free rate is stale and fails to reflect the projected increase in interest rates.

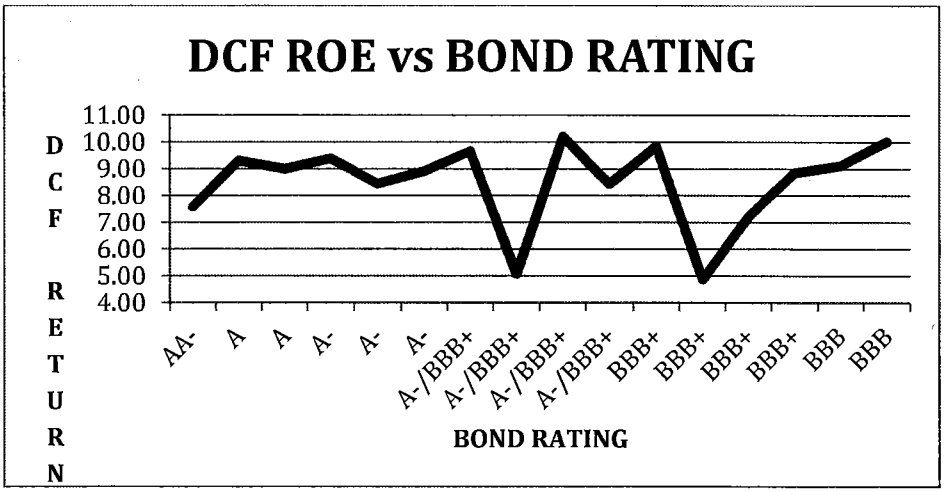
4. CAPM BETA ESTIMATES

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

A. Yes, I do, at least for his comparable group of electric utilities from which Sempra is conspicuously absent. I note that both Sempra Energy's and Edison's beta is 0.80 which exceeds Mr. Hill's group average of 0.68 by a significant amount. This certainly contradicts Mr. Hill's view that California electric utilities are less risky than average on account of its superior bond ratings and risk-mitigating mechanisms on which I commented earlier. The problem is that Mr. Hill has confounded the risk of bonds and the risk of common stocks. The former is related to the creditworthiness of the issuer while the latter is related to variability.

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

A. No, there is not. The graph below shows the relationship between Mr. Hill's DCF return estimates for the 16 companies in his comparable group taken from his Schedule 5 page 1 and these companies' bond ratings taken from his Schedule1. If Mr. Hill were correct, one would expect a strong positive relationship between returns and bond ratings. As the graph makes abundantly clear, there is no such relationship. As I showed earlier, the same is true for Mr. Lawton's group of companies.



5. CAPM MARKET RISK PREMIUM

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

6. HISTORICAL RISK PREMIUMS

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

A. On page 116 of his testimony lines 8-9 and lines 12=14, Mr. Hill critiques the risk premium method on two grounds: 1) the method assumes that past is prologue, and 2) the method assumes that the risk premium is constant over time. I employed returns realized over long time periods rather than returns realized over more recent time periods. Realized returns can be substantially different from prospective returns anticipated by investors, especially when measured over short time periods. A risk premium study

should consider the longest possible period for which data are available. Short-run periods during which investors earned a lower risk premium than they expected are offset by short-run periods during which investors earned a higher risk premium than they expected. Only over long time periods will investor return expectations and realizations converge, or else, investors would never commit any funds.

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

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

7. EMPIRICAL CAPM

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

A. On page 103 lines 12-17 of his direct testimony, Mr. Hill erroneously asserts that use of "adjusted" betas with an Empirical CAPM analysis double-counts the effect of changing

the slope of the capital market line. Contrary to such suggestion, the Empirical CAPM is not an adjustment (increase or decrease) in beta. Instead, the Empirical CAPM is a formal recognition of the fact that empirical evidence demonstrates that the observed risk-return tradeoff is flatter than predicted by the CAPM.

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

8. MARKET-TO-BOOK RATIOS

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

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

First, Mr. Hill's position implies that regulators should set an ROE so as to produce a M/B ratio of near 1.0. This is erroneous. The stock price is set by the market, not by regulators. The M/B ratio is the *result* of regulation, not its starting point. The regime of regulation envisioned by Mr. Hill, that is, that the regulator will set an allowed

rate of return so as to produce a M/B ratio of close to 1.0, presumes that investors commit capital to a utility with a M/B in excess of 1.0, knowing full well that they will be inflicted a capital loss by regulators. Such behavior on the part of investors is certainly not a realistic or accurate view of investment or regulation.

Second, the traditional M/B ratio does not reflect the replacement cost of a company's assets. Consistent with *Bluefield* and *Hope*, the fundamental goal of regulation should be to set the expected economic profit for a public utility equal to the level of profits expected to be earned by firms of comparable risk, in short, to emulate the competitive result, so as to assure the firm's credit and to attract needed capital. For unregulated firms, the natural forces of competition will ensure that in the long-run the market value of these firm's securities equals the replacement cost of their assets. This suggests that a fair and reasonable price for a public utility's common stock is one that produces equality between the market price of its common equity and the replacement cost of its physical assets. The latter circumstance will not necessarily occur when the M/B ratio is near 1.0. Only when the market value of the firm's common equity equals the value of the firm's equity at replacement cost will equality hold.

In an inflationary period, the replacement cost of a firm's assets may increase more rapidly than its book equity. To avoid the resulting economic confiscation of shareholders' investment in real terms, the allowed rate of return should produce a M/B ratio which provides a Q-ratio of 1 or a Q-ratio equal to that of comparable firms.[20] It is quite likely that M/B ratios will exceed one if inflation increases the replacement cost of

[20] 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.

a firm's assets at a faster pace than book equity. This explains in part why utility M/B ratios have remained well above 1.0 over the past two decades.

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

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

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

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

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

Mr. Hill fails to recognize, however, that the ability of the DCF model to estimate the cost of equity accurately depending on the M/B ratio of utilities was simply not an

issue for utilities more than a quarter century ago because utilities were trading at market prices very close to book value. Similarly, it was not an important issue when Professor Gordon developed the DCF model in the mid-1960s. Instead of reaching back some 30 years, perhaps Mr. Hill should have consulted the 1994 and 2006 editions of my book,[21] each of which discusses at length the chronic inability of the DCF model to accurately estimate investor returns when Market-to-Book ratios deviate markedly from unity.

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

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

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

9. DCF UNDERSTATEMENT OF INVESTOR RETURNS

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

A. On pages 46-49, Mr. Hill is criticizing Edison Company witness Dr. Hunt for relying on a rationale published in my 1996 and 2006 textbooks whereby the DCF understates

[21] *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).

investor returns when M/B ratios exceed 1.0. Mr. Hill concludes on page 46 that the numerical example from my book cited by Dr. Hunt does not show that the DCF understates the cost of equity when the M/B ratio exceeds 1.0.

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

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

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

G. CRITICISM OF MR. HILL'S PROPOSED CAPITAL STRUCTURE FOR SDG&E

Q. DID YOU REVIEW MR. HILL'S CAPITAL STRUCTURE TESTIMONY WITH RESPECT TO SCG [SDG&E]?

A. Yes. Although I am not the witness sponsoring capital structure proposals, I state on page 64 of my direct testimony that my recommended ROE is predicated on the adoption of a test year capital structure consisting of 52% common equity.

Q. IF ADOPTED, WHAT EFFECT WOULD MR. HILL'S RECOMMENDATION TO REDUCE THE COMPANY'S PROPOSED COMMON EQUITY RATIO FROM 52% TO 50% HAVE ON YOUR RECOMMENDED ROE?

A. First, adopting Mr. Hill's proposed common equity ratio is not recommended and is not supported by any other party's testimony in this case. The Company's capital structure witness should more fully address this aspect of Mr. Hill's testimony. Moreover, as I explained in my direct testimony, lower common equity ratios imply greater risk and higher capital cost. The greater amount of risk borne by common shareholders, the greater the return required by investors to be compensated for that risk. While I do not agree with Mr. Hill's proposed common equity ratio, if the Commission were to adopt it, the Commission would also need to adjust the authorized ROE upward to account for this increased risk. This would amount to a 20 basis point adjustment upward of my direct testimony ROE recommendation for the Company, in order to account for Mr. Hill's proposed increase to the Company's risk profile.

H. CONCLUSIONS

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

A. Mr. Hill understates the appropriate ROE for SDG&E. The inability to scientifically replicate his DCF growth rates, the mainstay of his recommendation, casts a serious doubt on the reasonableness of his recommendation.

Q. WOULD THE ADOPTION OF MR. HILL'S RECOMMENDED ROE ENDANGER SDG&E'S CREDIT QUALITY?

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

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

A. No, he has not.

IV. REBUTTAL TO MR. MARCUS

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

A. No, I do not. Mr. Marcus' analysis is flawed and his conclusion misguided. In discussing the impact of a lower ROE, Mr. Marcus correctly notes that if a utility ROE is lowered below investor expectations and credit ratings are affected, the cost of debt (or the bond interest rate) will rise. He asserts, however, that "[i]t is not reasonable to authorize a utility's elevated ROE in order to insulate it from a hypothetical credit rating decrease if the revenue requirement increment resulting from the elevated ROE increment will be more than the revenue requirement increment resulting from the cost of

debt increment that might result from a lower authorized ROE."[22] He then offers analysis purporting to show that "...ratepayers would be better off even with lowered debt ratings...caused by lower ROEs in almost any conceivable case."[23] The analysis presented by Mr. Marcus regarding the harm caused to ratepayers by a lower ROE is overly-simplistic, however, and fails to take into account several important considerations.

While Mr. Marcus acknowledges the relationship between low ROE and increased credit costs, his analysis entirely ignores additional factors relevant to the analysis of the impact of a lower ROE, such as the amount of leverage and investor's flight to quality, the utility's need to remain flexible over its current capital intensive period, the negative impact on preferred stock costs, costs of bond issuances, and the long term effect of future debt issuances. As a practical matter, the lower the utility ROE, the greater the negative impact of these factors.

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

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

a. Increased Amount of Leverage: A lower ROE will cause the amount of leverage to increase, making it more difficult to attract investor capital. If a utility's ROE is reduced, the amount of capital offered by investors would decline, as shareholders seek alternative investment options. Reasonable investors move their capital to the most optimal security in order to receive the best return for the risk they are willing to

[22] August 6, 2012 prepared testimony of William B. Marcus at pp. 6-7.

[23] August 6, 2012 prepared testimony of William B. Marcus at p. 9.

accept (this is often referred to as the "flight to quality"). For the utility, this would mean that the amount of funds that would need to be obtained by financing would increase. The capital structure would then be affected as the utility would be more levered. This scenario results in a much riskier utility – one that is more heavily financed by debt as opposed to equity. It creates a paradoxical situation in which the utility would require a higher ROE to attract investors but, in the absence of that higher ROE authority, would be unable to attract them and would therefore be required to issue more debt, thereby creating an investment levered "spiral" of sorts. In short, Mr. Marcus' analysis ignores the long-term impact of a lower ROE. While the immediate effect of lowering the ROE might, as Mr. Marcus suggests, be a lowering of ratepayers' costs, in the long run, ratepayers will pay *higher* costs in the form of higher levels of debt costs (that would be added to the higher credit costs Mr. Marcus acknowledges would result from a lower utility ROE).

b. Reduction in Flexibility of the Utility: The increase in the level of debt that would result from the loss of equity investors would cause a corresponding reduction in the utility's flexibility in terms of how and in what it can invest. This is because the utility would have less capital available from equity holders and would be required to tap into a more expensive debt market to attract funds. A utility would then have to make a decision regarding tapping into a less-than-optimal debt market or forgoing an investment. To take this further, at such high levels of debt, it may be difficult to find bond holders to lend SDG&E the money. To the extent utility investments are intended to promote policy goals, reduced investment flexibility will interfere with achievement of these policy goals. SDG&E witnesses Hrna, for example, discusses

the role of SDG&E's capital investment in promoting California's policy goals: "The company's capital program reflects significant investments in base business capital infrastructure, renewable investments, and new technology. These investments support the State's energy policy, as implemented by the Commission, enable access to renewable energy, and reinforce SDG&E's commitment to provide safe and reliable service to its customers."[24] Likewise, SDG&E witness Schlax explains that SDG&E's proposed ROE is necessary to "enable SDG&E to achieve the underlying objective of these extensive capital investments: meeting customer demands for electricity and gas at reasonable rates, and using a technologically advanced and efficient system while satisfying the State's laudable environmental requirements."[25] Mr. Marcus' analysis fails to account for the reduction in investment flexibility that would result from a lower ROE and corresponding greater level of debt, or for the resulting impact on the public interest in the long-term.

c. Increase in Preferred Stock Costs: Mr. Marcus also ignores the fact that as debt interest rates rise with decreasing credit ratings caused by a reduced ROE, the cost of Preferred Stock would rise as well. Ms. Hrna testified that SDG&E plans to issue Preferred Stock in the future, estimated by SDG&E to be about $160 million in 2013-2014.[26] The cost of this type of financing would rise along with the reduced ratings.

d. Increased Cost of Issuing Debt: Mr. Marcus' analysis fails to address the impact of a lower ROE on the cost of issuing bonds. Part of the embedded cost of debt comes

[24] Prepared Direct Testimony of Sandra K. Hrna on behalf of San Diego Gas and Electric Company dated April 20, 2012. Page 7, lines 3-7.

[25] Prepared Direct Testimony of Robert M. Schlax on behalf of San Diego Gas and Electric Company dated April 20, 2012. Page 2, lines 19-22.

[26] Prepared Direct Testimony of Sandra K. Hrna on behalf of San Diego Gas and Electric Company at p. 4, lines 17-19.

from the cost to issue debt. As a utility becomes more risky, or experiences a decrease in its debt ratings, the cost of issuing debt also rises. The utility would therefore have to raise debt rates on ratepayers to pay for this additional cost while receiving no additional capital to fund projects in return.

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

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

Q. DOES THIS COMPLETE YOUR REBUTTAL TESTIMONY?

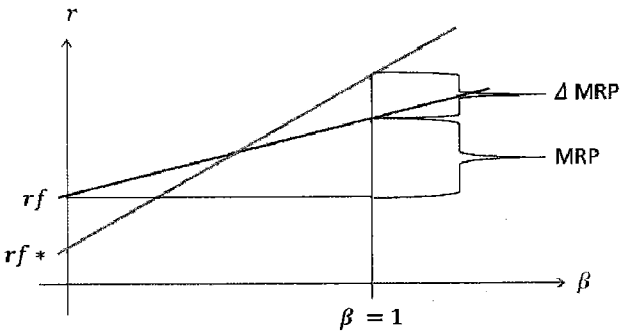
A. Yes, it does.

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 *rf* and market risk premium of *MRP*. In a time of market uncertainty, investors flee to risk-free assets driving the price of *rf* down to *rf**. However, the market's level of uncertainty has increased driving the security market line *steeper* (green line). As such, there in increased market risk premium *(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:

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

ATTACHMENT B

FITCH REPORT

CHANGE LOG

PAGE	LINE	ORIGINAL	AMENDED
10	14-15	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
13	16-17	Mr. Lawton is silent on the subject so that I can only assume that he believes such an allowance is unwarranted.	deleted
40	2	undertainties	uncertainties
47	12-16	The impact on SDG&E's cost of equity CAPM estimate is by 50 basis points (0.52%), using Mr. Woolridge's beta for SDG&E of 0.73: $\beta_{SDG\&E}$ x (Arithmetic Mean – Geometric Mean) 0.68 x (6.25% – 5.50%) = 0.68 x (0.75%) = 0.50%	The impact on SDG&E's cost of equity CAPM estimate is by 55 basis points, using Mr. Woolridge's beta for SDG&E of 0.73: $\beta_{SDG\&E}$ x (Arithmetic Mean – Geometric Mean) 0.73 x (6.25% – 5.50%) = 0.73 x (0.75%) = 0.55%
86	10-12	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%