

Company: Southern California Gas Company (U 904 G)
Proceeding: 2020 Cost of Capital
Application: A.19-04-018
Exhibit: SCG-09

SOUTHERN CALIFORNIA GAS COMPANY (U 904 G)
PREPARED REBUTTAL TESTIMONY OF ROGER A. MORIN, PH.D.
(RETURN ON EQUITY)

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

August 2019

1 **Q. PLEASE DESCRIBE HOW YOUR REBUTTAL TESTIMONY IS ORGANIZED.**

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

4 **Q. PLEASE SUMMARIZE THE RATE OF RETURN RECOMMENDATIONS OF THE**
5 **TWO WITNESSES YOU ARE REBUTTING IN THIS CASE.**

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

Witness	Party	ROE
Mr. Rothschild	Cal PA	8.49% ¹
Mr. Gorman	EPUC/IS/TURN	9.00% ²

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¹ A. Rothschild, Public Advocates Office, Report on the Cost of Capital for Test Year 2020, Redacted Version (August 1, 2019) (Rothschild Direct), p. 5.

² Direct Testimony and Exhibits of Michael P. Gorman on behalf of Energy Producers & Users Coalition ("EPUC"), Indicated Shippers, and The Utility Reform Network ("TURN") (August 1, 2019) (Gorman Direct), p. IX-38.

1 **I. MR. ROTHSCHILD'S TESTIMONY**

2 **Q. PLEASE SUMMARIZE MR. ROTHSCHILD'S RATE OF RETURN**
3 **RECOMMENDATION.**

4 A. Mr. Rothschild recommends a ROE of 8.49% for SoCalGas, the lowest ROE of the
5 two rate of return witnesses.

6 In determining the cost of equity, Mr. Rothschild applies a constant growth
7 Discounted Cash Flow ("DCF") analysis, a non-constant growth DCF analysis, and
8 a Capital Asset Pricing Model ("CAPM") to a group of 29 electric utilities. Mr.
9 Rothschild's ROE results from the three methodologies are summarized in Table
10 5 (page 6) of his testimony as follows:

11	Constant Growth DCF	7.51% - 8.72%
12	Non-Constant Growth DCF	8.45% - 9.41%
13	CAPM	6.77% - 9.33%

14 Based on these results, Mr. Rothschild somehow concludes that SoCalGas'
15 cost of equity is 8.49%.³ Mr. Rothschild does not fully explain how he arrived at
16 his 8.49% recommendation from these six estimates. I was unable to reconstruct
17 the 8.49% with varying combinations of averages, medians, or midpoints of the six
18 estimates. What is more confusing is Mr. Rothschild's statement on page 30 (line
19 13) that the cost of equity of his proxy group is 8.75%. For purposes of this rebuttal
20 testimony, I shall assume his recommendation is 8.49%.

21

³ See Rothschild Direct at 5 (Table 3).

1 **Q. WHAT ARE YOUR GENERAL REACTIONS TO MR. ROTHSCHILD'S COST OF**
2 **COMMON EQUITY RECOMMENDATION?**

3 A. My first general reaction to his recommendation, before I engage in a more
4 technical critique, is that there are two major flaws in Mr. Rothschild's testimony.
5 First, Mr. Rothschild's recommended 8.49% ROE for SoCalGas lies outside
6 currently authorized ROEs of 9.6% for natural gas utilities in both 2018 and 2019.⁴
7 I am not aware of any natural gas utility having an allowed return near Mr.
8 Rothschild's recommended 8.49%. Mr. Rothschild's recommended reduction of
9 the Company's ROE down to 8.49%, if ever adopted, would result in one of the
10 lowest ROE authorized in the utility industry.

11 My second reaction is that Mr. Rothschild bases his recommendation on a
12 group of electric utilities rather than a group of natural gas utilities. His results,
13 therefore, are not applicable to SoCalGas.

14 My third reaction is that there are serious flaws in Mr. Rothschild's
15 implementation of both the DCF and CAPM methodologies.

16 **Q. IS MR. ROTHSCHILD'S LOW RECOMMENDED ROE APPROPRIATE AT THIS**
17 **TIME?**

18 A. No. Mr. Rothschild's recommended ROE of 8.49% is untimely and contrary to
19 customers' best interests to receive reliable and reasonably-priced service. As I
20 discussed in my direct testimony, if SoCalGas' authorized ROE is set too low, it
21 will ultimately increase costs for SoCalGas customers.⁵ The CPUC approval of

⁴ Source: Major Rate Case Decisions January – December 2018," RRA Regulatory Focus, S&P Global Intelligence, July 22, 2019.

⁵ See Ex. SCG-04 (Morin), pp. 5-7.

1 my base recommended ROE of 10.7%, along with the adoption of the Company's
2 proposed capital structure and supportive regulation, will buttress these goals and
3 provide measurable benefits to SoCalGas customers.

4 Strong financial viability and creditworthiness decrease borrowing costs,
5 improve access to capital and the availability of longer-term debt maturities, and
6 enable the Company to absorb any negative volatility in its financial performance.
7 Moreover, maintaining the Company's financial viability will have beneficial long-
8 term cost implications for the Company and its customers as the Company re-
9 finances existing debt, issues new capital, and enters into new contractual
10 arrangements. Clearly, SoCalGas' customers have a vested interest in a strong
11 financial position for the utility. The interests of customers and shareholders are
12 consistent, not mutually exclusive. They both benefit from a financially sound
13 utility.

14 **Q. WHAT ARE THE BASIC CONCLUSIONS OF YOUR REBUTTAL TO MR.**
15 **ROTHSCHILD'S COST OF EQUITY TESTIMONY?**

16 A. Mr. Rothschild understates SoCalGas' cost of common equity. A proper
17 application of cost of capital methodologies would give results substantially higher
18 than those that he obtained, notwithstanding the fact that his recommended ROE
19 does not even consider that SoCalGas remains among the riskiest utilities in the
20 industry at this time for reasons stated in my direct testimony.

21

1 **Q. ARE THERE ANY AREAS OF MR. ROTHSCHILD'S TESTIMONY WITH WHICH**
2 **YOU AGREE?**

3 A. There are very few. I agree with Mr. Rothschild's beta estimates and market risk
4 premium estimates in the CAPM analysis. I otherwise believe that his
5 implementation of the DCF and CAPM methodologies is flawed.

6 **Q. PLEASE SUMMARIZE YOUR SPECIFIC CRITICISMS OF MR. ROTHSCHILD'S**
7 **TESTIMONY.**

8 A. I have a number of specific criticisms of Mr. Rothschild's testimony, as follows:

9 **1. ROE Recommendation Outside of the Mainstream.** Mr. Rothschild's
10 recommended ROE is outside the zone of currently authorized ROEs for natural
11 gas utilities and for his own sample of companies. As noted, the average
12 authorized ROEs in the natural gas utility industry in 2018 and 2019 as reported in
13 the Regulatory Research Associates' quarterly review dated July 2019 edition is
14 9.6%. The currently authorized ROEs for Mr. Rothschild's peer companies
15 average approximately 10.0% and the average expected ROE for the group is
16 10.5% according to Value Line and as shown on page 18 (line 12) of Mr.
17 Rothschild's testimony. These authorized and expected returns exceed by a
18 significant margin Mr. Rothschild's recommended 8.49% return for SoCalGas, let
19 alone the much higher relative risk of SoCalGas.

20 **2. Understated Dividend Yield.** Mr. Rothschild's dividend yield component
21 is understated because it is not consistent with the annual form of the DCF model.
22 It is inappropriate to increase the dividend yield by adding one-half the future
23 growth rate to the spot dividend yield. The appropriate manner of computing the

1 expected dividend yield when using the plain vanilla annual DCF model is to add
2 the full growth rate rather than one-half the growth rate. This adjustment also
3 allows for the failure of the annual DCF model to allow for the quarterly timing of
4 dividend payments. In short, Mr. Rothschild's DCF results are understated by this
5 omission.

6 **3. DCF Dividend Yield and Flotation Costs.** Mr. Rothschild's dividend yield
7 component is understated because it does not allow for flotation costs and, as a
8 result, a legitimate expense is left unrecovered in his DCF results, as well as the
9 results from the other three methodologies, which are understated by 20 basis
10 points.⁶

11 **4. DCF Growth Rates.** In order to estimate the growth component of the DCF
12 model, Mr. Rothschild has put all of his eggs in one basket, namely the so-called
13 retention ratio method. But this method is logically circular because it requires its
14 user to assume the answer to begin with. Analysts' growth forecasts are ignored
15 and so are historical growth rates. Most analysts, including all the other ROE
16 witnesses in this proceeding rely on analysts' growth forecasts to implement the
17 DCF model for the simple reason that the stock price Mr. Rothschild uses in his
18 DCF analysis is predicated on analysts' growth forecasts and not retention ratio
19 growth.

20 **5. CAPM Risk-Free Rate.** Mr. Rothschild's estimate of the CAPM risk-free
21 rate is too low because it is based on current interest rates rather than projected
22 rates, and is based on short-term interest rates rather than long-term interest rates.

⁶ See Id. at 53-58 (discussing the need for flotation costs).

1 9.6% in 2018 and 2019 for natural gas utilities. Moreover, the average long-term
2 expected return on equity for the utilities in Mr. Rothschild's own peer group is
3 10.5% as he states on page 18 (line 12) of his testimony. Finally, the currently
4 authorized ROE for the electric utilities in Mr. Rothschild's peer group is
5 approximately 10.0%. I reiterate my concern that Mr. Rothschild bases his
6 analyses on a group of electric utilities rather than a peer group of natural gas
7 utilities.

8 These allowed and expected ROEs exceed Mr. Rothschild's recommended
9 ROE for SoCalGas of only 8.49%. In short, Mr. Rothschild's recommendation is
10 outside the mainstream of the allowed rates of return that were current during the
11 period in which Mr. Rothschild performed his analysis and lies outside the zone of
12 recently authorized returns for natural gas utilities and for Mr. Rothschild's own
13 sample of companies.

14 Unreasonable rate treatment for a utility, if implemented, may have serious
15 public policy implications and repercussions that are not mentioned in Mr.
16 Rothschild's testimony. For example, the quality of regulation and the
17 reasonableness of authorized ROEs clearly have implications for regulatory
18 climate, economic development and job creation in a given territory. The
19 consistency of regulation in a given jurisdiction has similar implications. I believe
20 that Mr. Rothschild's recommended return has negative implications on these
21 grounds and is not consistent with the economic well-being of the State of
22 California. It certainly provides a disincentive to invest in California.

1 **2. Understated Dividend Yield**

2 **Q. DO YOU HAVE ANY COMMENT ON MR. ROTHSCHILD'S DIVIDEND YIELD**
3 **CALCULATION IN THE DCF ANALYSIS?**

4 Yes. I disagree with Mr. Rothschild's dividend yield calculation. Mr. Rothschild
5 multiplies the spot dividend yield by one plus one half the expected growth rate (1
6 $+ 0.5g$) rather than the standard one plus the expected growth rate ($1 + g$). Mr.
7 Rothschild's deviation from the standard methodology understates the return
8 expected by the investor.

9 The fundamental assumption of the annual DCF model used by Mr.
10 Rothschild is that dividends are received annually at the end of each year and that
11 the first dividend is to be received one year from now. Thus, the appropriate
12 dividend to use in a DCF model is the full prospective dividend to be received at
13 the end of the year. Instead, Mr. Rothschild calculates the first dividend by
14 multiplying the current dividend by one plus one-half the growth rate ($1 + 0.5g$)
15 instead of multiplying by one plus the growth rate ($1 + g$). Since the appropriate
16 dividend to use in a DCF model is the prospective dividend one year from now
17 rather than the dividend one-half year from now, Mr. Rothschild's approach
18 understates the proper dividend yield.

19 Mr. Rothschild's use of the wrong methodology creates a downward bias in
20 its dividend yield component, and causing it to underestimate the cost of equity by
21 approximately 10 basis points. For example, for a spot dividend yield of 4% and a
22 growth rate of 6%, Mr. Rothschild's estimated dividend yield is $3\%(1 + .06/2) =$
23 3.1% . The correct dividend yield to employ is $3\%(1 + .06) = 3.2\%$, which is 10

1 basis points higher. Thus, failure by Mr. Rothschild in its formula to recognize the
2 quarterly nature of dividend payments understates the cost of equity capital by
3 approximately 10 basis points.

4 Moreover, the basic annual DCF model ignores the time value of quarterly
5 dividend payments and assumes dividends are paid once a year at the end of the
6 year. Multiplying the spot dividend yield by $(1 + g)$ is actually a conservative
7 attempt to capture the reality of quarterly dividend payments and understates the
8 expected return on equity. Contrary to Mr. Rothschild's assertion on page 20 (lines
9 15-17) that the annual DCF model overstates the cost of equity, the opposite is in
10 fact true. The annual DCF model actually understates the cost of equity by ignoring
11 the more frequent compounding of quarterly dividends. Mr. Rothschild justifies the
12 use of the annual model on the weak grounds that it is easier. The use of financial
13 models should not be governed by their ease of implementation but rather by their
14 accuracy and validity.

15 **3. DCF Dividend Yield and Flotation Costs**

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

19 **A.** Flotation costs are very similar to the closing costs on a home mortgage. In the
20 case of issues of new equity, flotation costs represent the discounts that must be
21 provided to place the new securities. Flotation costs have a direct and an indirect
22 component. The direct component represents monetary compensation to the
23 security underwriter for marketing/consulting services, for the risks involved in

1 distributing the issue, and for any operating expenses associated with the issue
2 (printing, legal, prospectus, etc.). The indirect component represents the
3 downward pressure on the stock price as a result of the increased supply of stock
4 from the new issue. The latter component is frequently referred to as "market
5 pressure."

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

12 As demonstrated in my direct testimony, the expected dividend yield
13 component of the DCF model must be adjusted for flotation costs by dividing it by
14 $(1 - f)$, where " f " is the flotation cost factor.

15 **Q. WHAT FLOTATION COST TREATMENT DID MR. ROTHSCHILD RECOMMEND**
16 **IN THIS CASE?**

17 A. Mr. Rothschild's common equity return recommendation does not include any
18 allowance for issuance expense. His DCF estimates of equity costs are therefore
19 understated by 20 basis points, as shown in Appendix A of my direct testimony.

20 Mr. Rothschild's reluctance to accept flotation costs is misplaced given that
21 common equity capital is not free. The flotation cost allowance to the cost of
22 common equity capital is routinely discussed and applied in most corporate finance
23 textbooks.

1 Mr. Rothschild's disregard of flotation costs is also inconsistent with Value
2 Line data on historical and projected common stock issues. Gas utilities have, and
3 will continue to be issuing new common stock in the future. In fact, Mr. Rothschild's
4 retention growth formula to implement the DCF model contains an explicit
5 allowance for future common stock issues via the "sv" term in the equation. Those
6 common stock issues will certainly incur flotation costs.

7 **4. DCF Growth Rates**

8 **Q. WHAT GROWTH RATE PROXIES DID MR. ROTHSCHILD EMPLOY IN HIS DCF**
9 **ANALYSIS?**

10 A. The Achilles' heel of Mr. Rothschild's testimony is his exclusive reliance on the so-
11 called Retention Growth method in order to calculate the growth component of his
12 DCF analysis. There are alternate superior methods used as proxies for growth
13 by expert witnesses, including the other ROE witnesses in this proceeding, namely
14 historical growth rates and analyst growth projections. Mr. Rothschild chose not
15 to rely on far more conventional approaches in his DCF analyses.

16 • **Retention Growth Method**

17 **Q. DO YOU AGREE WITH THE RETENTION GROWTH RATE TECHNIQUE USED**
18 **BY MR. ROTHSCHILD TO IMPLEMENT THE DCF MODEL?**

19 A. No, I do not agree with this technique, a pivotal component of Mr. Rothschild's
20 recommendation. In order to estimate the growth component of the DCF model,
21 Mr. Rothschild relies exclusively on the retention growth method. According to this
22 method, the growth rate is based on the equation $g = br$, where "b" is the
23 percentage of earnings retained and "r" is the expected rate of return on book

1 equity (i.e., ROE). Mr. Rothschild also allows for growth through external stock
2 issues by adding “sv” to the retention growth equation: $g = br + sv^8$.

3 Mr. Rothschild’s ROE recommendation rests heavily on the implementation
4 of two DCF models, which unfortunately rely on a flawed approach. I disagree with
5 Mr. Rothschild’s retention growth proxy in the DCF analysis for three reasons: (i)
6 the method is logically circular, for it requires the user to assume the ROE answer
7 to begin with; (ii) it is inconsistent with the academic empirical evidence; and (iii)
8 there is a potential lack of representativeness of Value Line’s estimates as proxies
9 for the market consensus.

10 **Q. IS THE RETENTION GROWTH METHODOLOGY USED BY MR. ROTHSCHILD**
11 **LOGICALLY CONSISTENT?**

12 A. No, it is not. Mr. Rothschild’s retention growth methodology contains a logical
13 contradiction. The contradiction arises because the method requires an explicit
14 assumption on the ROE expected from the retained earnings that produce future
15 growth. Mr. Rothschild bases his ROE estimate on Value Line’s average expected
16 ROE estimate for his peer group of companies, as shown on page 18 of his
17 testimony (which he sources to a Schedule ALR-4). But the ROEs used by Mr.
18 Rothschild in calculating the retention growth rate do not match Mr. Rothschild’s
19 current cost of equity estimate for SoCalGas.

20 The issue is that the purpose of this proceeding is to establish a fair and
21 reasonable ROE on a prospective basis. It is inappropriate to develop a ROE

⁸ See Id. at 12.

1 recommendation based on assumed ROEs. The method is logically circular in a
2 regulatory proceeding.

3 Mr. Rothschild actually relied on the average expected ROE of 10.5% as he
4 states on page 18 (line 12) of his testimony. Incidentally, that contradicts his
5 footnote No. 9 on page 18 where he states that he used 12.5% for the expected
6 ROE. Leaving that aside, the problem is that the 10.5% ROE used in Mr.
7 Rothschild's retention growth computation exceeds Mr. Rothschild's
8 recommended cost of equity of 8.49% for SoCalGas. Mr. Rothschild's analysis
9 thus assumes that the earned returns (i.e., ROE) of the sample companies exceed
10 what he has determined to be their cost of equity forever. That is, Mr. Rothschild
11 assumes that these companies will earn a ROE higher than that granted by their
12 regulators and reflected in their rates. That cannot be!

13 While this scenario implicit in Mr. Rothschild's retention growth method may
14 be imaginable for an unregulated company, it is implausible to assume for a
15 regulated company whose rates are continually re-set by its regulator at a level
16 designed to permit the company to earn a return equal to its cost of capital. This
17 logical flaw compromises the integrity of Mr. Rothschild's recommendation, and
18 should be a sufficient basis for rejecting the results produced by this method.

19 In essence, by using a ROE that differs from his final recommended cost of
20 equity, Mr. Rothschild requires the Commission to make inconsistent findings
21 regarding ROE. I am perplexed as to why Mr. Rothschild assumes that his group
22 of comparable utilities is expected to earn 10.5% forever, while at the same time

1 he estimates a ROE of 8.49% for the Company. The only way that these utilities
2 can earn a ROE of 10.5% is if rates are set so that they will in fact earn 10.5%.

3 On page 14 (lines 18-20), Mr. Rothschild argues that “*k*” is not the same
4 variable as the future expected earned return on equity, “*r*.” I disagree because
5 regulators set the allowed return “*r*” equal the cost of equity “*k*.” The only way that
6 these utilities can earn a ROE of “*k*” is if rates are set so that they will in fact earn
7 “*k*.”

8 **Q. IS THE RETENTION GROWTH RATE TECHNIQUE CONSISTENT WITH THE**
9 **EMPIRICAL EVIDENCE?**

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

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

17 A. No. The third difficulty with Mr. Rothschild's retention growth rates is that exclusive
18 reliance on Value Line estimates of ROE and retention ratio runs the risk that such
19 estimates are not representative of investors' consensus forecast.

20 • **Analysts' Growth Forecasts**

21 **Q. DID MR. ROTHSCCHILD RELY ON ANALYSTS' GROWTH FORECASTS IN HIS**
22 **DCF ANALYSIS?**

1 A. No, he did not, despite the need to rely on and determine investor expectations.
2 As he himself states on page 26 (lines 1-2) stock prices are based on investor
3 expectations.

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

7 A. On page 18 (lines 20-21) and on page 19 (line 1) of his testimony, Mr. Rothschild
8 denounces the use of financial analysts' earnings forecasts on the grounds that
9 they are notoriously overstated. Mr. Rothschild does not provide any published
10 supportive evidence in referred academic journals for that statement. The issue is
11 not whether forecasts turn out to be correct or overstated; it is whether these
12 forecasts are reflected in investor expectations and stock prices. There is an
13 abundance of evidence attesting to the importance of earnings in assessing
14 investors' expectations. First, the sheer volume of earnings forecasts available
15 from the investment community relative to the scarcity of dividend forecasts attests
16 to their importance.

17 To illustrate, Value Line, Zacks Investment Research, First Call, Thompson
18 Reuters, Yahoo Finance, and Multex provide comprehensive compilations of
19 investors' earnings forecasts, to name some. The fact that these investment
20 information providers focus on growth in earnings rather than growth in dividends
21 indicates that the investment community regards earnings growth as a superior
22 indicator of future long-term growth. Second, Value Line's principal investment

1 rating assigned to individual stocks, Timeliness Rank, is based primarily on
2 earnings, accounting for 65% of the ranking.

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

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

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

11 A. Published studies in the academic literature demonstrate that growth forecasts
12 made by security analysts are reasonable indicators of investor expectations, and
13 that investors rely on analysts' forecasts. This evidence is described in Chapter
14 10 of my most recent text, *The New Regulatory Finance*. In short, published
15 studies in the academic literature demonstrate that (i) analysts' growth rate
16 forecasts are reasonable indicators of investor expectations and (ii) investors rely
17 on such forecasts.

18 Mr. Rothschild's refusal to rely on analysts' growth forecasts as
19 unreasonable proxies for the DCF growth rate is without foundation and quite
20 inconsistent with the empirical finance literature on the subject. In another
21 astonishing statement, on page 62 (lines 8-9), Mr. Rothschild states that earnings
22 growth rates have no relation to either the cost of equity or stock price. Quite the

1 contrary, one of the driving forces behind stock prices is growth in earnings, as the
2 empirical literature clearly demonstrates.

3 I also disagree with Mr. Rothschild that financial analysts' earnings
4 forecasts are overly-optimistic,⁹ at least for utility stocks. The published academic
5 literature does not support such a claim.

6 **Q. WHAT GROWTH RATES SHOULD MR. ROTHSCHILD HAVE USED?**

7 A. For reasons outlined above, Mr. Rothschild should have relied on analyst growth
8 forecasts as most expert witnesses do, including the other ROE witnesses in this
9 proceeding.

10 **Q. IS MR. ROTHSCHILD CONTRADICTING HIMSELF WITH REGARDS TO THE**
11 **USE OF DIVIDEND GROWTH VS EARNINGS GROWTH IN THE DCF MODEL?**

12 A. Yes, he is. On page 21 (lines 5-7) when asked whether the DCF model still relies
13 on earnings growth, he answered "yes." But earlier on page 13 (lines 17-21), he
14 states that the use of earnings growth overstates the cost of equity.

15 **Q. WHAT DO YOU CONCLUDE FROM MR. ROTHSCHILD'S DCF ANALYSES?**

16 A. Leaving alone the fact that Mr. Rothschild's results are not based on a group of
17 natural gas utilities, Mr. Rothchild's exclusively relies on a flawed methodology and
18 should be accorded very little weight, if any, by the Commission.

19 **5. CAPM Risk-Free Rate**

20 **Q. DOES MR. ROTHSCHILD PERFORM A CAPM ANALYSIS?**

⁹ See Id. at 19, 57.

1 A. Yes, he does. To implement the CAPM, three quantities are required: the risk-free
2 rate (“R_F”), beta (“β”), and the market risk premium (“MRP”). As shown on Table
3 8 of page 30, Mr. Rothschild uses a risk-free rate of 2.12%, a beta range of 0.67 –
4 0.75, and MRP range of 7.0% - 9.5%.

5 **Q. DO YOU AGREE WITH MR. ROTHSCHILD’S BETA ESTIMATES IN THE CAPM**
6 **ANALYSIS?**

7 A. Yes, I agree with his estimates, although I do not agree with his method of
8 derivation. I note that the upper end of his beta range, 0.75, is actually SoCalGas’
9 parent company beta reported by Value Line for Sempra Energy, one of the
10 highest in the industry.

11 **Q. DO YOU AGREE WITH MR. ROTHSCHILD’S MRP ESTIMATES IN THE CAPM**
12 **ANALYSIS?**

13 A. Yes, I agree with his resulting estimates, although I do not agree with his method
14 of derivation. The lower part of his range of 7.0% is the same estimate I use in my
15 own CAPM implementation, although it is derived from a different direction.

16 **Q. DO YOU AGREE WITH MR. ROTHSCHILD’S RISK-FREE RATE ESTIMATE?**

17 A. No, I do not. As proxy for the risk-free rate, Mr. Rothschild uses the current yield
18 on one-year Treasury notes of 2.12% over the previous three months. As I show
19 below, Mr. Rothschild should have used the consensus long-term interest rate
20 forecast of 4.20%. This correction alone would raise his CAPM estimates
21 substantially by 2.08% (4.20% – 2.12% = 2.08%).

1 **Q. PLEASE COMMENT ON MR. ROTHSCHILD'S PROXY FOR THE RISK-FREE**
2 **RATE IN THE CAPM.**

3 A. I disagree with this proxy for two reasons. First, the appropriate proxy for the risk-
4 free rate in the CAPM is the return on long-term Treasury bonds, and not the yield
5 on short-term one-year Treasury notes. This is simply because common stocks
6 are very long-term instruments more akin to long-term bonds than to one-year
7 notes.

8 Because common equity has an infinite life-span, the inflation expectations
9 embodied in its market-required rate of return will be equal to the inflation rate
10 anticipated to prevail over the long-term. The same expectation should be
11 embodied in the risk free rate used in applying the CAPM model. Among U.S.
12 Treasury securities, U.S. 30-year Treasury bonds have the longest term to
13 maturity. Therefore, U.S. 30-year Treasury bonds will more closely incorporate
14 within their yield the inflation expectations that influence the prices of common
15 stocks than do U.S. Treasury bills or Treasury notes. The correct proxy for the
16 risk-free rate in the CAPM is the return on 30-year Treasury bonds, and not the
17 yield on one-year Treasury notes. I note that is standard procedure practiced by
18 most financial economists. Second, as I show below, Mr. Rothschild should have
19 relied on prospective interest rates rather than on current interest rates.

20 **Q. WHY SHOULD MR. ROTHSCHILD'S HAVE RELIED ON PROSPECTIVE RISK-**
21 **FREE RATES IN THE CAPM ANALYSIS?**

22 A. Mr. Rothschild uses current interest rates in his CAPM analysis instead of forecast
23 interest rates, and objects to my use of forecast interest rates. But given that this

1 proceeding is to provide ROE estimates for future authorized returns, forecast
2 interest rates are far more relevant. I note that Mr. Rothschild generously uses
3 projections of other financial variables in all his analyses, including dividend growth
4 projections and expected return projections by Value Line. So, it is a mystery as
5 to why he uses projections for most of his financial variables, but not for interest
6 rates.

7 Mr. Rothschild should have relied on projected long-term Treasury interest
8 rates for the simple reason that investors price securities on the basis of long-term
9 expectations, including interest rates. Cost of capital models, including the CAPM,
10 are prospective (i.e., forward-looking) in nature and must take into account current
11 market expectations for the future because investors price securities on the basis
12 of long-term expectations, including interest rates. As Mr. Rothschild himself
13 states on page 26 (lines 1-2), stock prices are based on investor expectations.

14 All the economic forecasts that I am aware of, as shown on Table 1 below,
15 anticipate a substantial and steady increase in interest rates from 2019 onward.
16 In summary, the average projected long-term interest rate on 30-year Treasury
17 bonds is 4.2%. Based on this consistent evidence from various sources, a long-
18 term bond yield forecast of 4.2% should have been used for purposes of a forward-
19 looking CAPM analysis in the current economic environment. As a result, Mr.
20 Rothschild's CAPM estimates are understated by 130 basis points (4.20% – 2.12%
21 = 2.08%) from this omission alone.
22

Table 1. Forecast Yields on 30-year U.S. Treasury Bonds

Source	Forecast
Value Line Economic Forecast	4.0%
U.S. Energy Information Administration	4.6%
Bureau of Labor Statistics	4.2%
Congressional Budget Office	4.2%
Economic Report of the President 2018	4.1%
White House Budget 2019	4.2%
IHS (Global Insight)	3.8%
AVERAGE	4.2%

6. Empirical CAPM

Q. DO YOU AGREE WITH MR. ROTHSCHILD'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 predicted by the CAPM. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted returns. 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. This

1 relationship is well documented in the finance literature and should have been
2 acknowledged by Mr. Rothschild in his CAPM analysis.

3 The empirical form of the CAPM that I used in my direct testimony refines
4 the standard form of the CAPM to account for this phenomenon.

5 As discussed in Appendix A of my direct testimony, the downward-bias
6 inherent in the CAPM is particularly significant for low-beta securities, such as the
7 electric utilities used by Mr. Rothschild. Mr. Rothschild's CAPM estimates of equity
8 costs are understated by about 50 basis points from this bias alone.

9 **Q. PLEASE PROVIDE A SUMMARY OF THE CORRECTIONS TO MR.**
10 **ROTHSCHILD'S CAPM ESTIMATES.**

11 A. Table 2 summarizes the principal reasons why Mr. Rothschild's CAPM results
12 understate an appropriate ROE for SoCalGas:

13 **Table 2. Adjustment to Mr. Rothschild's CAPM Results**

<u>Source</u>	<u>Basis Points</u>
Risk-Free Rate	208
CAPM understatement	50
Flotation Cost	20

Total Adjustment	278

14
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21 Correction of these understatements would increase Mr. Rothschild's
22 CAPM results by 278 basis points (2.78%), that is, from his midpoint CAPM
23 estimate of 8.05% to 10.83%, which is almost to my recommended base return of
24 10.7% for SoCalGas.

1 **7. Risk Adjustment**

2 **Q. DID MR. ROTHSCHILD ADJUST HIS RECOMMENDED RETURN ON EQUITY**
3 **UPWARD IN ORDER TO ACCOUNT FOR THE COMPANY'S HIGHER**
4 **RELATIVE RISK?**

5 A. No, he did not. Given the higher than average DCF estimates and beta estimates
6 of SoCalGas' parent company, Sempra Energy, relative to its peers, it is
7 transparent that risks applicable to a gas only utility operating in California impacts
8 the cost of equity. I refer to my direct testimony for a detailed discussion of the
9 Company's higher relative risks.

10 **8. Capital Structure Recommendation**

11 **Q. WHAT CAPITAL STRUCTURE DOES MR. ROTHSCHILD RECOMMEND?**

12 A. Mr. Rothschild recommends a fictitious capital structure consisting of 48% debt
13 and 52% common equity capital based on his review of the actual capital structures
14 of the parent companies in his peer group of utilities.

15 **Q. DO YOU AGREE WITH MR. ROTHSCHILD'S APPROACH BASED ON A**
16 **REVIEW OF THE ACTUAL CAPITAL STRUCTURES OF UTILITY**
17 **COMPANIES?**

18 A. No, I do not for two reasons. First, as I showed on page 1 of Exhibit RAM-12 in
19 my direct testimony, the average common equity ratio of natural gas utilities is 53%
20 - 54%. Inexplicably, Mr. Rothschild chose not to rely on a group of natural gas
21 utilities in order to arrive at his recommendation. Secondly, Mr. Rothschild used
22 the wrong comparison group. He should have relied on the capital structures of
23 operating utility companies rather than on those of the parents. As I showed in my

1 direct testimony, the average common equity ratio of the operating utility
2 companies in my peer group is in the range of 53% - 54%, in contrast to Mr.
3 Rothschild's 52% ratio.

4 **9. Responses to Mr. Rothschild's Criticisms**

- 5 • **DCF Dividend Growth Rates**

6 **Q. SHOULD MR. ROTHSCHILD HAVE CONSIDERED DIVIDEND GROWTH**
7 **PROXIES IN APPLYING THE DCF MODEL?**

8 A. No, he should not for several reasons. First, earnings growth provides a more
9 meaningful guide to investors' long-term growth expectations. After all, it is growth
10 in earnings that will support future dividends and share prices. Moreover, as a
11 practical matter, there are far more earnings forecasts available from the
12 investment community than dividend forecasts, which attests to their importance
13 to investors.

14 Second, it would not be unreasonable to expect gas utilities to lower their
15 dividend payout ratio over the next several years in response to the need to rely
16 more heavily on internal financing sources in light of substantial planned capital
17 expenditures. In other words, earnings and dividends are not expected to grow at
18 the same rate in the future. Whenever the dividend payout ratio is expected to
19 change, the intermediate growth rate in dividends cannot equal the long-term
20 growth rate, because dividend/earnings growth must adjust to the changing payout
21 ratio. The assumptions of constant perpetual growth and constant payout ratio are
22 clearly not met.

1 In short, dividend growth rates are unlikely to provide as meaningful a guide
2 to investors' growth expectations for gas utilities as earnings. Moreover, in the
3 second stage of his non-constant growth DCF model, Mr. Rothschild switches from
4 dividend growth to book value growth. No explanation is offered for the switch in
5 growth metric. Nor does Mr. Rothschild offer any explanation as to how book value
6 growth correlates with earnings growth and investor cash flows, if at all.

7 • **Quarterly vs. Annual DCF Model**

8 **Q. DR. MORIN, DID YOU RELY ON THE QUARTERLY DCF MODEL IN YOUR**
9 **COST OF CAPITAL TESTIMONY?**

10 A. No, I did not, contrary to Mr. Rothschild's statement on page 66 of his testimony.
11 I relied on the standard textbook annual DCF model: $K = D_1/P + g$.

12 **Q. HOW DO YOU RESPOND TO MR. ROTHSCHILD'S COMMENT WITH**
13 **REGARDS TO THE DCF MODEL USED IN YOUR TESTIMONY, AND IS HE**
14 **CORRECT?**

15 A. On pages 65-66, Mr. Rothschild is under the mistaken impression that I relied on
16 the quarterly version of the DCF model, which I did not, and argues that it is
17 inappropriate to do so. His spurious argument is that because dividends are paid
18 quarterly to investors, the company receives revenues throughout the year on a
19 continuous basis, which compounds over time and that shareholders are paid
20 compounded earnings through dividends. Therefore, he concludes that the annual
21 DCF model is required.

22 The problem is that Mr. Rothschild has confused investor returns with company
23 returns. What we are trying to ascertain with the DCF model is the investor return;

1 not the company return. While the company receives collected revenues from
2 customers continuously, the investor receives dividends every quarter and not
3 continuously. In any event, although the company receives revenues on a
4 continuous basis, the working capital component of the rate base recognizes this
5 fact and is adjusted accordingly.

6 • **Arithmetic vs. Geometric Averages**

7 **Q. IS IT APPROPRIATE TO USE GEOMETRIC AVERAGES IN MEASURING**
8 **HISTORICAL MARKET RISK PREMIUMS IN A CAPM ANALYSIS?**

9 A. No, it is not. Mr. Rothschild argues on page 78 that I and other witnesses in this
10 proceeding should have relied on the geometric average of stock returns minus
11 bond returns rather than on the conventional and correct arithmetic average.

12 As I discussed extensively in my direct testimony on pages 41-43, whenever
13 relying on historical risk premiums, only arithmetic average returns over long
14 periods are appropriate for forecasting and estimating the cost of capital.
15 Geometric average returns are not.¹⁰

16 There is no theoretical or empirical justification for the use of geometric
17 mean rates of return in estimating the cost of capital. Briefly, the disparity between
18 the arithmetic average return and the geometric average return raises the question
19 as to what purposes should these different return measures be used. The answer
20 is that the geometric average return should be used for measuring historical
21 returns that are compounded over multiple time periods. The arithmetic average

¹⁰ See Roger A. Morin, Regulatory Finance: Utilities' Cost of Capital, Chapter 11 (1994); Roger A. Morin, The New Regulatory Finance: Utilities' Cost of Capital, Chapter 4 (2006); Richard A Brealey, et al., Principles of Corporate Finance (8th ed. 2006).

1 return should be used for future-oriented analysis, where the use of expected
2 values is appropriate. It is inappropriate to average the arithmetic and geometric
3 average return; they measure different quantities in different ways.

4 Geometric means are properly used in evaluating historic performance of
5 stocks or portfolios of stocks, whereas determining investor expectations, which
6 define the cost of equity capital, requires use of arithmetic means. Chapter 6 of
7 my book The New Regulatory Finance,¹¹ as well as Duff & Phelps' Valuation
8 Yearbook 2019, explain this issue in detail, provide illustrative mathematical
9 examples, and cite authoritative financial texts, all of which confirm the need to use
10 arithmetic means, and not geometric means, to properly estimate a utility's cost of
11 equity.

12 **Q. HOW DO YOU RESPOND TO MR. ROTHSCHILD'S NUMERICAL EXAMPLE**
13 **SHOWING THE FALLACY OF ARITHMETIC RETURNS?**

14 A. The example actually proves my point that if relying on geometric means, investors
15 would require the same expected return to invest in both of these stocks, even
16 though the volatility of returns in Stock A is very high while Stock B exhibits
17 perfectly stable returns. That is clearly contrary to the most basic financial theory;
18 that is, the higher the risk, the higher the expected return.

19
20
21
¹¹ Morin, R. A., The New Regulatory Finance, Chapter 4 (2006).

1 • **Flotation Cost Adjustment**

2 **Q. WHAT IS MR. ROTHSCHILD'S POSITION ON THE ISSUE OF FLOTATION**
3 **COSTS?**

4 A. According to Mr. Rothschild, such costs are unwarranted.

5 **Q. DO YOU AGREE WITH MR. ROTHSCHILD'S ARGUMENT AGAINST A**
6 **FLOTATION COST ALLOWANCE?**

7 A. No, I do not. On page 93 (lines 4-20) of his testimony, Mr. Rothschild suggests
8 that a flotation cost adjustment is unwarranted when stock prices trade above book
9 value. I disagree. A stock's market-to-book value is irrelevant. That market prices
10 are above book value does not change the fact that a portion of the capital
11 contributed by equity investors is not available to earn a return because it is paid
12 out as flotation costs. The simple fact of the matter is that in issuing common
13 stock, the company's common equity account is credited by an amount less than
14 the market value of the issue, so that the company must earn slightly more on its
15 reduced equity base in order to produce a return equal to that required by
16 shareholders. The stock's market-to-book value is irrelevant. The costs are there
17 irrespective of whether the stock trades above, below, or at book value.

18 • **U.S. Treasury Bond Betas**

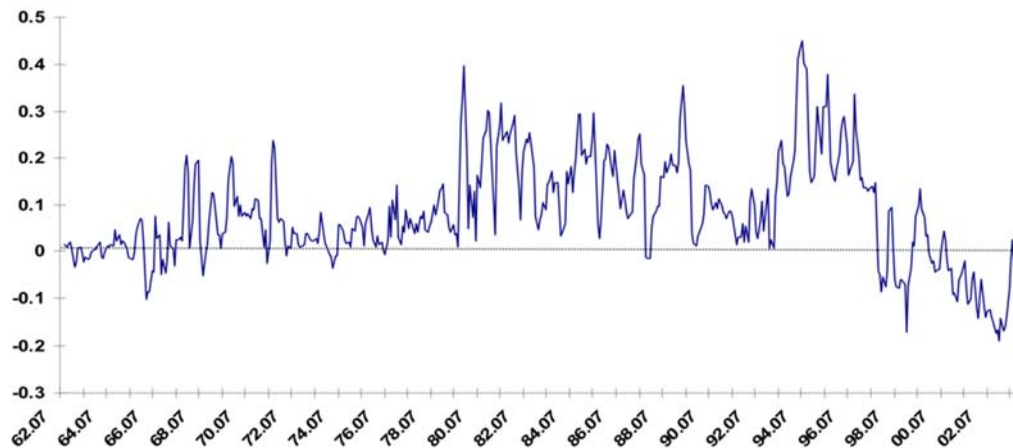
19 **Q. HOW DO YOU RESPOND TO MR. ROTHSCHILD'S ARGUMENT THAT LONG-**
20 **TERM TREASURY BONDS ARE INAPPROPRIATE PROXIES FOR THE RISK-**
21 **FREE RATE IN A CAPM ANALYSIS?**

22 A. On pages 63 (lines 20-22) and 85 (lines 7-9) of his testimony, Mr. Rothschild
23 argues that long-term U.S. Treasury bonds are inappropriate proxies for the risk-

1 free rate because their beta risk measures are non-zero. I disagree. In fact, U.S.
2 Treasury bond betas are effectively zero regardless of maturity. This is based on
3 a comprehensive study by Israel, Pahlhares, and Richardson published in the
4 second quarter of 2018 edition of the Journal of Investment Management
5 “*Common Factors in Corporate Bond Returns.*” As seen below from Figure 1 from
6 that study, the average beta of Treasury bonds is effectively zero.

Figure 1
CAPM beta of bonds
(1962.07-2003.12)

Realized beta of bonds based on 3-months of daily returns on stocks and bonds.



7
8 **Q. PLEASE DISCUSS MR. ROTHSCHILD’S VIEWS ON MARKET TO BOOK (M/B)**
9 **RATIOS.**

10 A. In various places throughout his testimony, Mr. Rothschild’s testimony argues that
11 because current M/B ratios for electric utilities exceeds 1.0, allowed returns by
12 regulators exceed the cost of equity capital for utilities. For example, on page 48
13 (lines 12-13), Mr. Rothschild states that targeting a M/B ratio near 1.0 is optimal.
14 On page 100 (lines 1-5), and again on page 104 (lines 1-5), Mr. Rothschild states

1 that a M/B above 1.0 means that a company is earning more than its cost of equity,
2 and allowed returns should be reduced. In other words, Mr. Rothschild is implying
3 that state utility commissions should lower the allowed return on equity so that the
4 stock price will decline to book value. I presume from these statements that Mr.
5 Rothschild finds it desirable that stock prices drop from the current M/B ratio value
6 in excess of 1.0 for most electric and gas utilities, to the desired M/B ratio range of
7 1.0.

8 There are several reasons why M/B ratios are largely irrelevant in
9 establishing rates of regulated utilities, and Mr. Rothschild's views on the role of
10 M/B ratios in regulation are misguided.

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

20 Second, the traditional M/B ratio does not reflect the replacement cost of a
21 company's assets. Consistent with *Bluefield* and *Hope*, the fundamental goal of
22 regulation should be to set the expected economic profit for a public utility equal to
23 the level of profits expected to be earned by firms of comparable risk, in short, to

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

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

18 Stock prices above book value are common for utility stocks, and indeed for
19 all of the major market indexes. As I discuss in my direct testimony, the market for
20 capital investment is a competitive one. If regulators artificially lowered utility

¹² The relationship between the market value of a firm's securities and the replacement cost of its assets is embodied in the Q-ratio. The Q-ratio is defined as the market value of a firm's securities divided by the replacement cost of its assets. If $Q > 1.0$, a firm has an incentive to invest because the value of the firm's securities exceeds the replacement cost of assets, that is, the firm's return on its investments exceeds its cost of capital. Conversely, if $Q < 1.0$, a firm has a disincentive to invest in new plant. In final long-run equilibrium, the Q-ratio is driven to 1.0.

1 ROEs to reflect book value and not investors' expectations, then investors would
2 simply take their capital and invest in non-utility assets. It is obvious that investors
3 and regulators through their rate case decisions do not subscribe to Mr.
4 Rothschild's position that utilities that have market prices above book value are
5 over-earning. Otherwise, regulators would not grant rate increases for any utility
6 whose stock price was above book value, and investors would never bid up the
7 price of stock above book value.

8 **Q. DO YOU AGREE WITH MR. ROTHSCHILD'S DENUNCIATION OF**
9 **REGULATORS?**

10 A. Absolutely not. On page 49 (lines 12-15), in a withering and rather impertinent
11 comment on regulators, including this Commission, and in an attempt to justify his
12 draconian positions, Mr. Rothschild concludes that regulators have been
13 persistently wrong for years by allowing returns that are higher than the cost of
14 equity. Aside from his view that regulatory commissions have been consistently
15 wrong, there is absolutely no empirical foundations for Mr. Rothschild's
16 recommendation.

17 Conclusion

18 **Q. WOULD THE ADOPTION OF MR. ROTHSCHILD'S RECOMMENDED ROE**
19 **ENDANGER SOCALGAS' CREDIT QUALITY?**

20 A. Yes, it certainly increases the probability of a deterioration in SoCalGas'
21 creditworthiness. Decreases in SoCalGas' authorized ROE, such as the decrease
22 recommended by Mr. Rothschild, could very well trigger a downgrade of
23 SoCalGas' bonds. A weakening of SoCalGas' financial viability and earnings

1 power at a time when SoCalGas needs to attract significant external capital on
2 reasonable terms is ill-advised.

3 **Q. HAS MR. ROTHSCHILD PRESENTED ANY ARGUMENTS IN HIS TESTIMONY**
4 **THAT WOULD CAUSE YOU TO ALTER ANY OF YOUR RECOMMENDATIONS**
5 **AND METHODOLOGIES?**

6 A. No, he has not.

7 **Q. WHAT DO YOU CONCLUDE FROM MR. ROTHSCHILD'S TESTIMONY?**

8 A. I conclude the following:

9 1. Mr. Rothschild's recommended ROE of 8.49%, if adopted, would result in one
10 of the lowest ROE authorized in the natural gas utility industry, and could cause
11 adverse consequences on the Company's creditworthiness, its financial integrity,
12 the Company's capital raising ability, and ultimately its customers. Allowed and
13 expected ROEs for Mr. Rothschild's peer group of companies substantially exceed
14 his recommended ROE for SoCalGas.

15 2. Mr. Rothschild's testimony and recommendations rely on a group of vertically
16 integrated electric utilities rather than on a group of natural gas utilities like
17 SoCalGas, and as such should be given little weight.

18 3. Mr. Rothschild's dividend yield component is understated because it is not
19 consistent with the annual form of the DCF model.

20 4. Mr. Rothschild's dividend yield component is understated because it does not
21 allow for flotation costs and, as a result, a legitimate expense is left unrecovered

1 and his DCF results, as well as the results from the other three methodologies, are
2 understated by 20 basis points.

3 5. In order to estimate the growth component of the DCF model, Mr. Rothschild
4 has solely relied on the so-called retention ratio method, which is logically circular
5 for it requires its user to assume the answer to begin with. Analysts growth
6 forecasts are ignored and so are historical growth rates. In short, Mr. Rothschild's
7 two DCF estimates, which largely drive his recommendation, should be dismissed
8 because they are derived from a logically circular methodology.

9 6. Mr. Rothschild's estimate of the CAPM risk-free rate is too low because it is
10 based on one-year Treasury note yields rather than on long-term Treasury bond
11 yields, and because it is based on current interest rates rather than on projected
12 rates. As a result, his CAPM estimates are understated by 2.08% from this
13 omission alone.

14 7. The basic version of the CAPM used by Mr. Rothschild understates the
15 Company's cost of equity for low-beta securities by 50 basis points. Correction of
16 Mr. Rothschild's various understatements in his CAPM analysis would increase his
17 CAPM results by 2.78%.

18 **Q. WHAT ARE THE BASIC CONCLUSIONS OF YOUR REBUTTAL TO MR.**
19 **ROTHSCHILD'S COST OF EQUITY TESTIMONY?**

20 A. Mr. Rothschild seriously understates SoCalGas' cost of common equity. A proper
21 application of cost of capital methodologies would give results substantially higher
22 than those that he obtained. I also find Mr. Rothschild's testimony to contain

- 1 several contradictions and inconsistencies and find his views on several aspects
- 2 of cost of capital methodology to be misguided.
- 3 *///*

1 **II. REBUTTAL TO MR. GORMAN'S TESTIMONY**

2 **Q. PLEASE SUMMARIZE MR. GORMAN'S RATE OF RETURN ON EQUITY**
3 **RECOMMENDATION.**

4 A. Mr. Gorman recommends that a return of 9.0%¹³ be applied to SoCalGas' common
5 equity capital for ratemaking purposes.

6 In determining the cost of equity, Mr. Gorman applies three DCF analyses
7 to proxy groups very similar to mine: a classic constant growth DCF analysis, a
8 sustainable growth analysis, and a multi-stage DCF analysis. The results of the
9 three DCF analyses for the proxy companies are summarized in Table 43, on page
10 IX-25 of his testimony. On line 8 of page IX-25, Mr. Gorman concludes that his
11 DCF results support a ROE of 8.6%. He appears to give little weight, if any, to his
12 multi-stage DCF results. I was nevertheless surprised by this conclusion given
13 that the DCF results for the natural gas group are in the 9.58% - 10.09% range.

14 Mr. Gorman also applies a risk premium analysis based on the difference
15 between the ROE awards of regulators of utilities and both U.S. Treasury bond
16 yields and yields on A-rated utilities over the 1986- 2019 period bonds to arrive at
17 two risk premia. Based on this analysis, as shown at the bottom of Column 3 in
18 Exhibits MPG-10 and MPG-11, the average indicated equity risk premium is 5.48%
19 over U.S. Treasury bond yields and 4.12% over Moody's utility bond yield. Mr.
20 Gorman goes on to examine the range of risk premiums over the period using 5-
21 year and 10-year averages to smooth out the results. The range in risk premium
22 is 4.17% - 6.75% using a 5-year rolling average, and 4.30% - 6.53% using 10-year

¹³ See Gorman Direct at IX-38.

1 rolling averages. He then opts to arbitrarily give a 70% weight to the high-end
2 result and 30% weight to the low-end result to finally arrive at a 6.0% risk premium.
3 Adding his risk-free rate estimate of 2.8%, the resulting cost of equity is 8.80%
4 (2.80% + 6.00% = 8.80%).¹⁴ The same procedure is repeated only this time using
5 a utility-specific risk premium. The resulting cost of equity estimate is 9.20%.¹⁵

6 Mr. Gorman concludes that this methodology produces a ROE in the range
7 of 8.8% to 9.2% with a midpoint of 9.0%.¹⁶

8 Finally, Mr. Gorman applies a CAPM analysis to the same peer groups of
9 companies used in his DCF analysis and obtains a ROE in a range of 7.00% to
10 8.54%. He opts for the high end of the range, 8.5%, which is his final CAPM estimate
11 of the cost of equity.¹⁷

12 The results from the various methodologies are summarized in Table 45 of
13 page IX-38, Mr. Gorman estimates a ROE for SoCalGas in the range of 8.5% to
14 9.00%. He selects the upper end of his range as his final recommended ROE for
15 SoCalGas.

16 **Q. WHAT ARE THE BASIC CONCLUSIONS OF YOUR REBUTTAL TESTIMONY**
17 **TO MR. GORMAN'S COST OF EQUITY TESTIMONY?**

18 A. While I agree with several of Mr. Gorman's procedures and methodologies, Mr.
19 Gorman understates SoCalGas' cost of common equity. If Mr. Gorman's various
20 results are amended to reflect proper data inputs to the financial models and if

¹⁴ See Id. at IX-31 – IX-32.

¹⁵ See Id. at IX-32.

¹⁶ See Id.

¹⁷ See Id. at IX-37.

1 appropriate risk adjustments are incorporated into his analysis, Mr. Gorman's
2 revised ROE recommendation would actually exceed my own recommendation.

3 **Q. PLEASE SUMMARIZE YOUR COMMENTS ON MR. GORMAN'S TESTIMONY.**

4 A. I agree with: (i) Mr. Gorman's samples of utility companies in his DCF and CAPM
5 analyses, with one minor exception; (ii) his use of analysts' growth forecasts as
6 proxies for expected growth in the classic constant growth DCF model and first
7 stage of the multi-stage DCF model; (iii) the beta estimates in the CAPM analysis,
8 (iv) part of his MRP component of the CAPM analysis; and (v) the broad outline of
9 his risk premium analyses. My disagreements center more on the appropriate data
10 inputs to the various models and failure to properly recognize SoCalGas' relative
11 risks.

12 I disagree with Mr. Gorman on the following grounds: (i) the absence of a
13 flotation cost adjustment; (ii) the use of the sustainable growth version of the DCF
14 model, (iii) the risk-free rate proxy in the CAPM and Risk Premium analyses, (iv)
15 one of the MRP components in the CAPM analysis; (v) the failure to employ the
16 empirical version of the CAPM in keeping with the vast literature on the subject;
17 and (vi) the failure to account for the inverse behavior between the allowed risk
18 premium and the level of interest rates. I also conclude that his criticisms of my
19 testimony are unfounded.

20 I shall now treat each of those issues in turn.
21
22

1 **1. DCF Dividend Yield and Flotation Costs**

2 **Q. DO YOU HAVE ANY COMMENT CONCERNING MR. GORMAN'S DIVIDEND**
3 **YIELD COMPONENT?**

4 A. Yes. The expected dividend yield component of the DCF model should be
5 adjusted for underpricing allowance by dividing it by $(1 - f)$, where "f" is the
6 underpricing allowance factor. As discussed earlier, Mr. Gorman's dividend yield
7 component is understated by approximately 20 basis points because it does not
8 allow for flotation costs, and, as a result, a legitimate stockholder expense is left
9 unrecovered.

10 **Q. WHAT FLOTATION COST TREATMENT DID MR. GORMAN RECOMMEND IN**
11 **THIS CASE?**

12 A. Mr. Gorman's common equity return recommendation does not include any
13 allowance whatsoever for issuance expense. Therefore, his DCF estimates of
14 equity costs are downward-biased by approximately 20 basis points by that
15 omission alone. I refer to my earlier discussion of this issue in my rebuttal of Mr.
16 Rothschild's testimony.

17 **2. Sustainable Growth**

18 **Q. PLEASE COMMENT ON MR. GORMAN'S SUSTAINABLE GROWTH**
19 **ESTIMATE IN THE DCF MODEL.**

20 A. In order to estimate the growth component of the DCF model, Mr. Gorman also
21 relies on the sustainable growth approach,¹⁸ where the growth rate is based on the

¹⁸ See Id. at IX-17.

1 equation $g = b(ROE)$; “ b ” is the percentage of earnings retained and “ ROE ” is the
2 expected rate of return on book equity. Mr. Gorman also accounts for the impact
3 of external stock financing on growth by adding an external growth term ($g = sv$).
4 For reasons discussed earlier, which will not be repeated here, I disagree with the
5 sustainable growth technique in view of its inherent circularity. In fairness to Mr.
6 Gorman, he does not rely on this faulty methodology in order to arrive at his final
7 return recommendation.

8 3. CAPM Risk-Free Rate

9 **Q. DOES MR. GORMAN PERFORM A CAPM ANALYSIS?**

10 A. Yes, he does.

11 **Q. WHAT INPUTS DOES MR. GORMAN USE IN THE CAPM ANALYSIS?**

12 A. Three inputs are required in order to implement the CAPM: the risk-free rate, the
13 beta risk measure, and the market risk premium (“MRP”). For the risk-free rate,
14 Mr. Gorman uses 2.80%.¹⁹ For beta, Mr. Gorman uses 0.70 which is the average
15 historical Value Line beta of his peer groups.²⁰ For the MRP, Mr. Gorman uses
16 7.10% which is the midpoint of a 6.0% - 8.2% range produced from average and
17 prospective estimates.²¹

18 **Q. DO YOU AGREE WITH MR. GORMAN’S BETA ESTIMATE?**

19 A. Yes, I do.

¹⁹ See Id. at IX-33.

²⁰ See Id. at IX-34.

²¹ See Id. at IX-37.

1 **Q. DO YOU AGREE WITH MR. GORMAN'S MRP ESTIMATE?**

2 A. Yes, I do.

3 **Q. WHAT RISK-FREE RATE DOES MR. GORMAN ADOPT IN HIS CAPM AND**
4 **RISK PREMIUM ANALYSES?**

5 A. Mr. Gorman uses *Blue Chip Financial Forecasts'* projected 30-year Treasury bond
6 yield of 2.80% as his risk-free input in the CAPM and Risk Premium analyses.

7 **Q. DO YOU AGREE WITH THIS RISK-FREE ESTIMATE?**

8 A. No, I do not, for it is too low. Mr. Gorman should have a forecast of 4.2% based
9 on a consensus of several projections. I was surprised by Mr. Gorman's sole
10 reliance on the Blue Chip forecasts. When it came to GDP forecasts to implement
11 the multi-stage DCF model, Mr. Gorman relied on a wide variety of forecasts as
12 seen on his Table 42, on page IX-23 of his testimony. Strangely, he did not rely
13 on the same sources for his forecasts of the risk-free rate.

14 As I discussed earlier in my rebuttal to Mr. Rothschild, all the economic
15 forecasts of which I am aware which were cited on Table 2, suggest a 4.2% interest
16 rates on long-term Treasury bonds. As a result, Mr. Gorman's CAPM and Risk
17 Premium estimates are understated by 140 basis points (4.2% - 2.8% = 1.4%).
18 That in itself would raise his recommended ROE by 1.4%, from 9.0% to 10.4%.

19 **5. CAPM Understatement**

20 **Q. DOES MR. GORMAN'S VERSION OF THE CAPM UNDERESTIMATE THE**
21 **APPROPRIATE COST OF CAPITAL?**

1 A. Yes, it does. As was discussed earlier in my rebuttal, a CAPM-based estimate of
2 the cost of capital underestimates the return required from low-beta securities and
3 overstates the return from high-beta securities, based on the empirical evidence.
4 Mr. Gorman's version of the CAPM underestimates equity costs by about 50 basis
5 points from this bias.

6 **6. Risk Premium Analysis**

7 **Q. DO YOU AGREE WITH MR. GORMAN'S HISTORICAL RISK PREMIUM**
8 **ANALYSIS?**

9 A. No, I do not.

10 **Q. HOW DOES MR. GORMAN ESTIMATE THE HISTORICAL RISK PREMIUM**
11 **ESTIMATES?**

12 A. Mr. Gorman estimated the difference between the allowed return on utility common
13 equity investments and both U.S. Treasury and A-rated utility bond yields over the
14 1986-2019 period bonds to arrive at two risk premia. Mr. Gorman concludes that
15 this methodology produces a ROE in the range of 8.8% to 9.2% with a midpoint of
16 9.0%.²²

17 **Q. WHAT IS WRONG WITH MR. GORMAN'S HISTORICAL RISK PREMIUM**
18 **ESTIMATES?**

19 A. Three things. First, it is based on the wrong risk-free rate forecast. Second, the
20 use of 5-year and 10-year rolling averages to his results are arbitrary. In the case
21 of his DCF results and CAPM results he opted for the high end of the range, but in

²² See Id. at IX-32.

1 this instance, he only gives a 70% weight to the high-end results. Third, Mr.
2 Gorman's analysis does not recognize the inverse relationship between the risk
3 premium and interest rates, as I did in my direct testimony.

4 **Q. DID MR. GORMAN TAKE INTO ACCOUNT THE RELATIONSHIP BETWEEN**
5 **RISK PREMIUMS AND INTEREST RATES?**

6 A. No, he did not. In his risk premium analysis, Mr. Gorman examines the historical
7 risk premiums implied in the ROEs allowed by regulators over the period 1986-
8 2019, but fails to take into account the rising trend of the risk premium in response
9 to lower interest rates. That is evident from Mr. Gorman's own data. On Schedule
10 MPG-10, the risk premium reported for 2019 is 6.7%, which is 110 basis points
11 (1.10%) in excess of Mr. Gorman's average risk premium of 5.6% for the whole
12 period.

13 A careful review of ROE decisions relative to interest rates reported in Mr.
14 Gorman's Schedule MPG-10 reveals a narrowing of the risk premium in times of
15 rising interest rates, and a widening of the premium as interest rates fall. As I
16 demonstrated in my direct testimony, the following statistical relationship between
17 the risk premium ("*RP*") and Treasury bond yields ("*YIELD*") emerges over the
18 1986-2019 period:

$$19 \quad RP = .0816 - 0.4668 YIELD \quad R^2 = 0.84$$

20 The relationship is statistically significant as indicated by the high "*R*²."
21 Inserting the current long-term Treasury bond yield of 2.8% used by Mr. Gorman
22 in the above equation suggests a risk premium estimate of 6.9% that would be

1 allowed. This in turn implies an allowed ROE of 9.7% rather than Mr. Gorman's
2 recommended 9.0%, a difference of 70 basis points. Inserting the 4.2% risk-free
3 rate that Mr. Gorman should have used in his CAPM and Risk Premium analyses
4 suggests a risk premium estimate of 6.2%, which in turn implies a ROE of 10.4%,
5 rather than Mr. Gorman's recommended 9.0%, a difference of 140 basis points.

6 **Q. DID MR. GORMAN ADJUST HIS RECOMMENDED RETURN ON EQUITY**
7 **UPWARD IN ORDER TO ACCOUNT FOR THE COMPANY'S HIGHER**
8 **RELATIVE RISK?**

9 A No, he did not.

10 **10. Response to Mr. Gorman's Comments**

- 11 • **Peer Group**

12 **Q. HOW DO YOU RESPOND TO MR. GORMAN' CRITICISM OF YOUR PEER**
13 **GROUP ON THE GROUNDS THAT TWO COMPANIES, FORTIS AND**
14 **DOMINION, SHOULD BE EXCLUDED FROM THE ANALYSIS?**

15 A. I disagree. First, Fortis owns U.S. electric utilities and is covered in the Value Line
16 data base and its utility coverage. Second, investors are certainly not precluded
17 from investing in cross-border utility stocks such as Fortis, especially given its
18 strong presence and exposure in the U.S. electric utility industry. Third, Mr.
19 Gorman argues that the Canadian equity market is riskier than the U.S. market
20 and, therefore, Fortis should be excluded. That logic escapes me. Just because
21 the Canadian equity market is riskier than the U.S. because of its exposure to
22 natural resources, it certainly does not follow that Fortis is also riskier. As a matter

1 of fact, Fortis' beta risk measure is 0.65 which is nearly the same as the average
2 electric utility beta, and thus equivalent in risk.

3 Mr. Gorman excludes Dominion on the grounds that it is acquiring SCANA.
4 The transaction was consummated several month ago on February 2019, so there
5 is no longer any reason or exclusion.

6 • **Flotation Cost**

7 **Q. PLEASE COMMENT ON MR. GORMAN'S CRITICISM OF YOUR FLOTATION**
8 **COST ADJUSTMENT.**

9 A. Mr. Gorman's dividend yield component is understated by 20 basis points because
10 it does not allow for flotation costs, and, as a result, a legitimate stockholder
11 expense is left unrecovered.

12 As stated on page X-20 starting on line 17, Mr. Gorman's only argument
13 against my flotation cost adjustment is that it is not based on SoCalGas-specific
14 costs, and that it is generic in nature. That argument is specious. To base a
15 flotation cost allowance on a one-company sample, although company specific,
16 would not provide a sufficiently reliable statistical and economic basis to infer a
17 utility's appropriate flotation cost allowance. While it is conceptually correct to rely on
18 the particular company circumstances in quantifying the flotation cost allowance, it is
19 not a practical alternative. The flotation cost allowance is a weighted average cost
20 factor designed to capture the average cost of various equity vintages and types of
21 equity capital raised by the company.

1 • DCF Growth Rates

2 **Q. PLEASE COMMENT ON MR. GORMAN’S CRITICISM OF YOUR DCF GROWTH**
3 **RATES BECAUSE THEY EXCEED THE LONG-TERM GROWTH OF THE**
4 **MACROECONOMY.**

5 A. On page X-7 (lines 13-20), Mr. Gorman criticizes my use of analysts’ growth rates
6 on the grounds that they exceed the long-term sustainable growth rate of the
7 economy. Mr. Gorman contends that projected growth in Gross Domestic Product
8 (“GDP”) constitutes a high-end, sustainable growth rate for a utility over an
9 indefinite period of time. However, Mr. Gorman’s position is directly contradicted
10 by his statement on page VI-12 (lines 1-5), in which Mr. Gorman states:

11 *“As predictors of future returns, security analysts’ growth estimates have*
12 *been shown to be more accurate than growth rates derived from historical data.*
13 *That is, assuming the market generally makes rational investment decisions,*
14 *analysts’ growth projections are more likely to influence investors’ decisions which*
15 *are captured in observable stock prices than growth rates derived only from*
16 *historical data.”*

17
18 Furthermore, Mr. Gorman has not provided any empirical evidence that
19 earnings per share would grow at the average growth of the economy, or GDP
20 growth, and I am unaware of any financial literature that would support such an
21 assertion. To the best of my knowledge, there is no empirical support for the notion
22 that the earnings and dividends of utility companies, in general, or utilities, in
23 particular, or indeed any specific company or industry, track GDP growth. Nor am
24 I aware of any evidence that the investment community looks to GDP growth over
25 the next century when evaluating utility investments.

26 However, based upon the previously cited wealth of empirical and academic
27 literature which supports the superiority of analyst’s forecasts as measures of

1 investor expectations for the use of such forecasts in the DCF model, current
2 earnings growth forecasts are the appropriate growth rates to use in a DCF
3 analysis. As discussed earlier in my rebuttal and in my direct testimony, there is
4 considerable empirical evidence in the academic literature that support the
5 superiority of analysts' forecasts of earnings per share as measures of investor
6 expectations. Besides, to the extent that economic trends influence growth, they
7 are already captured in analysts' growth estimates for gas utilities.

8 Be that as it may, analyst growth rates are the growth rates impounded in
9 stock prices, whether I or Mr. Gorman agree or disagree with the use of such
10 growth rates.

11 • **Multi-Stage DCF Analysis and Gross Domestic Product Growth**

12 **Q. PLEASE COMMENT ON MR. GORMAN'S IMPLEMENTATION OF HIS MULTI-**
13 **STAGE DCF ANALYSIS.**

14 A. Starting on page IX-18, Mr. Gorman's testimony contains a lengthy analysis of
15 SoCalGas' cost of equity using the multi-stage DCF model. In the interest of time
16 and space, I will only make brief comments on this analysis, since Mr. Gorman
17 himself does not seem to have much faith in the results from this method. As
18 shown in Table 43, on page IX-25, and on lines 8-10 of his testimony, Mr. Gorman's
19 final DCF estimate is 8.6%, and his low multi-stage DCF results are ignored,
20 perhaps an indication of the inappropriate nature of this method.

21 The central assumption of this approach, and its Achilles' heel in my view,
22 is that utility growth rates match that of the macroeconomy. I am not an
23 enthusiastic proponent of this approach because I am not aware of any financial

1 literature supporting the notion that that utility earnings per share would grow at
2 the average growth of the economy, or GDP growth. To the best of my knowledge,
3 there is no empirical support for the notion that the earnings and dividends of utility
4 companies, in general, or utilities in particular, or indeed any specific company or
5 industry, track GDP growth. Nor am I aware of any evidence that the investment
6 community looks to GDP growth over the next several decades when evaluating
7 utility investments.

8 However, based upon the wealth of empirical and academic literature that
9 supports the superiority of analyst's forecasts as measures of investor
10 expectations for the use of such forecasts in the DCF model, current earnings
11 growth forecasts are the appropriate growth rates to use in a DCF analysis. As
12 discussed in my direct testimony, there is considerable empirical evidence in the
13 academic literature that support the superiority of analysts' forecasts of earnings
14 per share as measures of investor expectations. Besides, to the extent that
15 economic trends influence growth, they are already captured in analysts' growth
16 estimates for utilities.

17 In any event, Mr. Gorman himself does not appear to place much faith on
18 his multi-stage DCF model, which is predicated on the idea that utilities grow at the
19 same rate as the general macro-economy, for he places no weight at all on the
20 results of his multi-stage DCF model.

21 **Q. DO YOU HAVE ANY MORE COMMENTS ON THE USE OF GDP GROWTH IN**
22 **THE MULTI-STAGE DCF MODEL?**

23 **A.** Yes, I do. I have the following additional comments:

1 First, Mr. Gorman assumes a single generic growth rate of approximately
2 4% for all the companies in his proxy group. Hence, if Mr. Gorman's view that all
3 utility companies will grow at a long-term growth of 4.1%,²³ there is really no need
4 for a proxy group at all.

5 Second, it is difficult to accept Mr. Gorman's notion that investors believe
6 that every company will grow at the same rate of 4.1% forever. Mr. Gorman's 4.1%
7 growth rate is generic in nature, and does not account for the different risks and
8 prospects of the peer group companies or for the entire utility industry for that
9 matter.

10 Third, if we accept the current and prospective inflation rate of 2.0%, Mr.
11 Gorman's nominal GDP growth rate of 4.1% becomes only about 2% in real
12 inflation-adjusted terms. I find it hard to believe that investors would assume the
13 risk of common stocks in exchange for a mere 2.0% more than expected inflation.
14 An investor would be better off buying bonds under that scenario.

15 Fourth, the DCF model assumes that changes in the growth rate are
16 inversely related to the dividend yield. There are two moving interrelated parts in
17 the DCF model: the growth rate and the dividend yield (D/P). As the expected
18 growth increases, the stock price increases and the dividend yield (D/P)
19 decreases. The reverse is true as well. As growth decreases, the stock price
20 decreases, that is, the dividend yield increases. If we believe that Mr. Gorman's
21 4.1% growth rate applies to SoCalGas and to all the other peer companies in
22 contrast to analyst growth rates in the 5% - 6% range embedded in current stock

²³ See Id. at IX-17.

1 prices, it behooves us to accept that the dividend yield will increase from its base
2 level of 3.0%.

3 In short, Mr. Gorman's DCF analysis is incomplete because it erroneously
4 assumes that one factor can change while all others remain constant. Mr. Gorman
5 assumes that all the peer companies have a 4.1% growth rate and that none of
6 those peer companies' dividend yield would change as their expected growth rates
7 decline. If a 4.1% growth rate were to apply to utility companies, one must make
8 assumptions as to their dividend yield, which Mr. Gorman fails to do.

9 • **Interest Rate Forecast**

10 **Q. HOW DO YOU RESPOND TO MR. GORMAN'S CRITICISMS OF YOUR LONG-
11 TERM INTEREST RATE FORECAST BECAUSE IT IS HIGHER THAN THE
12 FORECAST PUBLISHED IN THE BLUE CHIP FINANCIAL FORECASTS?**

13 **A.** On page X-9 (lines 4-15), Mr. Gorman argues that a projected risk-free rate of
14 4.2% exceeds the consensus forecast published in The Blue Chip Financial
15 Forecasts. I have two responses.

16 First, the Blue Chip Financial Forecasts is not necessarily the consensus.
17 It is but one forecast and is certainly not representative of the consensus as I
18 showed earlier in my rebuttal of Mr. Rothschild's testimony on Table 7 where the
19 average forecast from six authoritative sources is 4.2%, and there is little variability
20 among the forecasts. Clearly, the Blue Chip Financial Forecasts forecast of 2.8%
21 is an outlier.

22 Second, the Blue Chip Financial Forecasts are for only the next five- and
23 ten-year periods, whereas the interest rate forecasts shown on Table 2 are based

1 on much longer time periods. This is quite consistent with the DCF model long-
2 term horizon requirements and with what investors can reasonably expect to occur
3 over the very long-run horizon of the DCF model.

4 • **Historical Risk Premium Analysis**

5 **Q. PLEASE COMMENT ON MR. GORMAN'S FIRST CRITICISM OF YOUR**
6 **HISTORICAL RISK PREMIUM ANALYSIS.**

7 A. On page X-15 (lines 7-11) of his testimony, Mr. Gorman takes issue with my
8 historical risk premium analysis because it is based on an overstated risk-free rate
9 of 4.2% rather than his Blue Chip forecast of 2.8%. I have already discussed the
10 lack of representativity of Mr. Gorman's 2.8% risk-free rate.

11 Mr. Gorman's second concern also expressed on page X-15 (lines 11-16)
12 is unwarranted as well. Over very long time periods such as used in my historical
13 risk premium studies, the influence of unexpected capital losses offsets the
14 influence of unexpected capital gains on both bond and stock returns.

15 • **Empirical CAPM**

16 **Q. DO YOU HAVE ANY COMMENTS REGARDING MR. GORMAN'S CONCERNS**
17 **WITH YOUR EMPIRICAL CAPM ANALYSIS?**

18 A. Yes. Mr. Gorman's concerns with my empirical CAPM analysis expressed on page
19 X-11 (lines 15-20) arise from his confusing the adjustment of beta with the
20 empirical CAPM. As previously discussed in my direct testimony, there is
21 considerable academic and regulatory support for the use of the empirical CAPM.
22 As explained in Appendix A of my direct testimony, it is essential to take into
23 account the reality that the empirical Security Market Line described by the

1 traditional CAPM is not as steeply sloped as the predicted Security Market Line.
2 The empirical CAPM is thus a return adjustment which accounts for this reality and
3 is not an adjustment to beta which is an x-axis adjustment accounting for
4 regression bias. Hence, the use of adjusted betas is not equivalent to the empirical
5 CAPM. Mr. Gorman's criticisms are unfounded.

6 Mr. Gorman also erroneously argues that there is no evidence supporting
7 the empirical CAPM that rely on Value Line adjusted betas. I provided a substantial
8 bibliography of evidence supporting the empirical CAPM in Appendix A of my direct
9 testimony.

10 • **Risk Premium and Interest Rates**

11 **Q. IS MR. GORMAN CORRECT THAT THE INVERSE RELATIONSHIP BETWEEN**
12 **EQUITY RISK PREMIUMS AND INTEREST RATES IS NOT SUPPORTED BY**
13 **ACADEMIC RESEARCH?**

14 A. No. Mr. Gorman erroneously argues that the inverse relationship between equity
15 risk premiums and interest rates is not supported by academic research.²⁴ My first
16 reaction was to simply point to the graph on page 53 of my direct testimony, which
17 shows a very clear significant negative relationship.

18 Contrary to Mr. Gorman's contention that finance literature does not fully
19 endorse the notion that the risk premium shrinks as interest rates decline, there is an
20 abundance of studies that support the notion. Published studies demonstrate that,

²⁴ See Gorman Direct at 17 (lines 11-13).

1 beginning in 1980, risk premiums varied inversely with the level of interest rates,
2 rising when rates fell and declining when interest rates rose.²⁵

3 Regulators have recognized this tendency as well. The California Public
4 Utility Commission recognizes that the cost of equity does not move in tandem with
5 interest rates, and its long-standing practice has been to adjust the cost of equity
6 by one-half to two-thirds of the change in bond yields.

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

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

16 Generally, it is observed that if bondholders' fear of interest rate risk exceeds
17 shareholders' fear of loss of earning power, the risk differential will narrow and hence
18 the risk premium will shrink. This is particularly true in high inflation environments.
19 Interest rates rise as a result of accelerating inflation, and the interest rate risk of

²⁵ See, e.g., Willard T. Carleton, *et al.*, "Inflation Risk and Regulatory Lag," 38 *The Journal of Finance* 419-43 (1983); Eugene F. Brigham, *et al.*, "The Risk Premium Approach to Measuring a Utility's Cost of Equity," 14 *Financial Management* 33-45 (1985); Robert S. Harris, "Using Analysts' Growth Forecasts to Estimate Shareholder Required Rates of Return," 15 *Financial Management* 58-67 (1986); Robert S. Harris & Felicia C. Marston, "Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts," 21 *Financial Management* 63-70 (1992); and Farris M. Maddox, *et al.*, "An Empirical Study of Ex Ante Risk Premiums for the Electric Utility Industry," 24 *Financial Management* 89-95 (1995).

1 bonds intensifies more than the earnings risk of common stocks, which are partially
2 hedged from the ravages of inflation. This phenomenon has been termed as a
3 “lock-in” premium. Conversely, in low interest rate environments, as is the case
4 currently, when bondholders’ interest rate fears subside and shareholders’ loss of
5 earning power dominate, the risk differential will widen and hence the risk premium
6 will increase.

7 These empirical studies show that equity risk premiums have consistently
8 increased as interest rates have declined. This result is a simple reflection of the
9 fact that required rates of return in the stock market are not entirely dependent on
10 changes in interest rates. Because utilities have to compete with other companies
11 and with other types of equity investments for money, the return on equity for
12 utilities does not change by as much as the observed changes in interest rates.
13 The use of an unadjusted simple average of long-term equity risk premiums with
14 current interest rates would be simply wrong. Such an approach would
15 consistently understate the required return on equity.

16 In short, the empirical evidence from the published academic literature
17 demonstrates that the risk premium varies inversely with the level of interest rates,
18 contrary to Mr. Gorman’s view. The relationship remains true today, as evidenced
19 by the graph provided on page 53 of my direct testimony.

20 **Q. WHAT DO YOU CONCLUDE FROM MR. GORMAN’S COST OF EQUITY**
21 **ANALYSES?**

22 A. I agree with several of Mr. Gorman’s views and procedures: (i) his two samples of
23 utilities in his DCF and CAPM analyses with one minor modification; (ii) his use of

1 analysts' growth forecasts as proxies for expected growth in the classic DCF
2 model; (iii) his beta estimates in the CAPM analysis; (iv) his market risk premium
3 component of the CAPM analysis; and (v) the broad outline of his risk premium
4 analysis, although not the input data.

5 I disagree with Mr. Gorman on the following grounds: (i) the absence of a
6 flotation cost adjustment; (ii) an understatement of the risk-free rate in the CAPM
7 and Risk Premium analyses; (iii) part of his MRP component in the CAPM analysis;
8 (iv) the failure to employ the empirical version of the CAPM in keeping with the
9 vast literature on the subject; (v) the failure to account for the inverse behavior
10 between the allowed risk premium and the level of interest rates; and (vi) the failure
11 to fully recognize SoCalGas' higher business risk. I also conclude that his
12 criticisms of my testimony are unfounded.

13 My specific conclusions are as follows:

14 1. DCF Dividend Yield and Flotation Costs. Mr. Gorman's return estimates are
15 understated by 20 basis points because he does not allow for flotation costs, and,
16 as a result, a legitimate stockholder expense is left unrecovered.

17 2. CAPM and Risk Premium Risk-Free Rate. Mr. Gorman's risk-free rate is
18 understated by 1.4%. Using the appropriate risk-free rate, Mr. Gorman's CAPM
19 and Risk Premium estimates are to be raised by 140 basis points from this
20 correction alone.

21 3. CAPM Version. The raw form of the CAPM used by Mr. Gorman understates
22 the cost of equity for low-beta securities by approximately 50 basis points.

1 4. Allowed Risk Premium Analysis. Mr. Gorman’s allowed risk premium analysis
 2 does not account for the inverse relationship between allowed returns and the level
 3 of interest rates, understating returns by 70 basis points.

4 The table below recapitulates my findings with respect to Mr. Gorman’s
 5 testimony. Column 1 shows the three methodologies employed. Column 2 shows
 6 Mr. Gorman’s original findings from his Table 45. Column 3 shows the 20 basis
 7 points understatement due to the flotation cost adjustment. Column 4 shows the
 8 140 basis points correction for the understated risk-free rate in the CAPM and Risk
 9 Premium analyses. Column 5 shows the 50 basis points understatement of the
 10 plain vanilla CAPM. Column 6 shows the amended Risk Premium results due to
 11 the unaccounted inverse relationship between risk premiums and interest rates.
 12 The last column sums the various understatements. As seen at the bottom of the
 13 table, the sum total of these corrections and revisions is that Mr. Gorman’s ROE
 14 recommendation becomes 10.33% without any allowance for a SoCalGas risk
 15 premium.

Financial Model	Gorman Original	Flotation Cost	Risk-free Rate	ECAPM Bias	Inverse Relation	Final Estimates
(1)	(2)	(3)	(4)	(5)	(6)	(7)
DCF	8.60	0.20	0.00	0.00	0.00	8.80
CAPM	8.50	0.20	1.40	0.50	0.00	10.60
Risk Premium	9.00	0.20	1.40	0.00	0.70	11.30
Average						10.33

16

1 When one appropriately accounts for SoCalGas' higher than average risks, which I
2 believe warrants a risk premium of 70 basis points as explained in my direct testimony,
3 his recommendation would exceed my own ROE proposal of 10.7%.

4 **Q. DR. MORIN, DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

5 A. Yes, it does.