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**PACIFIC GAS AND ELECTRIC COMPANY**  
**COST OF CAPITAL 2013**  
**PREPARED TESTIMONY**

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PACIFIC GAS AND ELECTRIC COMPANY  
 COST OF CAPITAL 2013  
 PREPARED TESTIMONY

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**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 1**  
**COST OF CAPITAL POLICY AND PROPOSAL**

PACIFIC GAS AND ELECTRIC COMPANY  
CHAPTER 1  
COST OF CAPITAL POLICY AND PROPOSAL

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**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 1**  
**COST OF CAPITAL POLICY AND PROPOSAL**

**A. Introduction**

In this application Pacific Gas and Electric Company (PG&E) requests of return on its investments in California Public Utilities (CPUC Commission) jurisdictional assets for the test year adopted rate of return must ensure that PG&E can attract capital prices, and be able provide a fair return to shareholders.

PG&E requests an overall Rate of Return (ROR) of 8.45 percent, in Table 1 - 1 below. This is a decrease from the ROR currently authorized 8.79 percent. This request reflects a ROR of 8.45 percent, a currently authorized ROR of 11.35 percent; a cost of long-term debt of 5.69 percent, a decrease from 6.05 percent; a cost of preferred stock of 5.60 percent, a decrease from 5.68 percent; and PG&E's capital structure requests that its currently authorized 52 percent be maintained and proposes 47 percent for long-term debt and 1.0 percent for preferred stock.

**TABLE 1-1**  
**PACIFIC GAS AND ELECTRIC COMPANY**  
**PROPOSED COST OF CAPITAL**

Line No.		2013		Weighted Cost
		Cost	Capital Structure	
1	Long-Term Debt	5.69 %	47.0 %	2.67 %
2	Preferred Stock	5.60 %	1.0 %	0.06 %
3	Common Equity	11.00 %	52.0 %	5.72 %
4	Return on Rate Base			8.45 %

PG&E expects to make unprecedented amounts of infrastructure investments, roughly \$15 billion over the period 2014, and equal to PG&E's entire rate base just 8 years ago. These invest

<sup>1</sup> If the CPUC also adopts in this proceeding a capital adjustment mechanism (ACCAM), then the Return on Equity (ROE) adopted in this proceeding over the duration of the ACCAM, as adjusted periodically by the CPUC in Decision 08-05-035 used the term "CCM" to describe the mechanism, but PG&E uses the term "ACCAM" herein, as PG&E did in the proposed testimony of c

1 include funding for safety and reliability, replacement aging rep  
2 facilities, additional pipes and wires to serve new customers,  
3 generation and transmission, are a crucial part of the electric energy system  
4 that supports the people and economy of California. Investments, these as  
5 well as to fund maturing debt, PG&E will need to raise capital in  
6 a time when capital markets are recovering from the credit crisis and  
7 the Euro Zone sovereign debt crisis is still smoldering.

8 In addition to raising capital, PG&E must also maintain its ability to obtain  
9 bank credit facilities to support operational and working capital needs. Annual  
10 purchases of gas and electric commodities ranging from \$1 billion to \$1.5 billion  
11 level of financing requires a strong balance sheet with liquid assets and  
12 good credit ratings.

13 PG&E was downgraded in late 2011 by two of the three major credit  
14 agencies, and its lowest credit rating is now BBB, about junk not  
15 grade.<sup>2</sup> PG&E considers a BBB credit rating sub optimal, and there is  
16 for further declines. Setting a reasonable return on capital as a  
17 capital structure that does not increase PG&E's debt to equity ratio is a  
18 factors in preventing further declines. PG&E's proposals will  
19 enable PG&E to maintain its current investment grade and will  
20 support its ability to attract capital and credit at a reasonable cost. A  
21 customers would eventually bear the cost of poor credit ratings, higher  
22 cost of debt, higher cost of facilities, and the higher collateral as a  
23 result of counterparties requiring more collateral for transactions.  
24 Customers would also pay higher prices for purchased power, since the  
25 credit quality, and hence the cost, of generation is a  
26 function of PG&E's credit quality.

27 The remaining chapters in this exhibit provide support for the  
28 recommendations in this chapter. Specifically, Chapter 2 provides for  
29 the ROE recommendation; Chapter 3 estimates the test year of 2013  
30 long-term debt and preferred stock; and Chapter 4's present value analysis shows  
31 how the ACCAM has worked since it was adopted in 2008 and that the proposed  
32 current ACCAM be continued for three more years.

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<sup>2</sup> See Attachment 1 A, Table 1 A- 4 for a description of credit rat

1 **B. Return on Equity Recommendation**

2 PG&E's ROE proposal is based on the financial model in PG&E's results  
3 witness Dr. William Averava, Dr. Averava, using data from generally  
4 comparable to PG&E, estimates the ROE for these utilities using  
5 ROE estimation methods. Dr. Averava's ROE model results, 0.9 percent from  
6 the Discounted Cash Flow (DCF) model, 10.8 - 14.5 percent from the  
7 Asset Pricing Model, and 10.8 - 11.4 percent from expected risk premium  
8 earnings models, form the basis for his recommended range of a  
9 10.2 - 11.4 percent. Taking into consideration including the factor  
10 specific risks and exposures of PG&E, Dr. Averava concludes that an ROE rate  
11 above the midpoint of this range, or 11.0 percent, and represents a  
12 reasonable ROE for PG&E. Dr. Averava also applies using a DCF model  
13 group of large, stable, risk companies from non-utility sectors of the  
14 economy to corroborate his utility proxy results.

15 Dr. Averava describes the risks faced by PG&E, which are general  
16 in his proxy group of comparables. But it emphasizes that  
17 investors perceive risks in California are not seen elsewhere, thus  
18 requiring a return above the midpoint of Dr. Averava's reasonable range. While  
19 many Californians view their home state as one of the best others  
20 see California as hostile to business and saddled with a structure of that  
21 has been called "ungovernable." Michael J. Boskin and John Coggin,  
22 professors of economics at Stanford University, recently described  
23 "Long a harbinger of national trends and an incubator, of but not so  
24 observed that California "is near the bottom in business and tax  
25 state bond ratings. The Economist recognized that "Hardship and risk-taking,  
26 hopes and crushing disappointments have been part of California's  
27 since [the gold rush], through booms and busts, euphorias, and but  
28 also noted that "California is now called a 'dysgovernable' and  
29 even 'failed' state." While these terms may seem extreme, and many, including  
30 PG&E, may not agree with them, they are not terms applied to other

3 "California's Greek Tragedy," The Wall Street Journal, 3, p. 2 A1132.

4 "The People's Will," The Economist Special Report April 20, 2011.

1 Investors are well aware of these perceptions of California and  
2 views into account when assessing the risk of investing in those only  
3 business is in California, and deciding where to invest in the  
4 require, a return that PG&E believes is in the upper half of a  
5 reasonable range.

6 Illustrative of this innovation and risk taking in California are  
7 other states are its bold and aggressive energy policies. California  
8 leader in the pursuit of programs and rate designs that promote  
9 efficiency, and was one of the first states to restructure the electric  
10 industry in the late 1990s. Those innovative restructuring actions, in the  
11 case of electric restructuring, showed sweeping new policies with high  
12 risk, as evidenced by the bankruptcy of PG&E and the near bankruptcy  
13 Southern California Edison Company. As California moves forward with  
14 one major aspect of another sweeping new policy, and California's  
15 Warming Solutions Act of 2006, investors must consider that the cap  
16 and trade program, a large, untested program with potential costs, also  
17 comes with risks, no matter how well policy makers attempt to identify and  
18 mitigate these risks. California adopted one of the most aggressive  
19 renewable standards in the nation, a standard that bears the risk of  
20 integrating a vast amount of intermittent and distributed power in a  
21 comparatively short time, accompanied by the uncertainty of the  
22 consumer price for such a level of renewables, and the impact it  
23 have on the State's economy.

24 California is willing to take these risks in order to meet its goals  
25 related to climate change and energy independence. For example, the  
26 business and political structures in California lead to greater liability  
27 compared to other states, and therefore greater risks faced by  
28 including California utilities. As a result, PG&E believes the Averá's  
29 recommended ROE of 11.0 percent, in the upper range of the reason-  
30 appropriately reflects the higher risk that confront California utilities.

### 31 C. Costs of Long-Term Debt and Preferred Stock

32 PG&E's embedded cost of long-term debt is projected from the increase  
33 currently authorized level of 6.05 percent to 5.369 percent for  
34 decrease is largely driven by the decrease in the variable PG&E



1 debt, and the issuance in recent years of new fixed-rate debt at long-term  
2 interest rates lower than PG&E's currently authorized cost of debt.

3 PG&E's cost of preferred stock is projected to decrease from the  
4 authorized level of 5.68 to 5.60 percent as a result of the  
5 redemption costs of retired preferred stock. PG&E does not have any  
6 issuances or redemptions of preferred stock for the foreseeable future.

#### 7 **D. Capital Structure and Credit Ratings**

8 PG&E's ability to attract capital at a reasonable cost is affected by a  
9 number of business risks that it faces. If it finances its operations with  
10 a higher level of business risks, financial ratios, including debt-to-equity, will result  
11 in less access to capital and at higher debt-to-equity ratios. At lower  
12 leverage, all else equal. Over the next three years, PG&E's financing  
13 requirements are substantial: PG&E must raise \$8 billion to  
14 fund its infrastructure investments of \$15 billion, mainly from internally  
15 generated cash. In addition, PG&E needs  
16 borrowing capacity to provide \$1.5 billion for capital expenditures  
17 transactions and access to another \$1.5 billion of operating capacity  
18 to manage daily and seasonal swings of cash as well as to provide  
19 for unforeseen events.

20 Given its financing requirements, PG&E needs a strong balance sheet  
21 with enough common equity to provide adequate credit capacity. PG&E's  
22 common equity ratio of 52 percent is the lowest level that equity should  
23 maintain in order to retain its current credit ratings and to provide  
24 capital and short-term credit at reasonable prices. PG&E's current  
25 optimal credit rating is in the A category, but PG&E is currently rated  
26 by S&P, and a 52 percent equity ratio is PG&E's long-term strategic  
27 goal to achieve its targeted A rating.

#### 28 **1. A Common Equity Ratio of 52 Percent Is Needed to Support PG&E's** 29 **Current Credit Ratings**

30 PG&E was downgraded in late 2011 by two of the three major  
31 rating agencies. PG&E is currently rated BBB by S&P, A3 by Moody's,

1 Investor Service ( Moody' s ) , and BBB+ by <sup>5</sup> Fitch. Although the  
2 Moody' s A3 rating is favorable, the S& P BBB rating is only two  
3 above sub-investment grade, also known as " junk" status. These  
4 ratings are driven by a number of factors generally are determined by  
5 a qualitative assessment of overall business risks, of financial use  
6 metrics to help assess a ability to service its debt.

7 As discussed more fully below, only one of PG& E' s three key cr  
8 metrics can support credit ratings in the A category, PG& E and becau  
9 already has significant amounts of debt and off-balance sheet d  
10 obligations, its debt ratio is nearly as high as it can go without p  
11 leading to another credit rating downgrade.

12 Figure 1 - 1 below shows PG& E' s current credit metrics using S& P  
13 criteria to relate credit metrics to <sup>9</sup> credit rating. The three key metrics are  
14 key measures of PG& E' s ability to service its debt: of funds from  
15 operations ( FFO ) to interest ( FFO / INT ) , the ratio of FFO to tot  
16 ( FFO / DEBT ) , and the ratio of total debt to CAPITAL ( DEBT/  
17 Figure 1 - 1 shows that two of the three key FFO / DEBT ratios, the F  
18 the DEBT/ CAPITAL ratios are currently in the BBB and BB categor

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5 It is not unusual for firms to have different ratings agencies, a situation known as " split ratings. " of ~~Aborted~~ firms have split ratings reflecting different assessments or perceptions of risk.

6 S& P and Fitch use the same ratings nomenclature. A ~~Table~~ <sup>Table</sup> 1 A - 4 shows the Moody' s equivalent rating under the S& P system

7 For example, Moody' s identifies four key rating factors that influence the assignment of ratings for regulated gas and electric utilities. These factors are: ( 1 ) the regulatory framework, which determines overall business risk; ( 2 ) capital structure and operating performance; ( 3 ) diversification into unregulated businesses; and ( 4 ) financial strength, which are the ability to raise capital.

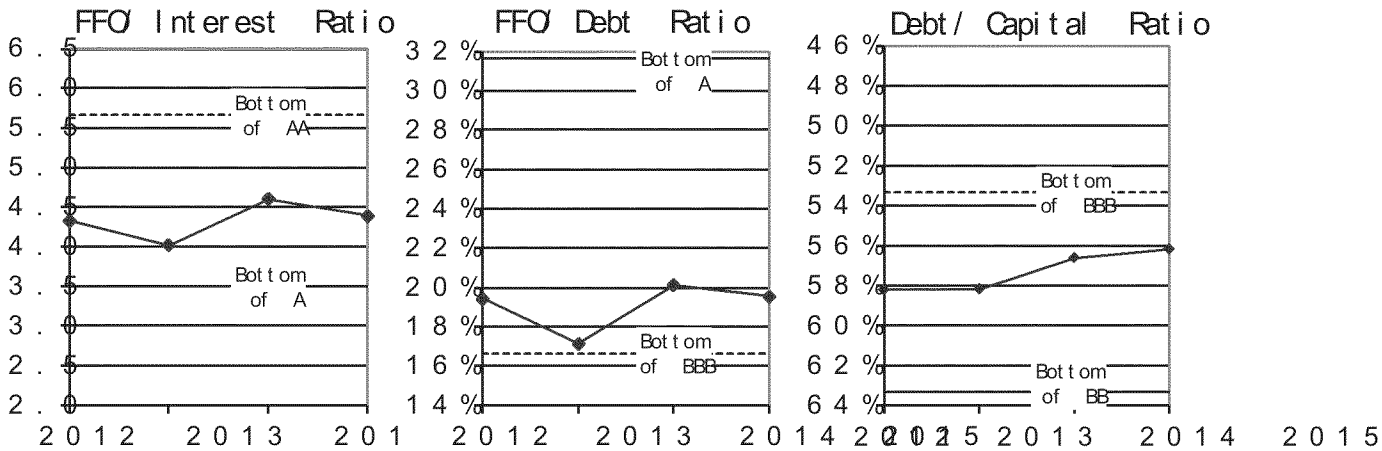
8 As discussed more fully later in this chapter, long-term power purchase agreements ( PPA ) as an alternative to owning power plants, and PPAs carry obligations that are similar to conventional debts that PG& E has. These " debt equivalents " are currently on the order of \$ 3 billion, relative to PG& E' s conventional debt outstanding of about \$ 13 billion. The amount of PPA debt is expected to grow as greater amounts of renewables and conventional generation are added through PPAs.

9 The lines on the graphs marking the boundaries of the credit ratings are based on Attachment 1 A, Table 1 A - 2 .

10 Figure 1 - 1 is based on criteria published by S& P. The graphs can be found in Attachment 1 A, Tables 1 A - 1 and 1 A - 2 . Definitions of the metrics used in Attachment 1 A, Table 1 A - 3 .

1 respectively. PG&E's other metrics FFO/INT is consistent with the  
 2 criteria for ratings in the A category.

FIGURE 1-1  
 PACIFIC GAS AND ELECTRIC COMPANY



3 The Total Debt to Total Capital is a function of a PG&E's c  
 4 structure (including short-term debt and debt equivalents, long-as w  
 5 term capital). The other two ratios are less directly driven b  
 6 structure, but a decrease in PG&E's authorized equity ratio wil  
 7 impact all three ratios, putting downward pressure on PG&E's cr  
 8 and access to capital. As a result, a decrease in PG&E's autho  
 9 common equity ratio may trigger a credit ratings downgrade.

10 Both S&P and Moody's have, in their recent credit reports on PG  
 11 stated that a potential cause of a credit rating downgrade is a  
 12 leverage. In its December 2011 ratings report, out:

13 The stable outlook reflects our anticipation that the company w  
 14 continue repairing its business practices and produce cash flow  
 15 projections in line with our base case expectations of debt FFO to t  
 16 of 20% and adjusted debt to capitalization in the year area of 58%  
 17 **We could lower the ratings if leverage exceeds 60% and FFO to**  
 18 **total debt falls to less than 15% on a sustained basis.** [Emphasis  
 19 added] We could raise the ratings if financial performance mee  
 20 base case expectations and the business profile strengthens, wh  
 21 would be evidenced by improved operations for the utility's gas  
 22 transmission system, refocused efforts on building the safety into  
 23 corporate culture, and continued constructive regulatory outcom

11 S&P's Ratings Direct: Pacific Gas and Electric Company; Dec 11.

1 In a similar vein, Moody's stated:

2 The stable outlook also factors in the company's continued effort  
3 finance negative free cash flow with meaningful amounts of common  
4 equity sufficient to maintain a 52% equity ratio, at which level it is  
5 to support overall credit quality. ...

6 Additional leverage is not the only factor that could lead to a  
7 rating downgrade. In discussing the electric industry, Richard  
8 managing director at S&P, stated:

9 ...rapidly increasing consumer resistance to rising bills will temper  
10 regulatory support for timely and perhaps even full rate recovery  
11 preference for expense deferrals may develop, and a possibility  
12 competitive authorized returns will almost certainly prevail.  
13 of events would likely result in a shift of our stable outlook  
14 U.S. electric utility credit quality to negative.

15 It is important to note that with split ratings, the lower  
16 rating relied upon by PG&E's counterparties when extending credit. For  
17 example, a two-notch downgrade by S&P to BB+ (below investment  
18 grade) would cause PG&E's counterparties to require additional collateral  
19 \$1 billion, an amount that PG&E simply may not be able to fund  
20 current credit facilities. At that point PG&E may find it difficult to obtain  
21 any additional credit facilities, and what facilities could come  
22 at a significantly higher cost and limited in size. PG&E's ability  
23 to gas and electric commodities and transact through the California  
24 Independent System Operator would be severely limited, PG&E's  
25 ability to procure energy for its customers. Even if this occurred  
26 credit ratings of the other rating agencies remain investment  
27 grade.

28 While there are many factors that the rating agencies consider  
29 in assigning a credit rating, PG&E's leverage at this time is unlikely  
30 to be offset by changes in other factors that might offset an  
31 increase in leverage, and in view of PG&E's recent credit rating downgrade  
32 is ill-advised. As a result, a 52 percent debt-to-equity ratio is  
33 a level of equity needed to sustain PG&E's current credit ratings

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12 Moody's Rating Action: Moody's Affirms PG&E's Ratings. 20 Sept.

13 "Utility Credit Ratings Critical to Raising Capital," EnergyBarry 7, 2012.

1           **2. A 52 Percent Common Equity Ratio May Enable Future Credit Rating**  
2           **Upgrades to an Optimal Level**

3           It is in the best interests of PG&E's customers to target credit  
4           from all three credit rating agencies in the A category, either  
5           Ratings of BBB or lower put at risk the utility's capital ability during  
6           periods of financial market disruption, and provide a sufficient  
7           against further events affecting capital markets that could result  
8           in downgrades to sub-investment grade. Attaining a credit rating  
9           A category not only lowers the cost of credit, but also helps ensure  
10          utility will have continuous access to credit.

11          **a. Credit Ratings in the A Category Provide a Cushion for Credit**  
12          **Ratings Downgrades for Reasons Beyond PG&E's Control**

13          Credit ratings can change for a number of reasons, such as a  
14          change in the regulatory environment, a change in business risk  
15          change in financial risk (i.e., the amount of leverage a firm  
16          example, political events, such as a recently proposed California  
17          measure that, if passed, could shut down all the nuclear genera-  
18          facilities in California could lead to a credit ratings downgrade  
19          it would increase PG&E's risks. Regarding possibility, stated:

20                 A disorderly exit from nuclear – that is, something that forces  
21                 early closure of the [California nuclear] plants defined clear  
22                 cost recovery and that does not allow the electric utility to  
23                 plan for alternatives, almost certainly would jeopardize credit  
24                 quality.<sup>14</sup>

25          Financial market disruptions could also lead to credit ratings  
26          downgrade. For example, during the recent financial crisis the  
27          subsidiaries of Ameren, with credit ratings in the BBB category  
28          difficulty renewing short-term facilities, and deal with

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14          S&P Global Credit Portal; The Ground-Shaking Reality of Nuclear Power;  
            October 17, 2011.

1 credit ratings downgrades because their diminished access to ca  
2 and credit could impair their ability to finance their operations.

3 **b. BBB Is the Minimum Acceptable Credit Rating for PG&E**

4 An optimal credit rating is one that can leave PG&E with a  
5 temporarily acceptable minimum credit rating in the event of  
6 downgrades, under scenarios of reasonable, but not extreme, stress  
7 and that still provides PG&E with the capital and credit m  
8 albeit at higher cost and at greater risk of temporary access  
9 Over time, perhaps several years, PG&E would expect to be able  
10 move up toward its optimal ratings. For PG&E, its minimum temporary  
11 credit rating is BBB, which is investment grade. It is important to  
12 note that a BBB credit rating is not particularly desirable for  
13 as PG&E that must continually raise amounts of new capital and  
14 maintain substantial credit facilities. During the recent crisis,  
15 firms rated BBB and below experienced significant difficulty raising  
16 capital.

17 PG&E has first-hand experience with being denied the credit during  
18 financial crisis in 2008, when it was rated by S&P and  
19 Moody's and Fitch. Despite these relatively strong credit ra  
20 PG&E was temporarily unable to access the debt markets at the p  
21 the financial crisis. In October 2008, several banks in PG&E  
22 group, including a money-centered bank and a large highly rega  
23 investment bank, declined to participate in PG&E's facility of cr

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15 As stated by Moody's in 2009 just after the Washington Street banks such as  
Lehman Brothers, Merrill Lynch, and Bear Stearns:

Although Moody's expects that all or a portion of these banks could be  
renewed at some point in 2009, constrained bank conditions make  
the timing, structure, pricing, tenor, and size of facilities more uncertain.  
As a result, Moody's does not view the stand-alone facilities of PG&E's  
subsidiaries as being sufficient to support investment ratings until new,  
preferably multi-year, bank facilities are put in place. Negative  
considered if PG&E's Illinois utilities do not enter into adequate  
arrangements well in advance of the current facility expiration of 2010.  
(Moody's Rating Action, January 29, 2009.)

16 In this context, "temporary" can be up to several years at times. For  
example, a significant change in the qualitative characteristics of a  
changes that could not be offset by changes in attributes by cash flow and  
leverage. It may take several years to rebuild credit quality.

1 that was needed to support the issuance of pollution-control bo  
2 Again in April and May 2009, a majority of banks in PG&E's  
3 refused to participate in a proposed \$500 million bank revolving  
4 credit facility that was required to support PG&E's liquidity needs  
5 associated with energy procurement activities. For these reasons,  
6 PG&E's BBB credit rating is sub-optimal for PG&E, and probably at best a  
7 minimum credit rating.

8 Credit ratings below BBB are not acceptable. Once a company's  
9 credit rating drops below investment grade, access to the debt  
10 market decreases, the cost of debt increases significantly, and debt covenants  
11 become substantially more restrictive. The sub-investment grade  
12 market is much more susceptible to disruptions, as investors  
13 are quick to abandon this market when there are signs of trouble  
14 as the Greek debt crisis. For example, during the 2008-2009  
15 crisis, virtually all companies with sub-investment grade ratings  
16 were unable to access the capital and credit markets. Some companies  
17 with BBB- had difficulty accessing the capital markets because of the  
18 perceived risk of falling below investment grade.

19 A downgrade below BBB would also limit, and perhaps eliminate,  
20 PG&E's access to the Tier 2 commercial paper market. This is a  
21 significant source of short-term capital for PG&E's operations  
22 that if restricted would force the company to obtain short-term  
23 financing at significantly higher costs. These costs would be compounded  
24 if the company renews its \$3 billion credit facility, which would be  
25 significantly more expensive and potentially even capacity intensive  
26 if PG&E were downgraded below BBB.

### 27 c. An Optimal Credit Rating for PG&E Is A or A-

28 A target optimal credit rating is one that can absorb movements  
29 of 2-3 notches downward, which would leave PG&E at its temporarily  
30 acceptable minimum credit rating of BBB, allowing the utility to

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17 A "notch" is the change from one rating to an adjacent rating, such as A to A-, or BBB to BBB+. From BBB to BB+ (sub-investment grade) is not a significant change in credit quality, and impacts the cost of financing, especially going from the A to the BBB and lower categories of credit ratings.

1 investment grade status. For example, if PG&E were to use more  
2 leverage in its capital structure, it might be downgraded one notch.  
3 PG&E can also be downgraded as a result of a sustained adverse  
4 mismatch between PG&E's revenues and expenses, or more generally  
5 due to a decrease in regulatory supportiveness. A series of events  
6 could result in two or even three downgrades, leading PG&E at B  
7 started from A

8 In addition to providing a cushion to withstand possible  
9 ratings downgrades, there is a clear and significant cost advantage  
10 credit ratings in the A category. Typically, A-rated bonds will  
11 interest rates on the order of 0.44 percent less than BBB-rated  
12 and BBB-rated bonds will have interest rates about 1.82 percent  
13 than bonds rated BB (sub-investment grade).<sup>18</sup> Applying these figures  
14 to PG&E's issuance of \$2.1 billion in bonds in 2011, 2012 and  
15 the annual interest costs of A-rated bonds are about \$1.1 million  
16 relative to BBB-rated bonds. The annual interest cost of issuing  
17 BB-rated bonds would have been about \$4.6 million more than issuing  
18 BBB-rated bonds.

19 Credit ratings of A or A- are also optimal for issuing commercial  
20 paper, which PG&E relies on to fund its daily and seasonal working  
21 cash. PG&E is currently a Tier 2 issuer of commercial paper,  
22 that its commercial paper is less than the best issuer of commercial  
23 paper in Tier 1. Tier 1 issuers typically have credit ratings  
24 A-, and experience continuous access to the commercial paper  
25 markets at a lower cost relative to Tier 2 issuers. During the recent credit crisis,  
26 Tier 2 companies had difficulty accessing the commercial paper  
27 markets, PG&E included, and needed to pay much higher rates than  
28 normal compared to Tier 1 issuers.

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18 For example, in PG&E's 2011 General Rate Case, the Advisory Committee recommended that PG&E refinance a portion of its long-term commercial paper, one of the riskiest ways to finance such assets. Implementing this recommendation could have led to a credit ratings downgrade.

19 The 0.44 percent and 1.82 percent averages are taken over the period of the credit crisis in late 2008 to early 2009. At that time, the interest rate on BBB-rated bonds was 4.50 basis points greater than the rates on A-rated bonds.



1 These higher costs of debt and credit, as well as credit to  
 2 procurement activities, are summarized on Table 1 and (b) below. Col  
 3 shows the incremental costs of BBB credit ratings. A column (a)  
 4 and column (b) shows the incremental costs of a rating compa  
 5 a BBB rating. The costs in Table 1 - 2 do not reflect the high  
 6 PG&E would be charged for power purchase agreements (PPA) as  
 7 discussed below.

**TABLE 1-2  
 PACIFIC GAS AND ELECTRIC COMPANY  
 INCREMENTAL INTEREST COSTS (\$ MILLIONS)**

Line Nb.		A to BBB ( a )	BBB to BB ( b )	A to BB ( c )
1	Long- Term Debt ( a )		\$ 1 2	\$ 5 5
2	Short- Term Debt ( b )	4	3 5	3 9
3	Total	\$ 1 7	\$ 9 0	\$ 1 0 6

- ( a ) These amounts include additional annual interest costs and fees for pollution control bonds.
- ( b ) These amounts include additional annual interest costs and the high cost of collateral.

8 Another important reason to target credit ratings in the A category  
 9 to lower the cost of capital for PG&E's many independent genera  
 10 who contract with PG&E for the long-term sale<sup>20</sup> of their power.  
 11 investors who finance these generators have less risk and hence  
 12 lower cost of capital, when the off taker ( PG&E ) has higher cr  
 13 quality, all else equal. A lower cost of capital for those ge  
 14 results in lower PPA costs to PG&E customers.

15 Credit ratings in the A category are indicative of greater cred  
 16 capacity, which PG&E needs to take on the substantial debt-like  
 17 obligations that come with purchasing power from independent  
 18 generators under long-term contracts (PPAs). As long as the

<sup>20</sup> Generally, a generator with a long-term contract with PG&E and a credit rating any higher than PG&E's, and at best is one of the independent generators to receive investment grade ratings means PG&E's credit ratings are better.

1 generators produce according to their contracts, PG&E's obliga  
2 pay the generators whether the power is needed or not, and whet  
3 power could be purchased for less on the market. Because PPAs  
4 these debt-like characteristics, PG&E's investment pay to close at  
5 the magnitude of these obligations, and factor them into their  
6 assessment of PG&E's financial capacity to support all its debt  
7 debt-like obligations.

8 Targeting and achieving credit ratings in the A category, and  
9 appropriate level of equity needed to sustain such ratings in t  
10 A category, would ensure that PG&E will have the credit capaci  
11 procure additional PPAs to meet the 33 percent state renewable  
12 generation standard, as well as its other generation resource  
13 requirements. Failure to mitigate negative impacts of debt  
14 equivalence in the future may preclude credit rating increases,  
15 possibly lead to lower credit ratings, increasing the cost of d  
16 credit for PG&E, as well as the cost of purchased power.

#### 17 **d. Preferred Stock Is Not Currently an Attractive Source of Capital for** 18 **PG&E**

19 The preceding discussion assumes that PG&E uses common equity  
20 to maintain an appropriate balance between debt and equity. Be  
21 credit rating agencies give some "equity credit" to preferred s  
22 target equity ratio can also be achieved with a combination of  
23 and common stock. However, for PG&E preferred stock is not cur  
24 an attractive source of equity capital for several reasons.

25 First and most importantly, the market for PG&E's preferred  
26 securities is significantly smaller and less liquid (softer desc  
27 deep" or "thin") than that for debt or common equity securities  
28 result, it is not a source of funding for PG&E capital  
29 needs, and raising substantial amounts of preferred stock would take  
30 The thin market could also result in a liquidity premium, or in

---

21 Investors account for these debt-like obligations in various ways. For example, S&P explicitly  
includes both debt and interest expense for PPAs when calculating credit metrics. Other  
rating agencies may consider the impact qualitatively and other investors have  
developed their own methods to assess the impact of debt-PG&E's credit quality.

1 cost of issuance, being applied to PG&E transactions that could  
2 avoided by reliance on securities traded in more liquid markets

3 Second, the credit treatment of preferred stock would be credit  
4 neutral at best, but could potentially be credit destructive.  
5 The credit impact of preferred stock depends on the basic characteristics  
6 of the preferred stock and on whether it replaces debt or equity in the  
7 capital structure, the treatment for which can vary and rating agencies  
8 could change over time. In general, preferred stock in place of  
9 credit destructive because the rating agencies apply less than  
10 100 percent equity credit. Preferred stock in place of equal  
11 debt and equity could be credit neutral, depending on the rating  
12 treatment, but for the reasons discussed in the preceding paragraph  
13 would not be as reliable a source of capital. Taken together,  
14 factors highlight the credit challenges associated with preferred

15 Third, at current market rates PG&E customers would not realize  
16 savings from preferred stock relative to a mix of debt and equity.  
17 Preferred stock is typically rated two notches below a firm's overall  
18 credit rating, and as a result, PG&E's preferred stock is rated  
19 below investment grade, and the cost of preferred stock issued by PG&E  
20 would not be less than equal amounts of common stock and long-term  
21 debt based on current market conditions. In total, these factors  
22 demonstrate that preferred stock would expose PG&E to funding a  
23 credit risk with no apparent benefit to customers.

#### 24 E. Implementation of the Cost of Capital in Rates

25 PG&E proposes to implement any revenue requirement change resulting  
26 from a cost of capital decision in this proceeding retroactively and effective  
27 beginning January 1, 2013, assuming a Commission decision on 12 is

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22 For example, PG&E's outstanding perpetual preferred stock is 500k percent equity and 50 percent debt treatment by the agencies.

23 PG&E's overall credit rating, also called by S&P as "Issuer" BBB, is two notches below that is BB. See Table 1 A-4 in Appendix A of the cost of capital credit ratings. See Attachment 1 A, Table 1 A-4 for a more complete description of the ratings.

1 in time to allow PG&E to implement rates on January 1, 2013.  
2 applicable to Direct Access rates for electric service at the same  
3 time as changes in bundled electric customer rates used under current  
4 tariffs, PG&E will record the gas distribution, gas storage, and  
5 electric distribution, and electric generation revenue requirements  
6 2013 cost of capital in the appropriate balancing accounts as of  
7 of January 1, 2013. Rates for each of these revenue requirements  
8 based on the then-current approved revenue allocation and are  
9 separately approved for each revenue requirement.

#### 10 F. Conclusion

11 PG&E's operations require very substantial and continual capital  
12 A ROE of 11.0 percent and a 52 percent common equity ratio should  
13 PG&E to maintain its current credit ratings, and ensure that PG  
14 capital at a reasonable cost. Equal, higher credit ratings result in greater  
15 access to capital and lower customer costs. Based on its financial strength  
16 achieving optimal credit ratings of either A- or better, PG&E should  
17 provide PG&E with a sufficient buffer to weather market risks, do  
18 including those that might result from unstable market conditions.  
19 recommended 52 percent common equity ratio is a key component  
20 optimal credit ratings.

21 Commission approval of PG&E's ACCAM would reduce costs related  
22 of capital proceedings, and would also be positive for a credit rating  
23 provides investors with a degree of confidence in the company's capital  
24 will change with interest rates.

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24 All electric rate changes for January 1, 2013, including PG&E's Annual Electric  
True-Up proceeding for January 1, 2013, will be consolidated with PG&E's Annual  
2013, will be consolidated with PG&E's Annual True-Up proceeding for  
implementation January 1, 2013.

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 1**  
**ATTACHMENT 1A**  
**PG&E CREDIT METRICS AND RATINGS**

**ATTACHMENT 1A**  
**PG&E CREDIT METRICS AND RATINGS**

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All three major credit rating agencies use similar “key credit metrics” statistics to assess the quantitative aspects of a firm’s operating performance. (1) FFO interest coverage; (2) FFO to total debt to total capitalization. Table 1 A- 3 provides definitions of these ratios. The first measures coverage on cash generated over a period of time and compares that to obligations. The other two measures focus on a company’s ability to pay obligations over time and the total financial cushion for creditors.

Pacific Gas and Electric Company’s ( PG& E ) current projections for 2012 and 2013 credit statistics are shown in Table 1 A. These statistics can be compared to the indicative credit ratings for a business profile of “ strong, ” published by Standard & Poor’s, as presented in Table 1 A- 2 . Table 1 A- 1 shows credit statistics without debt with an equivalence adjustment for PG& E’s portfolio of power purchase agreements ( PPA ) that are expected to provide power within the 2012 - 2013 rating period. The agencies’ calculations include short- term debt, but adjustments are made to reflect the cash flow and debt- like impacts of obligations set in place for benefits, asset retirements, and accrued interest.

Table 1 A- 1 shows that the FFO interest coverage at 2011 is 2.0x, in the range associated with an A credit rating at PG& E’s business “ strong. ” This FFO interest coverage result reflects the fact that PG& E has secured very low interest rates for its long- term debt. However, the balance sheet ratio of FFO debt to total capitalization is only in the range of a BBB- credit rating. Moreover, the debt to total capitalization is in the range of sub- investment grade and BBB- . The balance sheet ratios indicate little to no room for increasing debt leverage if PG& E is to maintain its credit ratings.

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<sup>1</sup> S& P’s Ratings Direct: “ U.S. Utilities Ratings Analysis and News for Corporate Ratings Matrix. ” November 30, 2007. Primary Credit Analysts: William Ferrara, and John W. Witlock, New York.

<sup>2</sup> These contracts include Qualifying Facility ( QF ), District Irrigation and other procurement contracts. Per S& P practice, debt equivalent contracts not expected to be online before 2014 is excluded from the credit statistics calculations.

1 The credit statistics presented in Table 1A-1 also showed the impact  
 2 statistics resulting from the inclusion of debt equivalents. The table shows  
 3 that all statistics decline when debt equivalence is considered. All the  
 4 credit statistics remain in the investment grade range, and the impact  
 5 equivalence will grow as PG&E moves toward achieving the Resilient  
 6 Portfolio Standard goal and providing for load growth through long-term  
 7 contracts. Increasing imputed debt and imputed interest rates on new  
 8 contracts will further reduce current coverage margins and credit quality.

**TABLE 1A-1  
 PACIFIC GAS AND ELECTRIC COMPANY  
 PROJECTED PG&E CREDIT RATIOS(a)**

Line Nb.		2012	2013
1	<u>With Power Contract Debt Equivalence</u>		
2	FFO Interest Coverage	4.33	4.03
3	FFO to Total Debt	19.4%	17.2%
4	Total Debt to Total Capital	58.2%	58.2%
5	<u>Without Power Contract Debt Equivalence</u>		
6	FFO Interest Coverage	4.71	4.44
7	FFO to Total Debt	20.8%	19.0%
8	Total Debt to Total Capital	55.3%	54.2%

(a) Includes preferred equity as 50 percent debt equivalent.

**TABLE 1A-2  
 PACIFIC GAS AND ELECTRIC COMPANY  
 STANDARD AND POOR'S UTILITY GROUP FINANCIAL TARGETS**

Financial Risk Indicative Ratios – U.S. Utilities  
 (Fully adjusted, historically demonstrated, and expected to consistently continue)

Line Nb.	Financial Risk Profile	Cash Flow		Debt Leverage	Indicative Rating With "Strong" Business Risk Profile
		FFO Debt (%)	FFO Interest (x)	Total Debt/ Capital	
1	Modest	40 - 60	<b>4.0-6.0</b>	25 - 40	A
2	Intermediate	25 - 45		3.0 - 4.5	35 - 50
3	Aggressive	<b>10-30</b>	2.0 - 3.5	<b>45-60</b>	BBB-
4	Highly Leveraged	Below 15	2.5 or less		Over 50

**TABLE 1A-3  
PACIFIC GAS AND ELECTRIC COMPANY  
DESCRIPTION OF CREDIT RATIOS**

**FFO Interest Coverage**

**FFO Interest Coverage = (FFO + Total Interest Expense)/Total Interest Expense**

FFO = Net Income - AFUDC - Pfd Div + Depreciation (including Principal Payments)  
+ Change in Deferred Tax + Other Net Cash from Operations + Depreciation Expense

Total Interest Expense = Interest + Imputed Interest on Deferred Billof P

**Total Debt to Total Capital**

**Total Debt to Total Capital = Total Debt/Total Capital**

Total Debt = Long-Term Debt + Short-Term Debt + 50% of Preferred CF and  
Purchased Power Debt

Total Capital = Common Equity + 50% of Preferred Debt Stock + Total

**FFO to Average Total Debt**

**FFO to Average Total Debt = FFO/Average Total Debt**

FFO = Net Income - AFUDC - Pfd Div + Depreciation (including Principal Payments)  
+ Change in Deferred Tax + Other Net Cash from Operations + Depreciation Expense

Average Total Debt = Average of Beginning of Year and Total of Debt

Note: All Calculations exclude securitized debt in ~~recurrent~~ conditions.



**TABLE 1A-4  
PACIFIC GAS AND ELECTRIC COMPANY  
CREDIT RATINGS DESIGNATIONS**

	Standard & Poor's	Fitch	Moodys Investor Service
Investment Grade	AAA	AAA	Aaa
	AA+	AA+	Aa1
	AA	AA	Aa2
	AA-	AA-	Aa3
	A+	A+	A1
	A	A	A2
	A-	A-	A3
	BBB+	BBB+	Baa1
	BBB	BBB	Baa2
BBB-	BBB-	Baa3	
Speculative or "Junk" Grade	BB+	BB+	Ba1
	BB	BB	Ba2
	BB-	BB-	Ba3
	B+	B+	B1
	B	B	B2
	B-	B-	B3
	CCC+	CCC+	Caa
	CCC	CCC	Ca
	CCC-	CCC-	C
D (Default)	D (Default)	D (Default)	

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 2**  
**RETURN ON EQUITY**

PACIFIC GAS AND ELECTRIC COMPANY  
CHAPTER 2  
RETURN ON EQUITY

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**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 2**  
**RETURN ON EQUITY**

**A. Introduction**

My name is William E. Averam, 3907 Red River, Austin, Texas. I am a financial, economic, and policy consultant to business and government. My offices are located at 3907 Red River, Austin, Texas. A description of my background and qualifications, including a resume, details of my experience, is included at the back of this volume.

**1. Overview**

The purpose of my testimony is to present to the Public Utilities Commission of the State of California (PUC or Commission) my independent evaluation of the fair rate of return or rate of return (ROE) on jurisdictional electric and gas operations of Pacific Gas and Electric Company (PG&E or the Company).

To prepare my testimony, I used information from a variety of sources that would normally be relied upon by a person in my capacity with the organization, operations, finances, and operations of PG&E. My participation in prior proceedings before the PUC and the Federal Energy Regulatory Commission (FERC). In connection with the present filing, I considered and relied upon corporate disclosures, including financial reports and findings, other published information relating to PG&E, including bond ratings reports, financial filings, regulatory proceedings and orders. I also reviewed information generally to capital markets and specifically to investor requirements, and expectations for regulated utilities. These coupled with my experience in fields of finance and regulation, have given me a working knowledge of the issues relevant to investment required return for PG&E, and they form the basis of my analysis and conclusions.

The rate of return on common equity compensates shareholders for use of their capital to finance the investment necessary to provide service. Investors commit capital only if they expect to earn

investment commensurate with returns available from alternative investments with comparable risks. To be consistent with sound economics and the standards set forth by the Supreme Court in *Bluefield*<sup>1</sup> and *Hope*<sup>2</sup> cases, a utility's allowed return on common equity should be sufficient to: (1) fairly compensate the utility's cost (2) enable the utility to attract adequate capital on reasonable terms; and (3) maintain the utility's financial integrity.

My evaluation of a fair RCE began with a review of the operations and finances of PG&E, as well as the general conditions of the utility industry. With this background, I examined current capital market conditions and conducted various quantitative analyses to estimate the cost of common equity including alternative applications of the Howard DCF model and the Capital Asset Pricing Model (CAPM) risk premium approach based on allowed rates of return, as well as expected earned rates of return for utilities. Based on estimates of equity risk premium indicated by my analyses, PG&E's RCE was evaluated taking into account the specific risks, exposures, and potential challenges to its operations in California, all of which are properly reflected in a fair RCE.

## 2. Summary and Conclusions

Based on the results of my analyses and the economic requirements necessary to support continuous access to capital, an RCE of 11.0% is recommended for PG&E. The bases for my conclusion are summarized below:

- In order to reflect the risks and prospects associated with PG&E's jurisdictional utility operations, my analyses focused on a representative group of other firms with electric and gas utility operations;
- Because investors' required return on equity is unobservable, no single method should be viewed in isolation, I applied the DCF, CAPM, and risk premium methods, as well as the expected earnings approach to estimate a fair RCE for PG&E.

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<sup>1</sup> *Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n*, 343 U.S. 268 (1952).  
<sup>2</sup> *FPC v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

- 1 • While my conclusions were based solely on the results for the p  
2 group of utilities, I also DCF results for group of  
3 companies selected from the least risky, most stable and mature  
4 participants in the non-utility of the economy. This a  
5 benchmark is consistent with the fact that utilities must compe  
6 capital with firms outside their own industry;
- 7 • Based on the results of my analyses for the comparable- risk gro  
8 utilities, and giving less weight to extremes at the high and l  
9 the range, I concluded that a fair ROE for PG&E is in the 10  
10 11.4% range.

11 My testimony examines the challenges facing PG&E that support a  
12 ROE in the upper part of the reasonable range to recognize the  
13 requirements for financial strength. My recommended ROE for PG  
14 11.0% considers that:

- 15 • An ROE above the midpoint of my recommended range is consistent  
16 with maintaining a level of financial strength that allows acce  
17 capital, even during times of financial stress and turbulent mark
- 18 • While PG&E's ambitious investment plans will benefit cu  
19 by expanding utility infrastructure, meeting reliability, and sa  
20 and furthering energy policy objectives in California, the Comp  
21 financial integrity and flexibility will be enhanced in mee  
22 mandates;
- 23 • The reasonableness of an 11.0% ROE for PG&E is also supported  
24 the need to ensure that the Company has the ability to respond  
25 potential challenges including nuclear exposure and ambitious  
26 environmental standards and recover flotation costs.

27 Taken together, these considerations confirm the reasonableness  
28 recommended range and support an 11.0% ROE for PG&E

29 This requested ROE is a reasonable cost for PG&E's payers to  
30 Investors have many options vying for their money. They make i  
31 capital available to PG&E only if the expected returns justify  
32 Customers will enjoy reliable efficient utility service only as  
33 investors are willing to make the huge capital investment nece

1 maintain and improve PG&E's utility system. Protecting a return adequate  
2 to investors is a necessary measure that capital markets expect PG&E  
3 now and in the future. If regulatory decisions allow the return  
4 to investors to levels insufficient to justify the risk, the economic  
5 benefits of reliable utility service so vital to our customers and  
6 economic development.

## 7 **B. Fundamental Analyses**

8 As a predicate to my economic capital market analyses, section  
9 briefly describes PG&E and reviews its operations and financial condition, the  
10 risks and prospects for the industry examined. Understanding of  
11 these fundamental factors that drive the risks and prospects of PG&E is  
12 essential to developing an informed opinion about its value and the  
13 requirements that form the basis of a fair RCE.

### 14 **1. Pacific Gas and Electric Company**

15 PG&E, the primary subsidiary of PG&E Corporation (PG&E), is primarily  
16 engaged in providing integrated retail electric and natural gas service  
17 in northern and central California. One of the largest utilities in  
18 the United States, PG&E provides service to approximately 5.2 million electric cus-  
19 tomers and 4.3 million gas distribution customers. At year-end 2011, PG&E  
20 had total assets of \$49.2 billion, with total revenues amounting to approx-  
21 imately \$15.0 billion.

22 During 2011, PG&E's electricity sales totaled 74.9 million  
23 megawatt-hours (MWh). Sales to residential customers are composed  
24 of retail sales, with 40% to commercial, 12% to industrial end-uses,  
25 and the remaining 7% attributable to agricultural and other customers.  
26 The Company has over 7,400 megawatts (MW) of generating capacity, including  
27 2,240 MW at its Diablo Canyon facility. During 2011,  
28 company-owned generation provided approximately 49% of PG&E's  
29 electricity requirements. Electricity provided under contracts with  
30 the California Department of Water Resources has steadily declined and  
31 provided just 4% of the energy needed to serve PG&E's customers.  
32 The remaining 47% of the Company's energy supply is purchased from

1 variety of sources, including Qualifying Facilities (QF) and  
2 water agencies, and non-QF renewable generators.

3 PG&E's transmission and distribution facilities extend throughout a  
4 part of 47 of California's 58 counties and include approximately  
5 18,600 circuit miles of transmission lines and approximately 14  
6 of distribution lines. PG&E is interconnected with systems in  
7 the Western Electricity Coordinating Council (WECC) which include  
8 14 Western states, Alberta and British Columbia, Canada, and part  
9 Mexico. In connection with electricity industry restructuring,  
10 relinquished control, but not ownership, of its electric transmission  
11 to the California Independent System Operator Corporation (CAISO)  
12 in 1998. The CAISO, which approved PG&E's transmission organization,  
13 controls the operation of a significant portion of California's  
14 (HV) wholesale power grid and provides open access transmission  
15 on a non-discriminatory basis.

16 PG&E also owns and operates an integrated natural gas gathering  
17 transportation, storage, and distribution system that extends in  
18 California's 58 counties and includes most of the northern and central  
19 of the state. In 2011, the Company provided natural gas utility services to  
20 approximately 4 million customers. Residential and small commercial  
21 customers, which make up the core customer class, represent  
22 approximately 99% of PG&E's gas utility customers and a substantial % of total  
23 gas deliveries, with non-core customers (industrial, large commercial  
24 electric generation) making up the balance. Total natural gas  
25 2011 amounted to 804 billion cubic feet, with residential, commercial,  
26 commercial customers accounting for 30%, 57%, and 13%, respectively.  
27 PG&E's natural gas system consists of over 42,000 miles of distribution  
28 mains and over 6,400 miles of pipelines, and includes three  
29 Company-owned underground natural gas storage fields, as well as a 51%  
30 interest in a jointly owned storage facility located in Kern County, California.

31 PG&E's retail utility operations are subject to the jurisdiction of the  
32 CPUC, with the interstate jurisdiction regulated by the FERC. Additionally,  
33 PG&E's Diablo Canyon nuclear facilities are subject to the jurisdiction of the  
34 Nuclear Regulatory Commission.



1 Standard & Poor's (S&P) Corporation has assigned PG&E a Corporate  
2 Credit Rating of "BBB," while Moody's Investors Service set Moody's  
3 PG&E's Issuer Rating at "A3" Ratings, Fitch Ratings, Ltd. (Fitch) has  
4 Issuer Default Rating for PG&E of "BBB+."

5 PG&E continues to expand utility infrastructure, including a new  
6 transmission system that enhance reliability and facilitate access to  
7 additional generating resources. As discussed in our reports, PG&E  
8 to invest roughly \$15 billion in utility infrastructure over the  
9 2012 - 2014. Considering the size of these projects, continued  
10 support for the Company's financial integrity will be an important  
11 supporting PG&E's capital program.

## 12 2. Industry Risks Facing PG&E

13 Investors are aware of numerous challenges that impact their  
14 perceptions of the risks inherent in the utility industry and have  
15 implications for the financial standing of the utilities. Although  
16 PG&E's uncertain costs associated with environmental compliance  
17 demand in the wake of economic slowdown, the implications of increased  
18 conservation and renewables goals, as well as exposure to regulatory  
19 uncertainties all impact the industry's future. As Moody's notes:

20 [A] sustained period of sluggish economic growth, characterized by  
21 unemployment, could stress the sector's recovery prospects, financial  
22 performance, and credit ratings. The quality of the sector's assets  
23 are already showing signs of decline, partly because of higher  
24 costs and investments.

25 Moody's concluded, "we also see the sector's overall business and  
26 operating risks increasing."

27 Additionally, in recent years, PG&E and its customers have had  
28 contend with dramatic fluctuations in energy costs and price volatility  
29 in the spot markets and investors' rebalancing of their portfolios  
30 turmoil in energy markets of extreme volatility, can quickly  
31 find themselves in a significant under-recovery position with r

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3 Moody's Investors Service, "U.S. Electric Utilities: A Headline Strengthening  
Balance Sheet Now Would Protect Overall" Comment (Oct. 28, 2010).

4 Moody's Investors Service, "Regulation Provides Substantial Risk Outlook  
(Jan. 19, 2011).

power costs, which can stress liquidity. Volatile increases can discourage potential customers from choosing natural gas, substitution, and lead to decreased customer usage, increases which the risks of investing natural gas but for utilities places additional pressure on their bond ratings. Moody's echoed this sentiment, that reduced demand and margins challenge gas distributors during periods of volatile natural gas prices.

While current expectations for significantly lower power prices weaker fundamentals affecting current load and fuel prices, investors recognize the potential that such trends could quickly reverse. For example, recurring political crises in the Middle East have caused sharp petroleum prices. Moody's noted that utilities remain exposed to fluctuations in energy prices, observing, "The low prices that remain low, could easily be proved incorrect, due to the evidence of historical volatility." Fitch recently observed that market conditions will likely result in higher natural gas prices, and thereby the utility potential exposure to future price shocks.

Investors are also aware of the financial and regulatory pressure by utilities associated with both rising costs and the need to undertake significant capital investments. S&P noted that as utilities undertake projects, along with uncertain load growth, the utility industry is observed:

[We also see the sector's overall business risks and operating increasing, owing primarily to costs associated with building and expanding the nation's trillion-dollar electric infrastructure.]

As The Value Line Investment Survey (Value Line) observed with respect to gas utilities:

5 Moody's Investors Service, "North American Natural Gas & Transmission," *Industry Outlook* (Sep. 2007).

6 Moody's Investors Service, "U.S. Electric Utilities Ahead; Uncertainty Enhancing Balance Sheets Now Would Protect Overall," *Comment* (Oct. 28, 2010).

7 Fitch Ratings Ltd., 2012 Outlook: Utilities Report (Ed. 5, 2011).

8 Standard & Poor's Corporation, "Industry Outlook, Ratings Direct" (Feb. 2, 2010).

9 Moody's Investors Service, "Regulation Provides Substantive Assistance," *Industry Outlook* (Jan. 19, 2011).

1 The economy remains weighed down by tight credit, a soft housing  
 2 market, and high unemployment. The weakness in the housing sec  
 3 has particularly affected this industry. The sluggish inventory o  
 4 houses has limited the need for natural gas. This is particularly  
 5 for these utilities as the peak heating season. Moreover,  
 6 customer growth has declined, which continues to pressure reven  
 7 across this group. Additionally, more conservation and consumer sp  
 8 has impacted customer usage, which has hurt volumes. Lastly, b  
 9 collection has been difficult given high unemployment rates. L  
 10 ahead, these factors will likely continue to play a role in these comp  
 11 the calendar turns to 2011.

12 As noted earlier, investors expect that PG&E will undertake  
 13 significant utility capital expenditures. S&P's observed that PG  
 14 expenditures "could grow to approaching \$5 billion over the  
 15 next several years," and concluded, "This level of capital inve  
 16 unprecedented."<sup>11</sup> Enhancing the infrastructure necessary to meet the  
 17 energy needs of customers is certainly desirable, but the enorm  
 18 magnitude of the capital expenditures contemplated by PG&E impo  
 19 additional financial responsibilities on the Company that are i  
 20 during times of capital market turmoil.

21 Increased environmental pressures and speculation over the pote  
 22 costs associated with new regulatory mandates have also created  
 23 uncertainties. Moody's noted that, "the sector is increasingly exposed to i  
 24 stringent environmental mandates."<sup>12</sup> While the momentum for carbon  
 25 emissions legislation has slowed at the national level, for expect a  
 26 eventual regulations continue to pose uncertainty. Fitch noted that  
 27 it, "expects the thrust of the EPA's agenda will hinge on the  
 28 creditworthiness of issuers in the utility and power sector."<sup>13</sup>

29 Meanwhile, California became the first state in the nation to a  
 30 landmark, state-administered cap-and-trade program. The passage of  
 31 Global Warming Solutions Act of 2006 set an economy-wide cap on  
 32 California greenhouse gas emissions at 1990 levels by 2010. Later

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10 The Value Line Investment Survey at 547 (Dec. 10, 2010).  
 11 Standard & Poor's Corporate Gas & Electric Ratings Direct (Dec. 15, 2011).  
 12 Moody's Investors Service, "Regulation Provides Subdued Industry Outlook  
 (Jan. 19, 2011).  
 13 Fitch Ratings Ltd., New EPA Rules: Special Report (Mar. 1, 2012).  
 14 Assembly Bill (AB) 32, 2006 Gen. Assem. (Ca. 2006).

1 Cap- and trade regulation became effective January 1, 2012, with  
2 auctions of carbon allowances to take place in November 2012.  
3 Meanwhile, Senate Bill 1368 implementation of emission  
4 performance standards for all retail providers notwithstanding  
5 addition, California's Renewables Portfolio Standard (RPS) is one  
6 of the most ambitious in the country, and requires investors, wholesale  
7 service providers, and community choice aggregators to increase  
8 procurement from eligible renewable energy resources to 33% of  
9 energy procurement by 2020.

10 In evaluating an investment in the Company, investors would also  
11 consider the impact that PG&E's nuclear operations have on the  
12 financial requirements. The Diablo Canyon nuclear facility provides  
13 approximately 25% of the energy required to serve regulated retail  
14 customers. While customers benefit from the advantages of fuel cost savings  
15 and diversity that nuclear power confers, investors also associate  
16 facilities with risks that are not encountered with other sources of  
17 generation. S&P has long recognized additional risks posed by nuclear  
18 facilities, as reflected in a 1994 article:

19 Operating and maintaining [nuclear plants] is more complex compared  
20 with fossil plants because of safety considerations and the additional  
21 safety equipment and operational controls required.

22 Moody's confirmed that, "ownership of nuclear generating facilities  
23 brings a higher level of complexity associated with operating and  
24 maintaining the units."

25 These concerns have been exacerbated by the events at the Fukushima  
26 Daiichi nuclear complex in Japan, as S&P noted:

27 Standard & Poor's Ratings Service believes that the failure of  
28 back-up safety systems will heighten scrutiny of the U.S. nuclear power  
29 generators. We aren't taking any rating action at this time. Still, the  
30 failure consequences raise the likelihood of greater costs and enhanced  
31 regulatory oversight of U.S. existing

15 California Environmental Protection Agency Resources Board, www.arb.ca.gov.

16 Perata, Chapter 598, Statutes of 2006.

17 Standard & Poor's Corporation, "Measuring Nuclear Risk in Environment,"  
CreditWeek (Aug. 8, 1994).

18 Moody's Investors Service, "New Nuclear Generation States the Keeping Options  
Open vs. Addressing An Inevitable Necessity" Comment (Oct. 2007).

1 facilities. A renewed public focus on the inherent risks of nu  
2 will demand as much. This could result in detensi on license- ex  
3 approvals and deteriorating economics for new plantn. constAuctio  
4 the same time, closure of nuclear power plants, ncr eased due to i  
5 costs or regulatory action, might significantly r affect U S. ele  
6 supply and have substantial capital spending implications. for u

7 While the Company's nuclear operations may be highly efficient  
8 extremely safe, this incident highlights the exposure nevet the ESG E  
9 faces due to events far outside 20ts Even for a utility with an  
10 exemplary record of nuclear safety and operating success, facilities  
11 raise the bar in terms of financial preparedness. oncl udes, Moody's c  
12 extended outage can significantly stress an owner's over quality a  
13 financial prof 21 e. In addition, longer- term uncertainties regarding the  
14 disposal of spent fuel and the ultimate costs of g decommission  
15 accompany any investment in lean generating facilities order to n  
16 mitigate these potential exposures, Moody's cited the importance  
17 constructive regulatory relationship and " a need to establish f  
18 policies over the near- term aimed at producing verial storag fina  
19 ratios in order to maintain a 22 given rating. "

### 20 3. Impact of Capital Market Conditions

21 As Value Line recently recognized, " It has been a fortu the ent yea  
22 financial markets, to say 23 the least, investors have faced a myriad of  
23 challenges and uncertainties, including the threat of a U S. go  
24 default, political brinkmanship over raising the federal debt c  
25 S& P's subsequent downgrade of its U S. sovereign debt rating.  
26 The sovereign debt crisis in Europe has also dealt to a i nashor blow  
27 confidence, and concerns over potential exposure to def Euro- zone

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19 Standard & Poor's Corporation, S. " Nuclear Power y n d o s At Japan And Awaits  
More Scrutiny, *Global Credit Research* ( Mar. 16, 2011 ).

20 For example, a proposed ballot initiative into California a h e s e s t down of the  
Dablo Canyon and San Onofre nuclear generation stations.

21 Moody's Investors Service, " New Nuclear Generation States the Keeping Options  
Open vs. Addressing An Inevitable N e s s i a l y C o m m e n t ( Oct. 2007 ).

22 *Id.*

23 The Value Line Investment Survey at 541 ( Dec. 9, 2011 ).

24 See, e.g., Standard & Poor's Corporation, " Economic Forecast: Still n g r e a d i e r , "  
*RatingsDirect* ( Aug. 17, 2011 ).

1 has again undermined confidence in the financial and banking se  
2 Meanwhile, speculation that the economy remains exposed to a po  
3 “double-dip” persists, with unemployment remaining stubbornly h  
4 lackluster consumer confidence, rising petroleum prices, and co  
5 weakness plaguing the real estate sector.

6 Investors have had to confront ongoing volatility and share price  
7 stress in the credit markets, in response have repeatedly fled to the  
8 safety of U.S. Treasury bonds. The dramatic rise in the price  
9 other commodities also attests to investors’ heightened concern  
10 prospective challenges and risks, including the overarching thr  
11 inflation and renewed economic turmoil. With respect to Moody’s  
12 noted the dangers to credit availability associated with exposure  
13 European banks,<sup>27</sup> and concluded:

14 Over the past few months, we have been reminded that global fin  
15 markets, which are still receiving extraordinary benefits from b  
16 sovereign governments, are exposed to turmoil. As a result, the c  
17 markets could therefore become intermittent, even for safer, mo  
18 defensive sectors like the power industry.<sup>28</sup>

19 Uncertainties surrounding economic and capital markets condition  
20 heighten the risks faced by, which, described earlier, face a  
21 variety of operating and financial challenges.

22 With respect to expected trends in bond yields, Table 2 - 1 below  
23 compares current interest rates on 30-year Treasury bonds, triple  
24 corporate bonds, double-A rated utility bonds with respect to  
25 2012 through 2015 by Value Line, IHS Global Insight, Blue Chip  
26 Forecasts (Blue Chip), and the Energy Information Administration,  
27 which is a statistical agency of the U.S. Department of Energy:

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25 See, e.g., Standard & Poor’s Corporation, “Risks To The Forecast,”  
*RatingsDirect* (Dec. 21, 2011).

26 See, e.g., Gongloff, Mark, “Stock Rebound Is a Crisis Flashback,”  
*Volatility at Peak of Credit Difficulties; Unusual Street Activity* at B1  
(Feb. 6, 2010); Lauricella, Tom, “Stock Rise—Dip Weakens Global  
Government Debt Worries Drive Dow’s Biggest Point Drop,”  
*Wall Street Journal* at A1 (Aug. 5, 2011).

27 Moody’s Investors Service, “Electric Utilities Industry Uncertainty,”  
*Industry Outlook* (Jul. 22, 2010).

28 Moody’s Investors Service, “Regulation Provides Stability,”  
*Industry Outlook* (Jan. 19, 2011).

**TABLE 2-1  
PACIFIC GAS AND ELECTRIC COMPANY  
INTEREST RATE TRENDS**

	<u>Current (a)</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
3 0 - Yr. Treasury					
Value Line ( b)	3 . 1 %	3 . 3 %	3 . 7 %	4 . 0 %	4 . 5 %
IHS Global Insight ( c)	3 . 1 %	3 . 3 %	3 . 8 %	4 . 5 %	5 . 1 %
Blue Chip ( d)	3 . 1 %	3 . 7 %	4 . 2 %	4 . 8 %	5 . 3 %
AAA Corporate					
Value Line ( b)	3 . 9 %	4 . 2 %	4 . 6 %	5 . 0 %	5 . 3 %
IHS Global Insight ( c)	3 . 9 %	4 . 2 %	4 . 5 %	5 . 1 %	6 . 0 %
Blue Chip ( d)	3 . 9 %	4 . 3 %	4 . 7 %	5 . 4 %	5 . 8 %
S&P ( e)	3 . 9 %	4 . 2 %	4 . 6 %	5 . 1 %	6 . 0 %
AA Utility					
IHS Global Insight ( c)	4 . 1 %	4 . 4 %	4 . 9 %	5 . 6 %	6 . 5 %
EIA ( f)	4 . 1 %	4 . 7 %	4 . 8 %	5 . 7 %	6 . 8 %

( a) Based on monthly average bond yields for the six-month period ending Feb. 2012 reported by [www.federalreserve.gov/releases/h15/data.htm](http://www.federalreserve.gov/releases/h15/data.htm) and [www.creditch.com](http://www.creditch.com) and [www.moodys.com](http://www.moodys.com) and <http://www.federalreserve.gov/releases/h15/data.htm>

( b) The Value Line Investment Survey Forecast for the U.S. ( Economy 24, 2011 ).

( c) IHS Global Insight, *U.S. Economic Outlook* at 25 ( Dec. 2011 ).

( d) *Blue Chip Financial Forecasts*, Vol. 30, No. 12 ( Dec. 1, 2011 ).

( e) Standard & Poors Corporation, " U.S. Economic Forecast: Outlook " *RatingsDirect* ( Jan. 12, 2012 ).

( f) Energy Information Administration, *Annual Energy Outlook 2012, Early Release* ( Jan. 23, 2012 ).

1 As evidenced above, there is a clear consensus that the cost of  
2 permanent capital will be higher 2012 - 2015 than  
3 currently.

4 While conditions in the economy and capital markets appear to have  
5 stabilized at least for the moment no one knows the future of our  
6 complex global economy. Investors continue to react sensitively and  
7 to any signs of future trouble in the financial system, and this economic  
8 climate has important implications with respect to PG&E's ROE for  
9 The fact remains that the utility industry and PG&E's significant requirement  
10 new capital investment. Given the importance of service, utilities  
11 would be unwise to ignore investors' increased sensitivity to  
12 implications of capital market volatility in evaluating PG&E's firm  
13 this case.

14 The prospect for continued turmoil in capital markets also influences  
15 appropriate capital structure. PG&E's financial flexibility is crucial

1 role in ensuring the wherewithal to meet funding interests, with and uti  
2 higher financial leverage may be foreclosed from additional bor  
3 especially during times of stress. Ensuring the credit exists, f  
4 utilities were forced to draw on short-term credit lines to mee  
5 retirement obligations because of uncertainties regarding the of  
6 long-term capital, while others were effectively shut out of the commo  
7 paper market altogether. Fitch recently highlighted this expos

8 **Capital Markets Freeze:** Significant tightening or loss of capital  
9 markets and bank access would have a deleterious affect on sect  
10 creditworthiness in the face of high capex budgets.

11 As a result, the Company's capital structure must maintain an e  
12 "cushion" that preserves the flexibility necessary to maintain  
13 access to capital even during times of unfavorable market condi

## 14 C. Capital Market Estimates

15 In this section, I develop capital market estimates of equity. The cost  
16 First, I address the concept of the cost of the equity risk-return with  
17 tradeoff principle fundamental to capital market. I describe WACC, CAPM,  
18 and risk premium analyses conducted to estimate the cost of equ  
19 benchmark groups of comparable risk firms and evaluate expected es  
20 of return for utilities. Finally, I examine those issues which have  
21 properly considered in evaluating a fair RCE

### 22 1. Cost of Equity Concept

23 The return on common equity is the cost of inducing and retaini  
24 investment in the utility's physical plant and assets. This in  
25 necessary to finance the asset base needed to provide utility s  
26 Competition for investor funds is intense and investors invest fre  
27 their funds wherever they choose. They will compete only to a  
28 investment only if they expect it to produce a return commensur  
29 those from other investments with comparable risks.

30 The fundamental economic principle underlying the cost of equit  
31 concept is the notion that investors are risk averse. In capit

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29 Riddell, Kelly, "Cash-Starved Companies Scrap Dividends," *Fairfax Post-Gazette*  
(Oct. 2, 2008).

30 Fitch Ratings Ltd., "2012 Outlook: Utilities Report," (Jan. 5, 2011).



1 where relatively risk-free assets are available (Treasury  
2 securities), investors do not hold riskier assets if they are  
3 offered a premium or additional return, above the rate of return  
4 risk-free asset. Since all assets compete with each other, for  
5 riskier assets must yield a higher expected rate of return than  
6 induce investors to hold them

7 Given this risk-return tradeoff, the required rate of return (  $k_i$  )  
8 asset (  $i$  ) can generally be expressed as:

$$k_i = R_f + RP_i$$

9 where:  $R_f$  = Risk-free rate of return, and

10  $RP_i$  = Risk premium required to hold riskier asset  $i$ .

11 Thus, the required rate of return for a particular asset at any  
12 function of: ( 1 ) the yield on risk-free assets; and ( 2 ) its  
13 risk, and with investors demanding correspondingly larger risk premiums for as  
14 bearing greater risk.

15 Unlike debt capital, there is no contractually guaranteed return  
16 common equity capital. Because it is unobservable, the cost of  
17 particular utility must be estimated by analyzing information about  
18 market conditions generally, assessing the relative risks of the  
19 specifically, and employing various quantitative methods that  
20 investors' current required rates of return. These various qua  
21 methods typically attempt to infer investors' required rates of  
22 stock prices, interest rates, or other capital market data.

## 2.3 Comparable Risk Proxy Groups

24 Application of the DCF model and quantitative methods to  
25 estimate the cost of equity requires observable market data such as  
26 stock prices. Because PG&E is a wholly-owned subsidiary and has  
27 publicly traded stock, its cost of common equity can be measured  
28 directly. Moreover, even for a firm with publicly traded stock  
29 equity can only be estimated. As a result, applying quantitative  
30 using observable market data only produces an estimate that in  
31 includes some degree of observation error.

1 Thus, the accepted approach to increase confidence in the results  
2 apply quantitative models to a proxy group of companies that  
3 investors regard as risk comparable. The results of the analysis  
4 sample of companies are relied upon to establish a range of rates  
5 for the cost of equity for the specific company at issue.

6 Because PG&E is an integrated electric and gas utility, with the  
7 Company's electric operations accounting for approximately 78 percent  
8 of total revenues, I examined quantitative estimates of required rates  
9 of return for a proxy group of combination gas and electric utilities.  
10 My analyses focused on a reference group of other utilities whose  
11 companies included by Value Line in its Electricity and Gas Utilities  
12 with: (1) both electric and gas utility operations, reported S&P  
13 ratings between "BBB" and "A"; (2) a Value Line Safety "B" Rank  
14 (3) a Value Line Financial Strength Rating of "B5" or higher;  
15 market capitalization of approximately \$1.0 billion or greater. In addition,  
16 I excluded four firms that otherwise would have been included but  
17 are not appropriate for inclusion because they were involved in  
18 merger or acquisition. These criteria resulted in a proxy group composed  
19 of 14 companies, which I call the "Utility Group."

20 In addition, my DCF analyses also considered a proxy group of  
21 unregulated companies. Under the regulatory standards established  
22 by *Hope* and *Bluefield*, the salient criterion in establishing a meaningful  
23 benchmark to evaluate a fair ROE is relative risk, particularly as to  
24 activity or degree of regulation. With regulation of utility companies  
25 competitive market forces, required returns for utilities should be  
26 those of non-utility firms of comparable risk to the extent that  
27 of free competition. Consistent with this approach, I also  
28 applied the DCF model to a reference group of low-risk companies  
29 non-utility sectors of the economy referred to as the "Non-Utility  
30 Group".

---

31 A major merger or acquisition can lead to significant stock price changes as investors alter their assessment of the utility's future prospects, but this is not necessarily reflected in the growth rates used to apply the DCF model. Because of this, I excluded companies that are involved in a major merger or acquisition and used other proxy groups used to estimate the cost of equity in regulatory proceedings.

1 The cost of capital is an opportunity cost based that the returns  
2 investors could realize by putting their money invest her alterna  
3 Clearly, the total capital invest utility stocks she stipn of tthe iceberg  
4 of total common stock investment, and there are ther plethora of o  
5 enterprises available to investors beyond those industry utility  
6 Utilities must compete for capital, not just heigain over firm industry, t  
7 but with other investment opportunities of comparable risk. In  
8 portfolio theory is built on the assumption that sra wildn al holdives  
9 diverse portfolio of stocks, not just companies. a single ind

10 It is also consistent *Bluefield* and *Hope* cases to consider  
11 required returns for utility companies. Returns petitive sector  
12 of the economy form the very nimb for utility ROEs beca  
13 regulation purports to serve as a substitute for competitive actions of  
14 markets. The Supreme Court has recognized that et of s risk, degree  
15 not the nature of the business, whievant in evaluation owed  
16 ROE for a utility *Bluefield* case refers to “business undertakings  
17 attended with comparable risk and uncertainties.”<sup>32</sup> It does not restrict  
18 consideration to other utilities. *Shoemaker* case states:

19 By that standard the return to the equity owner should be come  
20 with returns on investments in other enterprises tracking corresp  
21 risks.<sup>33</sup>

22 As in *Bluefield* decision, there is nothing to restrict “other  
23 enterprises” solely to the utility industry.

24 Indeed, in teaching regulatory I usually observe that early  
25 applications of the comparable approach, utilities explicitly  
26 eliminated due to a concern about circularity. sbon of her wheels,  
27 *Hope* decision regulatory commissions not want to get involved in  
28 circular logic by looking to the returns of established by the  
29 same or similar regulatory commissions in the same geographic r  
30 To avoid circularity, regulators looked only from the utility returns of  
31 companies.

---

<sup>32</sup> *Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n*, 262 U.S. 679 (1923).

<sup>33</sup> *Federal Power Comm'n v. Hope Natural Gas Co.* (320 U.S. 391, 1944).

1 Consideration of the results of Non-Utility Group provides  
 2 corroboration to the DCF test for the Utility Group and  
 3 estimation of the cost of equity more reliable. The  
 4 the DCF model depend on analysts forecasts. It is possible  
 5 rates to be distorted by short-term trends in the industry or  
 6 being in temporary favor or disfavor by analysts. The result  
 7 distortions would be to bias the DCF estimates because utilities.  
 8 Non-Utility Group includes companies from many industries  
 9 diversifies away any distortion that may be caused by a  
 10 enthusiasm for a particular sector.

11 My comparable risk proxy group of utility firms was composed  
 12 those U.S. companies followed by Value Line that: (1) pay common  
 13 dividends; (2) have a Safety Rank of "1"; (3) have a Financial  
 14 Rating of "B++" or greater; (4) have a debt to equity ratio of 0.50 or less  
 15 investment grade credit ratings from S&P.

16 The criteria used to define my proxy groups provide an objective  
 17 as to investors' risk perception. Credit ratings are assigned by independent  
 18 rating agencies for the purpose of providing investors with a  
 19 assessment of the creditworthiness of a firm. Ratings are general  
 20 triple-A (the highest) default). Other symbols "A+" are used to  
 21 show relative standing within a category. Because the rating a  
 22 evaluation includes virtually all of the factors important  
 23 in assessing a firm's relative credit standing, ratings provide  
 24 a broad, objective measure of overall investment risk available  
 25 to investors. Although the credit rating agencies are criticized  
 26 their rankings and analyses are widely cited in community press  
 27 and referenced by investors. Investment restrictions that do  
 28 continue to influence capital flows, and credit ratings are also  
 29 used as a primary risk indicator in establishing proxy groups  
 30 cost of common equity.

31 While credit ratings provide the most widely referenced benchmark  
 32 investment risks, other quality rankings published by advisory  
 33 services also provide relative assessments of risk that are  
 34 investors in forming their expectations for common stocks. Val

primary risk indicator is its Safety Rank, which (as reflected in front of "1 5" (Riskiest). This overall risk intended to capture total risk of a stock, and incorporates element stock price stability and financial strength. Given that Value Line is the most widely available source of investment advisory information, its Safety Rank provides us regarding the risk perceptions of investors.

The Financial Strength Rating is designed as a guide to overall strength and creditworthiness, with the key inputs including financial leverage, business volatility measures, and company size. Value Line Financial Strength Ratings range from "A++" (strongest) down to "A" (weakest) in nine steps. Value Line's beta measures volatility of a security's price relative to the market as a whole. A stock that responds less to market movements has a beta less than 1.0, which indicates that it tends to move more than the market have betas greater than 1.0.

Table 2 - 2 compares the Non-Utility Group with the Utility Group PG&E across four key indicators of investment risk. Because PG&E is not publicly traded common stock, the Value Line risk measures reflect those published for its parent, PGE.

**TABLE 2-2  
PACIFIC GAS AND ELECTRIC COMPANY  
COMPARISON OF RISK INDICATORS**

Proxy Group	S&P	Value Line		
	Credit Rating	Safety Rank	Financial Strength	Beta
Utility	BBB+	2	B++	0.73
Non-Utility	A	1	A+	0.58
PG&E	BBB	3	B+	0.55

As shown above, the average corporate credit rating for the Utility Group is one notch higher than PG&E's "BBB" meaning, the Value Line Safety Rank and Financial Strength Rating corresponding to PG&E suggests somewhat greater risk than the averages for the Utility Group. The Company's beta suggesting less risk. Considered together, comparison of these objective measures indicates that the Utility Group

<sup>34</sup> S&P's corporate credit ratings for individual firms in the Utility Group range from "BBB" to "A" which mirrors PG&E's split rating of "BBB" from S&P and "A3" from Moody's.

1 conclude that the overall investment risks for PG&E are comparable,  
2 albeit slightly greater than those of the Group in the Utility  
3 With respect to the Non-Utility, its overall credit rating, Safety  
4 Rank and Financial Strength Rating all indicate the same values from  
5 PG&E, with its 0.58 average beta being essentially identical to  
6 0.55 value corresponding to the Company. The estimation of risk of inv  
7 considered in my analysis provide a sound, objective basis consi  
8 to evaluate relative risks across companies and industry sector. These  
9 measures incorporate a broad spectrum of risks, including finan  
10 business position, the impact of regulation, relative size, and  
11 company specific factors, and they apply equally to regulated a  
12 unregulated firms. Indeed, the core idea of modern portfolio t  
13 investors will diversify their holdings across multiple firms a  
14 groups, so that the risk of a stock is directly proportional to the  
15 extent of competition or the freedom to set prices.

16 While the impact of differences in regulation is a critical risk in o  
17 measures, my analyses conservatively focus on a lower risk group  
18 non-utility firms. The 12 companies that make up the Non-Utility  
19 representative of the pinnacle of corporate America, while these fir  
20 include household names such as Coca-Cola, Colgate-Palmolive, K  
21 and Wal-Mart, have long corporate histories, well established t  
22 and exceedingly conservative risk profiles. These companies have a long  
23 history of dividend payments, with the average dividend yield f  
24 approaching 3%. Moreover, because of their significance and na  
25 recognition, these companies receive intense scrutiny by the in  
26 community, which increases confidence that published earnings are  
27 representative of the consensus expectations reflected in stock  
28 prices.

### 29 3. DCF Analyses

30 DCF models attempt to replicate the market valuation process th  
31 the price investors are willing to pay for a share of a company

---

35 In addition to the risk measures shown in Table 2, the Non-Utility Group have  
virtually no financial leverage, with an average capitalization of approximately 90%  
common equity.

1 The model rests on the assumption that investors evaluate the r  
 2 expected rates of return from all securities in the capital mar  
 3 Given these expectations, the price of each stock is adjusted b  
 4 until investors are adequately compensated for the risks they b  
 5 Therefore, we can look to the market to determine the relative investor  
 6 share of common stock is worth. By estimating the present value of cash flows i  
 7 expect to receive from the stock in the way of dividends and capital gains  
 8 gains, we can calculate their required rate of return. Thus, the cash flows  
 9 that investors expect from a stock are estimated, current given its  
 10 market price, we can back into the discount rate, i.e., the cost of eq  
 11 investors implicitly used in bidding the stock to that price.

12 Rather than developing annual estimates of cash flows, the DCF model can be simplified to a "constant<sup>36</sup> growth" form

$$P_0 = \frac{D_1}{k_e - g}$$

15 where:  $P_0$  = Current price per share;  
 16  $D_1$  = Expected dividend per share in the coming year;  
 17  $k_e$  = Cost of equity;  
 18  $g$  = Investors' long-term growth expectations.

19 The cost of equity can be isolated by rearranging terms:

$$k_e = \frac{D_1}{P_0} + g$$

21 This constant growth form of the DCF model, which is the form m  
 22 frequently relied on in regulatory proceedings, recognizes that  
 23 return to stockholders consists of two parts: the expected dividend yield

<sup>36</sup> The constant growth DCF model is dependent on a number of assumptions, which in practice are never strictly met. These include: a constant rate of growth in dividends and earnings; a stable dividend payout ratio; the discount rate is constant; a constant growth rate for book value and price; a constant return on book value; no sales of stock at a price above or below book value; a constant price-earnings ratio; a constant discount rate, i.e., no changes in risk or interest rate levels; and a firm that will extend to infinity.

( 2 ) growth ( In other words, investors receive a portion of the total return in the form of current dividends and through remainder appreciation.

The first step in implementing the constant growth DCF model is determine the expected dividend yield (for the firm in question. This is usually calculated based on an estimate of the dividends to the coming year divided by the current price of the stock. The more controversial, step is to estimate investment long-term growth expectations (g) for the firm. The final step is to sum the firm's yield and estimated growth rate to arrive at an estimate of its

For the Utility Group, estimated dividends to be paid by these utilities over the next twelve months, obtained from Value Line D<sub>1</sub>. This annual dividend was then divided by the average stock price 30 days ended February 24, 2012 to arrive at the expected dividend yield for each utility. The expected dividends, and resulting dividend yields for the firms in the Group are presented on page Schedule VEA-1. As shown there, dividend yields for the firms Utility Group ranged from 3.5% to 5.2%, and averaged 4.4%.

The next step is to evaluate long-term growth expectations, or for the firm in question. In constant growth DCF theory, earnings, book value, and market price assumed to grow in lockstep and the growth horizon of the DCF model is infinite. But in practice, the DCF model is more than just a theoretical exercise; to replicate the mechanism investors used to arrive at observable stock prices, a variety of techniques can be used to derive growth rates, but that matters in applying the DCF model is the value expected to invest

Because investors' focus is on future growth, historical rates are unlikely to be representative of investors' expectations trends in earnings, dividends, and book value are not representative of investors' expectations for the future. Then the historical rates giving rise to these growth rates should be expected to continue. That not the case for utilities, however, and industry changes have led to declining growth in dividends, earnings pressure, cases, in many significant write-offs. While these conditions have distorted



1 growth measures, they are not representative of long-term expectations  
2 the utility industry or of the expectations that investors have  
3 incorporated into current market prices. As a result, historic  
4 measures for utilities do not currently meet the requirements of  
5 model.

6 While the DCF model is technically concerned with growth in div  
7 cash flows, implementation of this DCF model is slow with concern  
8 replicating the forward-looking evaluation of real-world investment  
9 case of utilities, dividends are not likely to be a meaningful  
10 guide to investors' current expectations. This is because utilities  
11 have significantly altered their dividend policies in response  
12 accentuated business risks in the industry. As a result of this trend  
13 towards a more conservative payout ratio, dividend growth in the  
14 industry has remained largely stagnant as utilities conserve fi  
15 resources to provide a hedge against heightened uncertainties.

16 As payout ratios for firms in the utility industry trended down  
17 investors' focus has increasingly shifted from dividends to ear  
18 measure of long-term growth. Future trends in earnings (EPS) per sha  
19 which provide the source for future dividends and ultimately share su  
20 prices, play a pivotal role in determining investors' long-term  
21 expectations. The importance of earnings in evaluating investo  
22 expectations and requirements is well accepted in the investmen  
23 community, and surveys of analytical techniques reflected by pr  
24 analysts indicate that growth in earnings is far more important  
25 dividends per share (DPS).<sup>37</sup> Apart from Value Line, investment advisory  
26 services do not generally publish comprehensive DPS forecasts, proj  
27 and this scarcity of dividend growth rates relative to the abun  
28 earnings forecasts attests to their relative importance. The fact  
29 analysts focus on EPS growth, and that dividend growth rates ar

---

37 For example, the payout ratio for electric utilities fell from historically to on  
the order of 60%. The Value Line Investment Survey at Sep. 6 195, Feb. 14, 2011  
at 2237).

38 See, e.g., Block, Stanley B., "A Study of Financial Analyst Theory" *Financial Analysts Journal* (July/August 1999); J. D. King, & N. Thomas, "Cash Flow King in Valuation" *Financial Analysts Journal*, Vol. 63, No. 2 at 56 (March/April 2005).

1 routinely published, indicates that projected EPS growth rates  
2 provide a superior indicator of the future long-term growth exp  
3 investors.

4 Moreover, professional security analysts study historical trend  
5 extensively in developing their projections of future earnings. The  
6 extent there is any useful information in historical patterns,  
7 is incorporated into analysts' growth forecasts.

8 The projected EPS growth rates for each of the fifty Group the Uti  
9 reported by Value Line, Thomson Reuters (IBES), and Zacks Inves  
10 Research (Zacks) are displayed on page 2 of Schedule 39A-1.

11 While some argue that analysts' growth rates are based on an app  
12 DCF model to estimate the cost of common equity, the growth relev  
13 rate is the forward-looking expectations of investors that are  
14 current stock prices. Investors, just like a community of analysts  
15 investment community, do not know how the future will actually  
16 They can only make investment decisions based on their best est  
17 what the future holds in the way of long-term growth stock, a part  
18 and securities prices are constantly adjusting to reflect their  
19 available information.

20 Any claims that analysts' estimates are not reliable or un-  
21 founded given the reality of a competitive market for investm  
22 The market for investment advice is intensely competitive and  
23 analysts are personally and professionally motivated to provide  
24 accurate assessment possible of future growth trends. Analyst finan  
25 forecasts do not add value to investors' decision making, it is  
26 for investors to pay for these estimates. These financial anal  
27 provide reliable forecasts without competition relative to  
28 those analysts whose forecasts investors find more reliable. That  
29 analyst estimates are routinely referenced in their financial and  
30 investment advisory publications (Value Line) strongly suggests that  
31 investors use them as a basis for their expectations.

---

39 Formerly I/B/E/S International, Inc., IBES growth rates are published by  
Thomson Reuters.

1 The continued success of investment services such as Thomson  
2 Reuters and Value Line, and the fact that projections from such  
3 sources are widely referenced, provides strong evidence that in  
4 considerable weight to analysts' earnings projections in forming  
5 expectations for future growth. While the projections analysts secure  
6 may be proven optimistic in hindsight, their bias in  
7 assessing the expected growth that investors have incorporated  
8 stock prices, and any bias in analysts' forecasts, whether pessimistic  
9 optimistic is similarly irrelevant if investors' share value and the  
10 Earnings growth projections of security analysts provide a  
11 referenced guide to investors' views and are widely applied in the  
12 DCF model. As explained in *New Regulatory Finance*:

13 Because of the dominance of institutional investors and their influence  
14 on individual investors, analysts' forecasts of long-run growth  
15 provide a sound basis for estimating required returns. Financial  
16 analysts exert a strong influence on the expectations of many investors  
17 who do not possess the resources to make their own forecasts, and  
18 they are a cause of growth. The accuracy of these forecasts in the  
19 sense of whether they turn out to be correct is, not as an original issue  
20 as they reflect widely held expectations.

21 In addition, based on the assumptions underlying constant growth  
22 theory, growth in book equity will be equal to the net product of the  
23 retention ratio (one minus the dividend payout ratio) and the  
24 return on book equity. Furthermore, if the earnings and the return  
25 payout ratio are constant over time, growth in earnings will be  
26 equal to growth in book value. The fact that these two are  
27 seldom, if ever, met in practice, this "sustainable growth" approach  
28 provide a rough guide for evaluating a firm's growth prospects  
29 frequently proposed in regulatory proceedings.

30 Accordingly, while I believe that analysts' EPS growth forecasts  
31 a superior and more direct guide to investors' expectations, I  
32 the "sustainable growth" approach for completeness. The sustainable  
33 growth rate is calculated by the formula  $b + r$ , where "b" is the  
34 expected retention ratio, "r" is the expected equity return

---

40 Morin, Roger A., *Guidelines for Financial Public Utilities Reports, Inc.* at 298 (2006)  
(emphasis added).

1 the percent of common equity expected to be issued annually as  
2 common stock, and "v" is the equity accretion rate.

3 Under DCF theory, the "sv" factor is a component of the growth  
4 designed to capture the impact of issuing new common stock at a  
5 above, or below, book value. When a company's stock price is g  
6 its book value per share, the per-share contribution to the  
7 associated with new stock issues will accrue to the current sha  
8 This increase to the book value of existing shareholders leads  
9 expected earnings and dividends, with the "sv" factor incorpora  
10 additional growth component.

11 The sustainable, "br+sv" growth rates for each Group in the Util  
12 are summarized on page 2 of Schedule VEA-1, with details underlying  
13 being presented on Schedule VEA-2. For each firm, the expected  
14 ratio (b) was calculated based on Value Line's projected divide  
15 earnings per share. Likewise, each firm's expected return (rate  
16 was computed by dividing projected earnings per share by projec  
17 book value. Because Value Line reports end-of-year book values  
18 adjustment was incorporated to compute an average rate over the  
19 year, consistent with the theory underlying this approach to es  
20 investors' growth expectations. Meanwhile, the percentage of comm  
21 expected to be issued annually as new common stock (s) was equa  
22 product of the projected market-to-book ratio and growth in com  
23 outstanding, while the equity accretion rate (v) was computed a  
24 the inverse of the projected market-to-book ratio.

25 After combining the dividend yields and respective growth rates  
26 each utility, the resulting cost of equity estimates are shown  
27 Schedule VEA-1. In evaluating the results of the DCF constant grow  
28 model, however, it is essential that the resulting values  
29 fundamental tests of reasonableness and economic logic are applied  
30 eliminate estimates that are extreme low or high outliers.

31 It is a basic economic principle that investors can be induced  
32 more risky assets only if they expect to earn a rate of return to compe  
33 for their risk bearing. As a result, the rate of return that i  
34 from a utility's common stock, the most junior securities of

1 must be considerably higher than the yield offered by ~~any~~ ~~higher~~ ~~market~~ debt. I  
2 Consistent with this principle, the DCF results must be ~~eliminate~~ ~~adjusted~~  
3 estimates that are determined to be extreme low ~~compared~~ when c  
4 against the yields ~~is~~ ~~above~~ to investors from less ~~risky~~ ~~utility~~

5 Similar tests have been applied by other regulators ~~noted~~ FERC has  
6 that adjustments are justified where applications ~~produce~~ ~~the~~ DCF ap  
7 produce illogical results. ~~all~~ ~~FERC~~ DCF results ~~against~~ ~~observable~~  
8 yields on long-term ~~public~~ ~~debt~~ and has recognized ~~that~~  
9 appropriate to eliminate estimates that do not ~~meet~~ ~~the~~ ~~minimum~~ ~~exc~~  
10 threshold. In a 2002 ~~decision~~ ~~test~~ ~~current~~ ~~preceden~~  
11 determining ROEs for electric utilities, for example: FERC conc

12 An adjustment to this data is appropriate in the ~~case~~ ~~of~~ PG&E s  
13 return of 8.42 percent, which is comparable to ~~the~~ ~~“~~ ~~Average~~ ~~Mo~~  
14 grade public utility bond ~~yield~~ ~~of~~ ~~6~~ ~~percent~~, for ~~9~~ ~~October~~ ~~19~~  
15 Because investors cannot be expected to purchase ~~stock~~ ~~if~~ ~~debt~~,  
16 has less risk than stock, yields essentially the ~~same~~ ~~end~~ ~~turn~~, t  
17 return cannot be considered reliable ~~in~~ ~~this~~ ~~case~~.

18 Similarly, in its August 2006 ~~Kern River Gas Transmission~~  
19 *Company*, FERC noted that:

20 [T]he 7.31 and 7.32 percent costs of equity ~~for~~ ~~El~~ ~~Paso~~ ~~at~~  
21 found by the ALJ are only 1.10 and 1.22 basis ~~percentage~~ ~~above~~ ~~the~~  
22 yield for public utility ~~debt~~.

23 The Commission upheld the opinion of Staff and the ~~Administrati~~  
24 Judge that cost of equity estimates for these ~~two~~ ~~companies~~ ~~group~~ ~~c~~  
25 “were too low to be ~~credible~~” ~~the~~ “practice of eliminating low-end outliers  
26 has been affirmed in numerous other FERC ~~proceedings~~, ~~in~~ ~~its~~  
27 April 15, 2010 ~~SoCal Edison~~, ~~in~~ FERC affirmed that, “it is  
28 reasonable to exclude any company whose low-end ROE ~~falls~~ ~~below~~ ~~the~~ ~~ex~~  
29 average bond yield by about 100 basis ~~points~~ ~~or~~ ~~more~~.”

41 *Southern California Edison*, 92 FERC at 61, 266 (footnote omitted).

42 *Kern River Gas Transmission Company*, Opinion No. 486, 117 FERC ¶ 61, 077 at  
n. 227 (2006).

43 *Id.*

44 See, e.g., *Virginia Electric Power Co.*, 123 FERC 61, 098 at P 64 (2008)

45 *SoCal Edison* at P 55.

1 As noted earlier, S&P corporate credit ratings for utility firms in  
2 Group averaged "BBB+", with Moody's monthly yields on triple-B  
3 averaging approximately 5.0% in February 2012. It is inconceivable that  
4 investors are not requiring a substantially higher rate of return on  
5 common stock. Consistent with principle, the DCF estimates  
6 Utility Group must be adjusted to eliminate estimates that are  
7 be extreme low outliers when compared against the yields available  
8 investors from less risky utility bonds.

9 As highlighted on page 3 of Schedule VE-2, the range of the indi-  
10 DCF estimates ranged from 4.5% to 6.5%. In light of the ri-  
11 principle and the test applied by Edison, it is inconceivable that  
12 investors are not requiring a substantially higher rate of return on  
13 common stock, which is the riskiest of a utility's securities.  
14 consistent with the test of economic logic applied by upward trend  
15 trend expected for utility bond yields, these values are deemed  
16 to the returns investors require from utility common stocks and be  
17 excluded.

18 Capital market trends also support elimination of these low-end  
19 outliers. As indicated earlier, while corporate bond yields have  
20 substantially as the worst of the financial crisis has generally  
21 expected that long-term interest rates will rise as the economy  
22 economy returns to a more normal pattern of growth. As shown by  
23 Table 2-3, forecasts of HS Global Insight and average EIA imply an  
24 triple-B bond yield of approximately 5.9% for the 2012-2015 period  
25 over the period 2012-2015:

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46 Moody's Investors Service, www.credittrends.com

**TABLE 2-3  
PACIFIC GAS AND ELECTRIC COMPANY  
IMPLIED BBB BOND YIELD**

	<u>2013</u>	<u>2012-15</u>
Projected AA Utility Yield		
IHS Global Insight	4.92 %	5.37 %
EIA (b)	4.84 %	5.52 %
Average	4.88 %	5.44 %
Yield Spread BBB - (c)AA	1.00 %	1.00 %
<b>Implied BBB/A Utility Yield</b>	<b>5.88%</b>	<b>6.44%</b>

(a) IHS Global Insight, *Economic Outlook* at 25 (Dec. 2011).

(b) Energy Information Administration, *Annual Energy Outlook 2012, Early Release* (Jan. 23, 2012).

(c) Based on monthly average bond yields from Moody's Investors Service for the six-month period Sep. 2011 - Feb. 2012.

1           The increase in debt yields anticipated by IHS Global Insight also  
2 also supported by the widely-referenced Blue Chip Economic Outlook, which  
3 projects that yields on corporate bonds will decline 100 basis  
4 points through the period 2013 - 2017.

5           As summarized in Table 2-4, below, after eliminating illogical  
6 application of the constant growth DCF model to the utilities in the  
7 Group resulted in the following cost of common equity estimates

**TABLE 2-4  
PACIFIC GAS AND ELECTRIC COMPANY  
DCF RESULTS – UTILITY GROUP**

<u>Growth Rate</u>	<u>Cost of Equity</u>	
	<u>Average</u>	<u>Midpoint</u>
EPS		
Value Line	10.1 %	11.0 %
IBES	9.7 %	10.9 %
Zacks	9.4 %	9.5 %
br+ sv	9.3 %	9.1 %

8           I applied the DCF model to the Non-Utility Groups in the exact same  
9 manner described earlier for the Utility Group. It should be noted that

<sup>47</sup> *Blue Chip Financial Forecasts*, Vol. 30, No. 12 (Dec. 1, 2011).

1 that are implausibly low or high should be eliminated when the eval  
 2 results of any quantitative method used to estimate the cost of  
 3 As highlighted on page 3 of Schedule VEA- 3 , circular additions of illo  
 4 values, three DCF estimates for the Non-utility group exceeded  
 5 20%. I determined that, when compared with the range of the  
 6 estimates, these values were clearly implausible and should be  
 7 This is also consistent with the precedent adopted by FERC, which has  
 8 established that high-end estimates found to be "extreme" should be  
 9 disregarded in interpreting the results of quantitative methods  
 10 estimate the cost of equity.

11 The results of my DCF analysis of the Non-utility Group as presented  
 12 on page 3 of Schedule VEA- 3 , with the sustainable, "br + sv" growth  
 13 being developed on Schedule VEA- 4 . As summarized in Table 2 - 5 ,  
 14 after eliminating illogical low and high-end values, the constant  
 15 growth DCF model resulted in cost of common equity estimates ra  
 16 from 10.9% to 13.2%:

**TABLE 2-5  
 PACIFIC GAS AND ELECTRIC COMPANY  
 DCF RESULTS – NON-UTILITY GROUP**

<u>Growth Rate</u>		<u>Cost of Equity</u>	
EPS	Value Line	<u>Average</u>	<u>Midpoint</u>
	Value Line	12.2%	12.6%
	IBES	10.9%	10.9%
	Zacks	11.7%	12.2%
	br + sv	13.2%	12.1%

17 As discussed earlier, reference to the Non-Utility Group is consistent  
 18 with established regulatory principles and provides a reasonable, c  
 19 benchmark to the DCF rates for the proxy group of regulated es.  
 20 returns for utilities should be with those of non-utility  
 21 comparable risk operating under the constraints of free competi

22 While the DCF estimates for the Non-Utility Group are considera  
 23 higher than those produced for the comparable-risk group of uti

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48 *Id.*



1 important to be clear that this outcome cannot be attributed to  
 2 differences. As I documented earlier, the risks associated with  
 3 the group of non-utility firms measured by S&P's Credit and  
 4 Value Line's Safety Rank, Financial Strength, and Beta are lower  
 5 risks investors associate with Utility Group. The objective  
 6 provided by these observable risk measures rules out that the  
 7 higher non-utility DCF estimates are associated with higher risk.

8 Rather, the divergence between the DCF results for these two groups  
 9 utility and non-utility firms can be attributed to the fact that  
 10 invariably depart from the returns that investors require  
 11 their expectations may not be captured by the inputs to the model  
 12 particularly the assumed growth rate. Because the cost of  
 13 unobservable, and DCF results inherently incorporate an estimate of the  
 14 cost of equity estimates Non-Utility Proxy group provide an important  
 15 benchmark in evaluating a fair ROE for PG&E. There is no basis  
 16 conclude that DCF results for a group of utilities would be more  
 17 reliable than those for firms in the competitive divergence and the  
 18 between the DCF estimates for Utility and Non-Utility suggests  
 19 that both should be considered to ensure a balanced end-result.

20 **4. Capital Asset Pricing Model**

21 The CAPM is a theory of market equilibrium that measures risk using  
 22 the beta coefficient. Because investors are assumed to be fully  
 23 the relevant risk of an individual asset (stock) is its volatility  
 24 relative to the market as a whole, with beta defining the ten  
 25 stock's price to follow changes in the market. Hence the CAPM is not  
 26 expressed as:

27 
$$R_j = r_f + \beta_j (R_m - r_f)$$

28 where:  $R_j$  = required rate of return for stock j;  
 29  $r_f$  = risk-free rate;  
 30  $R_m$  = expected return on the market portfolio; and,  
 31  $\beta_j$  = beta, or systematic risk, for stock j.

32 Like the DCF model, the CAPM is a forward-looking model  
 33 based on expectations of the future. As a result, prior to  
 34 meaningful estimate of investors' required rate of return, the CAPM must be the

1 applied using estimates that reflect the expectations for actual  
2 the market, not with backward-looking, historical data.

3 Application of the CAPM to the Utility Group based on a forward  
4 estimate for investors' required rate of return from a common stock  
5 presented on Schedule VIA-5. In order to capture the expectations  
6 today's investors in current capital markets, the expected market  
7 return was estimated by conducting a DCF analysis on the individual  
8 firms in the S&P 500.

9 The dividend yield for each firm was obtained from Value Line,  
10 growth rate was equal to the consensus earnings growth for each  
11 firm published by IBES, with each firm's dividend yield being  
12 weighted by its proportionate share of total market value. Based  
13 on a weighted average of the projections for the 375 individual firm  
14 estimates imply an average growth rate over the next five years  
15 Combining this average growth rate with a year-ahead dividend yield  
16 of 2.6% results in a current cost of common equity estimate for the  
17 whole (MR) of approximately 13.5%. Subtracting a 3.8% risk-  
18 premium on the projected yield on 30-year Treasury bonds for a 2013 product  
19 market equity risk premium of 9.8%.

20 I relied on the beta values reported by Value Line, which in my  
21 experience is the most widely referenced source for betas in reg  
22 proceedings. As noted in *Regulatory Finance*:

23 Value Line is the largest and most widely circulated independent  
24 investment advisory service, and influences the expectations of  
25 number of institutional and individual investors. Betas Value Line  
26 computed on a theoretically sound basis using a broadly based  
27 index, and they are adjusted for the regression tendency of betas  
28 to converge to 1.00.

29 In addition, because empirical research indicates that the CAPM  
30 does not fully account for observed differences in rates of return a

---

49 My application of the CAPM relied on 30-year Treasury bonds to be closely  
approximate the long-term horizon of common stocks. While I relied on 20-year  
government bond yields in past testimony, this was because I did not issue 30-year  
bonds from approximately March 2002 through January 2006.

50 Brin, Roger A., *Utility Finance*, Public Utilities Reports at 71 (2006).

1 firm size, a modification is required to account for this size  
2 As explained *Morningstar*:

3 One of the most remarkable discoveries of modern finance is the  
4 relationship between firm size and return. This relationship cu  
5 the entire size spectrum but is most evident among smaller comp  
6 which have higher returns on average than larger ones.

7 According to the CAPM, the expected return on a security should  
8 consist of the riskless rate, premium to compensate for systematic  
9 risk of the particular security. The degree of systematic risk  
10 by the beta coefficient. The need for the size adjustment arises  
11 differences in investors' required rates of return that firm sizes  
12 are not fully captured by beta. To account for this, Morningst  
13 developed size premiums that need to be added to the theoretical  
14 cost of equity estimates to account for the level of a firm's m  
15 capitalization in determining the CAPM cost of equity. These premiums  
16 correspond to the size deciles of publicly traded, common stocks  
17 from a premium of 6.1% for a company in the first decile (market  
18 capitalization less than \$120 million), to a reduction of 1.5% for  
19 firms in the tenth decile (market capitalization between \$15.5  
20 354.4 billion). As Morningstar's analysis of Corporate Adjustments  
21 to recognize the impact of size effects, as measured by market  
22 capitalization.

23 The average market capitalization of the Utility Group is \$10.3  
24 Based on data from *Morningstar*, this means that the theoretical CAPM cost  
25 of equity estimate must be increased by 7.3 basis points to account  
26 impact of the proxy group's relative size, which does not reflect  
27 average beta value. As shown on page 1 of Schedule VA-5, adjusted  
28 theoretical CAPM results, which averaged 10.8%, this size-adjusted  
29 adjusted results in an average cost of common equity of 11.5%,  
30 with the midpoint being 11.2%.

51 *Morningstar*, "Ibbotson S&P 500 Valuation Yearbook," (footnote 83)

52 *Morningstar*, "2012 Ibbotson S&P 500 Valuation Yearbook," at Appendix C, Table

53 As discussed earlier, the overall investment risks of the Utility Group are comparable to the  
Utility Group. As a result, this adjusted cost of equity estimate accurately reflects  
the required return associated with the risks of the proxy group applicable to PG&E

1 While investors undoubtedly consider historical information as  
2 in their evaluation of expectations, the cost of capital  
3 forward-looking concept. Because the CAPM is focused solely on  
4 perceptions of today's capital market investors, it should not  
5 using historical rates of return. The CAPM cost of equity  
6 is calibrated from investors' required risk premium between Tre  
7 and common stocks. In response to heightened uncertainties, in  
8 have repeatedly sought a safe haven in U.S. government bonds and  
9 "flight to safety" has pushed Treasury yields significantly low  
10 spreads for corporate debt have widened. This is not o  
11 the absolute level of the CAPM equity estimate affects it  
12 estimated risk premiums. Economic logic would suggest that inv  
13 required risk premium for common stocks over Treasury bonds has  
14 increased.<sup>54</sup>

15 Meanwhile, backward-looking approaches incorrectly assume that  
16 investors' assessment of the required risk premium between Tre  
17 and common stocks is constant, and equal to some historical ave  
18 At no time in recent history has the fallacy of this assumption  
19 demonstrated more concretely than it is today. This is congruit  
20 investors' current expectations historical risk premium particularly  
21 relevant during periods of heightened uncertainty and rapidly c  
22 capital market conditions, such as those experienced recently. The  
23 Staff of the Florida Public Commission concluded:

24 [R]ecognizing the impact the Federal Government's unprecedented  
25 intervention in the capital markets has had on the yields on lo  
26 Treasury bonds, staff believes models that relate required invest or-  
27 return on equity to the yield on government securities, such as  
28 CAPM approach, produce less reliable estimates of the ROE at th  
29 time.<sup>55</sup>

30 The Federal Reserve has continued to pursue a policy of active  
31 managing long-term bond yields, which further undermines the us

---

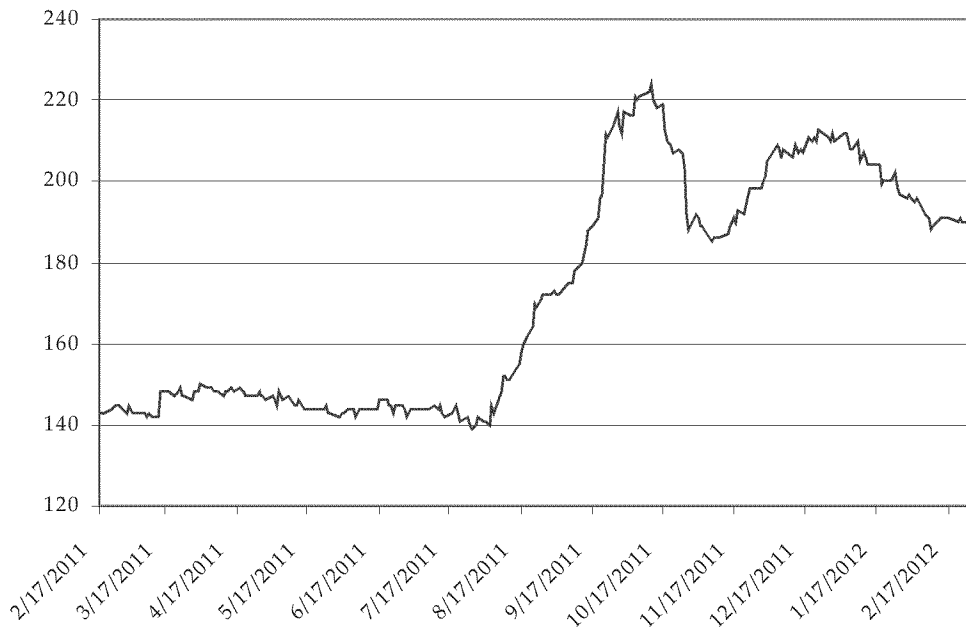
54 As discussed subsequently, there is considerable support that equity risk premiums  
rise as bond yields fall, and See, e.g., Vassilios, R. S., and Marston, F. C.,  
"Estimating Shareholder Risk Premium Using Analysts' Cost of Financial Management  
(Summer 1992).

55 Staff Recommendation for Docket No. 080677-E1 - Petition for increase in rates by Florida  
Power & Light Company, at p. 280 (Dec. 23, 2009).

1 historical data to apply the CAPM. In September 2008, the Federal Reserve  
 2 announced "Operation Twist", involving the exchange of Treasury-  
 3 instruments for longer-term government bonds, in an effort to p  
 4 pressure on long-term interest rates. The ongoing potential fo  
 5 turmoil in the capital markets has certainly contributed to  
 6 with common stock prices exhibiting the dramatic volatility  
 7 of heightened sensitivity to risk.

8 Nowhere has this been more evident than in the market for Treas  
 9 bonds, with yields being pushed significantly lower due to "flight to  
 10 safety" in the face of rising political, economic, and capital  
 11 risk. In turn, this has led to a dramatic increase in utility spreads,  
 12 the spreads between triple-B utility bond yields and 30-year Tr  
 13 shown in Figure 2-1, below.

**FIGURE 2-1  
 PACIFIC GAS AND ELECTRIC COMPANY  
 YIELD SPREAD (BP) BBB UTILITY – 30-YR. TREASURY**



14 This increase in the yield spread indicates that the additional  
 15 compensation investors demand to take on higher risks has incre  
 16 As S&P observed:

17 Standard & Poor's U.S. speculative-grade composite spread, which  
 18 measures the extra yield above U.S. Treasury bonds that investo

1 demand to hold the bonds of riskier companies, widened by 63 %  
2 781 basis points (bps) from April 18, 2011, to Sept.  
3 sharp expansion reflected the bond market's increasing aversion  
4 credit risk in an uncertain and riskier environment. During  
5 stress, correlations frequently increase among risky asset clas  
6 as the relationship between the return on speculative-grade bon  
7 the return from equities.<sup>56</sup>

8 Equity risk premiums cannot be observed directly, but because c  
9 stock investors are the last in line with respect to a firm's lai  
10 cash flows, higher yield spreads imply an even steeper increase  
11 additional return required from an investment in common equity.  
12 heightened capital market and economic uncertainties increase the i  
13 risk premiums demanded by investors, further undermining any reli  
14 historical studies to apply the CAPM

15 In addition, my CAPM analysis did not rely on geometric or arit  
16 means in arriving at an equity risk premium. In fact, more to arit  
17 geometric mean risk premiums is associated with application of  
18 that depend on historical data. In order to derive the market rate  
19 equity risk premium under this approach, historical average ret  
20 Treasury bonds are typically subtracted from those for common s  
21 These average rates of return based on backward-looking data fo  
22 time periods can be derived using both arithmetic and geometric

23 As discussed above, however, my application of the CAPM was a p  
24 forward-looking approach, which is consistent with the underlyi  
25 assumptions of this method and the standards underpinning the deter  
26 a fair rate of return. Because I looked directly at investors'  
27 expectations in the capital markets and not at historical rates  
28 CAPM analysis did not need to reference either the geometric o  
29 mean of historical rates of return.<sup>57</sup>

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56 Standard & Poor's Corporate Rating, Expansion In Credit Spreads Shows Bond Market Stress, But Less Severe Than During The Financial Crisis, (Oct. 11, 2011).

57 The forward-looking CAPM is more comparable to the arithmetic than the geometric mean. This distinction was made clear in the text used by the Chartered Financial Analyst (CFA) program worldwide: "the geometric mean is appropriate for making investment statements about past performance...the arithmetic is appropriate for making investment statements in a forward-looking context." Richard DeFusco, CFA, McLeavey, Dennis W, CFA, Pinto, Jerald E, CFA, Runkel, Quantitative Investment Analysis (Second Edition), at 127 (2007).

1 There are numerous studies that examine what investors have actu-  
2 realized in terms of equity versus stocks. Similar large articles  
3 suggesting what investors should expect based on "business cycle  
4 techniques. Further, there are surveys of corporate executives  
5 about what they expect the return differential to be over various  
6 horizons. Finally, there are projections that the managers of utility companies use  
7 for actuarial purposes. None of these values are comparable to  
8 the premium as I have applied it in my forward-looking, CAPM analysis  
9 based not on some generic notion of the equity risk premium but  
10 from contemporaneous projections for individual stocks. On the S

11 Average realized risk premiums computed over some selected time  
12 period may be an accurate representation of what was actually done in the  
13 past, but they don't answer the question as to what investors risk premium  
14 were actually expecting to earn on a forward-looking basis during the  
15 same time periods. Similar calculations of the equity risk  
16 premium developed at a point in history (whether based on actual or returns  
17 periods or contemporaneous projections) are not the same as the  
18 forward-looking expectations of today's investors since we live in an  
19 entirely different set of capital market and economic expectations.

20 The purpose of my analysis was to determine an allowed return that  
21 would meet the regulatory requirement of allowing PG&E capital to attract  
22 and maintain its financial integrity. The most appropriate benchmark  
23 meaningful forward-looking rate of the return on investment from  
24 PG&E is what investors are currently requiring from other invest-  
25 ments which PG&E must compete for capital. The risk premium used in  
26 my analysis is derived from current market data and is forward-looking in that  
27 it uses the projected earnings rates used by investors and does not  
28 depend on analysis of past historical data on risk premiums nor  
29 purport to identify what investors will actually utilize or in what  
30 they should reasonably expect over the long-term and that it is  
31 based on what investors currently require when they allocate their capital to  
32 competing investments. These current forward-looking returns are  
33 the touchstone of whether an authorized ROE can meet the CPUC's  
34 standard of capital attraction and maintaining financial integrity.

1 **5. Risk Premium Approach**

2 The risk premium method of estimating investors' of equit edn rate  
3 extends to common stocks the risk- return tradeoff based with  
4 The cost of equity is estimated by first determining the additi  
5 investors require to forgo the relative safety of bonds greater  
6 risks associated with common stock, and by then adding this equ  
7 premium to the current yield on bonds. Like the DCF model, the  
8 premium method is capital market oriented. However, models like DCF  
9 which indirectly impute the cost of equity, risks premium method  
10 estimate investors' required rate of return by adding premium equity  
11 to observable bond yields.

12 I based my estimates of equity risk premiums for utilities on s  
13 previously authorized rates of return on common equity. Author  
14 presumably reflect regulators' best estimates of cost of  
15 equity, however determined, at the time they issued their final  
16 Such returns should represent a balanced and impartial outcome  
17 considers the need to maintain a utility's financial integrity  
18 attract capital. Moreover, allowed returns are an important factor  
19 investors and have the potential to influence other observable  
20 parameters, including credit ratings and borrowing costs. That's  
21 provides a logical and frequently referenced basis for estimating  
22 premiums for regulated utilities.

23 Surveys of previously authorized rates of return on common equi  
24 frequently referenced as the basis for estimating equity risk p  
25 The rates of return on common equity authorized by re  
26 commissions across the U. S. are compiled by Regulatory Research  
27 Associates and published in its Regulatory report. In  
28 Schedule VA- 6 , the average on public utility bonds is derived from  
29 the average allowed rate of return on common equity utilities editor  
30 calculate equity risk premiums for each year between 1119 7 4 and 2  
31 Over this 38 - year period, these equity risk premiums for electric  
32 averaged 3 . 4 1 % , and the yield on public utility bonds averaged  
33

34 There is considerable evidence that the magnitude of equity ris  
premiums is not constant and that equity risk premiums tend to



1 inversely with interest<sup>58</sup> rates. In other words, when interest rate levels  
 2 relatively high, equity risk premiums narrow, and when interest  
 3 relatively low, equity risk premiums widen. The simple nature of  
 4 relationship is that the cost of equity does not, move as much a  
 5 lockstep with, interest rates. Accordingly, for decreases in increase  
 6 interest rates, the cost of equity may only 50 basis points. say,  
 7 Therefore, when implementing the risk premium method, its adjustment  
 8 be required to incorporate this inverse relationship. If interest current  
 9 levels have changed since the equity risk premiums were estimated

10 Finally, it is important to recognize that the historical risk focus  
 11 premium studies almost certainly ensures that they capture the full  
 12 significantly greater risks that investors now associate with utility  
 13 service. As a result, they are likely to underestimate the cost of  
 14 operating in today's utility industry.

15 Based on the regression output between the interest rates and equity  
 16 risk premiums displayed on page 4 of Schedule VE-6, risk the equity  
 17 premium increased approximately 41 basis points for each percentage  
 18 drop in the yield on average public utility bond. As illustrated  
 19 Schedule VE-6, with a projected yield on average public utility  
 20 2013 of 5.32%, this implied a current equity risk premium of  
 21 Adding this equity risk premium to the average yield on utility bonds  
 22 for 2013 of 5.88% produces a current cost of equity of 8%.

## 23 6. Expected Earnings Approach

24 As I noted earlier, I also evaluated the RCE preference to ex  
 25 rates of return for utilities. Rates of return derived from  
 26 alternative investments of comparable risk can provide an impor  
 27 benchmark in assessing the return necessary to assure confidence  
 28 financial integrity of a firm and its ability to sustain operations. This approach is  
 29 consistent with the economic underpinnings for a fair rate of r  
 30 reflected in the comparable earnings test established by the Supreme Court.

58 See, e.g., Brigham E. F., Shome, D. K., and Vinson, S. R. Approach to the Risk Premium  
 Measuring a Utility's Cost of Equity. *Financial Management* (Spring 1985); Harris, R. S., and  
 Marston, F. C., "Estimating Shareholder Risk Premiums: Using a Beta Approach,"  
*Financial Management* (Summer 1992).

1 in *Hope* and *Bluefield*. Moreover, it avoids the complexities and limitations  
2 of capital market methods and instead focuses on the returns on  
3 book equity, which are readily available to investors.

4 The simple, but powerful concept underlying the expected earnings  
5 approach is that investors compare each investment with the  
6 next best opportunity. If the utility is not as attractive to that  
7 available from other opportunities of comparable risk, all investors  
8 unwilling to supply the capital on the same terms. For existing  
9 denying the utility an opportunity what is available for similar  
10 risk alternatives prevents them from earning their opportunity cost.  
11 In this situation the government is effectively taking investors' value  
12 capital without adequate compensation.

13 The traditional comparable earnings test identifies a group of  
14 companies that are believed to be comparable in risk to the utility. The  
15 of those companies on the book value of their investment are then  
16 compared to the allowed return of the utility. While the traditional  
17 comparable earnings test is implemented using historical data from  
18 the accounting records, it is also common to use projections of  
19 book investment, such as those published by recognized investment  
20 advisory publications, (Value Line). Because these expected returns  
21 on book value equity are analogous to the allowed return on a utility  
22 base, this measure of opportunity cost is a direct apples-to-apples  
23 comparison. My application of the expected earnings approach was  
24 focused exclusively on forward-looking projections, not historical

25 Moreover, regulators do not set the returns that investors earn  
26 in capital markets. They can only establish the allowed return on a  
27 utility's investment, as reflected in accounting records. As a result, the  
28 expected earnings approach provides a direct guide to the measure that  
29 allowed RCE is similar to what other utilities of similar risk would  
30 invest in. This opportunity cost test does not require  
31 models to indirectly infer investors' perceptions from stock  
32 market data. As long as the proxy companies are similar in risk  
33 expected earned returns on invested capital provide a direct  
34 investors' opportunity cost that is independent of stock market fluctuations.

1 market- to- book ratios, debates over DCF growth rates, or the li  
2 inherent in any theoretical model of investor behavior.

3 For the firms in the utility industry, the returns on common equity  
4 projected by Value Line over its forecast horizon are shown on  
5 Schedule VEA- 7. Consistent with the rationale underlying the d  
6 of the br+sv growth rates, these year- end values were averaged  
7 returns using the same adjustment factor discussed earlier and  
8 on Schedule VEA- 2. As shown on Schedule VEA- 7, Value Line's  
9 projections for the utility Group suggest an average ROE of 11.  
10 Given the fact that Value Line is recognized as the most widely  
11 independent investment advisory service, its projections for  
12 utilities provide an important guide to investors' expectations

### 13 7. Flotation Costs

14 The common equity used to finance the investment in utility assets  
15 provided from either the sale of stock in the capital markets or  
16 earnings not paid out as dividends. When equity is raised thro  
17 of common stock, there are costs associated with "new equity" the  
18 securities. These flotation costs include services accounting, leg  
19 and printing, as well as the fees and discount paid to broker compens  
20 for selling the stock to the public. Also, "market que that the  
21 pressure" from the additional supply of common stock and other  
22 factors may further reduce the amount of funds that utilities use  
23 common equity.

24 While debt flotation costs are recorded on the books of the uti  
25 amortized over the life of the issue, and thus increase the eff  
26 debt capital, there is no similar accounting treatment for equity  
27 flotation costs are recorded and ultimately recognized, and the  
28 of return is authorized on flotation costs necessarily incurred  
29 portion of the equity capital used to finance utility plant and other  
30 flotation costs are not included in a utility's net book value becau  
31 portion of the gross proceeds from the sale of common stock use  
32 flotation costs is available for investment in plant and equipment  
33 costs capitalized as an intangible asset. Unless someone provides to  
34 recognize these issuance costs as utility's revenue, they are not fully

1 reflect all of the costs incurred for the use of ~~Equity~~ ~~securities~~ ~~other~~ ~~equity~~  
2 is no accounting convention to accumulate the flotation costs with a  
3 equity issues, they must be accounted for indirectly, with an u  
4 adjustment to the cost of equity being the most logical mechani

5 I am aware that the CPUC has not routinely approved a flotation  
6 adjustment for PG&E in past proceedings, but the severance in th  
7 provides a theoretical and practical basis to include flotation  
8 costs for PG&E. First, an adjustment for flotation costs associated  
9 equity issues is appropriate, where the utility is issuing a  
10 new sales of common stock. The need for a flotation cost adjust  
11 compensate for past equity issues been recognized in the financ  
12 literature. *Public Utilities Fortnightly* article, for example, Brigham,  
13 Aberwald, and Gapenski demonstrated that even if not further sto  
14 are contemplated, a flotation cost adjustment is also required to  
15 keep shareholders whole, and that the flotation cost adjustment  
16 consider total equity, including retained earnings. <sup>59</sup> *Brigham*

17 *Regulatory Finance* contains the following discussion:

18 Another controversy is whether the flotation cost allowance sho  
19 be applied when the utility is contemplating an imminent co  
20 stock issue. Some argue that flotation costs are real and shou  
21 recognized in calculating the fair rate of return on a utility bu  
22 time when the expenses are incurred. In other words, cost the flota  
23 allowance should not continue indefinitely, but should be made  
24 year in which the sale of securities occurs, continuing need for c  
25 compensation in future years. This argument implies that the c  
26 has already been compensated for these costs and/or the initial  
27 contributed capital was obtained freely, devoid of costs, flatio  
28 which is an unlikely assumption, and certainly not applicable t  
29 utilities. ... The flotation cost adjustment cannot be strictly f  
30 looking unless all past flotation costs associated with the past is  
31 been recovered.<sup>60</sup>

32 The following example demonstrates that investors will not have  
33 opportunity to earn their required rate, of dividend (yield plus  
34 expected growth) unless an allowance for past flotation costs is  
35 the allowed rate of return. Assume a utility sells \$ of  
36 common stock at the beginning of Year 1. If flotation costs incur

59 Brigham, E. F., Aberwald, D. A., and Gapenski, L. "Flotation Costs and Rate  
Making," *Public Utilities Fortnightly*, May, 2, 1985.

60 Brin, Roger A., *Utility Finance*, Public Utilities Reports, Inc. (2006) at 335.

1 of \$ 0 . 4 8 ( 5 % of the net proceeds) , then the only investment is  
 2 rate base. Assume that shareholders' required rate of return is  
 3 1 1 . 5 % , the expected dividend in Year 1a is \$ 0 . 5 0 ( of  
 4 5 percent ) , and that growth is expected to be 6 . 2 5 % annually.  
 5 in Table 2 - 6 below, if the allowed rate of return on common equity  
 6 equal to the utility' s 1 1 . 5 % " bare bones" cost of equity, common  
 7 stockholders will not earn their required rate of return of 1 1 . 5 %  
 8 investment, since growth will really only be 6 . 2 5 % , instead of

**TABLE 2-6  
 PACIFIC GAS AND ELECTRIC COMPANY  
 NO FLOTATION COST ADJUSTMENT**

Year	Common Stock	Retained Earnings	Total Equity	Market Price	M/B Ratio	Allowed ROE	Earnings Per Share	Dividends Per Share	Payout Ratio
1	\$ 9.52	\$ -	\$ 9.52	\$ 10.00	1.050	11.50%	\$ 1.09	\$ 0.50	45.7%
2	\$ 9.52	\$ 0.59	\$ 10.11	\$ 10.62	1.050	11.50%	\$ 1.16	\$ 0.53	45.7%
3	\$ 9.52	\$ 0.63	<u>\$ 10.75</u>	<u>\$ 11.29</u>	1.050	11.50%	<u>\$ 1.24</u>	<u>\$ 0.56</u>	45.7%
Growth			6.25%	6.25%			6.25%	6.25%	

9 The reason that investors never really earn 1 1 . 5 % on their investment  
 10 the above example is that the \$ 0 . 4 8 in flotation costs initially  
 11 raise the common stock is not treated like debt issuance costs  
 12 (i.e., amortized into interest expense and therefore embedded in the  
 13 cost of debt) , nor is it included as an asset in rate base.

14 Including a flotation cost adjustment allows investors to be fully  
 15 compensated for the impact of these costs. One commonly referred  
 16 method for calculating the flotation cost adjustment is to multiply the  
 17 dividend yield by a flotation cost percentage. Thus, with a 5 %  
 18 and a 5 % flotation cost percentage, the flotation cost adjustment  
 19 above example would be approximately 2 5 basis points. As shown  
 20 2 - 7 below, by allowing a rate of return on common equity of 1 1 . 5 %  
 21 1 1 . 5 % cost of equity plus a 2 5 basis point flotation cost adjustment,  
 22 investors earn their 1 1 . 5 % required rate of return, growth is now  
 23 equal to 6 . 5 %:

**TABLE 2-7  
PACIFIC GAS AND ELECTRIC COMPANY  
INCLUDING FLOTATION COST ADJUSTMENT**

Year	Common Stock	Retained Earnings	Total Equity	Market Price	M/B Ratio	Allowed ROE	Earnings Per Share	Dividends Per Share	Payout Ratio
1	\$ 9.52	\$ -	\$ 9.52	\$ 10.00	1.050	11.75%	\$ 1.12	\$ 0.50	44.7%
2	\$ 9.52	\$ 0.62	\$ 10.14	\$ 10.65	1.050	11.75%	\$ 1.19	\$ 0.53	44.7%
3	\$ 9.52	\$ 0.66	<u>\$ 10.80</u>	<u>\$ 11.34</u>	1.050	11.75%	<u>\$ 1.27</u>	<u>\$ 0.57</u>	44.7%
<b>Growth</b>			<b>6.50%</b>	<b>6.50%</b>			<b>6.50%</b>	<b>6.50%</b>	

The only way for investors to be fully compensated for the issuance to include an ongoing adjustment to account for flotation costs when setting the return on common equity. This is the case regardless of whether or not the utility is expected to issue additional shares in the future.

While utility stocks continue to trade at prices that exceed book value, this says nothing about the need to recognize the flotation costs of issuing common stock when establishing a fair rate of return. Investors determine the price they are willing to pay for a share of common stock based on their assessment of expected cash flows relative to risk. The fact that the market price of a utility's common stock exceeds book value doesn't change the fact that investors must be compensated to earn their required rate of return on capital, including that portion paid out as issuance expenses. As I demonstrated in the above, this can only occur if an upward adjustment is made to the ROE to account for flotation costs.

In addition to the flotation costs for recovery of costs associated with past sales of common stock, PG&E will also be incurring flotation costs associated with ongoing sales of new shares. A earlier, PG&E is faced with the challenge of financing enormous requirements. In order to meet these commitments while maintain a balanced mix of long-term capital sources, PG&E anticipates the significant amounts of new common stock. On November 28, 2011 PG&E filed a prospectus supplement with the Securities and Exchange Commission governing the sale of new common shares with a offering price of up to \$400 million. Meanwhile, Fitch noted that, "[

1 management's commitment to issue a total of \$1 billion of common  
2 a key rating driver.

3 Moreover, considering the impact of flotation costs, it would not u  
4 penalize ratepayers. The only purpose of the adjustment is to ad  
5 allow the utility an opportunity to recover a reasonable and ne  
6 expense associated with raising equity capital. As discussed, these e  
7 costs are directly analogous to debt issuance expenses that are  
8 recovered from ratepayers. A flotation cost adjustment does no  
9 any form of "windfall" for investors; rather, it is a recognition  
10 cost of raising capital that is invested in the services used  
11 customers.

12 There are a number of ways in which a flotation cost adjustment  
13 calculated, but the most common methods used to account for flo  
14 costs in regulatory proceedings is to apply an average flotation  
15 percentage to a utility's dividend yield. Based on a review of  
16 literature, *New Regulatory Finance* concluded:

17 The flotation cost allowance requires an estimated adjustment to  
18 return on equity of approximately 5% to 10%, depending on the  
19 risk of the issue.<sup>62</sup>

20 Alternatively, a study of data from Morgan Stanley regarding is  
21 costs associated with utility common stock issuances suggests a  
22 flotation cost percentage of 3.3%.<sup>63</sup> With respect to shares sold under  
23 PG&E's equity distribution agreement, PG&E has agreed to pay an  
24 underwriting fee equal to 1.0% of gross proceeds, in addition to  
25 offering expenses and legal fees.<sup>64</sup>

26 Applying these expense percentages to a representative dividend  
27 for a utility of 4.5% implies a flotation cost adjustment to the  
28 4.5 basis points. Issuance costs are a legitimate expense, and

61 Fitch Ratings Ltd., "Fitch Downgrades PG&E's ICB to 'BBB-',"  
Release (Dec. 16, 2011).

62 Roger A. Morin, "New Regulatory Public Utilities Reports, Inc. at 323 (2006).

63 Application of Yankee Gas Services Company for a Rate Order, Docket No. 04-06-01,  
Direct Testimony of George Kehrer (Jul. 2, 2010) at 1 Exhibit. Updating the result  
presented by Mr. Eckenroth through April 2005 analysis, the average flotation cost  
percentage of 3.6%.

64 PG&E Corporation, Prospectus Supplement (Nov. 28, 2011).

1 that they be considered in evaluating an ROE for PG&E from with  
2 reasonable range.

### 3 **D. Return on Equity Range for PG&E**

4 This section addresses the economic requirements for the PG&E return  
5 on equity. It discusses the regulatory policy reasons for a return  
6 on equity that is not sufficient to maintain PG&E's financial ability to  
7 attract capital, and demonstrates the benefits of an ROE that  
8 reflects PG&E's need for financial strength. Finally, this section  
9 concludes regarding a fair ROE range and my recommended ROE for

#### 10 **1. Implications for Financial Integrity**

11 Given the social and economic importance of the utility, it is  
12 essential to maintain reliable and economical service to all customers.  
13 Cash flow provided through the allowed ROE is a key component  
14 of a utility's credit quality and its access to capital markets. While it  
15 ultimately realizes the benefits of increased investment in infrastructure,  
16 a utility's ability to fulfill its mandate can be compromised if  
17 necessary financial wherewithal or is unable to use efficient returns  
18 to attract capital.

19 The major rating agencies have warned of exposure to uncertainty  
20 associated with political and regulatory developments, in particular  
21 the current financial and operating pressures on the utility industry.  
22 Investors understand just how swiftly unforeseen circumstances can lead to  
23 deterioration in a utility's financial conditions, and stakeholders  
24 discovered first hand how difficult and complex it can be to re-  
25 situation after the facts. Increased reticence by investors to provide  
26 capital during times of crisis highlights the need for financial  
27 flexibility and the importance of allowing an adequate ROE.

28 Considering investor heightened awareness of the risks associated  
29 with the utility industry, it is clear that results when a utility's financial  
30 flexibility is compromised, fair and balanced regulatory treatment  
31 of PG&E's access to capital is essential. Regulators recognize that utilities own  
32 risks, and that constructive regulation is a supporting and enabling



1 credit ratings and financial integrity, particularly adverse timing  
2 conditions.

3 Fitch concluded, “[G]iven the lingering rate of unemployment and  
4 concerns about the economy, there could well be pockets of adverse  
5 decisions, and those companies with little financial cushion on co  
6 adverse effects.”<sup>65</sup> Moody’s has also emphasized the need for regulatory  
7 support, concluding:

8 For the longer term however, we are becoming increasingly conc  
9 about possible changes to our fundamental assumptions about  
10 regulatory risk, particularly the prospect of a political  
11 (and therefore regulatory) environment. A prolonged recession  
12 climate with high unemployment, or an intense period of inflati  
13 make cost recovery more uncertain.<sup>66</sup>

14 S&P noted “the quality of regulation is at the heart of our  
15 utility creditworthiness.”<sup>67</sup>

16 Regulatory signals are a major driver of investor risk assess  
17 utilities. Security analyst studies and regulatory policy  
18 statements to advise investors to put their money where the  
19 recent example of Ohio, where regulators’ retroactive approval of a  
20 stipulated settlement of a transition plan led to the warnings fr  
21 investment community and significant declines in utility stock  
22 CPUC actions instill confidence that the regulatory environment  
23 supportive, investors make capital available to California until  
24 reasonable terms. When investors are confident that supportive  
25 regulation, they will make funds available even in times of tur  
26 financial markets. Moreover, suppliers of fuel, replacement po  
27 equipment, and the other goods and services necessary to keep t  
28 on in California will offer more favorable terms to strong utility

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65 Fitch Ratings Ltd., “U.S. Utilities, Power, and Global Power North America  
Special Report (Dec. 4, 2009).

66 Moody’s Investors Service, “U.S. Regulated Electric Utility Industry  
Outlook (July 2009).

67 Standard & Poor’s Corporation, “Assessing U.S. Utility Regulatory  
(Nov. 7, 2008).

68 See, e.g., Standard & Poor’s Corporation, “Ohio Utility Regulation: Be  
For Credit Quality of Power Companies In Ratings Direct (Feb. 27, 2012); Testa,  
Dan, “Thursday’s Energy Stocks: AEP shares slide after object security plan,”  
SNL Financial (Feb. 23, 2012).

1 operating under restrictive regulation than to a utility whose  
2 where that is suspect. Since the CPUC is PG&E's regulator, utility  
3 investors and suppliers look to the Commission to assess potential  
4 behind the Company's financial and contractual obligations. We  
5 can negotiate from a position of financial strength better deal for  
6 its customers.

7 The investment community has recognized that past regulatory  
8 decisions have generally been supportive of PG&E's credit quality.  
9 Moody's noted that California investor-owned utilities may face  
10 challenging environment due to electric rates that are among the  
11 averages and by the states weakened economy, and cited the added  
12 pressures of environmental initiatives and future regulatory uncertainties.

13 While the various adjustment mechanisms approved for PG&E are  
14 supportive of its credit quality, investors recognize exposed PG&E  
15 significant risks associated with energy price volatility and costs, and  
16 concerns over these risks have increasingly pronounced in the  
17 industry. The CPUC's adjustments are a valuable means of  
18 mitigating those risks, but they do not eliminate the adjustment. While  
19 mechanisms approved for PG&E partially attenuate exposure to  
20 this leveling of the playing field only serves to perpetuate PG&E  
21 to earn its authorized return, as required by established regulatory  
22 standards.

23 Moreover, utilities increasingly from a wide variety of  
24 mechanisms designed to mitigate against the risks associated with  
25 fluctuations in costs and regulatory lag. Restrictive and, therefore, these  
26 companies in the proxy group operate under a variety of revenue cost and  
27 adjustment mechanisms, which range from riders to recover bad  
28 expense and post-retirement employee benefit costs to adjustments  
29 designed to address the rising costs of environmental compliance  
30 measures. As a result, mitigation in risks associated with utilities' ability  
31 to attenuate the impact of fluctuations in costs is reflected in  
32 equity estimates developed earlier.

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69 Moody's Investors Service, "Credit Opinion: Pacific Gas and Electric Company,"  
Research (Apr. 4, 2011).

1 Finally, the impact of cost adjustment and otherhamiesub atory nec  
2 are considered by the investment community in its assessments of  
3 overall risks and incorporated into the credit ratings used to establish the  
4 Utility Group. Because the ratings and value indicators for  
5 the proxy companies are comparable to PG&E, there is no basis for  
6 adjustment related to specific regulatory provisions.

7 PG&E faces a number of challenges that require ready access to  
8 on reasonable terms in order to maintain reliable service, and  
9 circumstances heighten the importance of financial strength and  
10 support. PG&E's nuclear generation, while saving customers significant  
11 energy costs, can necessitate huge unexpected expenditures. For example, if  
12 federal agencies ordered PG&E to shut down one of its nuclear genera-  
13 tors (possibly in response to security threats or environmental concerns), Ca-  
14 lifornia would impose significant reliance on wholesale power markets to  
15 energy shortfalls, and require PG&E to mobilize money and credit on a  
16 significant scale.

17 In addition, while California frequently positions itself as the leader in  
18 of energy policy, this progressive stance exposes PG&E to challenges  
19 are not faced in other parts of the nation. Standards for emissions  
20 and RPS standards pose additional challenges and risks. While  
21 the underlying market systems are complex and untested, the potential  
22 to advance policy goals and produce environmental benefits  
23 can also be unanticipated. At the same time, risks that were  
24 clear a decade ago with the implementation of unbundling and a  
25 market structure.

26 As discussed in Chapter 1, PG&E expects to invest roughly \$1.5 billion in  
27 utility infrastructure over the period 2012-2014, an amount nearly equal to  
28 PG&E's entire rate base just 8 years ago. PG&E will also be required to  
29 substantial capital from new investors to meet the associated financing  
30 requirements. Providing an ROE that is sufficient to attract investment  
31 and maintain PG&E's ability to raise capital, is consistent with the  
32 economic requirements embodied in the Supreme Court's and  
33 *Bluefield* decisions, but it is also in the best interests of  
34 investors and suppliers. Whether the CPUC's regulatory policies will

1 provide adequate support for the Company's financial integrity,  
2 become exposed to less reliable and more expensive utility serv

3 Consider the effects of the California energy crisis. In 2000  
4 Utilities were forced to use cash flows from operations, selling various  
5 lines, and remaining access to short- and long-term debt to fund  
6 unrecovered energy supply costs and maintain service to customers.  
7 This led to a sharp deterioration in financial condition, a severe  
8 crunch, and a dramatic increase in credit risk. As a result, credit  
9 banks were highly reticent to extend financing for ongoing power  
10 construction and counterparties involved in meeting the utility  
11 needs became unwilling to transact business absent inspected conditions.  
12 Ultimately, the mismatch between revenues and expenses resulted in  
13 filing for bankruptcy protection in April 2001.

14 The challenging capital market environment highlighted the benefit  
15 strengthening PG&E's credit standing in attracting the capital  
16 secure reliable service at a lower cost for customers. Changing  
17 the path of establishing an ROE that supports financial strength  
18 extremely short-sighted. Since its recovery from the energy crisis, PG&E's  
19 customers and the state's economy have benefited from PG&E's re-  
20 financial flexibility and ability to raise capital on reasonable  
21 terms. Investors perceived that the Commission was withdrawing support  
22 PG&E's financial strength at this crucial juncture, likely to take a  
23 long time to re-establish the well-deserved reputation that the  
24 has earned among investors.

25 The ROE established in this case sends an important signal  
26 investors. The CPUC has an opportunity to show that it recognizes  
27 importance of financial strength and supportive regulation. By  
28 ROE in this case that reflects capital market realities and PG&E's  
29 financial challenges, the CPUC will reaffirm its commitment that  
30 committed to a balanced regulatory regime in California.

## 31 2. Capital Structure

32 An evaluation of the capital structure maintained by a utility  
33 also relevant in evaluating ROE. Other things being equal, debt  
34 ratio, or lower common equity ratio, translates into a higher ROE.

1 for all investors. A greater amount of debt means a greater investment  
2 senior claim on available cash flow, thereby reducing the amount each  
3 will receive his contractual payments. This increases the risk  
4 lenders are exposed, and they require correspondingly higher rates of  
5 interest. From common shareholders' standpoint, a high debt ratio means  
6 that there are proportionately more investors ahead of them, thereby  
7 increasing the uncertainty as to the amount of cash that will remain  
8

9 PG&E's capital structure is presented in the testimony of Mr. [redacted]  
10 As summarized in his testimony, the common equity ratio used to  
11 PG&E's overall rate of return was 52% in the preceding year. Mean-  
12 shown on Schedule VEA-8, common equity ratios for the other utility  
13 operating companies owned by the firms in the Utility Group range  
14 low of 47.5% to a high of 61.8% at year-end 2011, and

15 Schedule VEA-9 displays the capital structure data at year-end  
16 the individual firms in the Group. As shown there, equity ratios  
17 ratios for these utilities ranged from a low of 37.9% to a high of  
18 year-end 2011, and averaged 47.3%. Value Line expects that  
19 common equity ratio for the group of utilities will average over  
20 the next three to five years, with the individual utility equity  
21 from 43.0% to 55.0%.

22 From an investor's perspective, the relevant capital structure  
23 on the market values of securities because investors act solely on  
24 securities at market value. To be able to raise capital at a competitive  
25 returns that are competitive at the current market rates, it is  
26 not the embedded book value of the mix of stocks and bonds. As  
27 the market value capitalization of the firms in the Utility Group  
28 as a benchmark in evaluating PG&E's capital structure. As shown  
29 Schedule VEA-10, at year-end 2011, the market value capitalization  
30 firms in the Utility Group implied an average common equity ratio of  
31 or 58.1% based on Value Line's projections for the 2014-16 period.

32 As discussed earlier, utilities are facing the ongoing potential  
33 market volatility, rising cost structures, the significant capital  
34 investment plans, uncertainties over accommodating future environmental

mandates, and ongoing regulatory risks. Coupled with the potential for  
 turmoil in capital markets, these considerations necessitate a strong  
 balance sheet to deal with an increasingly uncertain environment. A more  
 conservative financial profile, in the form of equity generation, is  
 consistent with increasing uncertainties and the need to maintain a  
 continuous access to capital that is required to fund operation  
 necessary system investment, even during times of adverse market  
 conditions.

Moody's has repeatedly warned investors of the risks associated with  
 debt leverage and fixed obligations and advised outsiders that it  
 offers the opportunity to strengthen the balance sheet as a buffer against  
 uncertainties.<sup>70</sup> More recently, Moody's concluded:

From a credit perspective, we believe a strong balance sheet coupled  
 with abundant sources of liquidity represents one of the best defenses  
 against business and operating risk and potential negative rating  
 actions.<sup>71</sup>

Similarly, S&P noted that, "we generally consider a debt to capital  
 ratio of 50% or greater to be aggressive or highly leveraged for utilities."  
 Fitch affirmed that it expects utilities to employ a mix of  
 debt and equity to finance high levels of planned investments.<sup>72</sup>  
 More recently, Moody's affirmed that it expects regulated utilities  
 to strengthen their balance sheets in order "to prepare for more  
 challenging business conditions."<sup>73</sup> This is especially the case for PG&E, which  
 faces the prospect of financing significant capital expenditures in a  
 market while at the same time maintaining its ability to respond to  
 significant challenges.<sup>74</sup>

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70 Moody's Investors Service, "Storm Clouds Gathering for the North American  
 Electric Utility Sector," *Special Comment* (Aug. 2007) and "Utility Sector,"  
*Industry Outlook* (Jan. 2008).

71 Moody's Investors Service, "U.S. Electric Utilities: Beyond the Challenge,"  
*Industry Outlook* (Jan. 2010).

72 Standard & Poor's Corporate Ratings Roundup: U.S. Electricity Sector Maintained Strong  
 Credit Quality in a Gloomy Outlook, *Rating Direct* (Jan. 26, 2010).

73 Fitch Ratings Ltd., "U.S. Utilities, Power, and Global Power North America  
*Special Report* (Dec. 4, 2009).

74 Moody's Investors Service, "U.S. Electric Utilities: Ahead of the Curve - Strengthening  
 Balance Sheets Now Would Protect Credit," *Special Comment* (Oct. 28, 2010).

1 In evaluating PG&E's capital structure, it is also important to  
2 that, depending on their specific attributes, certain contractual agreements  
3 obligations that require a utility to make special payments be treated  
4 as debt in assessing financial risk. Because investors should consider  
5 impact of such fixed obligations in assessing a utility's position, financial  
6 they imply greater risk due to financial flexibility to offset the  
7 debt equivalent associated with off-balance sheet obligations, must  
8 rebalance its capital structure by increasing its common equity to  
9 restore its effective capitalization ratios to<sup>75</sup> previous levels.

10 These commitments have been repeatedly cited by major bond rating  
11 agencies in connection with assessments of utilities.<sup>76</sup> Financial risk

12 As discussed earlier, a significant portion of the Company's power  
13 requirements are obtained through PPAs. These contractual payment  
14 obligations, along with operating leases and obligations associated  
15 with post-retirement benefits, are fixed commitments with characteristics  
16 and are properly considered when evaluating the financial risk  
17 PG&E's capital structure. S&P reported that capitalizations of PG&E's  
18 to include approximately \$2.9 billion in<sup>77</sup> reported debt.  
19 Company takes action to offset this additional financial risk by  
20 higher equity ratio, the leverage will weaken PG&E's  
21 creditworthiness, implying a higher required rate of return to  
22 investors for the greater<sup>78</sup> risks.

23 Based on my evaluation, I concluded that the 52% of common equity  
24 requested by PG&E represents a reasonable mix of capital sources  
25 which to calculate the Company's overall rate of return on PG&E  
26 capital structure is consistent with the capital structures of other  
27 utility operating companies. At a 5.2% common equity rate, higher

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75 The capital structure ratios presented earlier do not include debt associated with Power Purchase Agreements (PPA) or the impact of other off-balance sheet obligations.

76 See, e.g., Standard & Poor's Corporation, "Standard & Poor's Methodology for U.S. Utilities' Power Purchase Agreements" (May 7, 2007).

77 Standard & Poor's Corporation, "Gas & Electric Ratings" (Dec. 15, 2011).

78 Apart from the immediate impact that the fixed charges on the utility's financial risk, higher fixed charges also reduce the utility's flexibility, and the utility may face other uncertainties, such as potential replacement in the event of supply disruption.

1 than the average book value equity ratio currently maintained by  
2 Utility Group, it is well within the range of financial results for this reference  
3 group, below the average market value equity capitalization, consistent with  
4 with the trend towards lower financial leverage expected for the industry.  
5 As discussed earlier, it is also consistent with the regulatory financial  
6 strength required to counterbalance the various exposures faced by PG&E.

7 While industry averages provide one benchmark for comparison, each  
8 firm must select its capital structure based on the risks and opportunities it faces,  
9 as well as its specific needs to access the capital markets. Flexibility  
10 flexibility plays a crucial role in ensuring the availability of capital to  
11 of customers, and utilities with higher leverage may be subjected to  
12 additional borrowing, especially during times of stress. PG&E's  
13 capital structure is consistent with industry benchmarks and reflects  
14 Company's ongoing efforts to maintain its credit standing and its  
15 access to capital on reasonable terms. The reasonableness of the  
16 Company's capital structure is reinforced by the ongoing uncertainty  
17 associated with the utility industry and the importance of supporting  
18 continued system investment, even during times of adverse industry  
19 market conditions.

### 20 3. ROE Recommendation

21 The cost of common equity estimates produced by the various capital  
22 market oriented analyses described in my testimony are summarized in  
23 Table 2 - 8, below. As shown there, the results of these alternative  
24 explained in my testimony ranged from 9.1% to 13.2%:



**TABLE 2-8  
PACIFIC GAS AND ELECTRIC COMPANY  
SUMMARY OF COST OF EQUITY ESTIMATES**

<u>DCF</u>	<u>Utility</u>		<u>Non-Utility</u>	
	<u>Average</u>	<u>Midpoint</u>	<u>Average</u>	<u>Midpoint</u>
Value Line	10.1 %	11.0 %	12.2 %	12.6 %
IBES	9.7 %	10.9 %	10.9 %	10.9 %
Zacks	9.4 %	9.5 %	11.7 %	12.2 %
Br + sv	9.3 %	9.1 %	13.2 %	12.1 %
<u>CAPM</u>				
Unadjusted	10.8 %	10.8 %		
Size Adjusted	11.5 %	11.2 %		
<u>Utility Risk Premium</u>	10.8 %			
<u>Expected Earnings</u>	11.4 %			

1           Considering the relative strengths and weaknesses inherent in e  
2 method, and conservatively giving less emphasis to the upper- a  
3 lower- most boundaries of the range of results from the Utility G  
4 I concluded that a fair ROE for PG&E falls in the range of 9.2 % to 1

5           As discussed earlier in my testimony, DCF estimates for the Non  
6 Proxy Group provide a useful benchmark because investors have a  
7 required rate of return from utility investment opportunities that is  
8 available in the capital markets. The purpose of such an analysis is  
9 substitute for the actions of competitive markets, and to expect  
10 non- utility companies to form the regulatory standard underlying  
11 a fair ROE.

12           The DCF results for the Non- Utility Proxy Group were considerab  
13 higher than those for the proxy group of utilities, even  
14 objective evidence demonstrates that the investment risks of th  
15 unregulated companies are low. Moreover, there is no doubt that  
16 that DCF results for a group of utilities would be inherently reliable  
17 than those for firms in the competitive sector. In fact, consi  
18 prominence of the 12 non- utility companies, the fact that by  
19 considering multiple industries, and the scrutiny that analysts these  
20 paragons of American industry, the DCF results for the Non- Util  
21 Group provide compelling evidence that suggests a downward bias  
22 utility DCF results. While my recommended ROE range is based

1 on the results for the Utility Group, I consider this downward  
2 assessment of the cost of equity estimates produced by utilities pro  
3 After considering the specific risks and exposures faced by PG&E  
4 the need to consider the importance of maintaining PG&E's finan  
5 flexibility, it is my opinion that the CPUC should authorize a  
6 for the Company. Apart from the results of the quantitative ne  
7 crucial to recognize the importance of maintaining financial strength  
8 so that PG&E remains prepared to respond to unforeseen events t  
9 materialize in the future. While this imperative is reinforced  
10 capital market conditions, it extends well beyond that set of financial  
11 includes the Company's ability to absorb potential shocks associated with  
12 natural disasters, volatile fuel pricing, and energy supplies in en  
13 Recent challenges in the capital markets and ongoing economic  
14 uncertainties highlight the benefits of bolstering PG&E's credit  
15 ensure that the Company can attract the capital needed to secur  
16 service at a lower cost to customers. Changing course from a path of  
17 financial strength would be extremely short-sighted considering  
18 that a combination of events could adversely impact PG&E's service to  
19 customers if its current financial strength were not maintained  
20 conclusions are also reinforced by the need to consider the impact of

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 2**  
**ATTACHMENT 2A**  
**SCHEDULES**

DIVIDEND YIELD

		(a)	(b)	
	<u>Company</u>	<u>Price</u>	<u>Dividends</u>	<u>Yield</u>
1	Alliant Energy	\$ 42.92	\$ 1.80	4.2%
2	Dominion Resources	\$ 50.38	\$ 2.11	4.2%
3	DTE Energy Co.	\$ 53.78	\$ 2.42	4.5%
4	Integrys Energy Group	\$ 52.81	\$ 2.72	5.2%
5	PG&E Corp.	\$ 41.33	\$ 1.82	4.4%
6	PPL Corp.	\$ 27.98	\$ 1.44	5.1%
7	Pub Sv Enterprise Grp	\$ 30.62	\$ 1.37	4.5%
8	SCANA Corp.	\$ 44.95	\$ 1.98	4.4%
9	Sempra Energy	\$ 57.27	\$ 2.08	3.6%
10	TECO Energy	\$ 18.16	\$ 0.89	4.9%
11	UIL Holdings	\$ 34.86	\$ 1.73	5.0%
12	Vectren Corp.	\$ 29.07	\$ 1.41	4.8%
13	Wisconsin Energy	\$ 34.35	\$ 1.20	3.5%
14	Xcel Energy, Inc.	\$ 26.59	\$ 1.06	4.0%
	<b>Average</b>			<b>4.4%</b>

(a) Average of closing prices for 30 trading days ended Feb. 24, 2012.

(b) The Value Line Investment Survey, *Summary & Index* (Feb. 3, 2012).

GROWTH RATES

<u>Company</u>	(a)	(b)	(c)	(d)
	<u>Earnings Growth</u>			<u>br+sv</u>
	<u>V Line</u>	<u>IBES</u>	<u>Zacks</u>	<u>Growth</u>
1 Alliant Energy	6.5%	7.5%	6.0%	5.0%
2 Dominion Resources	5.0%	4.6%	5.5%	6.2%
3 DTE Energy Co.	4.5%	4.1%	4.4%	3.6%
4 Integrys Energy Group	9.0%	9.4%	4.5%	3.1%
5 PG&E Corp.	5.0%	1.8%	4.3%	5.9%
6 PPL Corp.	5.0%	4.6%	NA	5.7%
7 Pub Sv Enterprise Grp	0.0%	2.8%	2.0%	6.0%
8 SCANA Corp.	3.5%	4.2%	4.0%	5.2%
9 Sempra Energy	4.5%	7.0%	7.0%	6.5%
10 TECO Energy	9.0%	4.2%	3.7%	5.3%
11 UIL Holdings	3.0%	4.1%	5.0%	2.5%
12 Vectren Corp.	5.5%	5.0%	4.3%	3.9%
13 Wisconsin Energy	8.5%	6.0%	6.3%	4.7%
14 Xcel Energy, Inc.	5.0%	4.9%	5.1%	3.9%

(a) The Value Line Investment Survey (Dec. 23, 2011, Feb. 3 & Feb. 24, 2012).

(b) [www.finance.yahoo.com](http://www.finance.yahoo.com) (retrieved Mar. 13, 2012).

(c) [www.zacks.com](http://www.zacks.com) (retrieved Mar. 13, 2012).

(d) See Schedule WEA-2.

DCF COST OF EQUITY ESTIMATES

Company	(a)	(a)	(a)	(a)
	Earnings Growth			br+sv
	<u>V Line</u>	<u>IBES</u>	<u>Zacks</u>	<u>Growth</u>
1 Alliant Energy	10.7%	11.7%	10.2%	9.2%
2 Dominion Resources	9.2%	8.8%	9.7%	10.4%
3 DTE Energy Co.	9.0%	8.5%	8.9%	8.1%
4 Integrys Energy Group	14.2%	14.6%	9.7%	8.3%
5 PG&E Corp.	9.4%	6.2%	8.7%	10.4%
6 PPL Corp.	10.1%	9.7%	NA	10.9%
7 Pub Sv Enterprise Grp	4.5%	7.2%	6.5%	10.5%
8 SCANA Corp.	7.9%	8.6%	8.4%	9.6%
9 Sempra Energy	8.1%	10.7%	10.6%	10.1%
10 TECO Energy	13.9%	9.1%	8.6%	10.2%
11 UIL Holdings	8.0%	9.1%	10.0%	7.4%
12 Vectren Corp.	10.3%	9.8%	9.1%	8.7%
13 Wisconsin Energy	12.0%	9.5%	9.8%	8.2%
14 Xcel Energy, Inc.	9.0%	8.9%	9.1%	7.9%
<b>Average (b)</b>	<b>10.1%</b>	<b>9.7%</b>	<b>9.4%</b>	<b>9.3%</b>
<b>Midpoint (c)</b>	<b>11.0%</b>	<b>10.9%</b>	<b>9.5%</b>	<b>9.1%</b>

(a) Sum of dividend yield (page 1) and respective growth rate (page 2).

(b) Excludes highlighted figures.

(c) Average of low and high values.

BR+SV GROWTH RATE

	(a)	(a)	(a)		(b)	(c)	(d)	(e)				
	----- 2015 -----				Adjustment		----- "sv" Factor -----					
<u>Company</u>	<u>EPS</u>	<u>DPS</u>	<u>BVPS</u>	<u>b</u>	<u>r</u>	<u>Factor</u>	<u>Adjusted r</u>	<u>br</u>	<u>s</u>	<u>v</u>	<u>sv</u>	<u>br + sv</u>
1 Alliant Energy	\$3.50	\$2.10	\$30.85	40.0%	11.3%	1.0209	11.6%	4.6%	0.0107	0.3144	0.34%	5.0%
2 Dominion Resources	\$4.00	\$2.60	\$27.25	35.0%	14.7%	1.0350	15.2%	5.3%	0.0174	0.5045	0.88%	6.2%
3 DTE Energy Co.	\$4.25	\$2.70	\$46.75	36.5%	9.1%	1.0199	9.3%	3.4%	0.0094	0.1870	0.18%	3.6%
4 Integrys Energy Group	\$4.00	\$2.72	\$42.00	32.0%	9.5%	1.0127	9.6%	3.1%	0.0028	0.1158	0.03%	3.1%
5 PG&E Corp.	\$4.00	\$2.00	\$36.75	50.0%	10.9%	1.0324	11.2%	5.6%	0.0179	0.1833	0.33%	5.9%
6 PPL Corp.	\$2.75	\$1.70	\$24.75	38.2%	11.1%	1.0426	11.6%	4.4%	0.0378	0.3400	1.28%	5.7%
7 Pub Sv Enterprise Grp	\$3.00	\$1.45	\$26.50	51.7%	11.3%	1.0274	11.6%	6.0%	-	0.2429	0.00%	6.0%
8 SCANA Corp.	\$3.75	\$2.15	\$39.00	42.7%	9.6%	1.0468	10.1%	4.3%	0.0516	0.1789	0.92%	5.2%
9 Sempra Energy	\$5.75	\$2.50	\$53.00	56.5%	10.8%	1.0372	11.3%	6.4%	0.0060	0.2429	0.15%	6.5%
10 TECO Energy	\$1.75	\$1.10	\$13.25	37.1%	13.2%	1.0250	13.5%	5.0%	0.0076	0.3977	0.30%	5.3%
11 UIL Holdings	\$2.40	\$1.73	\$27.50	27.9%	8.7%	1.0139	8.8%	2.5%	-	0.3125	0.00%	2.5%
12 Vectren Corp.	\$2.30	\$1.60	\$21.20	30.4%	10.8%	1.0223	11.1%	3.4%	0.0131	0.3943	0.52%	3.9%
13 Wisconsin Energy	\$2.75	\$1.65	\$19.50	40.0%	14.1%	1.0133	14.3%	5.7%	(0.0193)	0.5125	-0.99%	4.7%
14 Xcel Energy, Inc.	\$2.00	\$1.30	\$20.75	35.0%	9.6%	1.0288	9.9%	3.5%	0.0175	0.2455	0.43%	3.9%

2 A 4

**BR+SV GROWTH RATE**

	(a)	(a)	(f)	(a)	(a)	(f)	(g)	(a)	(a)		(h)	(a)	(a)	(g)
	----- 2010 -----			----- 2015 -----			Chg	----- 2015 Price -----				---- Common Shares ----		
<u>Company</u>	<u>Eq Ratio</u>	<u>Tot Cap</u>	<u>Com Eq</u>	<u>Eq Ratio</u>	<u>Tot Cap</u>	<u>Com Eq</u>	<u>Equity</u>	<u>High</u>	<u>Low</u>	<u>Avg.</u>	<u>M/B</u>	<u>2010</u>	<u>2015</u>	<u>Growth</u>
1 Alliant Energy	49.5%	\$5,841	\$2,891	52.0%	\$6,855	\$3,565	4.3%	\$50.00	\$40.00	\$45.00	1.459	110.89	115.00	0.73%
2 Dominion Resources	39.3%	\$29,097	\$11,435	43.5%	\$37,300	\$16,226	7.2%	\$65.00	\$45.00	\$55.00	2.018	570.00	595.00	0.86%
3 DTE Energy Co.	48.7%	\$13,811	\$6,726	48.0%	\$17,100	\$8,208	4.1%	\$70.00	\$45.00	\$57.50	1.230	169.43	176.00	0.76%
4 Integrys Energy Group	56.8%	\$5,119	\$2,907	55.0%	\$6,000	\$3,300	2.6%	\$55.00	\$40.00	\$47.50	1.131	77.35	78.30	0.24%
5 PG&E Corp.	49.3%	\$22,863	\$11,271	52.5%	\$29,700	\$15,593	6.7%	\$55.00	\$35.00	\$45.00	1.224	395.23	425.00	1.46%
6 PPL Corp.	37.1%	\$29,018	\$10,766	47.5%	\$34,700	\$16,483	8.9%	\$45.00	\$30.00	\$37.50	1.515	588.00	665.00	2.49%
7 Pub Sv Enterprise Grp	55.5%	\$18,375	\$10,198	55.0%	\$24,400	\$13,420	5.6%	\$40.00	\$30.00	\$35.00	1.321	505.90	505.90	0.00%
8 SCANA Corp.	45.7%	\$8,511	\$3,890	48.0%	\$12,950	\$6,216	9.8%	\$55.00	\$40.00	\$47.50	1.218	130.00	160.00	4.24%
9 Sempra Energy	49.6%	\$18,186	\$9,020	51.5%	\$25,400	\$13,081	7.7%	\$80.00	\$60.00	\$70.00	1.321	240.45	246.00	0.46%
10 TECO Energy	45.8%	\$4,954	\$2,269	44.5%	\$6,550	\$2,915	5.1%	\$25.00	\$19.00	\$22.00	1.660	216.00	221.00	0.46%
11 UIL Holdings	42.0%	\$2,850	\$1,197	43.0%	\$3,200	\$1,376	2.8%	\$45.00	\$35.00	\$40.00	1.455	50.00	50.00	0.00%
12 Vectren Corp.	50.1%	\$2,874	\$1,440	50.0%	\$3,600	\$1,800	4.6%	\$40.00	\$30.00	\$35.00	1.651	81.70	85.00	0.80%
13 Wisconsin Energy	49.0%	\$7,765	\$3,805	46.0%	\$9,450	\$4,347	2.7%	\$45.00	\$35.00	\$40.00	2.051	233.77	223.00	-0.94%
14 Xcel Energy, Inc.	46.3%	\$17,452	\$8,080	49.0%	\$22,000	\$10,780	5.9%	\$30.00	\$25.00	\$27.50	1.325	482.33	515.00	1.32%

2 A 5

- (a) The Value Line Investment Survey (Dec. 23, 2011, Feb. 3 & Feb. 24, 2012).
- (b) Computed using the formula  $2 * (1 + 5\text{-Yr. Change in Equity}) / (2 + 5\text{ Yr. Change in Equity})$ .
- (c) Product of average year-end "r" for 2015 and Adjustment Factor.
- (d) Product of change in common shares outstanding and M/B Ratio.
- (e) Computed as  $1 - B/M$  Ratio.
- (f) Product of total capital and equity ratio.
- (g) Five-year rate of change.
- (h) Average of High and Low expected market prices divided by 2015 BVPS.



DIVIDEND YIELD

		(a)	(b)	
	<u>Company</u>	<u>Price</u>	<u>Dividends</u>	<u>Yield</u>
1	Abbott Labs.	\$ 56.68	\$ 2.04	3.6%
2	Bard (C.R.)	\$ 94.21	\$ 0.76	0.8%
3	Church & Dwight	\$ 47.75	\$ 0.96	2.0%
4	Coca-Cola	\$ 69.06	\$ 2.04	3.0%
5	Colgate-Palmolive	\$ 93.04	\$ 2.32	2.5%
6	Gen'l Mills	\$ 38.77	\$ 1.28	3.3%
7	Kellogg	\$ 51.92	\$ 1.72	3.3%
8	Kimberly-Clark	\$ 72.03	\$ 2.96	4.1%
9	McCormick & Co.	\$ 50.72	\$ 1.24	2.4%
10	PepsiCo, Inc.	\$ 63.76	\$ 2.18	3.4%
11	Procter & Gamble	\$ 65.82	\$ 2.10	3.2%
12	Wal-Mart Stores	\$ 60.49	\$ 1.59	2.6%
	<b>Average</b>			<b>2.9%</b>

(a) Average of closing prices for 30 trading days ended Mar. 16, 2012.

(b) The Value Line Investment Survey, *Summary & Index* (Mar. 16, 2012).

GROWTH RATES

	<u>Company</u>	(a)	(b)	(c)	(d)
		<u>Earnings Growth</u>			<u>br+sv</u>
		<u>V Line</u>	<u>IBES</u>	<u>Zacks</u>	<u>Growth</u>
1	Abbott Labs.	8.5%	8.3%	7.5%	18.6%
2	Bard (C.R.)	8.5%	8.5%	10.4%	19.8%
3	Church & Dwight	10.5%	10.5%	11.8%	12.5%
4	Coca-Cola	10.0%	6.4%	8.0%	12.4%
5	Colgate-Palmolive	11.0%	8.8%	8.8%	11.0%
6	Gen'l Mills	8.5%	7.6%	8.0%	9.0%
7	Kellogg	7.5%	8.0%	8.8%	12.4%
8	Kimberly-Clark	7.0%	6.1%	6.5%	11.3%
9	McCormick & Co.	13.5%	8.4%	9.0%	18.0%
10	PepsiCo, Inc.	8.5%	6.2%	8.0%	11.2%
11	Procter & Gamble	10.0%	8.5%	8.8%	5.9%
12	Wal-Mart Stores	8.5%	9.1%	10.6%	5.8%

(a) The Value Line Investment Survey (retrieved Mar. 16, 2012).

(b) [www.finance.yahoo.com](http://www.finance.yahoo.com) (retrieved Mar. 16, 2012).

(c) [www.zacks.com](http://www.zacks.com) (retrieved Mar. 16, 2012).

(d) See Schedule WEA-4.

DCF COST OF EQUITY ESTIMATES

<u>Company</u>	(a)	(a)	(a)	(a)
	<u>Earnings Growth</u>			<u>br+sv</u>
	<u>V Line</u>	<u>IBES</u>	<u>Zacks</u>	<u>Growth</u>
1 Abbott Labs.	12.1%	11.9%	11.1%	22.2%
2 Bard (C.R.)	9.3%	9.3%	11.2%	20.6%
3 Church & Dwight	12.5%	12.5%	13.8%	14.5%
4 Coca-Cola	13.0%	9.3%	11.0%	15.4%
5 Colgate-Palmolive	13.5%	11.2%	11.3%	13.5%
6 Gen'l Mills	11.8%	10.9%	11.3%	12.3%
7 Kellogg	10.8%	11.3%	12.1%	15.7%
8 Kimberly-Clark	11.1%	10.2%	10.6%	15.5%
9 McCormick & Co.	15.9%	10.8%	11.4%	20.4%
10 PepsiCo, Inc.	11.9%	9.6%	11.4%	14.6%
11 Procter & Gamble	13.2%	11.7%	12.0%	9.1%
12 Wal-Mart Stores	11.1%	11.7%	13.2%	8.4%
<b>Average (b)</b>	<b>12.2%</b>	<b>10.9%</b>	<b>11.7%</b>	<b>13.2%</b>
<b>Midpoint (c)</b>	<b>12.6%</b>	<b>10.9%</b>	<b>12.2%</b>	<b>12.1%</b>

(a) Sum of dividend yield (page 1) and respective growth rate (page 2).

(b) Excludes highlighted figures.

(c) Average of low and high values.

DCF MODEL - NON-UTILITY GROUP

BR+SV GROWTH RATE

		(a)	(a)	(a)		(b)	(c)		(d)	(e)			
		----- 2015 -----				Adjust.			----- "sv" Factor -----				
	<u>Company</u>	<u>EPS</u>	<u>DPS</u>	<u>BVPS</u>	<u>b</u>	<u>r</u>	<u>Factor</u>	<u>Adj. r</u>	<u>br</u>	<u>s</u>	<u>v</u>	<u>sv</u>	<u>br + sv</u>
1	Abbott Labs.	\$6.00	\$2.20	\$20.50	63.3%	29.3%	1.0341	30.3%	19.2%	(0.0068)	0.7722	-0.53%	<b>18.6%</b>
2	Bard (C.R.)	\$9.00	\$0.94	\$36.75	89.6%	24.5%	1.0553	25.8%	23.1%	(0.0429)	0.7738	-3.32%	<b>19.8%</b>
3	Church & Dwight	\$3.10	\$0.72	\$19.70	76.8%	15.7%	1.0403	16.4%	12.6%	(0.0015)	0.6248	-0.09%	<b>12.5%</b>
4	Coca-Cola	\$4.90	\$2.15	\$9.10	56.1%	53.8%	1.0318	55.6%	31.2%	(0.2109)	0.8897	-18.77%	<b>12.4%</b>
5	Colgate-Palmolive	\$7.60	\$3.40	\$11.00	55.3%	69.1%	1.0574	73.1%	40.4%	(0.3167)	0.9267	-29.34%	<b>11.0%</b>
6	Gen'l Mills	\$3.40	\$1.60	\$14.30	52.9%	23.8%	1.0478	24.9%	13.2%	(0.0561)	0.7400	-4.15%	<b>9.0%</b>
7	Kellogg	\$4.90	\$2.15	\$9.10	56.1%	53.8%	1.0318	55.6%	31.2%	(0.2109)	0.8897	-18.77%	<b>12.4%</b>
8	Kimberly-Clark	\$6.50	\$3.00	\$21.25	53.8%	30.6%	1.0298	31.5%	17.0%	(0.0724)	0.7763	-5.62%	<b>11.3%</b>
9	McCormick & Co.	\$5.05	\$1.72	\$23.10	65.9%	21.9%	1.0778	23.6%	15.5%	0.0314	0.7690	2.42%	<b>18.0%</b>
10	PepsiCo, Inc.	\$5.95	\$2.36	\$25.40	60.3%	23.4%	1.0573	24.8%	14.9%	(0.0484)	0.7838	-3.79%	<b>11.2%</b>
11	Procter & Gamble	\$5.95	\$3.00	\$32.85	49.6%	18.1%	1.0333	18.7%	9.3%	(0.0507)	0.6715	-3.40%	<b>5.9%</b>
12	Wal-Mart Stores	\$6.00	\$2.20	\$26.30	63.3%	22.8%	1.0108	23.1%	14.6%	(0.1257)	0.6994	-8.79%	<b>5.8%</b>

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DCF MODEL - NON-UTILITY GROUP

BR+SV GROWTH RATE

		(a)	(a)	(f)	(a)	(a)	(g)	(a)	(a)	(f)	
		---- Common Equity ----			----- 2015 Price -----				----- Common Shares -----		
	<u>Company</u>	<u>2010</u>	<u>2015</u>	<u>Chg.</u>	<u>High</u>	<u>Low</u>	<u>Avg.</u>	<u>M/B</u>	<u>2010</u>	<u>2015</u>	<u>Growth</u>
1	Abbott Labs.	\$22,388	\$31,500	7.1%	\$100.00	\$80.00	\$90.00	4.390	1,547.00	1,535.00	-0.16%
2	Bard (C.R.)	\$1,690	\$2,940	11.7%	\$180.00	\$145.00	\$162.50	4.422	84.00	80.00	-0.97%
3	Church & Dwight	\$1,871	\$2,800	8.4%	\$60.00	\$45.00	\$52.50	2.665	142.40	142.00	-0.06%
4	Coca-Cola	\$2,158	\$2,965	6.6%	\$90.00	\$75.00	\$82.50	9.066	365.60	325.00	-2.33%
5	Colgate-Palmolive	\$2,675	\$4,750	12.2%	\$165.00	\$135.00	\$150.00	13.636	494.85	440.00	-2.32%
6	Gen'l Mills	\$5,403	\$8,720	10.0%	\$60.00	\$50.00	\$55.00	3.846	656.50	610.00	-1.46%
7	Kellogg	\$2,158	\$2,965	6.6%	\$90.00	\$75.00	\$82.50	9.066	365.60	325.00	-2.33%
8	Kimberly-Clark	\$5,917	\$7,975	6.2%	\$105.00	\$85.00	\$95.00	4.471	406.90	375.00	-1.62%
9	McCormick & Co.	\$1,463	\$3,190	16.9%	\$110.00	\$90.00	\$100.00	4.329	133.10	138.00	0.73%
10	PepsiCo, Inc.	\$21,476	\$38,125	12.2%	\$130.00	\$105.00	\$117.50	4.626	1,581.00	1,500.00	-1.05%
11	Procter & Gamble	\$61,439	\$85,700	6.9%	\$110.00	\$90.00	\$100.00	3.044	2,838.50	2,610.00	-1.66%
12	Wal-Mart Stores	\$68,542	\$76,360	2.2%	\$95.00	\$80.00	\$87.50	3.327	3,516.00	2,900.00	-3.78%

- (a) The Value Line Investment Survey (retrieved Mar. 16, 2012).
- (b) Computed using the formula  $2 * (1 + 5\text{-Yr. Change in Equity}) / (2 + 5\text{ Yr. Change in Equity})$ .
- (c) Product of year-end "r" for 2015 and Adjustment Factor.
- (d) Product of change in common shares outstanding and M/B Ratio.
- (e) Computed as  $1 - B/M$  Ratio.
- (f) Five-year rate of change.
- (g) Average of High and Low expected market prices divided by 2015 BVPS.

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CAPITAL ASSET PRICING MODEL

2013 BOND YIELD

	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
	Market Return (R <sub>m</sub> )								
Company	Div Yield	Proj. Growth	Cost of Equity	Risk-Free Rate	Risk Premium	Beta	Unadjusted K <sub>e</sub>	Size Adjustment	Implied Cost of Equity
1 Alliant Energy	2.6%	10.9%	13.5%	3.8%	9.7%	0.75	11.1%	0.94%	12.0%
2 Dominion Resources	2.6%	10.9%	13.5%	3.8%	9.7%	0.70	10.6%	-0.38%	10.2%
3 DTE Energy Co.	2.6%	10.9%	13.5%	3.8%	9.7%	0.75	11.1%	0.78%	11.9%
4 Integrys Energy Group	2.6%	10.9%	13.5%	3.8%	9.7%	0.90	12.5%	0.94%	13.5%
5 PG&E Corp.	2.6%	10.9%	13.5%	3.8%	9.7%	0.55	9.1%	-0.38%	8.8%
6 PPL Corp.	2.6%	10.9%	13.5%	3.8%	9.7%	0.65	10.1%	-0.38%	9.7%
7 Pub Sv Enterprise Grp	2.6%	10.9%	13.5%	3.8%	9.7%	0.80	11.6%	0.78%	12.3%
8 SCANA Corp.	2.6%	10.9%	13.5%	3.8%	9.7%	0.70	10.6%	0.94%	11.5%
9 Sempra Energy	2.6%	10.9%	13.5%	3.8%	9.7%	0.80	11.6%	0.78%	12.3%
10 TECO Energy	2.6%	10.9%	13.5%	3.8%	9.7%	0.85	12.0%	0.94%	13.0%
11 UIL Holdings	2.6%	10.9%	13.5%	3.8%	9.7%	0.70	10.6%	1.74%	12.3%
12 Vectren Corp.	2.6%	10.9%	13.5%	3.8%	9.7%	0.70	10.6%	1.17%	11.8%
13 Wisconsin Energy	2.6%	10.9%	13.5%	3.8%	9.7%	0.65	10.1%	0.78%	10.9%
14 Xcel Energy, Inc.	2.6%	10.9%	13.5%	3.8%	9.7%	0.65	10.1%	0.78%	10.9%
<b>Average</b>							<b>10.8%</b>		<b>11.5%</b>
<b>Midpoint</b>							<b>10.8%</b>		<b>11.2%</b>

- (a) Weighted average dividend yield for the dividend paying firms in the S&P 500 from www.valueline.com (Retrieved Jan 21, 2012).
- (b) Weighted average of IBES earnings growth rates for the dividend paying firms in the S&P 500 from http://finance.yahoo.com (retrieved Jan 23, 2012).
- (c) (a) + (b).
- (d) Average projected 30-year Treasury bond yield for 2013 based on data from IHS Global Insight, U.S. Economic Outlook at 25 (Dec. 2011).
- (e) (c) - (d).
- (f) www.valueline.com (retrieved Mar. 16, 2012).
- (g) (d) + (e) x (f).
- (h) *Morningstar*, "2012 Ibbotson SBBI Valuation Yearbook," at Appendix C, Table C-1 (2012).
- (i) (g) + (h).

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2013 BOND YIELDCurrent Equity Risk Premium

(a) Avg. Yield over Study Period	8.91%
(b) 2013 Average Utility Bond Yield	<u>5.32%</u>
Change in Bond Yield	-3.59%
(c) Risk Premium/Interest Rate Relationship	<u>-0.4114</u>
Adjustment to Average Risk Premium	1.48%
(a) Average Risk Premium over Study Period	<u>3.41%</u>
<b>Adjusted Risk Premium</b>	<b>4.89%</b>

Implied Cost of Equity

(b) 2013 BBB Utility Bond Yield	5.88%
Adjusted Equity Risk Premium	<u>4.89%</u>
<b>Risk Premium Cost of Equity</b>	<b>10.77%</b>

- (a) Schedule WEA-6, page 2.
- (b) Projected yields on utility bonds for 2013 based on data from IHS Global Insight, *U.S. Economic Outlook* at 25 (Dec. 2011), Energy Information Administration, *Annual Energy Outlook 2012 Early Release* (Jan. 23, 2012), and Moody's Investors Service at [www.credittrends.com](http://www.credittrends.com).
- (c) Schedule WEA-6, page 3.

## ELECTRIC UTILITY RISK PREMIUM

Schedule WEA-6

Page 2 of 3

AUTHORIZED RETURNS

Year	(a)	(b)	Risk Premium
	Allowed ROE	Average Utility Bond Yield	
1974	13.10%	9.27%	3.83%
1975	13.20%	9.88%	3.32%
1976	13.10%	9.17%	3.93%
1977	13.30%	8.58%	4.72%
1978	13.20%	9.22%	3.98%
1979	13.50%	10.39%	3.11%
1980	14.23%	13.15%	1.08%
1981	15.22%	15.62%	-0.40%
1982	15.78%	15.33%	0.45%
1983	15.36%	13.31%	2.05%
1984	15.32%	14.03%	1.29%
1985	15.20%	12.29%	2.91%
1986	13.93%	9.46%	4.47%
1987	12.99%	9.98%	3.01%
1988	12.79%	10.45%	2.34%
1989	12.97%	9.66%	3.31%
1990	12.70%	9.76%	2.94%
1991	12.55%	9.21%	3.34%
1992	12.09%	8.57%	3.52%
1993	11.41%	7.56%	3.85%
1994	11.34%	8.30%	3.04%
1995	11.55%	7.91%	3.64%
1996	11.39%	7.74%	3.65%
1997	11.40%	7.63%	3.77%
1998	11.66%	7.00%	4.66%
1999	10.77%	7.55%	3.22%
2000	11.43%	8.09%	3.34%
2001	11.09%	7.72%	3.37%
2002	11.16%	7.53%	3.63%
2003	10.97%	6.61%	4.36%
2004	10.75%	6.20%	4.55%
2005	10.54%	5.67%	4.87%
2006	10.36%	6.08%	4.28%
2007	10.36%	6.11%	4.25%
2008	10.46%	6.65%	3.81%
2009	10.48%	6.28%	4.20%
2010	10.34%	5.56%	4.78%
2011	<u>10.22%</u>	<u>5.13%</u>	<u>5.09%</u>
<b>Average</b>	12.32%	8.91%	3.41%

(a) Major Rate Case Decisions, Regulatory Focus, Regulatory Research Associates; *UtilityScope Regulatory Service*, Argus.

(b) Moody's Investors Service.



**REGRESSION RESULTS**

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.9062018
R Square	0.8212016
Adjusted R Square	0.816235
Standard Error	0.005182
Observations	38

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0.004439957	0.00444	165.344	5.054E-15
Residual	36	0.000966702	2.7E-05		
Total	37	0.005406659			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	0.0707625	0.00297293	23.8023	1.3E-23	0.06473308	0.07679183	0.064733085	0.07679183
X Variable 1	-0.411449	0.031997942	-12.8586	5.1E-15	-0.4763441	-0.3465546	-0.47634415	-0.34655465

EXPECTED EARNINGS APPROACH

Schedule WEA-7

Page 1 of 1

UTILITY GROUP

	(a)	(b)	(c)
<u>Company</u>	<u>Expected Return on Common Equity</u>	<u>Adjustment Factor</u>	<u>Adjusted Return on Common Equity</u>
1 Alliant Energy	11.5%	1.020932	11.7%
2 Dominion Resources	14.5%	1.034975	15.0%
3 DTE Energy Co.	9.0%	1.019911	9.2%
4 Integrys Energy Group	9.5%	1.012669	9.6%
5 PG&E Corp.	11.0%	1.03244	11.4%
6 PPL Corp.	11.0%	1.042568	11.5%
7 Pub Sv Enterprise Grp	11.5%	1.027447	11.8%
8 SCANA Corp.	9.5%	1.04685	9.9%
9 Sempra Energy	11.0%	1.037152	11.4%
10 TECO Energy	13.0%	1.025044	13.3%
11 UIL Holdings	8.5%	1.013935	8.6%
12 Vectren Corp.	11.0%	1.022319	11.2%
13 Wisconsin Energy	14.0%	1.013327	14.2%
14 Xcel Energy, Inc.	10.0%	1.028819	10.3%
<b>Average</b>			<b>11.4%</b>

(a) The Value Line Investment Survey (Dec. 23, 2011, Feb. 3 & Feb. 24, 2012).

(b) Adjustment to convert year-end return to an average rate of return from Schedule WEA-2.

(c) (a) x (b).

ELECTRIC UTILITY OPERATING COS.

		<u>At Fiscal Year-End 2011 (a)</u>		
<u>Company</u>		<u>Debt</u>	<u>Preferred</u>	<u>Common Equity</u>
1	Detroit Edison Co.	52.5%	0.0%	47.5%
2	Interstate Power & Light	46.0%	5.1%	49.0%
3	Kentucky Utilities Co.	40.2%	0.0%	59.8%
4	Louisville Gas & Electric Co.	38.7%	0.0%	61.3%
5	Northern States Power Co. (MN)	47.3%	0.0%	52.7%
6	Northern States Power Co. (WI)	41.5%	0.0%	58.5%
7	PPL Electric Utilities Corp.	44.7%	6.5%	48.8%
8	Pub Service Electric & Gas Co.	47.9%	0.0%	52.1%
9	Public Service Co. of Colorado	44.7%	0.0%	55.3%
10	San Diego Gas & Electric	51.5%	0.0%	48.5%
11	South Carolina Electric & Gas	46.2%	0.0%	53.8%
12	Southern California Gas Co.	37.6%	0.6%	61.8%
13	Southern Indiana Gas & Electric Co.	48.1%	0.0%	51.9%
14	Southwestern Public Service Co.	48.0%	0.0%	52.0%
15	Tampa Electric Co.	48.0%	0.0%	52.0%
16	Virginia Electric Power	43.2%	1.6%	55.1%
17	Wisconsin Electric Power Co.	41.8%	0.6%	57.6%
18	Wisconsin Power & Light	41.9%	2.3%	55.8%
19	Wisconsin Public Service Corp.	38.7%	2.7%	58.5%
	<b>Average</b>	<b>44.7%</b>	<b>1.0%</b>	<b>54.3%</b>

(a) Company Form 10-K and Annual Reports, FERC Financial Reports.

CAPITAL STRUCTURE

Schedule WEA-9

Page 1 of 1

UTILITY GROUP

		At Fiscal Year-End 2011 (a)			Value Line Projected (b)		
				Common			Common
	Company	Debt	Preferred	Equity	Debt	Other	Equity
1	Alliant Energy	45.7%	3.5%	50.9%	45.0%	3.0%	52.0%
2	Dominion Resources	62.1%	0.0%	37.9%	56.0%	0.5%	43.5%
3	DTE Energy Co.	50.6%	0.0%	49.4%	52.0%	0.0%	48.0%
4	Integrus Energy Group	41.3%	1.0%	57.7%	44.5%	0.5%	55.0%
5	PG&E Corp.	48.9%	1.0%	50.1%	46.5%	1.0%	52.5%
6	PPL Corp.	61.9%	0.0%	38.1%	52.0%	0.5%	47.5%
7	Pub Sv Enterprise Grp	40.9%	0.0%	59.1%	45.0%	0.0%	55.0%
8	SCANA Corp.	54.5%	0.0%	45.5%	52.0%	0.0%	48.0%
9	Sempra Energy	50.4%	0.1%	49.5%	48.5%	0.0%	51.5%
10	TECO Energy	57.3%	0.0%	42.7%	55.5%	0.0%	44.5%
11	UIL Holdings	58.8%	0.0%	41.2%	57.0%	0.0%	43.0%
12	Vectren Corp.	52.5%	0.0%	47.5%	50.0%	0.0%	50.0%
13	Wisconsin Energy	53.8%	0.4%	45.9%	53.5%	0.5%	46.0%
14	Xcel Energy, Inc.	53.9%	0.0%	46.1%	51.0%	0.0%	49.0%
	<b>Average</b>	<b>52.3%</b>	<b>0.4%</b>	<b>47.3%</b>	<b>50.6%</b>	<b>0.4%</b>	<b>49.0%</b>

(a) Company Form 10-K and Annual Reports.

(b) The Value Line Investment Survey (Dec. 23, 2011, Feb. 3 & Feb. 24, 2012).

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MARKET VALUE CAPITAL STRUCTURE

Schedule WEA-10

Page 1 of 1

UTILITY GROUP

	Company	At Fiscal Year-End 2011			Value Line Projected		
		(a)	(a)	(b)	(c)	(d)	(b)
		Long-term Debt	Preferred	Common Equity	Long-term Debt	Other	Common Equity
1	Alliant Energy	34.6%	2.6%	62.7%	36.4%	2.4%	61.1%
2	Dominion Resources	36.5%	0.0%	63.5%	38.8%	0.3%	60.8%
3	DTE Energy Co.	42.0%	0.0%	58.0%	46.8%	0.0%	53.2%
4	Integrays Energy Group	30.5%	0.8%	68.7%	41.6%	0.5%	57.9%
5	PG&E Corp.	40.6%	0.9%	58.6%	41.6%	0.9%	57.5%
6	PPL Corp.	51.4%	0.0%	48.6%	41.8%	0.4%	57.8%
7	Pub Sv Enterprise Grp	27.5%	0.0%	72.5%	38.3%	0.0%	61.7%
8	SCANA Corp.	44.0%	0.0%	56.0%	47.0%	0.0%	53.0%
9	Sempra Energy	43.3%	0.1%	56.7%	41.7%	0.0%	58.3%
10	TECO Energy	39.2%	0.0%	60.8%	42.8%	0.0%	57.2%
11	UIL Holdings	46.4%	0.0%	53.6%	47.7%	0.0%	52.3%
12	Vectren Corp.	38.6%	0.0%	61.4%	37.7%	0.0%	62.3%
13	Wisconsin Energy	36.3%	0.2%	63.4%	36.1%	0.3%	63.6%
14	Xcel Energy, Inc.	39.7%	0.0%	60.3%	44.2%	0.0%	55.8%
	<b>Average</b>	<b>39.3%</b>	<b>0.3%</b>	<b>60.3%</b>	<b>41.6%</b>	<b>0.3%</b>	<b>58.1%</b>

- (a) Long-term debt and preferred stock balances based on book values reported in Form 10-K Reports.
- (b) Market value of common equity computed by multiplying stock price by the number of common shares outstanding, both as reported by The Value Line Investment Survey (Dec. 23, 2011, Feb. 4 & Feb 24, 2012).
- (c) Debt outstanding computed by multiplying long-term debt ratio by total book capital, both as reported by The Value Line Investment Survey (Dec. 23, 2011, Feb. 3, & Feb. 24, 2012).
- (d) Balance of other long-term capital not accounted for in long-term debt and common equity ratios.

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**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 3**  
**COSTS OF LONG-TERM DEBT AND PREFERRED STOCK**

PACIFIC GAS AND ELECTRIC COMPANY  
CHAPTER 3  
COSTS OF LONG TERM DEBT AND PREFERRED STOCK

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**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 3**  
**COSTS OF LONG-TERM DEBT AND PREFERRED STOCK**

**A. Introduction**

The purpose of this testimony is to present Pacific Gas and Electric Company's (PG&E or the Company) proposed 2013 embedded costs of long-term debt and preferred stock and explain how these costs

Table 3 - 1 below compares the 2012 authorized costs of long-term preferred stock to those proposed for 2013. Their lower cost is primarily due to the issuance of long-term debt on November 2, 2013 at interest rates less than the current debt authorized as well as lower interest rates on PG&E's variable-rate debt. The decrease in the embedded cost of preferred stock results from amortization costs of previously redeemed preferred stock.

**TABLE 3-1**  
**PACIFIC GAS AND ELECTRIC COMPANY**  
**AUTHORIZED AND PROPOSED**

Line Nb.		2 0 1 2 Aut hori zed	2 0 1 3 Proposed
1	Long- Term Debt	6 . 0 5 %	5 . 6 9 %
2	Prefer red Stock	5 . 6 8 %	5 . 6 0 %

**B. Embedded Cost of Debt**

**1. Overview of Development of Embedded Cost of Debt**

To estimate its embedded cost of long-term debt for 2013, PG&E compares its recorded cost of debt as of March 31, 2012, and incorporates projected changes in the amounts or costs of debt throughout the remainder of 2012 and 2013. The forecasting models of outstanding debt reflect projected financing activities. Consistent with PG&E's practice, PG&E uses a forecast of future interest rates from the ISO's estimates



1 changes to the interest rates on PG&E's variable-rate bonds, as  
2 estimate the interest rate of new debt issuances.

### 3 **2. Recorded Cost of Debt as of March 31, 2012**

4 As of March 31, 2012, PG&E had a total outstanding long-  
5 \$11.5 billion, consisting of \$10.6 billion of fixed-rate  
6 variable-rate Pollution Control (PC) bonds. The interest rates  
7 PC bonds are reset on a daily or weekly basis. As of March 31,  
8 the weighted-average interest rate of the PC bonds is 0.12 percent.  
9 The embedded cost of debt as of March 31, 2012 is 5.76 percent.

### 10 **3. Forecasted Changes in the Remainder of 2012**

11 PG&E assumes \$300 million of fixed-rate long-term debt will  
12 in April 2012 and an additional \$625 million of fixed-rate debt  
13 be issued in September 2012.

14 The interest rate on new fixed-rate debt is estimated using the  
15 IHS Global Insight forecast for a 30-year utility bond semi-up  
16 to reflect PG&E's current bond ratings. Specifically, PG&E uses  
17 Insight's second and third quarter 2012 forecasts for utility  
18 bond of 4.29 percent and 4.46 percent, respectively, and adds  
19 point premium to reflect PG&E's current bond ratings, at the  
20 projected interest rates of 4.92 percent and 5.19 percent, res-  
21 shown on lines 3 and 4 in Table 3-2.

22 The 63 basis point premium is the first calculated average  
23 premiums during the last 24 months for utility bonds rated Baa  
24 rated Aa and for utility bonds over bonds rated published by  
25 Mergent Bond Record. Then these two premiums are prioritized  
26 the premium of Baa1-rated bonds, PG&E's current average bond ra-  
27 over Aa-rated bonds.

28 PG&E uses the IHS Global Insight forecast for 90-day prime com-  
29 paper to project future interest rates on its variable-rate PC

---

1 Interest rate projections in this chapter are based on IHS forecast published in  
March 2012.

2 PG&E is currently split rated, as discussed in Chapter 1. The average of the  
three current ratings is Baa1.

1 A regression of the monthly 90-day commercial paper with the  
2 weighted average variable-rate PC bond for the five-year period  
3 March 2012 was performed. The results of this regression were  
4 in conjunction with the forecast of the average commercial paper  
5 second, third and fourth quarters of 2012 to forecast PG&E's variable  
6 PC bonds for the remainder of 2012 to be 0.14 percent, as shown  
7 in Table 3-2.

8 The forecast includes the addition of \$50 million of commercial  
9 bonds series 2010E in April 2012.

10 As a result of the changes described above, the December 31,  
11 cost of long-term debt is projected to be 5.72 percent.

#### 12 4. 2013 Forecasted Changes

13 The estimated 2013 embedded cost of debt incorporates the projected  
14 changes in the amount of debt outstanding, as well as the changing  
15 costs of that debt.

16 PG&E expects to issue about \$1.675 billion of new fixed-rate  
17 2013 at an average interest rate of 5.42 percent, as shown on  
18 Table 3-2. The projected 2013 average interest rate is estimated  
19 the same way as in the calculation of the 2012 projected fixed-rate  
20 rates. A portion of the proceeds from new debt will be used to  
21 \$400 million of maturing long-term debt.

22 Based on IHS Global Insight's forecast of 90-day prime commercial  
23 paper, the projected 2013 average interest rate for PG&E's variable  
24 PC bonds is 0.16 percent, as shown on line 12 in Table 3-2.

25 The changes described above result in a decrease in PG&E's projected  
26 cost of debt from 5.72 percent in December 2012 to 5.65 percent in  
27 December 2013 as shown on lines 8 and 14, respectively, in Table 3-2.  
28 The 2013 average embedded cost of debt is projected to be 5.69 percent  
29 as shown on line 15 in Table 3-2.

**TABLE 3-2  
PACIFIC GAS AND ELECTRIC COMPANY  
2012 AND 2013 AVERAGE EMBEDDED COST OF DEBT  
(APRIL 2012 FORECAST)  
(\$ IN THOUSANDS)**

Line No.	Description	Coupon Rate ( a )	Out standing ( b )	Net Premium ( Discount ) , ( Expense )	or Net Proceeds ( c )	Annual Charges ( d )	Embedded Cost ( e )	( f )
1	March 31, 2012 ( Recorded )			\$ 11,517,100		\$ ( \$267,457,785,577 )	\$ 15,274%	34
2	<u>2012 Forecast ( April Through December )</u>							
3	New Issuance April 2012	4.92 %		300,000		( 3,000 )	297,000	
4	New Issuance September 2012	5.09 %		625,000		( 6,250 )	618,750	
5	Retired Bonds	2.25 %		( 50,000 )		407	( 49,593 )	( 1,
6	Adjustment for Variable Rate PC Bonds	0.14 %				520	520	158
7	Issuance/ Redemption Costs Amortization			19,391	19,391	( 381 )		
8	December 31, 2012			12,392,100		( 264,689 )	12,127,411	
9	<u>2013 Forecast</u>							
10	New Issuances	5.42 %		1,875,000		( 18,750 )	1,856,250	1
11	Retired Bonds	6.25 %		( 400,000 )		1,091	( 398,909 )	(
12	Adjustment for Variable Rate PC Bonds	0.16 %				693	693	184
13	Issuance/ Redemption Costs Amortization			24,990	24,990	( 907 )		
14	December 31, 2013			\$ 13,867,100		\$ ( 256,665 )	\$ 13,610,435	\$
15	2013 Two- Point Average ( Lines 8 and 14 )							

1 **C. Embedded Cost of Preferred Stock**

2 PG&E estimates its 2013 embedded cost of preferred stock in the  
 3 it estimates its embedded cost of debt. As shown in Table 3-13,  
 4 its recorded cost of preferred stock as of March 31, 2012. Using  
 5 starting basis, PG&E projects its embedded cost of preferred stock  
 6 incorporating changes for the remainder of 2012, and all of 2013.

7 For the remainder of 2012 and all of 2013, PG&E does not expect  
 8 issuances or redemptions of preferred stock. The resulting change in  
 9 PG&E's cost of preferred stock is a result of costs associated with preferred  
 10 stock previously redeemed. This change results in a 2013 projected  
 11 embedded cost of preferred stock of 5.60 percent, as shown on  
 12 Table 3-3.

**TABLE 3-3**  
**PACIFIC GAS AND ELECTRIC COMPANY**  
**2012 AND 2013 AVERAGE EMBEDDED COST OF PREFERRED STOCK**  
**(APRIL 2012 FORECAST)**  
**(\$ IN THOUSANDS)**

Line No.	Description	Par Value	Net Premium (Discount), or (Expense)	Net Proceeds	Annual Dividend	Year-End Embedded Cost	(e) = (
		( a )	( b )		( c )	( d )	
1	March 31, 2012 (Recorded)		\$ 257,995		\$ (6,495)	5 \$ 8 6 % , 499	
2	Redemption Amortization		122	122			
3	December 31, 2012		\$ 257,995	\$ (6,373)		\$ 251,621	\$ 14,0
4	2013						
5	Redemption Amortization		162	162			
6	December 31, 2013		\$ 257,995	\$ (6,211)		\$ 251,784	\$ 14,0
7	2013 Two-Point Average (Lines 3 and 6)						

3  
9

**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 4**  
**ANNUAL COST OF CAPITAL ADJUSTMENT MECHANISM**

PACIFIC GAS AND ELECTRIC COMPANY  
CHAPTER 4  
ANNUAL COST OF CAPITAL ADJUSTMENT MECHANISM

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**PACIFIC GAS AND ELECTRIC COMPANY**  
**CHAPTER 4**  
**ANNUAL COST OF CAPITAL ADJUSTMENT MECHANISM**

**A. Introduction**

California Public Utilities Commission (CPUC or Commission) Decision 08-05-035 directed the utilities that have or are parties in Utilities) in their next full cost of capital application (reports on the effectiveness of the Annual Cost of Capital Adjustment Mechanism (ACCAM) adopted in that decision. This chapter presents Pacific Gas and Electric Company's (PG&E) evaluation of the ACCAM since its implementation in 2008. PG&E finds that the mechanism has generally achieved Commission's objective to maintain a fair and reasonable cost while reducing the time and costs to the CPUC and all parties with annual cost of capital proceedings.

PG&E proposes that the ACCAM be continued for three years with full cost of capital application for the test year 2012. The applicable benchmark interest rate must also be reset to the 100 basis point monthly average through September 2012.

**B. Performance of the ACCAM From 2008-2012**

**1. Description of the Current Mechanism**

The current mechanism adopted in Decision 08-05-035, consists of a deadband of 100 basis points, an interest rate index determined by each utility's specific credit rating interest rate benchmark of 2-month average of utility bond interest rates, and an adjustment of 50 percent of the change in the benchmark. The index is the Moody's Aa utility bond for utilities rated Aa, Baa and Baa utility bond for utilities rated or below. In its decision

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1 Decision 08-05-035 used the term "CCM" to describe the mechanism but PG&E uses the term "ACCAM" herein, as PG&E did in the 2008 proceeding.  
2 The decision did not specify the appropriate index, but the presumption is that such utilities would utilize the Moody's A utility bond index.  
3 See Chapter 1, Attachment B for the corresponding index used by the Moody's and Standard & Poor's, Inc. (S&P) ratings nomenclature.



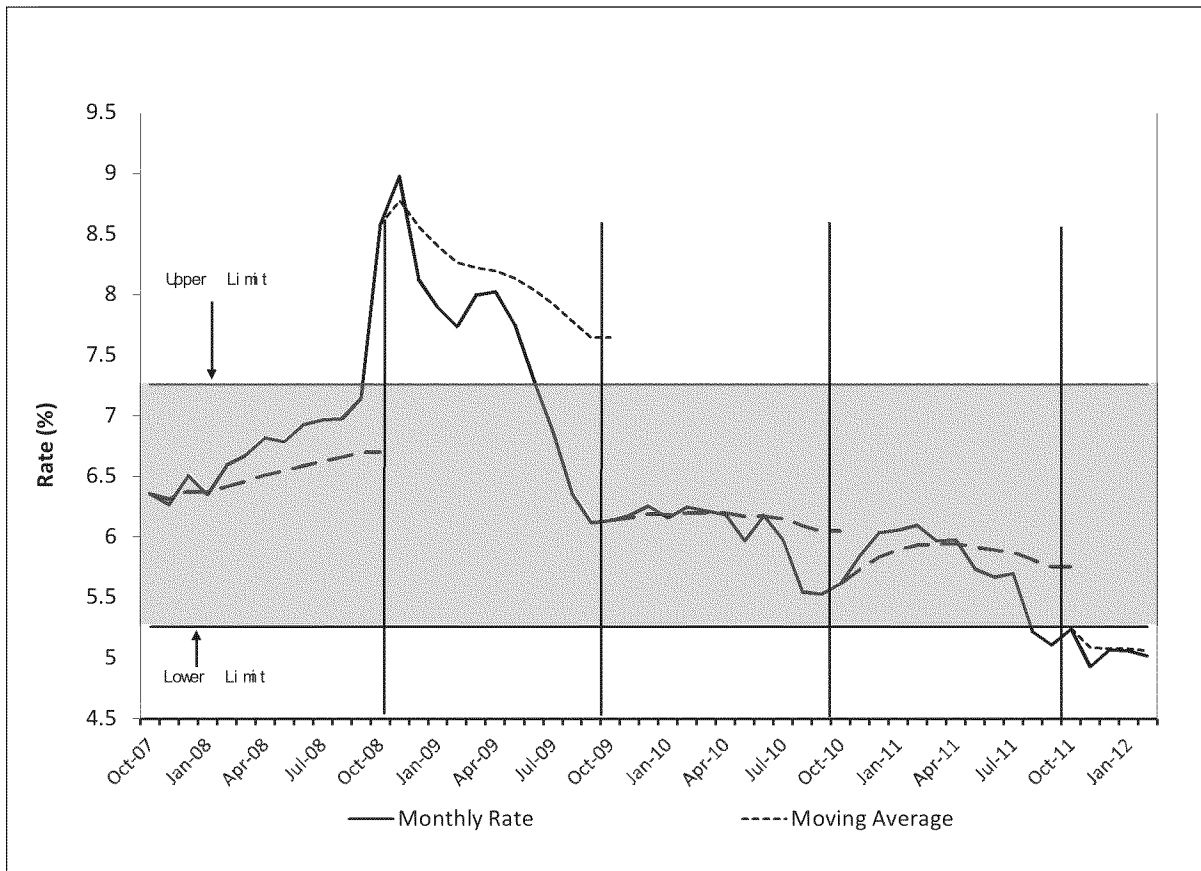
1 adopting the ACCAM the Commission did not prescribe which rate index  
2 index was appropriate for utilities with split ratings, utilities with ratings in  
3 different ratings categories. PG&E is currently rated ABB+ by Moody's  
4 by Fitch, and BBB by S&P. Hence under the current mechanism it is not  
5 evident which index applies to PG&E. Nor would it be applicable  
6 evident if a utility's score were to change during the period the  
7 ACCAM is in effect. Subsequent to Decision 08-05-035 adopted by the CPUC  
8 the Baa utility bond index for California Edison Company (SCE),  
9 which also has a split rating, and as a result PG&E has used the  
10 well, and would continue to do so if the CPUC adopts the  
11 current mechanism.

## 12 2. Performance of the ACCAM

13 Except for an unusual period during the financial crisis that started in  
14 2008, changes in the Aa, the A and the Baa interest rate index  
15 exceed the 100 basis point deadband during the ACCAM period that  
16 was in effect (2008-2012). The ACCAM would have triggered  
17 2009 for 2010 when interest rates peaked during the crisis, but, the  
18 as described more fully later, the cost of capital was not changed  
19 result, PG&E's authorized cost of capital has not changed since  
20 December 2007.

21 Figure 4-1 below shows monthly interest rates during the period  
22 2008-2011, as well as the index value at the end of each  
23 measurement period. The graph shows that the ACCAM would have  
24 triggered for 2010, since changes in the Baa index during the 12  
25 September 2009 exceeded 100 basis points compared to the Baa index  
26 interest rate index, which would have resulted in PG&E's increase in  
27 return on equity (ROE) from 11.35 percent to over 20 percent.  
28 The graph also shows that although interest rates had peaked in early  
29 2008, they then declined to a point below where they had started in early  
30 2008. This unusual behavior of interest rates is due to the factors  
31 which led to increasing interest rates, and then declining interest  
32 rates to their dramatic fall.

**FIGURE 4-1  
PACIFIC GAS AND ELECTRIC COMPANY  
PG&E COST OF CAPITAL MECHANISM (ACCAM) MOODY'S BAA UTILITY INDEX**



1 In the fall of 2009, SCE and PG&E both requested waivers of  
 2 ACCAM mechanism on the basis that the rise in interest rates that  
 3 have triggered an upward adjustment to the authorized rate had a  
 4 and hence was not indicative of a sustained change in capital cost  
 5 The CPUC agreed with the utilities and the ACCAM mechanism for  
 6 2010, and extended the ACCAM for two additional years.

7 **C. Capital Structure**

8 Consistent with the current ACCAM, PG&E proposes that capital structure  
 9 remain constant over the period the ACCAM is in effect.

10 However, PG&E reserves the right to file an application to modify the ACCAM during  
 11 period in the event PG&E must materially change its capital structure.

4 Both PG&E and SCE petitioned the CPUC to waive the ACCAM due to the unusual  
 movement in interest rates.

1 of Commission decisions in other proceedings. For example, in 2011  
2 General Rate Case (GRC), the Division of Ratepayer Advocates (DRA)  
3 proposed that PG&E refinance \$2 billion of permanent assets including  
4 nuclear fuel and Construction Work in Progress, centrally via  
5 The Utility Reform Network (TURN) (in addition supporting DRA's position on  
6 nuclear fuel, proposed that PG&E refinance its fleet of utility  
7 capital leases.

8 PG&E explained in its 2011 DRRC and TURN's proposal that it was  
9 a zero sum game not in ratepayer interests, generally and workable,  
10 financial management. However, if the CPUC were to propose such  
11 if it became feasible for PG&E to refinance such assets, then  
12 PG&E would likely need to add substantial common equity to its  
13 sheet—for example, increasing the common equity rate from 5.2 p  
14 5.4 percent—in order to maintain its credit quality. PG&E reserves  
15 the right to file an application with the Commission to request  
16 reflect the higher debt-to-equity ratio adopted by the Commission in another  
17 proceeding, and to offset the debt-to-equity ratio with more equity, thus  
18 cost of capital and revenue requirements appropriately.

**PACIFIC GAS AND ELECTRIC COMPANY**  
**APPENDIX A**  
**STATEMENTS OF QUALIFICATIONS**

**QUALIFICATIONS OF WILLIAM E. AVERA**

**Q. WHAT IS THE PURPOSE OF THIS EXHIBIT?**

A This exhibit describes my background and experiences and the details of my qualifications.

**Q. PLEASE DESCRIBE YOUR QUALIFICATIONS AND EXPERIENCE.**

A I received a B. A. degree with a major in economics from the University of North Carolina at Chapel Hill. After serving in the U.S. Navy, I entered the doctoral program at the University of North Carolina at Chapel Hill. I received my Ph.D. and joined the faculty at the University of North Carolina at Chapel Hill Graduate School of Business. I subsequently accepted a position at the University of Texas at Austin where I taught courses in financial and investment analysis. I then went to work for Paper International Company in New York City as Manager of Financial Education, in a position which I had responsibility for corporate education programs in finance, accounting, and economics.

In 1977, I joined the staff of the Public Utility Commission ( " PUCT" ) as Director of the Economic Research Division. During my tenure at the PUCT, I managed a division responsible for financial analysis and allocation and rate design, economic and financial data research, and processing systems, and I testified in cases on a variety of financial and economic issues. Since leaving the PUCT, I have been engaged as a consultant. I have participated in a wide range of assignments involving utility-related matters on behalf of utilities, industrial firms, and customers.

municipalities, and regulatory commissions. I testified before the Federal Energy Regulatory Commission ( "FERC" ), the Federal Communications Commission, the Surface Transportation Board ( a predecessor, the Interstate Commerce Commission ), the Canadian Television and Telecommunications Commission, and regulatory agencies, courts, and legislative committees in over 40 states.

In 1995, I was appointed by the PUCT to the Synchrotron Interconnection Committee to advise the Texas Legislature on the benefits of connecting Texas to the national electronic grid. In addition, I served as an outside director of Georgia System Operator Corporation, the system operator for electric cooperatives in Georgia.

I have served as Lecturer in the Finance Department at the University of Texas at Austin and taught in the evening graduate program at Edward's University for twenty years. In addition, I have lectured on economic and regulatory topics in programs sponsored by industry groups. I have taught in hundreds of educational programs for financial analysts in programs sponsored by the Association for Management and Research, the Financial Analysts Review and Local Financial Analysts Societies. These programs have been held in Asia, Europe, and North America, including the Financial Analysts Seminar at Northwestern University. I hold the Chartered Financial Analyst designation and have served as Vice President for Membership of the Financial Management Association. I have also served on the Board

Directors of the North Carolina Society of Financial Analysts  
Vice Chairman of the National Association of Regulatory Commissioners  
( " NARUC" ) Subcommittee on Economics and appointed to NARUC's  
Technical Subcommittee on the National Energy Act. served also  
an officer of various other professional organizations, and Associ  
resume containing the details of my experience and qualifications  
attached.

**WILLIAM E. AVERA**

FINCAP, INC.  
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*Economic and Financial Counsel*

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 Austin, Texas 78751  
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 FAX (512)458-4768  
 fincap@texas.net

**Summary of Qualifications**

Ph.D. in economics and finance; Chartered Financial Analyst (CFA<sup>®</sup>) designation; extensive expert witness testimony before courts, alternative dispute resolution panels, regulatory agencies and legislative committees; lectured in executive education programs around the world on ethics, investment analysis, and regulation; undergraduate and graduate teaching in business and economics; appointed to leadership positions in government, industry, academia, and the military.

**Employment**

*Principal,*  
 FINCAP, Inc.  
 (Sep. 1979 to present)

Financial, economic and policy consulting to business and government. Perform business and public policy research, cost/benefit analyses and financial modeling, valuation of businesses (almost 200 entities valued), estimation of damages, statistical and industry studies. Provide strategy advice and educational services in public and private sectors, and serve as expert witness before regulatory agencies, legislative committees, arbitration panels, and courts.

*Director, Economic Research*  
*Division,*  
 Public Utility Commission of Texas  
 (Dec. 1977 to Aug. 1979)

Responsible for research and testimony preparation on rate of return, rate structure, and econometric analysis dealing with energy, telecommunications, water and sewer utilities. Testified in major rate cases and appeared before legislative committees and served as Chief Economist for agency. Administered state and federal grant funds. Communicated frequently with political leaders and representatives from consumer groups, media, and investment community.

*Manager, Financial Education,*  
 International Paper Company  
 New York City  
 (Feb. 1977 to Nov. 1977)

Directed corporate education programs in accounting, finance, and economics. Developed course materials, recruited and trained instructors, liaison within the company and with academic institutions. Prepared operating budget and designed financial controls for corporate professional development program.



*Lecturer in Finance,*  
The University of Texas at Austin  
(Sep. 1979 to May 1981)  
Assistant Professor of Finance,  
(Sep. 1975 to May 1977)

Taught graduate and undergraduate courses in financial management and investment theory. Conducted research in business and public policy. Named Outstanding Graduate Business Professor and received various administrative appointments.

*Assistant Professor of Business,*  
University of North Carolina at  
Chapel Hill  
(Sep. 1972 to Jul. 1975)

Taught in BBA, MBA, and Ph.D. programs. Created project course in finance, Financial Management for Women, and participated in developing Small Business Management sequence. Organized the North Carolina Institute for Investment Research, a group of financial institutions that supported academic research. Faculty advisor to the Media Board, which funds student publications and broadcast stations.

### **Education**

*Ph.D., Economics and Finance,*  
University of North Carolina at  
Chapel Hill  
(Jan. 1969 to Aug. 1972)

Elective courses included financial management, public finance, monetary theory, and econometrics. Awarded the Stonier Fellowship by the American Bankers' Association and University Teaching Fellowship. Taught statistics, macroeconomics, and microeconomics.

Dissertation: *The Geometric Mean Strategy as a Theory of Multiperiod Portfolio Choice*

*B.A., Economics,*  
Emory University, Atlanta, Georgia  
(Sep. 1961 to Jun. 1965)

Active in extracurricular activities, president of the Barkley Forum (debate team), Emory Religious Association, and Delta Tau Delta chapter. Individual awards and team championships at national collegiate debate tournaments.

### **Professional Associations**

Received Chartered Financial Analyst (CFA) designation in 1977; Vice President for Membership, Financial Management Association; President, Austin Chapter of Planning Executives Institute; Board of Directors, North Carolina Society of Financial Analysts; Candidate Curriculum Committee, Association for Investment Management and Research; Executive Committee of Southern Finance Association; Vice Chair, Staff Subcommittee on Economics and National Association of Regulatory Utility Commissioners (NARUC); Appointed to NARUC Technical Subcommittee on the National Energy Act.

### **Teaching in Executive Education Programs**

*University-Sponsored Programs:* Central Michigan University, Duke University, Louisiana State University, National Defense University, National University of Singapore, Texas A&M University, University of Kansas, University of North Carolina, University of Texas.

*Business and Government-Sponsored Programs:* Advanced Seminar on Earnings Regulation, American Public Welfare Association, Association for Investment Management and Research, Congressional Fellows Program, Cost of Capital Workshop, Electricity Consumers Resource Council, Financial Analysts

Association of Indonesia, Financial Analysts Review, Financial Analysts Seminar at Northwestern University, Governor's Executive Development Program of Texas, Louisiana Association of Business and Industry, National Association of Purchasing Management, National Association of Tire Dealers, Planning Executives Institute, School of Banking of the South, State of Wisconsin Investment Board, Stock Exchange of Thailand, Texas Association of State Sponsored Computer Centers, Texas Bankers' Association, Texas Bar Association, Texas Savings and Loan League, Texas Society of CPAs, Tokyo Association of Foreign Banks, Union Bank of Switzerland, U.S. Department of State, U.S. Navy, U.S. Veterans Administration, in addition to Texas state agencies and major corporations.

Presented papers for Mills B. Lane Lecture Series at the University of Georgia and Heubner Lectures at the University of Pennsylvania. Taught graduate courses in finance and economics for evening program at St. Edward's University in Austin from January 1979 through 1998.

### **Expert Witness Testimony**

Testified in over 300 cases before regulatory agencies addressing cost of capital, regulatory policy, rate design, and other economic and financial issues.

*Federal Agencies:* Federal Communications Commission, Federal Energy Regulatory Commission, Surface Transportation Board, Interstate Commerce Commission, and the Canadian Radio-Television and Telecommunications Commission.

*State Regulatory Agencies:* Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maryland, Michigan, Missouri, Nevada, New Mexico, Montana, Nebraska, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Texas, Utah, Virginia, Washington, West Virginia, Wisconsin, and Wyoming.

Testified in 42 cases before federal and state courts, arbitration panels, and alternative dispute tribunals (89 depositions given) regarding damages, valuation, antitrust liability, fiduciary duties, and other economic and financial issues.

### **Board Positions and Other Professional Activities**

Audit Committee and Outside Director, Georgia System Operations Corporation (electric system operator for member-owned electric cooperatives in Georgia); Chairman, Board of Print Depot, Inc. and FINCAP, Inc.; Co-chair, Synchronous Interconnection Committee, appointed by Public Utility Commission of Texas and approved by governor; Appointed by Hays County Commission to Citizens Advisory Committee of Habitat Conservation Plan, Operator of AAA Ranch, a certified organic producer of agricultural products; Appointed to Organic Livestock Advisory Committee by Texas Agricultural Commissioner Susan Combs; Appointed by Texas Railroad Commissioners to study group for *The UP/SP Merger: An Assessment of the Impacts on the State of Texas*; Appointed by Hawaii Public Utilities Commission to team reviewing affiliate relationships of Hawaiian Electric Industries; Chairman, Energy Task Force, Greater Austin-San Antonio Corridor Council; Consultant to Public Utility Commission of Texas on cogeneration policy and other matters; Consultant to Public Service Commission of New Mexico on cogeneration policy; Evaluator of Energy Research Grant Proposals for Texas Higher Education Coordinating Board.

### **Community Activities**

Board of Directors, Sustainable Food Center; Chair, Board of Deacons, Finance Committee, and Elder, Central Presbyterian Church of Austin; Founding Member, Orange-Chatham County (N.C.) Legal Aid Screening Committee.

## **Military**

Captain, U.S. Naval Reserve (retired after 28 years service); Commanding Officer, Naval Special Warfare Engineering (SEAL) Support Unit; Officer-in-Charge of SWIFT patrol boat in Vietnam; Enlisted service as weather analyst (advanced to second class petty officer).

## **Bibliography**

### **Monographs**

*Ethics and the Investment Professional* (video, workbook, and instructor's guide) and *Ethics Challenge Today* (video), Association for Investment Management and Research (1995)

"Definition of Industry Ethics and Development of a Code" and "Applying Ethics in the Real World," in *Good Ethics: The Essential Element of a Firm's Success*, Association for Investment Management and Research (1994)

"On the Use of Security Analysts' Growth Projections in the DCF Model," with Bruce H. Fairchild in *Earnings Regulation Under Inflation*, J. R. Foster and S. R. Holmberg, eds. Institute for Study of Regulation (1982)

*An Examination of the Concept of Using Relative Customer Class Risk to Set Target Rates of Return in Electric Cost-of-Service Studies*, with Bruce H. Fairchild, Electricity Consumers Resource Council (ELCON) (1981); portions reprinted in *Public Utilities Fortnightly* (Nov. 11, 1982)

"Usefulness of Current Values to Investors and Creditors," *Research Study on Current-Value Accounting Measurements and Utility*, George M. Scott, ed., Touche Ross Foundation (1978)

"The Geometric Mean Strategy and Common Stock Investment Management," with Henry A. Latané in *Life Insurance Investment Policies*, David Cummins, ed. (1977)

*Investment Companies: Analysis of Current Operations and Future Prospects*, with J. Finley Lee and Glenn L. Wood, American College of Life Underwriters (1975)

### **Articles**

"Should Analysts Own the Stocks they Cover?" *The Financial Journalist*, (March 2002)

"Liquidity, Exchange Listing, and Common Stock Performance," with John C. Groth and Kerry Cooper, *Journal of Economics and Business* (Spring 1985); reprinted by National Association of Security Dealers

"The Energy Crisis and the Homeowner: The Grief Process," *Texas Business Review* (Jan.–Feb. 1980); reprinted in *The Energy Picture: Problems and Prospects*, J. E. Pluta, ed., Bureau of Business Research (1980)

"Use of IFPS at the Public Utility Commission of Texas," *Proceedings of the IFPS Users Group Annual Meeting* (1979)

"Production Capacity Allocation: Conversion, CWIP, and One-Armed Economics," *Proceedings of the NARUC Biennial Regulatory Information Conference* (1978)

"Some Thoughts on the Rate of Return to Public Utility Companies," with Bruce H. Fairchild in *Proceedings of the NARUC Biennial Regulatory Information Conference* (1978)

"A New Capital Budgeting Measure: The Integration of Time, Liquidity, and Uncertainty," with David Cordell in *Proceedings of the Southwestern Finance Association* (1977)

"Usefulness of Current Values to Investors and Creditors," in *Inflation Accounting/Indexing and Stock Behavior* (1977)

"Consumer Expectations and the Economy," *Texas Business Review* (Nov. 1976)

"Portfolio Performance Evaluation and Long-run Capital Growth," with Henry A. Latané in *Proceedings of the Eastern Finance Association* (1973)

Book reviews in *Journal of Finance* and *Financial Review*. Abstracts for *CFA Digest*. Articles in *Carolina Financial Times*.

### **Selected Papers and Presentations**

"Economic Perspective on Water Marketing in Texas," 2009 Water Law Institute, The University of Texas School of Law, Austin, TX (Dec. 2009).

"Estimating Utility Cost of Equity in Financial Turmoil," SNL EXNET 15<sup>th</sup> Annual FERC Briefing, Washington, D.C. (Mar. 2009)

"The Who, What, When, How, and Why of Ethics," San Antonio Financial Analysts Society (Jan. 16, 2002). Similar presentation given to the Austin Society of Financial Analysts (Jan. 17, 2002)

"Ethics for Financial Analysts," Sponsored by Canadian Council of Financial Analysts: delivered in Calgary, Edmonton, Regina, and Winnipeg, June 1997. Similar presentations given to Austin Society of Financial Analysts (Mar. 1994), San Antonio Society of Financial Analysts (Nov. 1985), and St. Louis Society of Financial Analysts (Feb. 1986)

"Cost of Capital for Multi-Divisional Corporations," Financial Management Association, New Orleans, Louisiana (Oct. 1996)

"Ethics and the Treasury Function," Government Treasurers Organization of Texas, Corpus Christi, Texas (Jun. 1996)

"A Cooperative Future," Iowa Association of Electric Cooperatives, Des Moines (December 1995). Similar presentations given to National G & T Conference, Irving, Texas (June 1995), Kentucky Association of Electric Cooperatives Annual Meeting, Louisville (Nov. 1994), Virginia, Maryland, and Delaware Association of Electric Cooperatives Annual Meeting, Richmond (July 1994), and Carolina Electric Cooperatives Annual Meeting, Raleigh (Mar. 1994)

"Information Superhighway Warnings: Speed Bumps on Wall Street and Detours from the Economy," Texas Society of Certified Public Accountants Natural Gas, Telecommunications and Electric Industries Conference, Austin (Apr. 1995)

"Economic/Wall Street Outlook," Carolinas Council of the Institute of Management Accountants, Myrtle Beach, South Carolina (May 1994). Similar presentation given to Bell Operating Company Accounting Witness Conference, Santa Fe, New Mexico (Apr. 1993)

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- "Development of Cogeneration Policies in Texas," University of Georgia Fifth Annual Public Utilities Conference, Atlanta (Sep. 1985)
- "Wheeling for Power Sales," Energy Bureau Cogeneration Conference, Houston (Nov. 1985).
- "Asymmetric Discounting of Information and Relative Liquidity: Some Empirical Evidence for Common Stocks" (with John Groth and Kerry Cooper), Southern Finance Association, New Orleans (Nov. 1982)
- "Used and Useful Planning Models," Planning Executive Institute, 27th Corporate Planning Conference, Los Angeles (Nov. 1979)
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- "An ANOVA Representation of Common Stock Returns as a Framework for the Allocation of Portfolio Management Effort," with Charles G. Martin, Financial Management Association, Montreal (Oct. 1976)
- "A Growth-Optimal Portfolio Selection Model with Finite Horizon," with Henry A. Latané, American Finance Association, San Francisco (Dec. 1974)
- "An Optimal Approach to the Finance Decision," with Henry A. Latané, Southern Finance Association, Atlanta (Nov. 1974)
- "A Pragmatic Approach to the Capital Structure Decision Based on Long-Run Growth," with Henry A. Latané, Financial Management Association, San Diego (Oct. 1974)
- "Growth Rates, Expected Returns, and Variance in Portfolio Selection and Performance Evaluation," with Henry A. Latané, Econometric Society, Oslo, Norway (Aug. 1973)

1 **PACIFIC GAS AND ELECTRIC COMPANY**  
2 **STATEMENT OF QUALIFICATIONS OF NICHOLAS M. BIJUR**

3 Q 1 Please state your name and business address.

4 A 1 My name is Nicholas M. Bijur and my business address is PG  
5 Corporation, One Market, Spear Tower, Suite 2400, San Francisco  
6 California.

7 Q 2 Briefly describe your responsibilities at PG&E Corporation

8 A 2 I am a Vice President and Treasurer. In addition, I am  
9 responsible for: implementing and executing financial strategy  
10 and Electric Company (the Utility) and PG&E Corporation's capital  
11 requirements; managing new and existing debt, preferred stock and  
12 common equity to minimize the long-term cost of capital while  
13 access to capital markets; managing cash flows to ensure liquidity  
14 to meet all corporate obligations; managing short-term and borrowings  
15 short-term investments; assisting client departments in implementing  
16 necessary bank services, such as electronic account reconciliation, check  
17 fraud detection and prevention and alternative customer payment  
18 monitoring strategic trends in the utility sector and appropriate  
19 funding and investment management of all external trust assets  
20 by the Utility and PG&E Corporation.

21 Q 3 Please summarize your educational and professional background

22 A 3 I received a bachelor of arts degree from the University of  
23 of business administration degree from the Anderson School of  
24 to joining PG&E in February 2005, I spent four and a half years  
25 investment banker at Morgan Stanley, most recently as a Vice President.  
26 Prior to receiving my MBA, I spent three years as a senior investment  
27 Citigroup (formerly Salomon Smith Barney).

28 Q 4 What is the purpose of your testimony?

29 A 4 I am sponsoring the following testimony in the PG&E Capital and  
30 filing:

- 31 • Chapter 1, "Cost of Capital Policy and Proposal."

32 Q 5 Does this conclude your statement of qualifications?

33 A 5 Yes, it does.

1                                   **PACIFIC GAS AND ELECTRIC COMPANY**  
2                                   **STATEMENT OF QUALIFICATIONS OF BRIAN A. FORZANI**

3    Q    1        Please state your name and business address.

4    A    1        My name is Brian A. Forzani, and my business address is Pacific  
5        Electric Company, 77 Beale Street, San Francisco, California.

6    Q    2        Briefly describe your responsibilities at Pacific Gas and Electric Company  
7        (PG&E).

8    A    2        I am a principal financial analyst in the Economic Analysis and Pro  
9        Department.

10   Q    3        Please summarize your educational and professional background.

11   A    3        I received my bachelor of science degree in Civil Engineering from  
12        University, and a master of engineering degree in Structural and  
13        a master of business administration degree from the University of  
14        Berkeley. I am a registered professional engineer in California.

15        In 1982, I joined PG&E as a civil engineer in the Design Department,  
16        performing structural design of various transmission lines. I  
17        became a gas distribution engineer in 1984 and a senior gas distribution  
18        engineer in 1987. While in these positions, I worked on a project for  
19        various transmission and distribution reconstruction projects.  
20        I became a senior rate analyst in 1990 and then supervisor in 1991 in the  
21        section of the Rates Department. I was promoted to my present  
22        position in 2008.

23   Q    4        What is the purpose of your testimony?

24   A    4        I am sponsoring the following materials in PG&E Capital Cost  
25        filing:

- 26        • Chapter 3, "Costs of Long-Term Debt and Preferred Stock."

27   Q    5        Does this conclude your statement of qualifications?

28   A    5        Yes, it does.

1                                   **PACIFIC GAS AND ELECTRIC COMPANY**  
2                                   **STATEMENT OF QUALIFICATIONS OF RICHARD A. PATTERSON**

3    Q    1           Please state your name and business address.

4    A    1           My name is Richard A. Patterson, and my business address is Pacific Gas  
5           and Electric Company, 77 Beale Street, San Francisco, California

6    Q    2           Briefly describe your responsibilities at Pacific Gas and Electric Company  
7           (PG&E).

8    A    2           I am a senior manager in the Economic and Departmental Analysis

9    Q    3           Please summarize your educational and professional background.

10   A    3           I received my bachelor of science degree in electrical engineering  
11           University of California, Berkeley, and a master of business administration  
12           degree in finance from the California State University, Hayward

13           In 1985, I joined PG&E as an analyst in the Revenue Requirements  
14           Department, working on modeling and forecasting of depreciation, expense  
15           depreciation and related items for short- and long-term planning  
16           cases. In 1986, I transferred to the Rates Department to work  
17           cost analysis, returning to the Revenue Requirements Department  
18           as a senior analyst responsible for preparing forecast of book  
19           depreciation for planning and rate filings. From 1988 to 1992, I  
20           supervisor in the Revenue Requirements Department, where I was  
21           responsible for the development of PG&E's depreciation policies. In 1992, I  
22           transferred to the Financial Planning and Analysis Department as a  
23           financial analyst. I assumed my present position in 1994.

24   Q    4           What is the purpose of your testimony?

25   A    4           I am sponsoring the following materials in PG&E's 2013 Cost  
26           filing:

- 27           • Chapter 4, "Annual Cost of Capital Adjustment Mechanism"

28   Q    5           Does this conclude your statement of qualifications?

29   A    5           Yes, it does.