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PACIFIC GAS AND ELECTRIC COMPANY

COST OF CAPITAL 2013

PREPARED TESTIMONY

PACIFIC GAS AND ELECTRIC COMPANY
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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 rates of return on its investments in California Public Utilities Commission (CPUC or Commission) jurisdictional assets for the test year 2013.[1] The adopted rate of return must ensure that PG&E can attract capital at reasonable prices and provide a fair return to shareholders.

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

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

Line No.		2013		
		Cost	Capital Structure	Weighted Cost
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 2010 and 2011 through 2014, an amount equal to PG&E's entire rate base just 8 years ago. These investments

[1] If the CPUC also adopts in this proceeding an annual cost adjustment mechanism (ACCAM), then the Return on Equity (ROE) adopted in this proceeding will be in effect over the duration of the ACCAM, as adjusted periodically by the ACCAM. In Decision 08-05-035 the Commission used the term "CCM" to describe the cost of capital mechanism, but PG&E uses the term "ACCAM" herein, as PG&E did in the 2008 cost of capital proceeding.

include funding for safety and reliability, replacement and rep facilities, additional pipes and wires to serve and new customers, generation and transmission, are a crucial part of the infrastructure that supports the people and economy of California. To fund these as well as to fund maturing debt, PG&E will need to raise capital a time when capital markets are recovering from the credit crisis and the Euro Zone sovereign debt crisis is still smoldering.

In addition to raising capital, PG&E must also maintain adequate bank credit facilities to cover collateral and working capital make annual purchases of gas and electric commodities ranging from $5 to $15 billion. This level of financing requires a strong balance sheet total equity, and good credit ratings.

PG&E was downgraded in late 2011 by two of the three leading credit agencies, and its lowest credit rating is now BBB, just above junk not grade.[2] PG&E considers a BBB credit rating sub optimal, and there is room for further declines. Setting a reasonable return on adopting capital a capital structure that does not increase PG&E's debt to leverage a factors in preventing further declines. PG&E's financial ratios must enable PG&E to maintain its current investment grade credit rating that support its ability to attract capital and credit cost-effectively. PG&E customers would eventually bear the cost of poor, credit through higher cost of debt, higher costs for electricity, and the cost of higher collateral as a result of counterparties requiring more collateral for transactions. Customers would also pay higher costs for purchased power, since the credit quality, and hence capital, of generators to PG&E is a function of PG&E's credit quality.

The remaining chapters in this exhibit provide support for the recommendations in this chapter. Specifically, Chapter 2 the basis for the ROE recommendation; Chapter 3 estimates the test year 2013 long-term debt and preferred stock; and Chapter 4's presents PG&E how the ACCAM has worked since it was adopted in 2008 and the propo current ACCAM be continued for three more years.

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[2] See Attachment 1A, Table 1A-4 for a description of credit rat

B. Return on Equity Recommendation

PG&E's ROE proposal is based on the financial modeling PG&E results witness Dr. William Avera, Dr using data from a group of similarly comparable to PG&E, estimates the ROE for these utility investors using ROE estimation methods. Dr. Avera's ROE model results, 9.09 percent from the Discounted Cash Flow (DCF) model, 10.8-14.5 percent from the Capital Asset Pricing Model, and 10.8-11.4 percent from an expected risk premium earnings models, form the basis for his recommended range of reasonable 10.2-11.4 percent. Taking into consideration, including the factors specific risks and exposures of PG&E, Dr. Avera concludes ROE that from above the midpoint of this range, or 11.0 percent, and represents a reasonable ROE for PG&E. Dr. Avera also applies using the DCF model group of large, stable, risk and companies from non-utility sectors of the economy to corroborate his utility proxy results.

Dr. Avera describes the risks faced by PG&E, which are captured generally in his proxy group of comparabilities. But it emphasizing that there is evidence that investors perceive risks in California that are not seen in states, thus requiring a return above the midpoint of Dr. Avera's range. reasonable While many Californians view their home state as one of the best, others see California as hostile to business and saddled with a structure political that has been called "ungovernable." Michael J. Boskin, and both John Cogan professors of economics at Stanford University, have described California as "Long a harbinger of national trends and an incubator," of but innovation also observed that California "is near the bottom in business tax and state bond ratings."[3] The *Economist* recognized that "Hardship and risk-taking, hopes and crushing disappointments have been part of California's forever since [the gold rush], through booms and busts, epuphories," and but also noted that "California is now called a 'dysfunctional,' 'ungovernable,' and even 'failed' states." While these terms may seem extreme, and many, including PG&E, may not agree with them, they are not terms applied to other

[3] "California's Greek Tragedy," The Wall Street Journal, p. A13.

[4] "The People's Will," The Economist Special Report on California 2011.

Investors are well aware of these perceptions of California and these and other views into account when assessing the risk of investing in those entities whose primary business is in California, and deciding where to invest and how much they will require, a return that PG&E believes is in the Applicant's behalf of Decision reasonable range.

Illustrative of this innovation and risk taking in California that sets it apart from other states are its bold and aggressive energy policies. California has been a leader in the pursuit of programs and rate designs that promote energy efficiency, and was one of the first states to undertake restructuring of its electric industry in the late 1990s. Those innovative actions and actions, as in the case of electric restructuring, showed sweeping new policies that carry a high risk, as evidenced by the bankruptcy of PG&E and the near bankruptcy of Southern California Edison Company. As California moves forward with one major aspect of another sweeping new policy, and California Global Warming Solutions Act of 2006, investors must consider that the cap and trade program, a large, untested program with potentially costly, also comes with risks, no matter how well policy makers attempt to identify and mitigate these risks. California has adopted one of the most aggressive renewable standards in the nation, a standard that at least one of the risk of integrating a vast amount of intermittent and distributed power in a comparatively short time, accompanied by the uncertainty of the consumer price for such a level of renewables, and the impact that have on the State's economy.

California is willing to take these risks in order to meet its goals related to climate change and energy independence. For better or worse, the business and political structures in California lead to a greater volatility compared to other states, and the greater risks face businesses, including California utilities. As a result, PG&E believes that the Applicant's recommended ROE of 11.0 percent, in the upper half of the range, reasonably appropriately reflects the higher risks that confront California utilities.

C. Costs of Long-Term Debt and Preferred Stock

PG&E's embedded cost of long-term debt is projected to decrease from the currently authorized level of 6.05 percent to 5.369 percent. This decrease is largely driven by the decrease in the cost of debt that PG&E

debt, and the issuance in recent years of newer fixed debt at long-t interest rates lower than PG&E's currently authorized cost of embedded debt.

PG&E's cost of preferred stock is projected to decrease slightly from th authorized level of 5.68 to 5.60 percent, primarily as a result of the an redemption costs of retired preferred stock. PG&E does not anticipate pro issuances or redemptions of preferred stock for the foreseeable

D. Capital Structure and Credit Ratings

PG&E's ability to attract capital at a reasonable cost is a fun business risks that it must address, with its financial strength. For a given level of business risks, financial strength, or amounts of debt, or leverage, will result in less access to capital and at higher debt costs than for a company with lower leverage, all else equal. Over the next three years, PG&E's requirements are substantial: PG&E must raise $8 billion to $10 billion to fund its infrastructure reinvestment of $15 billion, with the remaining coming from internally generated cash. In addition, short-term borrowing capacity to provide up to $1.5 billion for collateral only transactions and access to an additional $1.5 billion of short-term capacity to manage daily and seasonal swings of cash as well as provide for unforeseen events.

Given its financing requirements, PG&E needs a strong balance enough common equity to provide adequate credit capacity. PG&E proposes a common equity ratio of 52 percent, the lowest level that it should maintain in order to retain its current credit ratings and continue to access capital and short-term credit at reasonable prices. As PG&E's less optimal credit rating is in the A category, but PG&E only current by S&P, and a 52 percent equity ratio is PG&E's financial long-term goal to achieve its targeted A rating.

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

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

Investor Service (Moody's), and BBB+ by Fitch.[5] [6] All three ratings are the Moody's A3 rating is favorable, the S&P BBB rating is only two above sub-investment grade, also known as "junk" status. These ratings are driven by a number of factors[7] that generally are determined by a qualitative assessment of overall business risks, of and financial use metrics to help assess a utility's ability to service its debt.

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

Figure 1-1 below shows PG&E's current credit metrics using S& criteria to relate credit metrics to credit ratings.[9] The three key metrics are key measures of PG&E's ability to service its debt: funds from operations (FFO) to interest (FFO/INT), the ratio of debt of FFO to tot (FFO/DEBT), and the ratio of total debt to capital (DEBT/CAPITAL).[10] Figure 1-1 shows that two of the three key FFO/DEBT ratios, the F the DEBT/CAPITAL ratios are currently in the BBB and BB category

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

6 S&P and Fitch use the same ratings nomenclature. Attachment 1A, Table 1A-4 shows the Moody's equivalent rating under the S&P system.

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

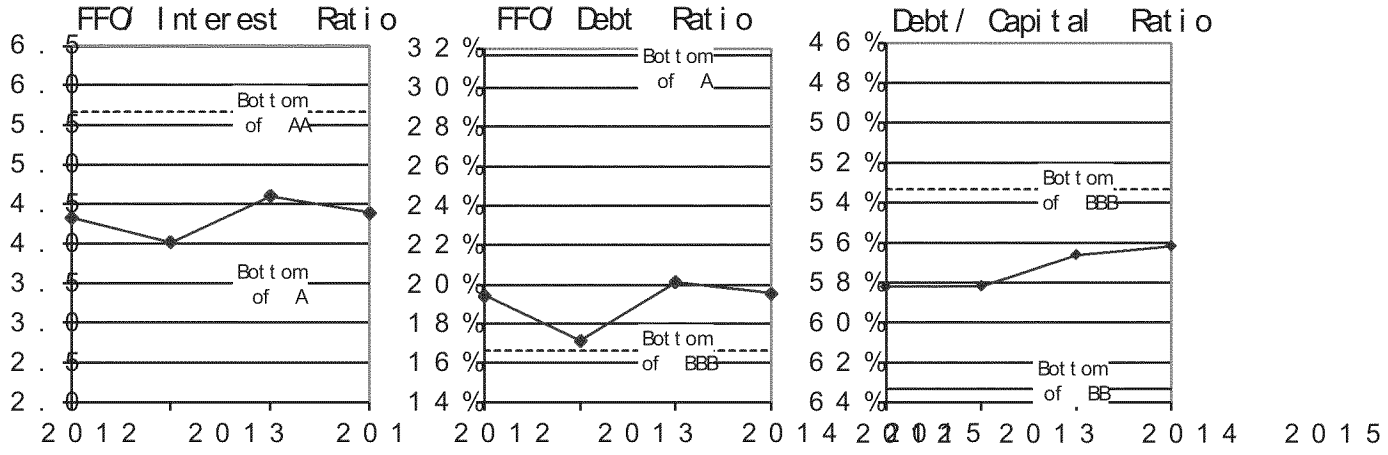
8 As discussed more fully later in this chapter, long-term power purchase agreements (PPA) as an alternative to owning power plants, and PPAs carry obligations that are similar to conventional debt. These "debt equivalents" are currently on the order of $3 billion, relative to PG&E's significant conventional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

9 The lines on the graphs marking the boundaries of the rating categories are estimated based on Attachment 1A, Table 1A-2.

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

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

FIGURE 1-1
PACIFIC GAS AND ELECTRIC COMPANY



The Total Debt to Total Capital ratio is a function of PG&E's capital structure (including short-term debt and debt equivalents, as well as long-term capital). The other two ratios are less directly driven by capital structure, but a decrease in PG&E's authorized equity ratio will adversely impact all three ratios, putting downward pressure on PG&E's credit ratings and access to capital. As a result, a decrease sized in PG&E's authorized common equity ratio may trigger a credit ratings downgrade.

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

> The stable outlook reflects our anticipation that if the company will continue repairing its business practices and produce cash flow projections in line with our base case expectations, such as debt to FFO of 20% and adjusted debt to capitalization in excess of 58% in the year ahead. **We could lower the ratings if leverage exceeds 60% and FFO to total debt falls to less than 15% on a sustained basis.** [Emphasis added] We could raise the ratings if financial performance meets base case expectations and the business profile strengthens, which would be evidenced by improved relations for the utility's gas transmission system, refocused efforts on building the safety into corporate culture, and continued constructive regulatory outcom

[11] S&P's RatingsDirect: Pacific Gas and Electric Company, December 1.

In a similar vein, Moody's[12] stated:

> The stable outlook also factors in the company's continued effo finance negative free cash flow with meaningful amounts of comm equity sufficient to maintain a 52% equity ratio, at which level to support overall credit quality. ...

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

> ...rapidly increasing consumer resistance to rising bills will te regulatory support for timely and perhaps even full rate recove preference for expense deferrals may develop, and for a less competitive authorized returns will almost certainly prevail. Such of events would likely result in a shift of our stable outlook U.S. electric utility credit quality to negative.[13]

It is important to note that with split ratings, it is the lowe relied upon by PG&E's counterparties when extending PG&E credit. For example, a two-notch downgrade by S&P to BB+ (below investment would cause PG&E's counterparties to require additional collateral $1 billion, an amount that PG&E simply may not have available to fund current credit facilities. At that point PG&E may find it difficult to obtain any additional credit facilities, and the facilities that could be obtained would come at a significantly higher cost and limited in size. PG&E's ability to purchase gas and electric commodities and transact through the California Independent System Operator would be severely limited, PG&E's ability to procure energy for its customers. Even if this could occur credit ratings of the other two rating agencies remain investment grade.

While there are many factors that the rating agencies consider assigning a credit rating, assigning PG&E's leverage at the high is unlikely to be offset by changes in other factors that might ease its leverage, and in view of PG&E's recent credit ratings would be ill-advised. As a result, a 52 percent common equity ratio is 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 Corp. and Utility ratings. 20 Sept.

13 "Utility Credit Ratings Critical to Raising Cap Budget," Energy February 7, 2012.

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

It is in the best interests of PG&E's customers to attain and target credit ratings from all three credit rating agencies in the A category or A-. Credit Ratings of BBB or lower put at risk the utility's ability to borrow at reasonable rates during periods of financial market disruption, and provide insufficient cushion against further events affecting capital markets that could result in downgrades to sub-investment grade. Attaining a credit rating in the A category not only lowers the cost of credit, but it also helps ensure that the utility will have continuous access to credit.

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

Credit ratings can change for a number of reasons, such as a change in the regulatory environment, a change in a business risk, a change in financial risk (i.e., the amount of leverage a firm has), for example, political events, such as a recently proposed ballot initiative in California to measure that, if passed, could shut down all three nuclear generation facilities in California, could lead to a credit ratings downgrade because it would increase PG&E risks. Regarding this possibility, S&P stated:

> A disorderly exit from nuclear – that is, something that forces early closure of the [California nuclear] plants without clear cost recovery and that does not give the electric utility time to plan for alternatives, almost certainly would jeopardize credit quality.[14]

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

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[14] S&P Global Credit Portal; The Ground-Shaking Reality's for Nuclear Power; October 17, 2011.

credit ratings downgrades because their diminished access to ca
and credit could impair their ability to finance their operatio[15]ns.

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

An optimal credit rating is one that can leave PG&E with a temporarily acceptable minimum credit rating in the event of cr downgrades, under scenarios of reasonable, but not extreme,[16] str and that still provides PG&E ca access to the capital and credit m albeit at higher cost and at greater risk of trade capital. Over time, perhaps several years, PG&E would expect to be able move up toward its optimal ratings. For PG&E, its minimum temporary credit rating is BBB, which is investment grade. It is important to note that a BBB credit rating is not particularly desirable for as PG&E that must continually arrange for large amounts of new capital maintain substantial credit facilities. During the recent crisis, firms rated BBB and below experienced significant difficulty ra capital.

PG&E has first-hand experience with being denied the credit during financial crisis in 2008, when it was rated by S&P and Moody's and Fitch. Despite these relatively stronger credit ra PG&E was temporarily unable to access the debt markets at the p the financial crisis. In October 2008, seven bank banks in PG&E group, including a money-centered bank and a large, highly rega 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 Lehman Brothers, Merrill Lynch, and Bear Stearns:

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

16 In this context, "temporary" can be up to several years, depending on the circumstances. For example, a significant change in the qualitative credit criteria terms of may trigger ratings changes that could not be offset by changes in near-term metrics driven by cash flow and leverage. It may take several years to rebuild credit quality.

that was needed to support the issuance of pollution-control bo
Again in April and May 2009, a majority of banks in PG&E's
refused to participate in a proposed $500 million bank revolving
credit facility that was to support PG&E's liquidity n
associated with energy procurement activities. For these reaso
BBB credit rating is sub-optimal for PG&E, and arguably at best a t
minimum credit rating.

Credit ratings below BBB are not acceptable. Once a company'
credit rating drops below investment grade, access to the debt
decreases, the cost of debt increases significantly, covenants and debt c
become substantially more restrictive. The sub-investment grad
market is much more subject to access disruptions, as investors
are quick to abandon this market when there are signs of troubl
as the Greek debt crisis. For example, during the 2008-20
crisis, virtually all companies with sub-investment grade ratin
unable to access the capital and credit markets. Even companie
BBB- had difficulty accessing the capital markets because of th
perceived risk of falling to investment grade.

A downgrade below BBB would also limit, and perhaps eliminate,
PG&E's access to the Tier 2 commercial paper market. This is
significant source of short-term capital for PG&E needs operational
that if restricted would force the company to obtain financing short-term
at significantly higher costs. These costs would be compounded
the company renews its $3 credit facility, which would be
significantly more expensive and potentially even unavailable if
PG&E were downgraded below BBB.

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

A target optimal credit rating is one that can absorb movements
2-3 notches downward,[17] which would leave PG&E at its temporarily
acceptable minimum credit rating of BBB, allowing maximum flexibility t

[17] A "notch" is the change from one rating to an adjacent rating, such as from A to A-, or BBB to BBB+. From BBB to BB+ (sub-investment grade) is not a notch but signifies a material change in credit quality, and impacts the cost and amount of credit available, t especially going from the A to the BBB and lower categories. of credit rati

investment grade status. For example, if PG&E were to use more leverage in its capital structure, it might be downgraded one notch.[18] PG&E can also be downgraded as a result of a sustained adverse mismatch between PG&E's revenues and expenses, or more generally due to a decrease in regulatory supportiveness. A series of events could result in two or even three downgrades, leading PG&E at BBB+ started from A.

In addition to providing a cushion to withstand possible credit ratings downgrades, there is a clear and significant cost advantage to credit ratings in the A category. Typically, A-rated bonds will have interest rates on the order of 0.44 percent lower cost than BBB- rated and BBB- rated bonds will have interest rates about 1.82 percent higher than bonds rated BB (sub-investment grade).[19] Applying these figures to PG&E's issuance of roughly $15 billion in bonds in 2021 through 2031, the annual interest costs of A- rated bonds are nearly $111 million less relative to BBB- rated bonds. The annual interest cost of issuing BB- rated bonds would have been about $466 million more than issuing BBB- rated bonds.

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

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[18] For example, in PG&E's 2011 General Rate Case, Ratepayer Advocates recommended that PG&E refinance a portion of its long-term commercial paper, one of the riskiest ways to finance such assets. Implementation of these recommendations could have led to a credit ratings downgrade.

[19] The 0.44 percent and 1.82 percent averages are taken over the year 2008. During the peak of the credit crisis in late 2008 to early 2009, rated bonds were 450 basis points greater than the rates on BBB- rated bonds.

These higher costs of debt and credit, as well as lower credit to procurement activities, are summarized on Table 1-2 (below). Column (a) shows the incremental costs of BBB credit ratings relative to A ratings, and column (b) shows the incremental costs of a BB rating compared to a BBB rating. The costs in Table 1-2 do not reflect the higher PG&E would be charged for power purchase agreements (PPA) as discussed below.

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

Line No.		A to BBB (a)	BBB to BB (b)	A to BB (c)
1	Long-Term Debt (a)	$12	$55	$67
2	Short-Term Debt (b)	4	35	39
3	Total	$17	$90	$106

(a) These amounts include additional annual interest costs and credit fees for pollution control bonds.

(b) These amounts include additional annual interest costs on short-term debt and the high cost of collateral.

Another important reason to target credit ratings solidly in the A category is to lower the cost of capital for PG&E's many independent generators who contract with PG&E for the long-term sale[20] of their power. The investors who finance these generators have less risk, and hence a lower cost of capital, when the off taker (PG&E) has higher credit quality, all else equal. A lower cost of capital for those generators results in lower PPA costs to PG&E customers.

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

[20] Generally, a generator with a long-term contract with PG&E would not have a credit rating any higher than PG&E's, and at best is one notch lower. Independent generators to receive investment grade ratings means PG&E's credit rating must be BBB or better.

generators produce according to their contracts, PG&E is obliga pay the generators whether the power is needed or hen ot, the and whet power could be purchased for less on the market. have Because PPAs these debt-like characteristics, PG&E's investors may to close att the magnitude of these obligations, and factor them into their assessment of PG&E's financial capacity to support and all its debt debt-like obligations.[21]

Targeting and achieving credit ratings in the A he category, and appropriate level of equity needed to sustain such ratings in t A category, would ensure that PG&E will have the to credit capaci procure additional PPAs to meet the 33 percent state renewable generation standard, as well as its other generation resource requirements. Failure to mi the ga negative impacts of debt equivalence in the future may preclude credit rating add increases, possibly lead to lower credit ratings, increase ing the cost of d credit for PG&E, as well as the cost of purchased power.

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

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

First and most importantly, the market for PG&E's preferred securities is significantly smaller and less liquid (as often described deep" or "thin") than that for debt or common equity securities. As a result, it is not a reliable source of funding for PG&E's capital needs, and raising substantial amounts of preferred stock could take years. The thin market could also result in a liquidity premium, or in

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[21] Investors account for these debt-like obligations in various ways. For example, S&P explicitly imputes 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 PPAs on PG&E's credit quality.

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

Second, the credit treatment of preferred stock would be credit neutral at best, but could potentially be credit destructive. The credit impact of preferred stock depends on the particular attributes of the preferred stock[22] and on whether it replaces debt or equity in the capital structure, the treatment for which can vary by agency and could change over time. In general, preferred stock is equity in place of equity credit destructive because the rating agencies apply less than 100 percent equity credit. Preferred stock in place of equal debt and equity could be credit neutral, depending on the rating agency treatment, but for the reasons discussed in the preceding paragraph would not be as reliable a source of capital. These factors highlight the credit challenges associated with preferred stock. Taken together,

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

E. Implementation of the Cost of Capital in Rates

PG&E proposes to implement any revenue requirement changes resulting from a cost of capital decision in this proceeding in rates and effective beginning January 1, 2013, assuming a Commission decision in 2012 is

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

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

in time to allow PG&E to implement rates on January 1, 2013.[24] Changes applicable to Direct Access rates for electric service would be the same time as changes in bundled electric customer rates set under PG&E's current tariffs. PG&E will record the gas distribution, gas storage, gas transmission, electric distribution, and electric generation revenue requirements resulting from the 2013 cost of capital in the appropriate balancing account memorandum of January 1, 2013. Rates for each of these revenue requirements will be based on the then-current approved revenue allocation and rate design separately approved for each revenue requirement.

F. Conclusion

PG&E's operations require very substantial and continual capital access. A ROE of 11.0 percent and a 52 percent common equity ratio should allow PG&E to maintain its current credit ratings, and PG&E can use those ratings to obtain PG&E capital at a reasonable cost. All else equal, higher ratings credit results in greater access to capital and lower customer costs. Based on Moody's analysis, PG&E is achieving optimal credit ratings of either A- or A3. As discussed above, PG&E's proposed ROE and capital structure provide PG&E with a sufficient buffer to weather unforeseen risks, including those that might result from unstable market conditions. PG&E's recommended 52 percent common equity ratio is a key component of achieving these optimal credit ratings.

Commission approval of PG&E's ACCAM would reduce costs associated with frequent cost of capital proceedings, and would also be positive for credit quality as it provides investors with a degree of confidence in how the cost of capital will change with interest rates.

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

All three major credit rating agencies use similar "key" credit benchmark statistics to assess the quantitative aspects of a firm's operations: (1) FFO to interest coverage; (2) FFO to total debt; and (3) debt to total capitalization. Table 1A-3 provides definitions of these ratios. Coverage ratios measure a firm's ability to meet interest expenses on cash generated over a period of time and compare it to that obligation. The other two measures focus on a company's ability to pay its liabilities over time and the total financial cushion for creditors.

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

Table 1A-1 shows that the FFO interest coverage and debt to capitalization ratios in 2012 and 2013 are in the range associated with an "A" credit rating at PG&E if its business is "strong." This FFO interest coverage result reflects the fact that, although PG&E has secured very low interest rates for its long-term debt, however, important balance sheet ratio of FFO to debt is only in the range of BBB- credit rating. Moreover, the debt to total capitalization ratio is in the high range of sub-investment grade and BBB-. The balance sheet therefore is difficult to no room for increasing debt leverage if PG&E is to maintain its credit ratings.

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1 S&P's RatingsDirect: "U.S. Utilities Ratings Analysis: The New S&P Corporate Ratings Matrix." November 30, 2007. Primary Credit Analysts: William Ferara, and John W. Whitlock, New York.

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

The credit statistics presented in Table 1A-1 also show the impact on credit statistics resulting from the inclusion of debt PPA equivalence. The table shows that all statistics decline when debt equivalence is considered. Although all the credit statistics remain in the investment grade category, the impact of debt equivalence will grow as PG&E moves toward achieving the Renewables Portfolio Standard goal and providing for load growth through long-term contracts. Increasing imputed debt and imputed interest that has no cash contracts will further reduce current coverage margins or credit quality.

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

Line No.		2012	2013
1	With Power Contract Debt Equivalence		
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	Without Power Contract Debt Equivalence		
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 No.	Financial Risk Profile	Cash Flow: FFO/ Debt (%)	Cash Flow: FFO/ Interest (x)	Debt Leverage: Total Debt/ Capital (%)	Indicative Rating With "Strong" Business Risk Profile
1	Modest	40-60	**4.0-6.0**	25-40	A
2	Intermediate	25-45	3.0-4.5	35-50	
3	Aggressive	**10-30**	2.0-3.5	**45-60**	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 (excluding Principal Payments) + Change in Deferred Tax + Other Net Cash from Operations + Depreciation Expense

Total Interest Expense = Interest + Imputed Interest on Preferred Dividends of 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 Stock + Imputed CP and Purchased Power Debt

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

FFO to Average Total Debt

FFO to Average Total Debt = FFO/Average Total Debt

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

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

Note: All Calculations exclude securitized debt ing conditions non-recurr

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

	Standard & Poor's	Fitch	Moody's 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. Avera, 3907 Red River, Austin, Texas. I am a financial, economic, and policy consultant to business, investment, and government. My offices are located at 3907 Red River, Austin, Texas, 78751. A description of my background and qualifications, including a more complete detail 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 (CPUC or Commission) my independent evaluation of the fair rate of return (ROR) on equity for 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 profession. In addition, my familiarity with the organization, operations, finances, and regulatory environment of PG&E is the result of my participation in prior proceedings before the CPUC and the Federal Energy Regulatory Commission (FERC). In connection with this testimony, I considered and relied upon corporate disclosures available to the public, publicly available financial reports and filings, other published information relating to PG&E, including bond rating agency reports, financial analysts' reports, regulatory proceedings and orders. I also reviewed certain information generally to capital markets and specifically to investors' perceptions, requirements, and expectations for regulated utility businesses. These, coupled with my experience in the fields of finance and regulation, have given me a working knowledge of the issues relevant to investors' required return for PG&E, and they form the basis and support for my analyses and conclusions.

The rate of return on common equity compensates shareholders for the use of their capital to finance the investment in, and necessarily commitment to, property to provide service. Investors commit capital only if they reasonably expect to obtain a

investment commensurate with returns available from alternative investments with comparable risks. To be consistent regulatory sound economics and the standards set forth by the Supreme Court in t *Bluefield*[1] and *Hope*[2] cases, a utility's allowed return on common equity should be sufficient to: (1) fairly compensate the capital utility inve (2) enable the utility return on fair to adequate to attract capital on reasonable terms; and (3) maintain the utility's financial inte

My evaluation of a fair ROE began with a review of and the operatio finances of PG&E, as well as the general condition of industry the util With this background, I examined current capital or market and conditi conducted various quantitative analyses to estimate cost of current equity including alternative applications of the discounted DCF) as model and the Capital Asset Pricing Model (CAPM), risk premium equity ris approach based on allowed rates of return, as well as expert evidence earned rates of return for utilities. Based on estimates of equ indicated by my analyses, my ROE was evaluated taking into account the specific risks, exposures, and potential challenges of utility operations in California, all of which are properly considered fair ROE.

2. Summary and Conclusions

Based on the results of my analyses and the economic requirement necessary to support continuous access to capital, and ROE recommend PG&E of 11.0%. The bases for my conclusion are summarized bel

- In order to reflect the risks and prospects associated with PG& jurisdictional utility operations, my analyses focused on a reference group of other firms with regulated gas utility operations;
- Because investors' required return on equity is unobservable an single method should be viewed in isolation, I applied CAPM, the DCF, and risk premium methods, as well as the expected earnings appr to estimate a fair ROE for PG&E;

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1 Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n, 79 (1923).

2 FPC v. Hope Natural Gas Co., 320 U.S. 591 (1944).

- While my conclusions were based solely on the results for the proxy group of utilities, I also considered results for proxy group companies selected from the least risky, most stable and mature participants in the non-electric sector of the economy. This additional benchmark is consistent with the fact that utilities must compete capital with firms outside their own industry;
- Based on the results of my analyses for the comparable-risk proxy utilities, and giving less weight to extremes at the high and low ends of the range, I concluded that a fair ROE for PG&E is in the 10.11.4% range.

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

- An ROE above the midpoint of my recommended range is consistent with maintaining a level of financial strength that allows access to capital, even during times of financial stress and tight capital markets;
- While PG&E's ambitious capital investment plans will benefit customers by expanding utility infrastructure, meeting reliability goals, and safely and furthering energy policy objectives in California, the Company's financial integrity and flexibility will be tested in order to meet these mandates;
- The reasonableness of an 11.0% ROE for PG&E is also supported by the need to ensure that the Company has the ability to respond to potential challenges – including nuclear exposure and ambitious environmental standards – and recover flotation costs.

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

This requested ROE is a reasonable cost for PG&E's customers to pay. Investors have many options vying for their money. They will make investment capital available to PG&E only if the expected returns justify the risks. Customers will enjoy reliable, efficient utility service at a cost only as low as investors are willing to make the huge capital investments necessary

maintain and improve PG&E's utility system. Providing returns adequate to investors is a necessary to ensure that capital will be available to PG&E now and in the future. If regulatory decisions unavailingly limit the returns to investors to levels insufficient to justify the risk, ultimately customers lose benefits of reliable utility service so vital in today's world to economic development.

B. Fundamental Analyses

As a predicate to my economic and capital market analyses, this section briefly describes PG&E and reviews its operations and financial condition, the risks and prospects for the industry examined. An understanding of these fundamental factors that drive the risks and prospects of investors is essential to developing an informed opinion about investors' return requirements that form the basis of a fair ROE.

1. Pacific Gas and Electric Company

PG&E, the primary subsidiary of PG&E Corporation (NYSE: PCG), is principally engaged in providing integrated retail electric and natural gas service in northern and central California. One of the largest investor-owned utilities, PG&E provides service to approximately 5.2 million residential and electric customers and 4.3 million gas distribution customers. At year-end 2011, PG&E had total assets of $49.2 billion, with total revenues in the year amounting to approximately $15.0 billion.

During 2011, PG&E's delivered electricity totaled 74.9 million megawatt-hours (MWh). Sales to residential customers (41%) composed retail sales, with 40% to commercial, 12% to industrial, and the remaining 7% attributable to agricultural and other customers. The Company has over 7,400 megawatts (MW) of generating capacity, including 2,240 MW at its Diablo Canyon facility. During 2011, company-owned generation provided approximately 49% of PG&E's electricity requirements. Electricity provided under contracts with the California Department of Water Resources has steadily declined and in 2011 provided just 4% of the energy needed to serve PG&E's customers. The remaining 47% of the Company's energy supply being purchased from

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

PG&E's transmission and distribution facilities extend throughout or a part of 47 of California's 58 counties and include approximately 18,600 circuit miles of transmission lines and approximately 141,000 of distribution lines. PG&E is interconnected with systems in the Western Electricity Coordinating Council (WECC), which includes 14 Western states, Alberta and British Columbia, Canada, and part of Mexico. In connection with electricity industry restructuring, PG&E relinquished control, but not ownership, of its electric transmission facilities to the California Independent System Operator Corporation (CAISO) in 1998. The CAISO, which is an approved FERC transmission organization, controls the operation of a significant portion of California's high voltage (HV) wholesale power grid and provides open access transmission on a nondiscriminatory basis.

PG&E also owns and operates an integrated natural gas gathering transportation, storage, and distribution system that extends throughout 40 of California's 58 counties and includes most of northern and central of the state. In 2011, the Company provided gas utility service to approximately 4 million customers. Residential and small commercial customers, which make up the core customer class, represent approximately 99% of PG&E's gas utility customers and account for 41% of the gas deliveries, with non-core customers (industrial, large commercial and electric generation) making up the balance. Total gas deliveries in 2011 amounted to 804 billion cubic feet, with residential, transmission, commercial customers accounting for 30%, 57%, and only 13%, respectively. PG&E's natural gas system consists of over 42,000 miles of distribution mains and over 6,400 miles of transmission pipelines, and includes three Company-owned underground natural gas storage fields, as well as an interest in a jointly owned storage facility located in Northern California.

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

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

PG&E continues to expand utility infrastructure, including upgr transmission system that enhance reliability and facilitate acc additional generating resources. As discussed in Chapter 1, PG expects to invest roughly $15 billion in utility infrastructure over th 2012-2014. Considerable amounts of these projects, including support for the Company's financial integrity will be instrumen supporting PG&E's capital program.

2. Industry Risks Facing PG&E

Investors are aware of numerous challenges that impact their perceptions of the relative risks inherent in the utility industry and how these implications for the financial standing of the investor-owned utilities, including PG&E. Uncertain costs associated with environmental compliance, demand in the wake of economic slowdown, the implications of increased conservation and renewables goals, as well as exposure to regul uncertainties all impact the industry's future. As Moody's noted:

> [A] sustained period of sluggish economic growth, characterized unemployment, could stress the sector's recovery prospects, fin performance, and credit ratings. The quality of the sector's c are already showing signs of decline, partly because of higher costs and investments.[3]

Moody's concluded, "we also see the sector's overall business a operating risks increasing."[4]

Additionally, in recent years, PG&E and its customers have had contend with dramatic fluctuations in energy costs, including ongoing volatility in the spot markets and investors reorganized after the turmoil in energy markets. In times of extreme volatility, utilities can quickly find themselves in a significant under-recovery position with r

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3 Moody's Investors Service, "U.S. Electric Utilities Ahead, Uncertainty Strengthening Balance Sheets Now Would Protect Credit," *Special Comment* (Oct. 28, 2010).

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

power costs, which can severely stress liquidity. Volatile market conditions can discourage potential customers from choosing natural gas, cause substitution, and lead to decreased customer usage, increases of which the risks of investing in natural gas distribution utilities places additional pressure on their bond ratings. Moody's echoed these sentiments, noting that reduced demand and margins challenge gas distribution companies during periods of volatile natural gas prices.[5]

While current expectations for significantly lower natural gas prices reflect weaker fundamentals affecting current load and fuel cost prices, investors recognize the potential that such trends could quickly change. For example, recurring political crises in the Middle East have increased concerns about sharp petroleum prices. Moody's added concern that utilities remained exposed to fluctuations in energy prices, observing, "This outlook, which assumes that commodity prices remain low, could easily be proved incorrect, due to the evidence of historical volatility."[6] Fitch recently observed that market conditions will likely result in higher natural gas prices, tempered only by the utilities' potential exposure to future price shocks.[7]

Investors are also aware of the financial and regulatory pressures faced by utilities associated with both rising costs and the need to undertake significant capital investments. S&P noted that "most capital expenditure projects, along with uncertain load growth, will be a challenge significant for the utility industry."[8] As Moody's observed:

> [W]e also see the sector's overall business risk risks and operating increasing, owing primarily to costs associated with aging and expanding the nation's trillion-dollar electric infrastructure.[9]

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

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

6 Moody's Investors Service, "U.S. Electric Utilities Ahead; Uncertain Strengthening Balance Sheets Now Would Protect Credit," *Special Comment* (Oct. 28, 2010).

7 Fitch Ratings Ltd., "2012 Outlook: Utilities, Power, Gas," (Dec. 5, 2011).

8 Standard & Poor's Corporation, "Industry Economic Outlook," *RatingsDirect* (Feb. 2, 2010).

9 Moody's Investors Service, "Regulation Provides Stability, But Uncertainty," *Industry Outlook* (Jan. 19, 2011).

The economy remains weighed down by tight credit, ga soft housin market, and high unemployment. The weakness in the or housing sec has particularly affected this industry. The flaugsolid inventory o houses has limited the need for natural gas. rly This rouslingparticula for these utilities as the emeak heating season. ver, Moreo customer growth has declined, which continues to pressure reven across this group. Additionally, more conservatiemdingconsumer sp has impacted customer usage, which has hurt volumesl. Lastly, b collection has been difficult given high unemployomentngrates. L ahead, these factors will likely continue to plaanyesonasthese comp the calendar turns to[10] 2011.

As noted earlier, investorsmaintthat PG&E will undertake significant utility capital expenditures. S&P &olEsservedapthat PG expenditures "could grow to aboveaching $5 billionover yeathe next several years," and concluded, "This levelmentof isapital inve unprecedented."[11] Enhancing the infrastructure necessary to meet the energy needs of customers is certainly desirable, oubut the enorm magnitude of the capital expenditures contemplated by sePG&E impo additional financial responsibilities on the Companyensitthatd are i during times of capital market turmoil.

Increased environmental pressures and speculation oventhe pote costs associated with new regulatory mandates have also created uncertainties. Moody's noted that, "the sectorreasingly exposed to i stringent environmental mandates."[12] While the momentum for carbon emissions legislation has slowed at the national tlevel, for expecta eventual regulations continue to pose uncertainty. tly Fitch noted thaten it, "expects the thrust of the EPA's agenda alwillengecontinue to ch creditworthiness ofissuers in the utility and power sector."[13]

Meanwhile, California became the first state indothe anation to a landmark, state-administered cap-and-trade program. thePassage of Global Warming Solutions Act of 2006 set an economy-wide cap on California greenhouse gas emissions at 1990 levelsby 2020.[14] Later

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10 The Value Line Investment Survey at 547 (Dec. 10, 2010).

11 Standard & Poor's Corporation, Gas & Electric *Ratings Direct* (Dec. 15, 2011).

12 Moody's Investors Service, "Regulation Provides Stability, *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).

Cap- and trade regulation became effective January 1, 2012, with auctions of carbon allowances to take place in November 2012.[15] Meanwhile, Senate Bill 1368 implementation of emission performance standards for all retail providers of electricity in California.[16] In addition, California's Renewables Portfolio Standard (RPS) is one of the most ambitious in the country, and requires investor-owned electric utilities, service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to obtain 33% of energy procurement by 2020.

In evaluating an investment in the Company, investors would also consider the impact that PG&E's nuclear operations have on the Company's financial requirements. The Diablo Canyon nuclear-fueled facility provides approximately 25% of the energy required to serve the Company's bundled retail customers. While customers benefit from the advantages of fuel and cost savings and diversity that nuclear power confers, investors must also associate with these facilities with risks that are not encountered with other sources of electric generation. S&P has long-cited certain additional risks posed by nuclear facilities, as reflected in a 1994 article:

> Operating and maintaining [nuclear plants] is more complex compared with fossil plants because of safety considerations and the additional safety equipment and operational controls required.[17]

Moody's confirmed that, "ownership of nuclear generating facilities brings a higher level of complexity associated with operating and maintaining the units."[18]

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

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

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

16 Perata, Chapter 598, Statutes of 2006.

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

18 Moody's Investors Service, "New Nuclear Generation in States that Are Keeping Options Open vs. Addressing An Inevitable Need," *Special Comment* (Oct. 2007).

facilities. A renewed public focus on the inherent risks of nu will demand as much. This could result in delays in license- ex approvals and deteriorating economics for new plant const Additio the same time, closure of nuclear power plants, increased due to i costs or regulatory action, might significantly affect U.S. ele supply and have substantial capital spending implications.[19] for u

While the Company's nuclear operations may be highly efficient extremely safe, this incident highlights the exposure nevertheless PG&E faces due to events far outside its control.[20] Even for a utility with an exemplary record of nuclear safety and operating success, facilities these raise the bar in terms of financial preparedness. Indeed, Moody's c extended outage can significantly stress an owner's overall liquidity a financial profile."[21] In addition, longer-term uncertainties regarding the disposal of spent fuel and the ultimate costs of decommissioning accompany any investment in nuclear generating facilities. In order to mitigate these potential exposures, Moody's cited the importanc constructive regulatory relationship and "a needed financial establish f policies over the near-term aimed at producing credit financial ratios in order to maintain a given rating."[22]

3. Impact of Capital Market Conditions

As Value Line recently recognized, "It has been a fortuitous event yea financial markets, to say the least."[23] Investors have faced a myriad of challenges and uncertainties, including the threat of a U.S. go default, political brinkmanship over raising the federal debt c S&P's subsequent downgrade of its U.S. sovereign debt rating.[24] The sovereign debt crisis in Europe has also dealt a harsh blow confidence, and concerns over potential exposure to default in the Euro-zone

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19 Standard & Poor's Corporate Credit, S. "Nuclear Power Industry Looks At Japan And Awaits More Scrutiny," *Global Credit Research* (Mar. 16, 2011).

20 For example, a proposed ballot initiative into California seeks shut down of the Diablo Canyon and San Onofre nuclear generation stations.

21 Moody's Investors Service, "New Nuclear Generation in the U.S. Keeping Options Open vs. Addressing An Inevitable Need Sooner," *Special Comment* (Oct. 2007).

22 *Id.*

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

24 *See, e.g.*, Standard & Poor's Corporate Economic "Forecast: Still Treacherous," *RatingsDirect* (Aug. 17, 2011).

has again undermined confidence in the financial and[25] banking se

Meanwhile, speculation that the economy remains exposed to a po

"double-dip" persists, with unemployment remaining high, stubbornly h

lackluster consumer confidence, rising petroleum prices, and co

weakness plaguing the real estate sector.

Investors have had to confront ongoing volatility in and share pric

stress in the credit markets,[26] in response have repeatedly fled to the

safety of U.S. Treasury bonds. The dramatic rise in gold and the price

other commodities also attests to investors' heightened concern

prospective challenges and risks, including the overhanging thr

inflation and renewed economic turmoil. With respect, Moody's utilit

noted the dangers to credit liquidity associated with exposu

European banks,[27] and concluded:

> Over the past few months, we have been reminded anew that global fin
> markets, which are still receiving extraordinary infusions of intervention b
> sovereign governments, are exposed to turmoil. Any increase in the c
> markets could therefore become intermittent, even for safer, mo
> defensive sectors like the power industry.[28]

Uncertainties surrounding economic and capital markets condition

heighten the risks faced by utilities, which, as described earlier, face a

variety of operating and financial challenges.

With respect to expected trends in bond yields, Table 2-1 below

compares current interest rates on 30-year Treasury bonds, round trip

corporate bonds, and double-A rated utility bonds with projections for

2012 through 2015 by Value Line, IHS Global Insight, Blue Ch

Forecasts (Blue Chip), and the Energy Information Administration (EIA),

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; Recalls Late Market Jitters' Volatility at Peak of Credit Difficulties; Unusual," *Wall Street Journal* at B1 (Feb. 6, 2010); Lauricella, Tom, "Stocks Tumble— Dow Weak Amid 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 Is Stable, But Regulatory 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

	Current (a)	2012	2013	2014	2015
30-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 Sept. 2011 - Feb. 2012 reported on www.creditstats.moodys.com and http://www.federalreserve.gov/releases/h15/data.htm

(b) The Value Line Investment Survey, Forecast for the U.S. Economy (Dec. 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 & Poor's Corporation, "U.S. Economic Forecast: Oh, Just Stress Less," *RatingsDirect* (Jan. 12, 2012).

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

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

While conditions in the economy and capital markets have appeared to have stabilized – at least for the moment – no one knows for the future of our complex global economy. Investors continue to react negatively and to any signs of future trouble in the financial, system and this economic climate has important implications with respect to PG&E's ROE for The fact remains that the utility industry and PG&E in significant new capital investment. Given the importance of reliable utility would be unwise to ignore investors' increased sensitivity to the implications of capital market volatility in evaluating PG&E's claim this case.

The prospect for continued turmoil in capital markets also influences appropriate capital structure for PG&E. Financial flexibility is crucial

role in ensuring the wherewithal to meet funding liabilities, with and uti higher financial leverage may be foreclosed from additional bor especially during times of stress. During the credit crisis, f utilities were forced to draw on short-term credit lines to mee retirement obligations because of uncertainties regarding the ab long-term capital,[29] while others were effectively shut out of the commerc paper market altogether. Fitch recently highlighted this expos

> **Capital Markets Freeze:** Significant tightening or loss of capital markets and bank access would have a deleterious effect on sect creditworthiness in the face of high capex budgets.[30]

As a result, the Company's capital structure must maintain equity an "cushion" that preserves the flexibility necessary to continuously maintain access to capital even during times of unfavorable economic and market condi

C. Capital Market Estimates

In this section, I develop capital market estimates of the cost of equity. First, I address the concept of the cost of the equity, risk-return with tradeoff principle fundamental to capital market theory. I describe DCF, CAPM, and risk premium analyses conducted to estimate the cost of equ benchmark groups of comparable risk firms and evaluate the expected rates of return for utilities. Finally, I examine the issue of which factors properly considered in evaluating a fair ROE.

1. Cost of Equity Concept

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

The fundamental economic principle underlying the cost of equit concept is the notion that investors are risk averse and markets In capit

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

30 Fitch Ratings Ltd., "2012 Outlook: Utilities, Power, and Gas," *Outlook Report* (Dec. 2011).

where relatively risk-free assets are *e.g.*, available (Treasury securities), investors need be induced to hold riskier assets if they are offered a premium, or additional return, above the return rate of return risk-free asset. Since all assets compete with investors' funds, for riskier assets must yield a higher expected rate of return than assets to induce investors to hold them.

Given this risk-return tradeoff, the required rate of return (*k*) for an asset (*i*) can generally be expressed as:

$$k_i = R_f + RP_i$$

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

RP_i = Risk premium required to hold riskier asset *i*.

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

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

2. Comparable Risk Proxy Groups

Application of the DCF model and quantitative methods to estimate the cost of equity requires observable capital such as stock prices. Because PG&E is a wholly-owned subsidiary and ha publicly traded stock, its cost of common equity cannot be meas directly. Moreover, even for a firm with public traded stock equity can only be estimated. As a result, applying quantitati using observable market data only produces an estimate that inh includes some degree of observation error.

Thus, the accepted approach to increase confidence in the results is to apply quantitative models to a proxy group of publicly traded companies that investors regard as risk comparable. The results of the analysis of a sample of companies are relied upon to establish a reasonable progress of reasonableness for the cost of equity for the specific company at issue.

Because PG&E is an integrated electric and gas utility, with the Company's electric operations accounting for approximately 78% of total revenues, I examined quantitative estimates of equity investors' required rates of return for a proxy group of combination gas and electric utilities. My electric utility analyses focused on a reference group of other utilities that are comparable to companies included by Value Line in its Electric Utility (Industry) group with: (1) both electric and gas utility operations, (2) corporate credit ratings between "BBB" and "A-"; (3) a Value Line Safety Rank of "2" or "3"; (4) a Value Line Financial Strength Rating of "B++" or higher; and (5) market capitalization of approximately $1.6 billion or greater. In addition, I excluded four firms that otherwise would have been in the group, but are not appropriate for inclusion because they were involved in a major merger or acquisition.[31] These criteria resulted in a proxy group composed of 14 companies, which I refer to as the "Utility Group."

In addition, my DCF analyses also considered a proxy group of unregulated companies. Under the regulatory standards established by *Hope* and *Bluefield*, the salient criterion in establishing a meaningful benchmark to evaluate a fair ROE is relative risk, and not business part activity or degree of regulation. With regulation often taking the place of competitive market forces, required returns for utilities should be comparable to those of non-utility firms of comparable risk operating in the environment of free competition. Consistent with this accepted standard, I also applied the DCF model to a reference group of low risk companies in non-utility sectors of the economy. I refer to this group as the "Non-Utility Group".

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[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 not necessarily reflected in the growth rates used to apply the DCF model. Because of this potential, companies that are involved in a major merger or acquisition are excluded from the proxy groups used to estimate the cost of equity in regulatory proceedings.

The cost of capital is an opportunity cost based on the returns that investors could realize by putting their money in other alternative investments. Clearly, the total capital invested in utility stocks is only the tip of the iceberg of total common stock investment, and there are a plethora of other enterprises available to investors beyond those in the utility industry. Utilities must compete for capital, not just against firms in their own industry, but with other investment opportunities of comparable risk. Indeed, modern portfolio theory is built on the assumption that rational investors will hold a diverse portfolio of stocks, not just companies in a single industry.

It is also consistent with the *Bluefield* and *Hope* cases to consider required returns for non-utility companies. Returns in the competitive sector of the economy form the very underpinning for utility ROEs because regulation purports to serve as a substitute for the actions of competitive markets. The Supreme Court has recognized that it is the degree of risk, not the nature of the business, which is relevant in evaluating an allowed ROE for a utility. The *Bluefield* case refers to "business undertakings attended with comparable risks and uncertainties."[32] It does not restrict consideration to other utilities. Similarly, the *Hope* case states:

> By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks.[33]

As in the *Bluefield* decision, there is nothing to restrict "other enterprises" solely to the utility industry.

Indeed, in teaching regulatory policy I usually observe that in the early applications of the comparable earnings approach, utilities were explicitly eliminated due to a concern about circularity. In other words, soon after the *Hope* decision regulatory commissions did not want to get involved in circular logic by looking to the returns of utilities that were established by the same or similar regulatory commissions in the same geographic region. To avoid circularity, regulators looked only to the returns of non-utility companies.

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

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

Consideration of the results of the Non-Utility Group provides important corroboration to the DCF test for the Utility Group and makes the more reliable estimation of the cost of equity. The estimates of growth rates in the DCF model depend on analysts' forecasts. It is possible for growth rates to be distorted by short-term trends in the industry or by being in temporary favor or disfavor by analysts. The result of such distortions would be to bias the DCF estimates. Because utilities. Non-Utility Group includes companies from many industries, it diversifies away any distortion that may be caused by the ebb and flow of enthusiasm for a particular sector.

My comparable risk proxy group of non-utility firms was composed of those U.S. companies followed by Value Line that: (1) pay common dividends; (2) have a Safety Rank of "1"; (3) have a Financial Strength Rating of "B++" or greater; (4) have a beta (5 yr.) of 0.60 or less; and (5) have investment grade credit ratings from S&P.

The criteria used to define my proxy groups provide an objective basis as to investors' risk perceptions. Credit ratings are assigned by independent rating agencies for the purpose of providing investors with a basis for assessment of the creditworthiness of a firm. Ratings are generally given a triple-A (the highest) to default (D). Other symbols ("A+") are used to show relative standing within a category. Because credit ratings are a rating evaluation includes virtually all of the factors deemed important or significant in assessing a firm's relative credit standing, ratings provide a broad, objective measure of overall investment risk available to investors. Although the credit rating agencies are not immune to criticism, their rankings and analyses are widely cited in the investment community and referenced by investors. Investment restrictions tied to credit ratings continue to influence capital flows, and credit ratings frequently are also used as a primary risk indicator in establishing proxy groups for the cost of common equity.

While credit ratings provide the most widely referenced barometer of investment risks, other quality rankings published by investment services also provide relative assessments of risks considered by many investors in forming their expectations for common stocks. Value Line's

primary risk indicator is its Safety Rank, which ranges from "1" (Safest) to "15" (Riskiest). This overall measure of risk is intended to capture the total risk of a stock, and incorporates elements of stock price stability and financial strength. Given that Value Line perhaps is the most widely available source of investment advisory information, its Safety Rank is useful provides insight regarding the risk perceptions of investors.

The Financial Strength Rating is designed as a guide to a company's financial overall strength and creditworthiness, with the key inputs to financial including financial leverage, business volatility measures, and company size. Value Line's Financial Strength Ratings range from "A++" (strongest) down to "C" (weakest) in nine steps. Value Line's beta measures the volatility of a security's price relative to the market as a whole. Stocks with betas of 1.00 tend to respond less to market movements has a beta less than 1.00, while stocks that tend to move more than the market have betas greater than 1.00.

Table 2-2 compares the Non-Utility Group with the Utility Group and PG&E across four key indicators of investment risk. Because PG&E has no publicly traded common stock, the Value Line risk measures reflect those published for its parent, PCG.

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

Proxy Group	S&P Credit Rating	Value Line Safety Rank	Value Line Financial Strength	Value Line 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"[34] However, the Value Line Safety Rank and Financial Strength Rating corresponding to PG&E suggests somewhat greater risk than the averages for the Group, but with the Company's beta suggesting less risk. Considered together, comparison of these objective measures indicates that would investors rely

[34] S&P's corporate credit ratings of 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" fr

conclude that the overall investment risks for PG&E are best represented, albeit slightly greater than those of the firms in the Utility Group.

With respect to the Non-Utility Group, its average credit rating, Safety Rank and Financial Strength Rating all indicate these risks are lower than PG&E, with its 0.58 average beta being essentially identical to the 0.55 value corresponding to the Company. These investment risk measures considered in my analysis provide a sound, objective, market-based basis to evaluate relative risks of companies and industry sectors. These measures incorporate a broad spectrum of risks, including financial business position, the impact of regulation, relative exposure size, and company specific factors, and they apply equally and do not favor regulated a unregulated firms. Indeed, the core idea of investment portfolio theory is that investors will diversify their holdings across multiple industry firms and groups, so that the risk of a stock is directly related to its contribution to the overall risk of the portfolio, not to the extent of competition or the freedom to set prices.

While the impact of differences in regulation is reflected in objective investment risk measures, my analyses conservatively focus on a lower risk group of non-utility firms. The 12 companies that make up the Non-Utility Group are widely known, well-established companies that are representative of the pinnacle of corporate America. While these firms include household names such as Coca-Cola, Colgate-Palmolive, Kellogg, and Wal-Mart, have long corporate histories, well established dividend records, and exceedingly conservative risk profiles.[35] These companies have a long history of dividend payments, with the average dividend yield approaching 3%. Moreover, because of their significance and national recognition, these companies receive intense scrutiny by investment community, which increases confidence that published interest rates are representative of the consensus expectations reflected in stock prices.

3. DCF Analyses

DCF models attempt to replicate the market valuation process to assess the price investors are willing to pay for a share of stock. A company

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

The model rests on the assumption that investors ieval uate the r expected rates of return from all securities inthe capital mar Given these expectations, the price of each stock tis adjusted b until investors are adequately compensated for the risks eathey b Therefore, we can look to the market to determine whatever investor share of common stock is worth. By estimating investor cash flows i expect to receive from the stock in the way of future dividends gains, we can calculate their required rate of return. Thus, t that investors expect from a stock are estimated, currently given its market price, we can back into the discount rate, or the cost of eq investors implicitly used in bidding the stock to that price.

Rather than developing annual estimates of cash flows into perp the DCF model can be simplified to a "constant[36] growth" form

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

where: P_0 = *Current price per share;*

D_1 = *Expected dividend per share in the coming year;*

k_e = *Cost of equity;*

g = *Investors' long-term growth expectations.*

The cost of equity can be isolated by rearranging terms:

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

This constant growth form of the DCF model, which is the form m frequently relied on in regulatory proceedings, recognizes that return to stockholders consists of two parts: ld (i.e., DP) ; dividend yie

[36] The constant growth DCF model is dependent on a number of assumptions, which in practice are never strictly met. These include that a utility's earnings; a stable dividend payout ratio; the cost of equity 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-to-book ratio; a constant discount rate (*i.e.*, no changes in risk or interest rate levels over time); and a forecasted yield that extend to infinity.

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

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

For the Utility Group, estimated dividends to be paid over the next twelve months, obtained from Value Line as D_1. This annual dividend was then divided by the average stock price for the 30 days ended February 24, 2012 to arrive at the expected dividend yield for each utility. The stock prices, dividends, and resulting dividend yields for the firms in the Group are presented on page 1 of Schedule WEA-1. As shown there, dividend yields for the firms in the Utility Group ranged from 3.5% to 5.2%, and averaged 4.4%.

The next step is to evaluate long-term growth expectations, or "g", for the firm in question. In constant growth DCF theory, dividends, earnings, book value, and market price are assumed to grow in perpetuity, and the growth horizon of the DCF model is infinite. But implementing a DCF model is more than just a theoretical exercise; to implement a DCF model is to attempt to replicate the mechanism investors used to arrive at observable stock prices. A wide variety of techniques can be used to derive growth rates or "g", but the key that matters in applying the DCF model is the value that investors attach to

Because investors' focus is on future expectations, growth rates based on historical trends in earnings, dividends, and book value are relevant only to the extent they are representative of investors' future expectations. Even then the historical conditions giving rise to these growth rates should be expected to continue. That is not the case for utilities, economy and industry changes have led to declining growth in dividends, earnings pressure, and, in many cases, significant write-offs. While these conditions have existed for some

growth measures, they are not representative of long-term expectations for the utility industry or the forward-looking expectations that investors have incorporated into current market prices. As a result, historical growth measures for utilities do not currently meet the requirements of the DCF model.

While the DCF model is technically concerned with growth in dividend cash flows, implementation of this DCF model is solely concerned with replicating the forward-looking evaluation of real-world investors. In the case of utilities, dividend growth rates are not likely to provide a meaningful guide to investors' current growth expectations. This is because utilities have significantly altered their dividend policies in response to more accentuated business risks in the industry.[37] As a result of this trend towards a more conservative payout ratio, dividend growth in the utility industry has remained largely stagnant as utilities conserve financial resources to provide a hedge against heightened uncertainties.

As payout ratios for firms in the utility industry trended downward, investors' focus has increasingly shifted from dividends to earnings as a measure of long-term growth. Future trends in earnings per share ("EPS"), which provide the source for future dividends and ultimately support share prices, play a pivotal role in determining investors' long-term growth expectations. The importance of earnings in evaluating investors' expectations and requirements is well accepted in the investment community, and surveys of analytical techniques relied on by professional analysts indicate that growth in earnings is far more influential than trends in dividends per share ("DPS").[38] Apart from Value Line, investment advisory services do not generally publish comprehensive DPS growth projections, and this scarcity of dividend growth rates relative to the abundance of earnings forecasts attests to their relative influence. The fact that securities analysts focus on EPS growth, and that dividend growth rates are

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37 For example, the payout ratio for electric utilities fell from approximately 80% historically to on the order of 60%. The Value Line Investment Survey (Sep. 15, 1995 at 161; Feb. 14, 2011 at 2237).

38 *See, e.g.,* Block, Stanley B., "A Study of Financial Analysts: Practice and Theory", *Financial Analysts Journal* (July/August 1999); Liu, Jing, Nissim, Doron, & Thomas, Jacob, "Is Cash Flow King in Valuations?", *Financial Analysts Journal*, Vol. 63, No. 2 at 56 (March/April 20

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

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

The projected EPS growth rates for each of the Duke Group the Uti reported by Value Line, Thomson Reuters (IBES), and Zacks Research (Zacks) are displayed on page 2 of Schedule WEA-1.[39]

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

Any claims that analysts' estimates are not relied upon by inve unfounded given the reality of a competitive market for investment advice. The market for investment advice is intensely competitive, and analysts are personally and professionally motivated to provide accurate assessment possible of future growth trends. If analysts' forecasts do not add value to investors' decision making, it is irrational for investors to pay for these estimates. Those analysts who consistently provide reliable forecasts without bias in competitive markets relative to those analysts whose forecasts investors find more credible. That analyst estimates are routinely referenced in their financial and investment advisory publications (Value Line) strongly suggests that investors use them as a basis for their expectations.

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

The continued success of investment services such as Thomson Reuters and Value Line, and the fact that projected growth rate sources are widely referenced, provides strong evidence that give considerable weight to analysts' earnings projections in their formin expectations for future growth. While the projections analysts secur may be proven optimistic or pessimistic in hindsight, the relevant in assessing the expected growth that investors have incorporated stock prices, and any bias in analysts' forecasts (whether pessi optimistic) is similarly irrelevant if investors' share view the analy Earnings growth projections of security analysts provide the most widely referenced guide to investors' views and are widely applied in their DCF model. As explained in *New Regulatory Finance*:

> Because of the dominance of institutional investors and their influence on individual investors, analysts' forecasts of long-run growth provide a sound basis for estimating required returns. Financial analysts exert a strong influence on the expectations of investors, many of who do not possess the resources to make their own forecasts, t they are a cause of [growth]. The accuracy of these forecasts in the sense of whether they turn out to be correct in hindsight is not as an important issue as they reflect widely held expectations.[40]

In addition, based on the assumptions underlying the constant growth theory, growth in book equity will be equal to the product of the retention ratio (one minus the dividend payout ratio) and the return on book equity. Furthermore, if the earned return on book equity and payout ratio are constant over time, growth in earnings, dividends, and book value will be equal to growth in book value. The DCF fact that these conditions are rarely, if ever, met in practice, this "sustainable growth" approach may provide a rough guide for evaluating a firm's growth prospects frequently proposed in regulatory proceedings.

Accordingly, while I believe that analysts' EPS growth forecast a superior and more direct guide to investors' expectations, I have included, for completeness, the "sustainable growth" approach. The sustainable growth rate is calculated by the following formula: $g = br + sv$, where "b" is the expected retention ratio, "r" is the expected earned return on

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40 Morin, Roger A., *New Regulatory Finance*, Public Utilities Reports, Inc. at 298 (2006) (emphasis added).

the percent of common equity expected to be issued each year as common stock, and "v" is the equity accretion rate.

Under DCF theory, the "sv" factor is a component of the growth rate designed to capture the impact of issuing new common stock at a price above, or below, book value. When a company's stock price is greater than its book value per share, the per-share contribution to book value in excess of cost associated with new stock issues will accrue to the benefit of current shareholders. This increase to the book value of existing shareholders' investment leads to higher expected earnings and dividends, with the "sv" term in the DCF model incorporating this additional growth component.

The sustainable, "br + sv" growth rates for each of the companies in the Utility Group are summarized on page 2 of Schedule WEA-1, with details underlying these results being presented on Schedule WEA-2. For each firm, the retention ratio (b) was calculated based on Value Line's projected dividends per share and projected earnings per share. Likewise, each firm's expected rate of return on book equity (r) was computed by dividing projected earnings per share for the next year by projected year-end book value. Because Value Line reports end-of-year and not average book values, an adjustment was incorporated to compute an average rate of return on book equity over the next year, consistent with the theory underlying this estimation approach to reflect investors' growth expectations. Meanwhile, the percentage of common equity expected to be issued annually as new common stock (s) is the product of the projected market-to-book ratio and the growth in common shares outstanding, while the equity accretion rate (v) is the inverse of the projected market-to-book ratio.

After combining the dividend yields and respective constant growth forecasts for each utility, the resulting cost of equity estimates are as shown on Schedule WEA-1. In evaluating the results of the DCF constant growth model, however, it is essential that the resulting estimates values pass fundamental tests of reasonableness and economic logic, and appropriately eliminate estimates that are extreme low or high outliers.

It is a basic economic principle that investors can be induced to hold more risky assets only if they expect to earn a greater return to compensate for their risk bearing. As a result, the investor's required return that is from a utility's common stock, the most junior of its securities, is greater than

must be considerably higher than the yield offered by long-term debt. Consistent with this principle, the DCF results must be adjusted to eliminate estimates that are determined to be extremely low when compared against the yields available to investors from less risky utility bonds.

Similar tests have been applied by other regulators. FERC has noted that adjustments are justified where applications of the DCF approach produce illogical results. FERC evaluates DCF results against observable yields on long-term public utility debt and has recognized that it is appropriate to eliminate estimates that do not sufficiently exceed this threshold. In a 2002 opinion establishing its current precedent for determining ROEs for electric utilities, for example, FERC concluded:

> An adjustment to this data is appropriate in the case of PG&E's low-end return of 8.42 percent, which is comparable to the average Moody's "A" grade public utility bond yield of 8.06 percent, for October 1999. Because investors cannot be expected to purchase stock if debt, which has less risk than stock, yields essentially the same return, this low-end return cannot be considered reliable in this case.[41]

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

> [T]he 7.31 and 7.32 percent costs of equity for El Paso and Williams found by the ALJ are only 110 and 122 basis points above the average yield for public utility debt.[42]

The Commission upheld the opinion of Staff and the Administrative Law Judge that cost of equity estimates for these two proxy group companies "were too low to be credible."[43] The practice of eliminating low-end outliers has been affirmed in numerous other FERC proceedings,[44] and in its April 15, 2010 decision in *SoCal Edison*, FERC affirmed that, "it is reasonable to exclude any company whose low-end ROE fails to exceed the average bond yield by about 100 basis points or more."[45]

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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.

As noted earlier, S&P corporate credit ratings for the Utility firms in the Group averaged "BBB+", with Moody's monthly yields on triple-B bonds averaging approximately 5.0% in February 2012.[46] It is inconceivable that investors are not requiring a substantially higher rate of return to hold utility common stock. Consistent with this principle, the DCF results for the Utility Group must be adjusted to eliminate estimates determined that can be extreme low outliers when compared against the bond yields available to investors from less risky utility bonds.

As highlighted on page 3 of Schedule WEA-2, the range of the individual DCF estimates ranged from 4.5% to 6.5%. The return trade-off of the risk principle and the test applied in *SoCal Edison*, it is inconceivable that investors are not requiring a substantially higher rate of return to hold utility common stock, which is the riskiest of a utility's securities. As consistent with the test of economic logic applied by the FERC and trend expected for utility bond yields, these two values provide a basis to the returns investors require from utility common stocks should and be excluded.

Capital market trends also support elimination of these low-end outliers. As indicated earlier, while corporate bond yields have substantially as the worst of the financial crisis has generally ended, expected that long-term interest rates will rise as the nation's economy returns to a more normal pattern of growth below. As shown by Table 2-3, forecasts of IHS Global Insight and average EIA imply an triple-B bond yield of approximately 5.9% for, the 2013-2015 rate y over the period 2012-2015:

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

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

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

(a) IHS Global Insight, *U.S. 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.

The increase in debt yields anticipated by IHS Global and EIA Insight also supported by the widely-referenced Blue Chip Financial Forecasts,[47] which projects that yields on corporate bonds will rise 100 to 110 basis points through the period 2013-2017.

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

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

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

I applied the DCF model to the Non-Utility Group in exactly the same manner described earlier for the Utility Group. The results are tabulated below:

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

that are implausibly low or high should be eliminated when evaluating the results of any quantitative method used to estimate the cost of equity. As highlighted on page 3 of Schedule WEA-3, given a large diversity of the values, three DCF estimates were found in the Non-Utility group that exceeded 20%. I determined that, when compared with the remainder of the estimates, these values were clearly implausible and excluded should be. This is also consistent with the precedent adopted by FERC, which has established that high-end estimates found to be "outliers" should be disregarded in interpreting the results of quantitative methods used to estimate the cost of equity.[48]

The results of my DCF analysis for the Non-Utility Group are presented on page 3 of Schedule WEA-3, with the sustainable growth rate ("b + sv") being developed on Schedule WEA-4. As summarized in the following Table 2-5, after eliminating illogical low and high-end values, the application of the growth DCF model resulted in cost of common equity estimates ranging from 10.9% to 13.2%:

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

Growth Rate	Cost of Equity	
EPS	Average	Midpoint
Value Line	12.2%	12.6%
IBES	10.9%	10.9%
Zacks	11.7%	12.2%
b + sv	13.2%	12.1%

As discussed earlier, reference to the Non-Utility Group assists consistency with established regulatory principles and provides corroborative evidence, or a benchmark to the DCF results for the proxy group of Regulated Companies. Allowed returns for utilities should not be out of line with those of other non-risk utilities of comparable risk operating under the constraints of a competitive

While the DCF estimates for the Non-Utility Group may be considered higher than those produced for the comparable-risk utility group, use of

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48 *Id.*

important to be clear that this outcome cannot be attributed to risk differences. As I documented earlier, the risks associated with investors the group of non-utilities as measured by S&P's credit ratings and Value Line's Safety Rank, Financial Strength, and Beta are lower than those risks investors associate with the Utility Group. The objective evidence provided by these observable risk measures rules out that conclusion. higher non-utility DCF estimates are associated with higher risk investments.

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

4. Capital Asset Pricing Model

The CAPM is a theory of market equilibrium that measures risk using the beta coefficient. Because investors are assumed to be well diversified, the relevant risk of an individual asset (stock) is its volatility relative to the market as a whole, with beta defined as the tendency of a stock's price to follow changes in the market. The CAPM is mathematically expressed as:

$$R_j = R_f + \beta_j (R_m - R_f)$$

where: R_j = required rate of return for stock j;
R_f = risk-free rate;
R_m = expected return on the market portfolio; and,
β_j = beta, or systematic risk, for stock j.

Like the DCF model, the CAPM is *ex-ante*, or forward-looking model based on expectations of the future. As a result, prior to use in order to meaningful estimate of investors' required rate of return, the CAPM must be

applied using estimates that reflect the expectations of investors actual the market, not with backward-looking, historical data.

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

The dividend yield for each firm was obtained from Value Line, growth rate was equal to the consensus earnings growth projection firm published by IBES, with each firm's dividend yield being gro weighted by its proportionate share of total market value. Bas weighted average of the projections for the 375 individual firm estimates imply an average growth rate over the next five years. Combining this average growth rate with a year-ahead dividend y 2.6% results in a current cost of common equity market estimate for the whole ($_{m}$)R of approximately 13.5%. Subtracting a 3.8% risk-on the projected yield on 30-year Treasury bonds for a 2013 produ market equity risk premium of[49] 9.8%.

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

> Value Line is the largest and most widely circulated independen investment advisory service, and influences the expectations of number of institutional and individual investors. Betas as Value Line computed on a theoretically sound basis using a broadly based m index, and they are adjusted for the regression tendency of bet converge to 1.00.[50]

In addition, because empirical research indicates that the CAPM not fully account for observed differences in the risk-return a

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

50 Morin, Roger A., *New Regulatory Finance*, Public Utilities Reports at 71 (2006).

firm size, a modification is required to account for this size effect. As explained by *Morningstar*:

> One of the most remarkable discoveries of modern finance is that relationship between firm size and return. This relationship cu the entire size spectrum but is most evident among small comp which have higher returns on average than larger ones.[51]

According to the CAPM, the expected return on a security should consist of the riskless rate, plus a premium to compensate for systematic risk of the particular security. The degree of systematic risk is represented by the beta coefficient. The need for the size adjustment arises differences in investors' required rates of return that are not fully captured by beta. To account for this, Morningstar developed size premiums that need to be added to the CAPM theoretical cost of equity estimates to account for the lower market capitalization in determining the CAPM cost.[52] These size premiums correspond to the size deciles of publicly traded, common stocks from a premium of 6.1% for a company in the first decile (market capitalization less than $1,200.7 million) to a reduction of 0.8 for firms in the tenth decile (market capitalization between and $15,354.4 billion). A CAPM analysis may incorporate adjustment to recognize the impact of size, as measured by market capitalization.

The average market capitalization of the Utility Group is $10,3 Based on data from *Morningstar*, this means that the theoretical CAPM cost of equity estimate must be increased by 73 basis points to acco impact of the proxy group's relative size, which is not reflect average beta value. As shown on page 1 of Schedule 5, adju theoretical CAPM results, which averaged 10.8%, this size adjustment results in an average indicated cost of common equity of 11.5%, with the midpoint being 11.2%.[53]

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51 *Morningstar*, "Ibbotson SBBI 2011 Valuation Yearbook," mitted) .83 (footnote o

52 *Morningstar*, "2012 Ibbotson SBBI Valuation Yearbook," at CAppendi(x2 0,1 2Ta)ble

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

While investors undoubtedly consider historical information as in their evaluation of expectations, the cost of is a forward-looking concept. Because the CAPM is focused solely on perceptions of today's capital market investors, be applied should not using historical rates of return. The CAPM cost ty of estimation equi is calibrated from investors' required risk premia sur bonds Tre and common stocks. In response to heightened uncertainties, in have repeatedly sought a safe haven in U.S. government bonds an "flight to safety" has pushed Treasury yields significantly low spreads for corporate debt have widened. This distortion is not o the absolute level of the cost CAPM equity estimate, affects it estimated risk premiums. Economic logic would suggest that inv required risk premium for common stocks over Treasury bonds has increased.[54]

Meanwhile, backward-looking approaches incorrectly assume that investors' assessment of the required risk premium between bond Trea and common stocks is constant, and equal to some historical ave At no time in recent history has the fallacy of this assumption demonstrated more concretely than it is today. The incongruity between investors' current expectations and historical risk premia is particularly relevant during periods of heightened uncertainty and changing capital market conditions, as those experienced recently. The Staff of the Florida Public Service Commission concluded:

> [R]ecognizing the impact the Federal Government's unprecedented intervention in the capital markets has had on the yields on long Treasury bonds, staff believes models that relate required investor-return on equity to the yield on government securities, such as CAPM approach, produce less reliable estimates of the ROE at the time.[55]

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

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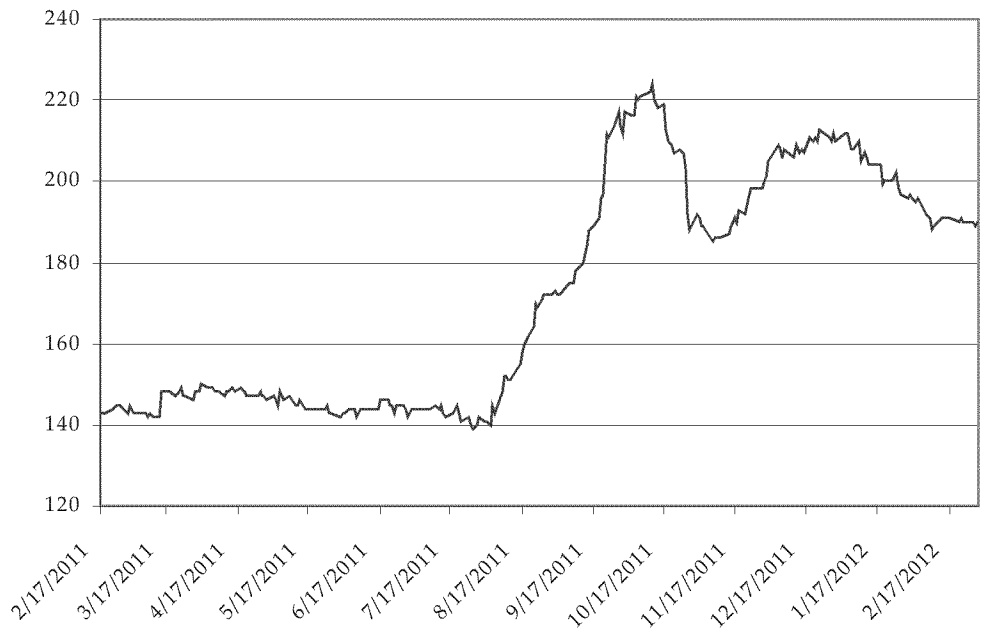
[54] As discussed subsequently, there is considerable evidence that equity risk premiums rise as bond yields fall, and *See, e.g.*, Harris, R. S., and Marston, F. C., "Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts," *Financial Management* (Summer 1992).

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

historical data to apply the CAPM. In September 2011, the Federal Reserve announced "Operation Twist", involving the exchange of Treasury short-term instruments for longer-term government bonds, in an attempt to put downward pressure on long-term interest rates. The ongoing potential for turmoil in the capital markets has certainly come to the forefront in recent months, with common stock prices exhibiting the dramatic volatility indicative of heightened sensitivity to risk.

Nowhere has this been more evident than in the market for Treasury bonds, with yields being pushed significantly lower due to "flight to safety" in the face of rising political, economic, and financial risks. In turn, this has led to a dramatic increase in risk premiums, as the spreads between triple-B utility bond yields and 30-year Treasuries, shown in Figure 2-1, below.

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



This increase in the yield spreads indicates that the additional compensation investors demand to take on higher risks has increased. As S&P observed:

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

demand to hold the bonds of riskier companies, widened by 63% 781 basis points (bps) from April 18, 2011 to Sept. sharp expansion reflected the bond market's increasing aversion credit risk in an uncertain and riskier environment. During p stress, correlations frequently increase among risky assets as the relationship between the return on speculative-grade bon the return from equities.[56]

Equity risk premiums cannot be observed directly, common because c stock investors are the last in line with respect to their claim cash flows, higher yield spreads imply an even steeper increase additional return required from an investment in common equity. heightened capital market and economic uncertainties increased the risk premiums demanded by investors, further undermining any reli historical studies to apply the CAPM.

In addition, my CAPM analysis did not rely on historical geometric or arithmetic means in arriving at an equity risk premium. Therefore, reference to arithmetic geometric mean risk premiums is associated with applications of CAPM that depend on historical data. In order to derive a market equity risk premium under this approach, historical returns average returns Treasury bonds are typically subtracted from those returns. common stocks These average rates of return based on backward-looking historical data also for time periods can be derived using both arithmetic and geometric means.

As discussed above, however, my application of the CAPM was a forward-looking approach, which is consistent with the underlying assumptions of this method and the standards underlying investment decision to determine a fair rate of return. Because I looked directly at investors' expectations in the capital markets and not at historical returns, my CAPM analysis did not need to reference either the arithmetic or geometric mean of historical rates of return.[57]

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

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

There are numerous studies that examine what investors actually have act realized in terms of equity versus stocks. Similarly, there are articles suggesting what investors should expect based on "building block" techniques. Further, there are surveys of corporate executives about what they expect the return differential to be over various time horizons. Finally, there are projections that the managers of institutional funds use for actuarial purposes. None of these values are the comparable to premium as I have applied it in my forward-looking, CAPM analyses based not on some generic notion of the equity risk premium derived but from contemporaneous projections for individual stocks in the S&P 500.

Average realized risk premiums computed over some selected time period may be an accurate representation of what was actually the case in past, but they don't answer the question as to what investors risk premiums were actually expecting to earn on a forward-looking basis during the same time periods. Similar calculations of the equity risk premium developed at a point in history – whether based on actual prior returns periods or contemporaneous projections – are not the same as the forward-looking expectations of today's investors, as discussed in the prior entirely different set of capital market and economic expectations.

The purpose of my analysis was to determine an allowed return that would meet the regulatory requirement of allowing PG&E to attract capital and maintain its financial integrity. The most appropriate benchmark for meaningful forward-looking estimate of the return investors require from PG&E is what investors are currently requiring from other investments with which PG&E must compete for capital. The risk premium in CAPM used in is derived from current market data and is forward-looking in that using the projected earnings rates used by investors does not depend on analysis of past historical data on risk premiums nor purport to identify what investors will actually future realize or in what they should reasonably expect over the long-term. Rather, it is of what investors currently require when they allocate their capital competing investments. These current forward-looking returns required the touchstone of whether an authorized ROE can meet the CPUC's standard of capital attraction and maintaining financial integrity.

5. Risk Premium Approach

The risk premium method of estimating investors' required rate of return extends to common stocks the risk-return tradeoff observed with bonds. The cost of equity is estimated by first determining the additional investors require to forgo the relative safety and certainty of bonds and to accept the risks associated with common stock, and by then adding this equity risk premium to the current yield on bonds. Like the DCF model, the risk premium method is capital market oriented. However, models like DCF which indirectly impute the cost of equity, risk premium methods directly estimate investors' required rate of return by adding a premium for equity risk to observable bond yields.

I based my estimates of equity risk premiums for utilities on surveys of previously authorized rates of return on common equity. Authorized returns presumably reflect regulatory commissions' best estimates of the cost of equity, however determined, at the time they issue their final orders. Such returns should represent a balanced and impartial outcome that considers the need to maintain a utility's financial integrity to attract capital. Moreover, allowed returns are considered important for investors and have the potential to influence other investor observable parameters, including credit ratings and borrowing costs. This approach provides a logical and frequently referenced basis for equity risk premiums for regulated utilities.

Surveys of previously authorized rates of return on common equity are frequently referenced as the basis for estimating equity risk premiums. The rates of return on common equity authorized for utilities by regulatory commissions across the U.S. are compiled by Regulatory Research Associates and published in its Regulatory Research Report. In Schedule WEA-6, the average yield on public utility bonds is subtracted from the average allowed rate of return on common equity for utilities selected to calculate equity risk premiums for each year between 1974 and 2011. Over this 38-year period, these equity risk premiums for electric utilities averaged 3.41%, and the yield on public utility bonds averaged

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

inversely with interest rates.[58] In other words, when interest rate levels are relatively high, equity risk premiums narrow, and when interest rates are relatively low, equity risk premiums widen. The implication of this inverse relationship is that the cost of equity does not, move as much a lockstep with, interest rates. Accordingly, a 100 basis point decrease or increase in interest rates, the cost of equity may only 50 basis points. say, Therefore, when implementing the risk premium method, adjustments may be required to incorporate this inverse relationship if interest rates current levels have changed since the equity risk premiums were estimated.

Finally, it is important to recognize that the historical focus of risk premium studies almost certainly ensures that they fail to reflect the full significantly greater risks that investors now associate with utility service. As a result, they are likely to understate the cost of equity for a company operating in today's utility industry.

Based on the regression output between the interest rates and equity risk premiums displayed on page 4 of Schedule VEA-6, the equity risk premium increased approximately 41 basis points for each 100 basis point drop in the yield on average public utility bonds as shown on page 4 of Schedule VEA-6, with a projected yield on average public utility bonds for 2013 of 5.32%, this implied a current equity risk premium of 8.01%. Adding this equity risk premium to the average projected utility bond yield for 2013 of 5.88% produces a current cost of equity of 13.89%, approx

6. Expected Earnings Approach

As I noted earlier, I also evaluated the ROE by reference to expected rates of return for utilities. Rates of return available from alternative investments of comparable risk can provide an important benchmark in assessing the return necessary to assure confidence in the financial integrity of a firm and its ability to This strategy approach is consistent with the economic underpinnings for a fair rate of return reflected in the comparable earnings test established by the Supreme Court in

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

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

The simple, but powerful concept underlying the expected earnin
approach is that investors compare each investment with the alternative
next best opportunity. If she is unable to find an investment similar to that
available from other opportunities of comparable risk, she will be unwilling
unwilling to supply the company capital on reasonable terms. For investors,
denying the utility an opportunity to earn what is available from other similar
risk alternatives prevents them from earning their cost of capital. opportunity
In this situation the government is effectively taking investors' valu
capital without adequate compensation.

The traditional comparable earnings test identifies a group of companies
that are believed to be comparable in risk to the utility being analyzed. The
of those companies on the book value of their investment are th
compared to the allowed return of the utility. While the traditional
comparable earnings test is implemented using historical data taken from
the accounting records, it is also common to use projections of
book investment, such as those published by recognized investment
advisory publications (e.g., Value Line). Because these expected returns
book value equity are analogous to the allowed returns on utility
base, this measure of opportunity cost results in a direct "apples to apples"
comparison. My application of the expected earnings approach was
focused exclusively on forward-looking projections, not historical data.

Moreover, regulators do not set the returns that investors earn
capital markets – they can only establish the allowed return on a
utility's investment, as reflected in accounting records. As a result, the
expected earnings approach provides a direct guide to the measure that
allowed ROE is similar to what other utilities of comparable risk are
invested capital. This opportunity cost test does not require
models to indirectly infer investors' perceptions from stock prices or
market data. As long as the proxy companies are similar in risk,
expected earned returns on invested capital provide a benchmark for the
investors' opportunity costs that is independent of stock price fluctuations,

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

For the firms in the Value Line utility group, the projected returns on common equit
Schedule WEA-7. Consistent with the rationale underlying the d
of the br+sv growth rates, these year-end values were averaged
returns using the same adjustment factor discussed above and
on Schedule WEA-2. As shown on Schedule WEA-7, Value Line's
projections for the Utility Group suggest an average ROE of 11.
Given the fact that Value Line is recognized as the most widely
independent investment advisory service, its projections for
utilities provide an important guide to investors' expectations

7. Flotation Costs

The common equity used to finance the investment in utility ass
provided from either the sale of stock in the capital markets o
earnings not paid out as dividends. When equity capital is raised thro
of common stock, there are costs associated with "floating" the
securities. These flotation costs include services, accounting, leg
and printing, as well as the fees and discounts paid to brokers compens
for selling the stock to the public. Also, some market argue that the
pressure" from the additional supply of common stock, market and other
factors may further reduce the amount of funds the utility receives w
common equity.

While debt flotation costs are recorded on the books of the uti
amortized over the life of the issue, and thus effectively increase the eff
debt capital, there is no similar accounting treatment for equity to ensur
flotation costs are recorded and ultimately recognized. Alternatively, no
of return is authorized on flotation costs necessarily incurred to obtain
portion of the equity capital used to finance plant. Flotation costs in other
flotation costs are not included in a utility's rate base because portions
portion of the gross proceeds from the sale of common stock that are
flotation costs is available to invest in plant and equipment, flotation
costs capitalized as an intangible asset. Unless some provision is made to
recognize these issuance costs, a utility's revenue requirement not fully

reflect all of the costs incurred for the use of Because there is no accounting convention to accumulate the flotation costs associated with equity issues, they must be accounted for indirectly, with an adjustment to the cost of equity being the most logical mechanism.

I am aware that the CPUC has not routinely approved a flotation adjustment for PG&E in past proceedings, but there is ample evidence in the record that provides a theoretical and practical basis to include consideration of flotation costs for PG&E. First, an adjustment for flotation costs is associated with past equity issues is appropriate whenever the utility is planning any new sales of common stock. The need for a flotation cost adjustment to compensate for past equity issues been recognized in all the financial literature. *Public Utilities Fortnightly* article, for example, Brigham, Aberwald, and Gapenski demonstrated that even if no future issues are contemplated, a flotation cost adjustment is still required to keep shareholders whole, and that the flotation cost adjustment must consider total equity, including retained earnings.[59] Similarly, *New Regulatory Finance* contains the following discussion:

> Another controversy is whether the flotation cost allowance should be applied when the utility is contemplating an imminent common stock issue. Some argue that flotation costs are real and should be recognized in calculating the fair rate of return only at the time when the expenses are incurred. In other words, the flotation allowance should not continue indefinitely, but should be made in the year in which the sale of securities occurs, with the ongoing need for compensation in future years. This argument implies that the company has already been compensated for these costs and/or the initial capital contributed was obtained freely, devoid of flotation costs, which is an unlikely assumption, and certainly not most applicable to utilities. ... The flotation cost adjustment cannot be strictly forward looking unless all past flotation costs associated with the past is been recovered.[60]

The following example demonstrates that investors will not have the opportunity to earn their required rate, i.e., of dividend (yield plus expected growth) unless an allowance for past flotation costs is included in the allowed rate of return on equity. Assume a utility sells $ of common stock at the beginning of Year 1. If flotation costs are incurred

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

60 Morin, Roger A., *New Regulatory Finance*, Public Utilities Reports, Inc. (2006) at 335.

of $0.48 (5% of the net proceeds), then the only investment that is rate base. Assume that shareholders' required rate of return is 11.5%, the expected dividend in Year 1 is $0.50 (a dividend yield of 5 percent), and that growth is expected to be 6% developed annually. in Table 2-6 below, if the allowed rate of return on common equity is equal to the utility's 11.5% "bare bones" cost of equity, common stockholders will not earn their required rate of return on the investment, since growth will really only be 6.25%, 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	$ 10.75	$ 11.29	1.050	11.50%	$ 1.24	$ 0.56	45.7%
Growth			**6.25%**	**6.25%**			**6.25%**	**6.25%**	

The reason that investors never really earn 11.5% on their investment in the above example is that the $0.48 in flotation incurred costs to initially raise the common stock is not treated like debt issuance costs (*i.e.*, amortized into interest expense and therefore embedded in the cost of debt), nor is it included as an asset in rate base.

Including a flotation cost adjustment allows investors to fully be fully compensated for the impact of these costs. One commonly referred method for calculating the flotation cost adjustment is to multiply the dividend yield by a flotation cost percentage. Thus, if the dividend yield is 5% and a 5% flotation cost percentage, the flotation cost adjustment in the above example would be approximately 25 basis points. As shown in Table 2-7 below, by allowing a rate of return on common equity of 11.5% cost of equity plus a 25 basis point flotation cost adjustment, investors earn their 11.5% required rate of return, which is since growth is actually 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	$ 10.80	$ 11.34	1.050	11.75%	$ 1.27	$ 0.57	44.7%
Growth			**6.50%**	**6.50%**			**6.50%**	**6.50%**	

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

While utility stocks continue to trade at prices in excess of book value, this says nothing about the need to recognize the impact of flotation costs as a legitimate cost 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 and risks relative to the cost. The fact that the market price of a utility's common stock exceeds book value doesn't change the fact that investors must be provided an opportunity to earn their required rate of return on all invested capital, including that portion paid out as issuance expenses. As I demonstrated in the example above, this can only occur if an upward adjustment is made to the ROE to account for flotation costs.

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

management's commitment to issue a total of $1 billion of equity or common a key rating driver.[61]

Moreover, considering the impact of flotation costs in a way would not u penalize ratepayers. The only purpose of the flotation cost adjustment is to allow the utility an opportunity to recover a reasonable and ne expense associated with raising equity capital. As discussed above, these costs are directly analogous to debt issuance expenses, which likewise are recovered from ratepayers. A flotation cost adjustment thus does not any form of "windfall" for investors; rather, it is appropriately recogni cost of raising capital that is invested in the facilities used customers.

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

> The flotation cost allowance requires an estimated adjustment to return on equity of approximately 5% to 10%, depending on the risk of the issue.[62]

Alternatively, a study of data from Morgan Stanley regarding is costs associated with utility common stock issuances suggests a flotation cost percentage of 3.6%.[63] With respect to shares sold under PG&E's equity distribution agreement, PG&E has agreed to pay an underwriting fee equal to 1.0% of gross proceeds, therein addition to offering expenses and legal fees.[64]

Applying these expense percentages to a representative yield dividend for a utility of 4.5% implies a flotation cost adjustment of 5 to 10 basis points. Issuance costs are a legitimate recoverable expense, and

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61 Fitch Ratings Ltd., "Fitch Downgrades PG&E's IDR to 'BBB+'; Outlook Stable," *Release* (Dec. 16, 2011).

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

63 Application of Yankee Gas Services Company for a Rate Increase, Docket No. 04-06-01, Direct Testimony of George Eckenroth at 2 (Jul. 2, 2004), Exhibit GE-1 at 1. Updating the results presented by Mr. Eckenroth through April 2005 analyst average results flotation cost percentage of 3.6%.

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

that they be considered in evaluating an ROE for PG&E from within a reasonable range.

D. Return on Equity Range for PG&E

This section addresses the economic requirements for PG&E's return on equity. It discusses the regulatory policy reasons to avoid an equity that is not sufficient to maintain PG&E's financial integrity and to attract capital, and demonstrates the benefits of an adequate ROE that reflects PG&E's need for financial strength. In addition, this section sets forth conclusions regarding a fair ROE range and my recommended PG&E ROE.

1. Implications for Financial Integrity

Given the social and economic importance of the utility industry, it is essential to maintain reliable and economical service to all customers. Cash flow provided through the allowed ROE is a key supporting ingredient in a utility's credit quality and its access to capital. While customers will ultimately realize the benefits of increased investment in infrastructure, a utility's ability to fulfill its mandate can be jeopardized if it lacks sufficient necessary financial wherewithal or is unable to attract efficient capital on reasonable terms.

The major rating agencies have warned of exposure to uncertainty associated with political and regulatory developments, including the survival of the current financial and operating pressures in the utility industry. Investors understand just how swiftly unforeseen circumstances can lead to deterioration in a utility's financial conditions, and have all stakeholders discovered first hand how difficult and complex it may be to reverse a situation after the factors' Increased reticence to supply additional capital during times of crisis highlights the need to maintain financial flexibility and the importance of allowing an adequate ROE.

Considering investors' heightened awareness of the risks associated with the utility industry, damage that results when a utility's financial flexibility is compromised, fair and balanced regulation is critical to maintain PG&E's access to capital. Investors recognize that regulation has its own risks, and that constructive regulation is a key supporting ingredient in a utility's

credit ratings and financial integrity, particularly adverse tim conditions.

Fitch concluded, "[G]iven the lingering rate of unemployment an concerns about the economy, there could well be pockets of adve decisions, and those companies with little financial cushion co adverse effects."[65] Moody's has also emphasized the need for regulatory support, concluding:

> For the longer term, however, we are becoming increasingly conc about possible changes to our fundamental assumptions about regulatory risk, particularly the prospect of a more adversaria (and therefore regulatory) environment. A prolonged recessiona climate with high unemployment, or an intense period of inflati make cost recovery more uncertain.[66]

S&P noted "the quality of regulation is at the analysis of our utility creditworthiness."[67]

Regulatory signals are a major driver of investment risk assess utilities. Security analysts monitor rate case orders and energy policy statements to advise investors where to put their money. Consi recent example of Ohio, where regulators' retroactive approval of tariffs for pri a stipulated settlement of a transition plan led to warnings fr investment community and significant declines in utilities' stock.[68] CPUC actions instill confidence that the regulatory environment supportive, investors make capital available to its California ratepayers on reasonable terms. When investors are confident that such supportive regulation, they will make funds available even in times of tur financial markets. Moreover, suppliers of fuel, power, replacement po equipment, and the other goods and services necessary to keep t on in California will offer more favorable terms to a strong financial

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65 Fitch Ratings Ltd., "U.S. Utilities, Power, and Gas: *Global Sector Update 2010 North America Special Report* (Dec. 4, 2009).

66 Moody's Investors Service, "U.S. Regulated Electric Monthly Update: *Industry Outlook* (July 2009).

67 Standard & Poor's Corporation, "Assessing U.S. Investor-Owned Utility Regulatory Environments," *RatingsDirect* (Nov. 7, 2008).

68 *See, e.g.*, Standard & Poor's Corporation, "Ohio Utility Deregulation Could Be Negative For Credit Quality Of Power Companies In The Near Term," *RatingsDirect* (Feb. 27, 2012); Testa, Dan, "Thursday's Energy Stocks: AEP shares slide deal after Ohio rejects security plan," *SNL Financial* (Feb. 23, 2012).

operating under constructive regulation than to a utility whose financial wherewithal is suspect. Since the CPUC is PG&E's regulatory, utility investors and suppliers look to the Commission to assess supportive regulatory behind the Company's financial and contractual obligations. PG&E will can negotiate from a position of financial strength better ability to deal for its customers.

The investment community has recognized that past regulatory decisions have generally been supportive of PG&E's credit quality. Moodys noted that California investor-owned utilities may face challenging environment due to electric rates that are among higher than averages and by the states weakened economy, and cited additional the added pressures of environmental initiatives and future uncertainties.[69] unc

While the various adjustment mechanisms approved for PG&E are supportive of its credit quality, investors recognize exposed PG&E significant risks associated the energy price volatility ongoing costs, and concerns over these risks became increasingly pronounced the industry. The CPUC's adjustment mechanisms are a valuable means of mitigating those risks, but they do not eliminate the adjustment While mechanisms approved for PG&E partially attenuate exposure on, to at this leveling of the playing field only serves to provide opportunity PG&E to earn its authorized return, as required by established regul standards.

Moreover, utilities increasingly from a wide variety of mechanisms designed to mitigate against the risks associated with fluctuations in costs and regulatory lag. Reflective of this, the companies in the proxy group operate under a variety of revenue cost and adjustment mechanisms, which range from riders to recover bad d expense and post-retirement employee benefit costs to adjustmen designed to address the rising costs of environmental compliance measures. As a result, mitigation risks associated with utilities' ability to attenuate the impact of fluctuations in costs is reflected in equity estimates developed earlier.

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

Finally, the impact of cost adjustment and other harmful regulatory mec are considered by the investment community in its assessment of the utility's overall risks and incorporated in the credit ratings used to establish the Utility Group. Because the ratings and Value Line indicators for the proxy companies are comparable to PG&E, there is no basis for adjustment related to specific regulatory provisions.

PG&E faces a number of challenges that require ready capital access to on reasonable terms in order to maintain reliable electric service, and circumstances heighten the importance of financial strength, stability and support. PG&E's nuclear generation, while saving significant customers sig energy costs, can necessitate huge unexpected expenditures. For example, Fo if federal agencies ordered PG&E to shut down one or more of its nuclear generating units (possibly in response to security threats or events in far away countries), PG&E would impose significant reliance on wholesale power markets to energy shortfalls, and require PG&E to mobilize money and credit on a significant scale.

In addition, while California frequently positions itself at the leading edge of energy policy, this progressive stance exposes PG&E to risks that are not faced in other parts of the nation. Aggressive greenhouse gas emission and RPS standards pose additional challenges and risks, especially given the underlying market systems are complex and untested. While these have the potential to advance policy goals and produce environmental benefits, there can also be unanticipated economic and risks (as a fact made w clear a decade ago with the implementation of unbundling and a market structure.

As discussed in Chapter 1, PG&E expects to invest roughly $15 utility infrastructure over the period 2012-2019, equal to an amount ne PG&E's entire rate base just 8 years ago. PG&E will also be require substantial capital from new investors to meet the financing associated f requirements. Providing an ROE that is sufficient to compensat and maintain PG&E's ability to attract capital, is consistent with the w economic requirements embodied in the Supreme Court's *Hope* and *Bluefield* decisions, but it is also in customers' best interests. investors and suppliers question whether the CPUC's regulatory policies will

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

Consider the effects of the California energy crisis in 2000 and 2001. Utilities were forced to use cash flows from operations, existing bank lines, and remaining access to short- and long-term debt to fund unrecovered energy supply costs and maintain service to customers. This led to a sharp deterioration in financial ratios, liquidity, a severe crunch, and a dramatic increase in credit risk. As a result, commercial banks were highly reticent to extend financing for ongoing operations, construction and counterparties involved in meeting the utilities' needs became unwilling to transact business absent special terms. Ultimately, the mismatch between revenues and expenses resulted in PG&E filing for bankruptcy protection in April 2001.

The challenging capital market environment highlights the benefits of strengthening PG&E's credit standing in attracting needed capital to secure reliable service at a lower cost for customers. Of course, charting the path of establishing an ROE that supports financial strength would be extremely short-sighted. Since its recovery from the energy crisis, PG&E customers and the state's economy have benefited from PG&E's restored financial flexibility and ability to raise capital on reasonable terms. If investors perceived that the Commission was withdrawing its support for PG&E's financial strength at this crucial juncture, it likely would take a long time to re-establish the well-deserved reputation for constructive that it has earned among investors.

The ROE established in this case should send an important signal to investors. The CPUC has an opportunity to show that it recognizes the importance of financial strength and supportive regulation by allowing an ROE in this case that reflects capital market realities and PG&E's financial challenges, the CPUC will reaffirm to investors that it is committed to a balanced regulatory regime in California.

2. Capital Structure

An evaluation of the capital structure maintained by a utility is also relevant in evaluating ROE. All other things held equal, debt ratio, or lower common equity ratio, translates into financial risk increased

for all investors. A greater amount of debt means that there is a greater investo senior claim on available cash flow, thereby reducing the likelihood that each a will receive his contractual payments. This increases the risk lenders are exposed, and they require corresponding higher rates of interest. From common shareholders' standpoint, a ratio high means debt that there are proportionately more investors ahead of them, th increasing the uncertainty as to the amount of cash flow, if any, will remain.

PG&E's capital structure is presented in the testimony of witne As summarized in his testimony, the common equity ratio proposed used to PG&E's overall rate of return was 52% in this proceeding. Mean shown on Schedule WEA-8, common equity ratios for the other uti operating companies owned by the firms in the Utility Group ran low of 47.5% to a high of 61.8% at year-end 2011, and

Schedule WEA-9 displays the capital structure data at year-end the individual firms in the Group. As shown there, equity ratios for these utilities ranged from a low of 39% to a high year-end 2011, and averaged 47.3%. Value Line expects that common equity ratio for the group of utilities will average over the next three to five years, with the individual common equity from 43.0% to 55.0%.

From an investor's perspective, the relevant capital structure on the market values of securities because investors can only b securities at market value. To be able to raise capital, pay compa returns that are competitive at the current market prices of, th not the embedded book value of the mix of stocks and bonds. As the market value capitalization of the firms in the Utility Group serves as a benchmark in evaluating PG&E's capital structure. As show Schedule WEA-10, at year-end 2011, the market value capitaliza firms in the Utility Group implied an average common equity of 58.1%, or 58.1% based on Value Line's projections for the 2014-16

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

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

Moody's has repeatedly warned investors of the risks associated debt leverage and fixed obligations and advised outside ratios to note the opportunity to strengthen the balance sheet as a buffer future against uncertainties.[70] More recently, Moody's concluded:

> From a credit perspective, we believe a strong balance sheet co with abundant sources of liquidity represents one of the best d against business and operating risk and potential negative rati actions.[71]

Similarly, S&P noted that, "we generally consider debt to cap of 50% or greater to be aggressive or highly leveraged for util Fitch affirmed that it expected utilities to employ "a mix of debt and equity to finance high levels of planned investments."[73] More recently, Moody's affirmed that it expects investor-owned utili strengthen their balance sheets in order "to prepare for more c business conditions."[74] This is especially the case for PG&E, which fa the prospect of financing significant capital expansion during a time of market while at the same time maintaining its ability to meet other significant challenges.

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

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

72 Standard & Poor's Corporate Ratings, "Roundup: U.S. Electric Utility Sector Maintained Strong Credit Quality In A Gloomy Ratings Year," *RatingsDirect* (Jan. 26, 2010).

73 Fitch Ratings Ltd., "U.S. Utilities, Power, and Gas: Global Headwinds Create Challenges for North American Utilities," *Special Report* (Dec. 4, 2009).

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

In evaluating PG&E's capital structure, it is also important to consider that, depending on their specific attributes, rents and other agreements or obligations that require a utility to make specified payments should be treated as debt in assessing financial risk. Because investors consider the impact of such fixed obligations in assessing a utility's financial position, they imply greater risk and require financial flexibility in order to offset the debt equivalent associated with off-balance sheet obligations, must rebalance its capital structure by increasing its common equity to restore its effective capitalization ratios to previous levels.[75] These commitments have been repeatedly cited by major bond rating agencies in connection with assessments of utility financial risks.[76]

As discussed earlier, a significant portion of the Company's power requirements are obtained through PPAs. These contractual payment obligations, along with operating leases and obligations associated with post-retirement benefits, are fixed commitments with characteristics comparable to debt and are properly considered when evaluating the financial risks implied by PG&E's capital structure. S&P reported that its capital adjustments to PG&E's to include approximately $2.9 billion in imputed debt.[77] Unless the Company takes action to offset this additional financial risk by maintaining a higher equity ratio, the resulting leverage will weaken PG&E's creditworthiness, implying a higher required rate of return to investors for the greater risks.[78]

Based on my evaluation, I concluded that the 52% ratio of common equity requested by PG&E represents a reasonable mix of capital from which to calculate the Company's overall rate of return. The proposed PG&E capital structure is consistent with the capital ratios of other utility operating companies. Although 52% common equity is 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," *RatingsDirect* (May 7, 2007).

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

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

than the average book value equity ratio currently maintained b Utility Group, it is well within the range of individual result for this reference group, below the average market value equity capital structure, consistent an with the trend towards lower financial leverage experienced by the industry for th As discussed earlier, it is consistent also with the relatively lower financial strength required to counterbalance the various exposures PG&E faced

While industry averages provide one benchmark for comparison, e firm must select its capital structure based on the risks and costs it faces, as well as its specific needs to access the capital markets. F flexibility plays a crucial role in ensuring that we can meet the needs of customers, and utilities with high leverage may be forced to forgo additional borrowing, especially during times of stress. The proposed PG&E capital structure is consistent with industry benchmarks and reflects the Company's ongoing efforts to maintain its credit standing and s access to capital on reasonable terms. The reasonableness of t Company's capital structure is reinforced by the ongoing uncert associated with the utility industry and the importance of supp continued system investment, even during times of adverse indus market conditions.

3. ROE Recommendation

The cost of common equity estimates produced by the various cap market oriented analyses described in my testimony are summariz Table 2-8, below. As shown there, the results of the alternati 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

	Utility		Non-Utility	
DCF	**Average**	**Midpoint**	**Average**	**Midpoint**
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%
CAPM				
Unadjusted	10.8%	10.8%		
Size Adjusted	11.5%	11.2%		
Utility Risk Premium	10.8%			
Expected Earnings	11.4%			

Considering the relative strengths and weaknesses inherent in each method, and conservatively giving less emphasis to the upper- and lower-most boundaries of the range of results for each group, the Utility Group I concluded that a fair ROE for PG&E falls in the range of 10.2% to 11.4%.

As discussed earlier in my testimony, DCF estimates for the Utility and Non-Utility Proxy Group provide a useful benchmark because investors themselves evaluate required rate of return from utility investments opportunities against other available in the capital markets. The purpose of regulation is to serve as a substitute for the actions of competitive markets, and ensure that investors expect non-utility companies form the foundation for the regulatory standard underlying a fair ROE.

The DCF results for the Non-Utility Proxy Group were considerably higher than those indicated for the proxy group of utilities. Although, even objective evidence demonstrates that the investment risks of the unregulated companies are greater. Moreover, there is no conclusive basis to that DCF results for a group of companies would be inherently reliable than those for firms in the competitive sector. Considering, in fact, the prominence of the 12 non-utility companies, the diversification considering multiple industries, and the scrutiny to which analysts these paragons of American industry, the DCF results for the Proxy Non-Utility Group provide compelling evidence that suggests a downward bias utility DCF results. While my recommended ROE range is solely based

on the results for the Utility Group, I consider bias this a downwar assessment of the cost of equity estimates produced by utilities. pro

After considering the specific risk and exposures faced by PG&E and the need to consider the importance of maintaining PG&E's financ flexibility, it is my opinion that the CPUC should authorize a ROE of 10.2% for the Company. Apart from the results of the quantitative me crucial to recognize the importance of maintaining financial strength in so that PG&E remains prepared to respond to unforeseen events t materialize in the future. While this imperative is driven by current capital market conditions, it extends well beyond market financial includes the Company's ability to absorb potential shocks associated with natural disasters, volatile fuel pricing, and energy supply disruptions in en

Recent challenges in the capital markets and ongoing economic uncertainties highlight the benefits of bolstering PG&E's credit to ensure that the Company can attract the capital needed to reliably secure service at a lower cost for customers. Changing course from a path of financial strength would be extremely short-sighted, considering that a combination of events could adversely impact PG&E's ability to serve customers if its current financial strength were not maintained. My conclusions are also reinforced by the need to consider flotati

PACIFIC GAS AND ELECTRIC COMPANY

CHAPTER 2

ATTACHMENT 2A

SCHEDULES

DIVIDEND YIELD

	Company	(a) Price	(b) Dividends	Yield
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%
	Average			**4.4%**

(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

		(a)	(b)	(c)	(d)
		Earnings Growth			br+sv
	Company	V Line	IBES	Zacks	Growth
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 (retrieved Mar. 13, 2012).
(c) www.zacks.com (retrieved Mar. 13, 2012).
(d) See Schedule WEA-2.

DCF COST OF EQUITY ESTIMATES

		(a)	(a)	(a)	(a)
		Earnings Growth			br+sv
	Company	V Line	IBES	Zacks	Growth
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%
	Average (b)	**10.1%**	**9.7%**	**9.4%**	**9.3%**
	Midpoint (c)	**11.0%**	**10.9%**	**9.5%**	**9.1%**

(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			
	Company	EPS	DPS	BVPS	b	r	Factor	Adjusted r	br	s	v	sv	br + sv
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%**

BR+SV GROWTH RATE

		(a)	(a)	(f)	(a)	(a)	(f)	(g)	(a)	(a)		(h)	(a)	(a)	(g)
		2010			2015			Chg	2015 Price				Common Shares		
	Company	Eq Ratio	Tot Cap	Com Eq	Eq Ratio	Tot Cap	Com Eq	Equity	High	Low	Avg.	M/B	2010	2015	Growth
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%

(a) The Value Line Investment Survey (Dec. 23, 2011, Feb. 3 & Feb. 24, 2012).
(b) Computed using the formula 2*(1+5-Yr. Change in Equity)/(2+5 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

	Company	(a) Price	(b) Dividends	Yield
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%
	Average			**2.9%**

(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

		(a)	(b)	(c)	(d)
		Earnings Growth			br+sv
	Company	V Line	IBES	Zacks	Growth
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 (retrieved Mar. 16, 2012).
(c) www.zacks.com (retrieved Mar. 16, 2012).
(d) See Schedule WEA-4.

DCF COST OF EQUITY ESTIMATES

	Company	(a) Earnings Growth V Line	(a) Earnings Growth IBES	(a) Earnings Growth Zacks	(a) br+sv Growth
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%
	Average (b)	**12.2%**	**10.9%**	**11.7%**	**13.2%**
	Midpoint (c)	**12.6%**	**10.9%**	**12.2%**	**12.1%**

(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 ----------					Adjust.			--------- "sv" Factor --------			
	Company	EPS	DPS	BVPS	b	r	Factor	Adj. r	br	s	v	sv	br + sv
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%	**18.6%**
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%	**19.8%**
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%	**12.5%**
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%	**12.4%**
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%	**11.0%**
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%	**9.0%**
7	Kellogg	$4.90	$2.15	$9.10	56.1%	53.8%	1.0318	55.6%	31.2%	(0.2109)	0.8897	-18.77%	**12.4%**
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%	**11.3%**
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%	**18.0%**
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%	**11.2%**
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%	**5.9%**
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%	**5.8%**

BR+SV GROWTH RATE

		(a)	(a)	(f)	(a)	(a)		(g)	(a)	(a)	(f)
		---- Common Equity ----			---------- 2015 Price ---------				----- Common Shares -----		
	Company	2010	2015	Chg.	High	Low	Avg.	M/B	2010	2015	Growth
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-Yr. Change in Equity)/(2+5 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.

CAPITAL ASSET PRICING MODEL

Schedule WEA-5
Page 1 of 1

2013 BOND YIELD

		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
		Market Return (R_m)								
	Company	Div Yield	Proj. Growth	Cost of Equity	Risk-Free Rate	Risk Premium	Beta	Unadjusted K_e	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%
	Average							**10.8%**		**11.5%**
	Midpoint							**10.8%**		**11.2%**

(a) Weighted average dividend yield for the dividend paying firms in the S&P 500 from www.valueline.com (Retreived 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).

2013 BOND YIELD

Current Equity Risk Premium

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

Implied Cost of Equity

(b)	2013 BBB Utility Bond Yield	5.88%
	Adjusted Equity Risk Premium	4.89%
	Risk Premium Cost of Equity	**10.77%**

(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.

(c) Schedule WEA-6, page 3.

AUTHORIZED RETURNS

Year	(a) Allowed ROE	(b) Average Utility Bond Yield	Risk Premium
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	10.22%	5.13%	5.09%
Average	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

Regression Statistics	
Multiple R	0.9062018
R Square	0.8212016
Adjusted R Square	0.816235
Standard Error	0.005182
Observations	38

ANOVA

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

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
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

	Company	(a) Expected Return on Common Equity	(b) Adjustment Factor	(c) Adjusted Return on Common Equity
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%
	Average			**11.4%**

(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).

CAPITAL STRUCTURE

Schedule WEA-8
Page 1 of 1

ELECTRIC UTILITY OPERATING COS.

		At Fiscal Year-End 2011 (a)		
	Company	Debt	Preferred	Common Equity
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%
	Average	**44.7%**	**1.0%**	**54.3%**

(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)		
	Company	Debt	Preferred	Common Equity	Debt	Other	Common 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	Integrys 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%
	Average	**52.3%**	**0.4%**	**47.3%**	**50.6%**	**0.4%**	**49.0%**

(a) Company Form 10-K and Annual Reports.
(b) The Value Line Investment Survey (Dec. 23, 2011, Feb. 3 & Feb. 24, 2012).

MARKET VALUE CAPITAL STRUCTURE

Schedule WEA-10
Page 1 of 1

UTILITY GROUP

		At Fiscal Year-End 2011			Value Line Projected		
		(a)	(a)	(b)	(c)	(d)	(b)
	Company	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	Integrys 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%
	Average	**39.3%**	**0.3%**	**60.3%**	**41.6%**	**0.3%**	**58.1%**

(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.

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 we developed these costs.

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

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

Line No.		2012 Authorized	2013 Proposed
1	Long-Term Debt	6.05%	5.69%
2	Preferred Stock	5.68%	5.60%

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 starts with its recorded cost of debt as of March 31, 2012, and includes projected changes in the amounts or costs of debt through the remainder of 2012 and 2013. The forecasted debt levels of outstanding reflect projected financing activities. Consistent with past practice, PG&E uses a forecast of future interest rates from IHS Global Insight

changes to the interest rates on PG&E's variable-rate debt as well as to estimate the interest rate of new debt issuances.[1]

2. Recorded Cost of Debt as of March 31, 2012

As of March 31, 2012, PG&E had a total outstanding long-term debt of $11.5 billion, consisting of $10.6 billion in fixed-rate debt and $0.9 billion in variable-rate Pollution Control (PC) bonds. The interest rates on PG&E's PC bonds are reset on a daily or weekly basis. As of March 31, 2012, the weighted-average interest rate of the PC bonds was 0.12 percent. The embedded cost of debt as of March 31, 2012 is 5.76 percent.

3. Forecasted Changes in the Remainder of 2012

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

The interest rate on new, fixed-rate debt is estimated using the IHS Global Insight forecast for Aa 30-year utility bonds, plus a premium to reflect PG&E's current bond ratings. Specifically, IHS Global Insight's second and third quarter 2012 forecasts for the Aa 30-year utility bond of 4.29 percent and 4.46 percent, respectively, on a quarterly basis and adds a 63 basis point premium to reflect PG&E's current bond ratings,[2] at the projected interest rates of 4.92 percent and 5.09 percent, respectively, as shown on lines 3 and 4 in Table 3-2.

The 63 basis point premium was estimated by first calculating average premiums during the last 24 months from utility bonds rated Baa1 and Baa2 rated Aa and for utility bonds rated A1 over bonds rated Aa published by Mergent Bond Record. Then these two premiums are prorated to a the premium of Baa1-rated bonds, PG&E's current average bond ra over Aa-rated bonds.

PG&E uses the IHS Global Insight forecast for 90-day financial prime commercial paper to project future interest rates on its variable-rate PC bonds.

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

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

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

The forecast includes the retirement of $50 million of pollution control bonds series 2010E in April 2012.

As a result of the changes described above, the December 31, 2012 cost of long-term debt is projected to be 5.72 percent.

4. 2013 Forecasted Changes

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

PG&E expects to issue a total of $1,675 billion of new debt in fixed-rate 2013 at an average interest rate of 5.42 percent, as shown on Table 3-2. The projected 2013 average interest rate is estimated the same way as in the calculation of the 2012 projected interest fixed-rate rates. A portion of the proceeds from new debt will be used to $400 million of maturing long-term debt.

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

The changes described above result in a decrease in PG&E's projected cost of debt from 5.72 percent in December 2012 to 5.65 percent in December 2013 as shown on lines 8 and 14, respectively, in Table 3-2. The 2013 average embedded cost of debt is projected to be 5.69 percent 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	Outstanding	Net Premium (Discount), or (Expense)	Net Proceeds	Annual Charges	Embedded Cost
		(a)	(b)		(c)	(d)	(e) (f)
1	March 31, 2012 (Recorded)			$11,517,100		$(267457,,785577)	$15,,27461%, 34
2	2012 Forecast (April Through December)						
3	New Issuance April 2012	4.92%	300,000		(3,000)	297,000	
4	New Issuance September 2012	5.09%	625,000		(6,25004)7	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)	72,%127,411	
9	2013 Forecast						
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)	$13,6%10,435	$
15	2013 Two-Point Average (Lines 8 and 14)						

C. Embedded Cost of Preferred Stock

PG&E estimates its 2013 embedded cost of preferred stock only in the it estimates its embedded cost of debt. As shown in Table 3-3, PG&E's its recorded cost of preferred stock as of March 31, 2012. Using this as starting basis, PG&E projects its embedded cost of preferred stock by incorporating changes for the remainder of 2012 and all of 2013.

For the remainder of 2012 and all of 2013, PG&E does not expect issuances or redemptions of preferred stock. The only change impacting PG&E's cost of preferred stock is amortization of costs associated with preferred stock previously redeemed. This change results in a projected average embedded cost of preferred stock of 5.60 percent, as shown on 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
		(a)	(b)	(c)	(d) (e) = (
1	March 31, 2012 (Recorded)		$257,995	$(6,495)	5 $2 6 %, 4 9 9
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)				

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 been parties in Utilities) in their next full cost of capital proceeding (application to report on the effectiveness of the Annual Cost of Capital Adjustment Mech (ACCAM) adopted in that decision.[1] This chapter presents Pacific Gas and Electric Company's (PG&E) evaluation of the ACCAM since it was implemented 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 an 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 2016 due April 2015. The applicable benchmark interest rate must also be reset for 2016 the 12-month October through September 2012 monthly average.

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 hedge for each determined utility's specific credit rating, an interest rate benchmark of 12-month average of utility bond interest rates, and an adjustment percentage of 50 percent of the change in the benchmark. The utility index is for each Moody's Aa utility bond for utilities rated A or higher, Baa and the utility bond for utilities rated Baa or lower.[2],[3] 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. [illegible] of c

2 The decision did not specify the appropriate index for A, but it is the presumption is that such utilities would utilize the Moody's A utility bond index.

3 See Chapter 1, Attachment B for the corresponding under each of the Moody's and Standard & Poor's, Inc. (S&P) ratings nomenclature.

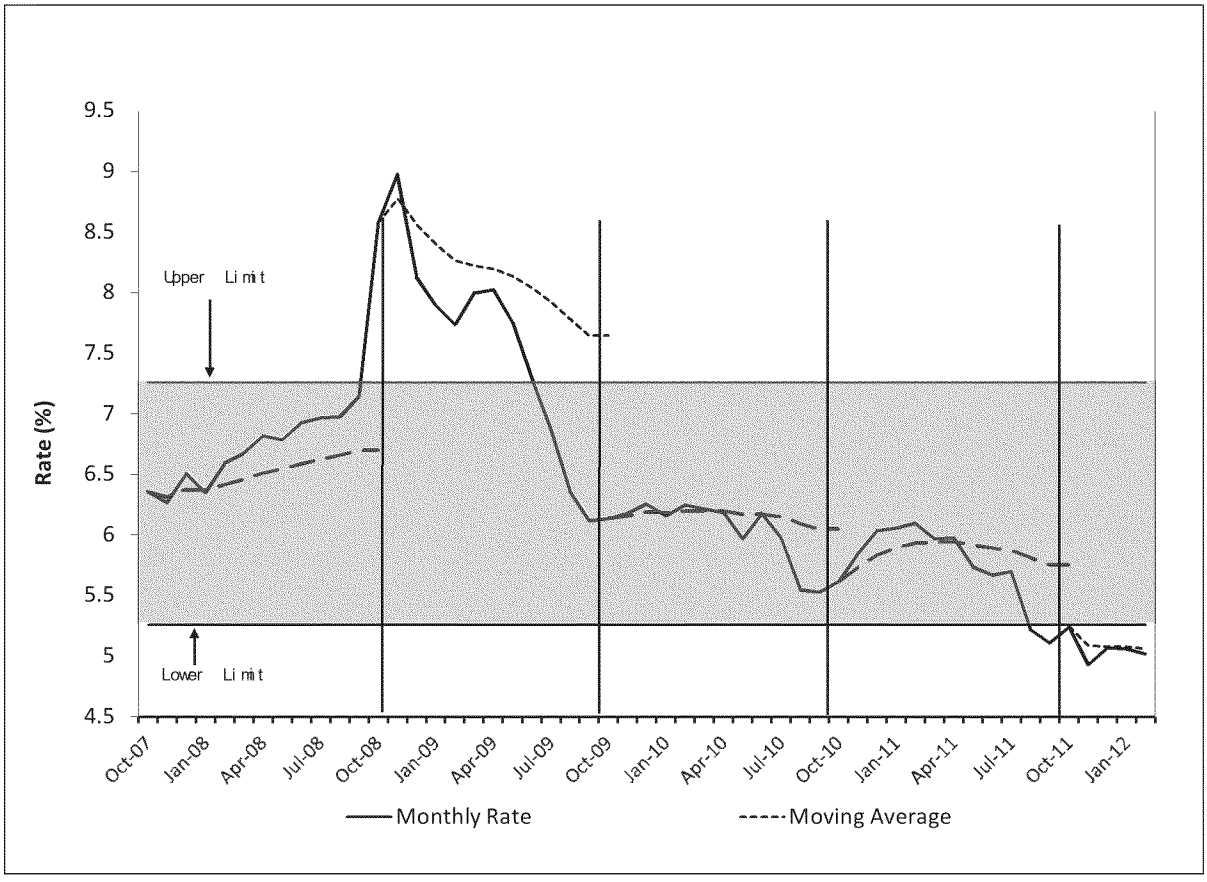
adopting the ACCAM, the Commission did not prescribe which rate index was appropriate for use with split rating utilities, i.e., with ratings in different ratings categories. PG&E is currently rated BBB+ by Moody's by Fitch, and BBB by S&P. Hence under the current mechanism it is not evident which index applies to PG&E. Nor would it be evident if a utility's credit rating were to change during the period the ACCAM is in effect. Subsequent to Decision 08-05-035, adopting the CPUC used the Baa utility bond index for Southern California Edison Company (SCE), which also has a split rating, and as a result PG&E has not used this as well, and would continue to do so if the CPUC readopts the continuation current mechanism.

2. Performance of the ACCAM

Except for an unusual period during the financial market crisis that started in 2008, changes in the Aa, the A and the Baa utility interest rate indexes did not exceed the 100 basis point deadband during the five-year ACCAM period that was in effect (2008-2012). The ACCAM would have triggered in 2009 for 2010 when interest rates peaked during the crisis. As a result, however, as described more fully later, the cost of capital was not changed. As a result, PG&E's authorized cost of capital has not changed since December 2007.

Figure 4-1 below shows monthly interest rates during the period 2008-2011, as well as the index value at the end of each 12-month measurement period. The graph shows that the ACCAM would have triggered for 2010, since changes in the Baa monthly index during the 12 months ending September 2009 exceeded 100 basis points compared to the Baa index. An interest rate index, which would have resulted in PG&E's increase in return on equity (ROE) from 11.35 percent to 12.04 percent. The graph also shows that although interest rates had peaked in 2009, earlier they then declined to a point below where they had ceased in the early in 2008. This unusual behavior of interest rates was caused by the crisis, and the flight to quality which led to increasing interest rates, and the economic recession to their dramatic fall.

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



In the fall of 2009, SCE and PG&E both requested waivers of ACCAM mechanism on the basis that the rise in interest rates would trigger an upward adjustment to the authorized ROE had a and hence was not indicative of a sustained change in capital cost. The CPUC agreed with the utilities,[4] waived the ACCAM mechanism for 2010, and extended the ACCAM for two additional years.

C. Capital Structure

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

However, PG&E reserves the right to file an application during period in the event PG&E must materially change its capital result

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

of Commission decisions in other proceedings. For example, in PG&E's 2011 General Rate Case (GRC), the Division of Ratepayer Advocates (DRA) proposed that PG&E refinance over $2 billion of permanent assets, including nuclear fuel and Construction Work in Progress, entirely with commercial paper. The Utility Reform Network (TURN), in addition to supporting DRA's position on nuclear fuel, proposed that PG&E refinance its fleet debt entirely using capital leases.

PG&E explained in its 2011 GRC why DRA's and TURN's proposals were zero sum game not in ratepayer interests, generally unworkable, and poor financial management. However, if the CPUC were to adopt such proposals, and if it became feasible for PG&E to refinance such assets as described, then PG&E would likely need to add substantial common equity to its balance sheet—for example, increasing the common equity ratio from 52 percent to 54 percent—in order to maintain its credit quality and ratings. PG&E reserves the right to file an application with the Commission to reset its cost of capital to reflect the higher degree of leverage adopted by the Commission in another proceeding, and to offset the higher leverage with more equity, adjusting the 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 experience and contains 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 Emory University. After serving in the U.S. Navy, I entered the doctoral program in economics at the University of North Carolina at Chapel Hill. Upon receiving my Ph.D., I joined the faculty at the University of North Carolina and taught finance in the Graduate School of Business. I subsequently accepted a position at the University of Texas at Austin where I taught courses in financial management and investment analysis. I then went to work for International Paper Company in New York City as Manager of Financial Education, a position in which I had responsibility for all corporate education programs in finance, accounting, and economics.

In 1977, I joined the staff of the Public Utility Commission of Texas ("PUCT") as Director of the Economic Research Division. During my tenure at the PUCT, I managed a division responsible for financial analysis, cost allocation and rate design, economic and financial research, and data 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 customers,

municipalities, and regulatory commissions. I have testified before the Federal Energy Regulatory Commission ("FERC"), the Federal Communications Commission, the Surface Transportation Board (FERC's predecessor, the Interstate Commerce Commission), the Canadian Radio-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 Synchronous Interconnection Committee to advise the Texas legislature on the costs and benefits of connecting Texas to the national electric grid. In addition, I served as an outside director of Georgia System Operations 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 St. Edward's University for twenty years. In addition, I have lectured on economic and regulatory topics in programs sponsored by various universities, industry groups. I have taught in hundreds of educational programs for financial analysts in programs sponsored by the Association for Investment Management and Research, the Financial Analysts Federation, and local financial analysts societies. These programs have been presented in Asia, Europe, and North America, including the Financial Analysts Seminar at Northwestern University. I hold the Chartered Financial Analyst® (CFA®) designation and have served as Vice President for Membership of the Financial Management Association. I have also served on the Board of

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

WILLIAM E. AVERA

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Summary of Qualifications

Ph.D. in economics and finance; Chartered Financial Analyst (CFA ®) 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 TransportationBoard, Interstate Commerce Commission, and the Canadian Radio-Televisionand 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; A*ppointed 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 yearss ervice); Commanding Officer, Naval Special Warfare Engineering (SEAL) Support Unit; Officer-in-Chargeof SWIFT patrol boat in Vietnam; Enlisted service as weather analyst (advanced to second class petty officer).

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"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 15th 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, DesMoines (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)

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"Growth Rates, Expected Returns, and Variance in Portfolio Selection and Performance Evaluation," with Henry A. Latané, Econometric Society, Oslo, Norway (Aug. 1973)

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

Q 1 Please state your name and business address.

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

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

A 2 I am a Vice President and Treasurer. In addition to, I manage responsible for: implementing and executing financing for Pacific Gas and Electric Company (the Utility) and PG&E Corporation's capital requirements; managing new and existing debt, preferred stock and common equity to minimize the long-term cost of capital while maintaining access to capital markets; managing cash flows to ensure sufficient to meet all corporate obligations; managing short-term and long-term investments; assisting client departments in implementing necessary bank services, such as electronic account reconciliation, check fraud detection and prevention and alternative customer payment monitoring strategic trends in the utility sector, and appropriately ensuring funding and investment management of all external trusts and assets by the Utility and PG&E Corporation.

Q 3 Please summarize your educational and professional background.

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

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following testimony in PG&E's Capital 2013 Cost filing:

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

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

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

Q 1 Please state your name and business address.

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

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

A 2 I am a principal financial analyst in the Project Economic Analysis and Procurement Department.

Q 3 Please summarize your educational and professional background.

A 3 I received my bachelor of science degree in civil engineering from Civil Engineering University, and a master of engineering degree in engineering structural and engineering a master of business administration degree from the University of California, Berkeley. I am a registered professional engineer in the State of California.

In 1982, I joined PG&E as a civil engineer in the Design Department, performing structural design of various facilities. I became a gas distribution engineer in 1984 and a senior gas distribution engineer in 1987. While in these positions I was a project engineer for various transmission and distribution reconstruction projects. I became a senior rate analyst in 1990 and then supervised rates in 1991 in the section of the Rates Department. I was promoted to my present position in 2008.

Q 4 What is the purpose of your testimony?

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

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

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.

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

Q 1 Please state your name and business address.

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

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

A 2 I am a senior manager in the Economic and Depreciation Analysis Department.

Q 3 Please summarize your educational and professional background.

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

In 1985, I joined PG&E as an analyst in the Revenue Requirements Department, working on modeling and forecasting of plant additions, expenses, depreciation and related items for short- and long-term financial planning cases. In 1986, I transferred to the Rates Department to work on cost analysis, returning to the Revenue Requirements Department in 1987 as a senior analyst responsible for preparing forecasts of book depreciation for planning and rate filings. From 1988 to 1992 I was supervisor in the Revenue Requirements Department, where I was responsible for the development of PG&E's depreciation policies. In 1992, I transferred to the Financial Planning and Analysis Department as a financial analyst. I assumed my present position in 1994.

Q 4 What is the purpose of your testimony?

A 4 I am sponsoring the following materials in PG&E's Capital 2010 Cost of Capital filing:

- Chapter 4, "Annual Cost of Capital Adjustment Mechanism."

Q 5 Does this conclude your statement of qualifications?

A 5 Yes, it does.