Docket No. 09-_____
Exhibit No. PPL/200
Witness: Samuel C. Hadaway

BEFORE THE PUBLIC UTILITIES COMMISSION

OF THE STATE OF CALIFORNIA

PACIFICORP

Direct Testimony of Samuel C. Hadaway

Return on Equity

November 2009

Q. Please state your name, occupation, and business address.

A. My name is Samuel C. Hadaway. I am a Principal in FINANCO, Inc., Financial Analysis Consultants, 3520 Executive Center Drive, Austin, Texas 78731.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of PacifiCorp ("Company").

Q. Briefly describe your educational and professional background.

A. I have a Bachelor's degree in economics from Southern Methodist University, as well as MBA and Ph.D. degrees with concentrations in finance and economics from the University of Texas at Austin ("UT Austin"). For the past 26 years, I have been an owner and full-time employee of FINANCO, Inc. FINANCO provides financial research concerning the cost of capital and financial condition for regulated companies as well as financial modeling and other economic studies in litigation support. In addition to my work at FINANCO, I have served as an adjunct professor in the McCombs School of Business at UT Austin and in what is now the McCoy College of Business at Texas State University. In my prior academic work, I taught economics and finance courses and I conducted research and directed graduate students in the areas of investments and capital market research. I was previously Director of the Economic Research Division at the Public Utility Commission of Texas ("Texas Commission") where I supervised the Texas Commission's finance, economics, and accounting staff, and served as the Texas Commission's chief financial witness in electric and telephone rate cases. I have taught courses at various utility conferences on cost of capital, capital structure, utility financial condition, and cost allocation and rate design

issues. I have made presentations before the New York Society of Security Analysts, the National Rate of Return Analysts Forum, and various other professional and legislative groups. I have served as a vice president and on the board of directors of the Financial Management Association.

A list of my publications and testimony I have given before various regulatory bodies and in state and federal courts is contained in my resume, which is included as Exhibit PPL/201.

Purpose and Summary of Testimony

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to estimate the market required rate of return on equity capital ("ROE") for PacifiCorp.

Q. Please state your ROE recommendation and summarize the results of your cost of equity studies.

A. I estimate the cost of equity for PacifiCorp to be 11.0 percent. My discounted cash flow ("DCF") analysis indicates a reasonable ROE range of 10.9 percent to 11.3 percent. My risk premium analysis indicates an ROE range of 10.26 percent to 10.40 percent. As I will discuss later in this testimony, recent sharp declines in interest rates have created risk premium ROE estimates that are not consistent with ROE estimates from the DCF model. This divergence is caused by continuing volatility and relatively low prices in the equity markets for utility shares, which indicates that the cost of equity has not declined as the interest rate drop would indicate. Based on these quantitative results and my further review of other economic data, I recommend a point estimate of 11.0 percent.

Q. How is your analysis structured?

In my DCF analysis, I apply a comparable company approach. PacifiCorp's cost of equity cannot be estimated directly from its own market data because the Company is a wholly-owned subsidiary of MidAmerican Energy Holdings Company. As such, PacifiCorp does not have publicly traded common stock or other independent market data that would be required to estimate its cost of equity directly. I begin my comparable company review with all the electric utilities that are included in the *Value Line Investment Survey* ("Value Line"). Value Line is a widely-followed, reputable source of financial data that is often used by professional regulatory economists. To improve the group's comparability with PacifiCorp, which has a senior secured bond rating of "A" from Standard & Poor's ("S&P") and "A2" from Moody's Investors Service ("Moody's"), I restricted the group to companies with senior secured bond ratings of at least A- by S&P or A3 by Moody's. I also required the comparable companies to derive at least 70 percent of revenues from regulated utility sales, to have consistent financial records not affected by recent mergers or restructuring, and to have a consistent dividend record with no dividend cuts or resumptions during the past two years. The fundamental characteristics and bond ratings of the 21 companies in my comparable group are presented in Exhibit PPL/202.

In my risk premium analysis, I relied on current and projected single-A utility bond interest rates. These rates are consistent with PacifiCorp's single-A bond ratings. Under current market conditions, I place most emphasis on the DCF results because the risk premium estimates appear to be artificially

depressed by the sharply lower interest rates that have resulted from recent monetary policy. The data sources and the details of my cost of equity studies are contained in Exhibits PPL/202 through PPL/206.

Q. How is the remainder of your testimony organized?

A. My testimony is divided into three additional sections. Following this introduction, I review various methods for estimating the cost of equity. In this section, I discuss comparable earnings methods, equity risk premium methods, and the DCF model. In the following section, I review general capital market costs and conditions and discuss recent developments in the electric utility industry that may affect the cost of capital. In the final section, I discuss the details of my cost of equity studies and summarize my ROE recommendations.

Estimating the Cost of Equity Capital

Q. What is the purpose of this section of your testimony?

A. The purpose of this section is to present a general definition of the cost of equity capital and to compare the strengths and weaknesses of several of the most widely used methods for estimating the cost of equity. Estimating the cost of equity is fundamentally a matter of informed judgment. The various models provide a concrete link to actual capital market data and assist with defining the various relationships that underlie the ROE estimation process.

Q. Please define the term "cost of equity capital" and provide an overview of the cost estimation process.

A. The cost of equity capital is the rate of return that equity investors expect to receive. Conceptually it is no different than the cost of debt or the cost of

preferred stock. The cost of equity is the rate of return that common stockholders expect, just as interest on bonds and dividends on preferred stock are the returns that investors in those securities expect. Equity investors expect a return on their capital commensurate with the risks they take and consistent with returns that might be available from other similar investments. Unlike returns from debt and preferred stocks, however, the equity return is not directly observable in advance and, therefore, it must be estimated or inferred from capital market data and trading activity.

An example helps to illustrate the cost of equity concept. Assume that an investor buys a share of common stock for $20 per share. If the stock's expected dividend is $1.00, the expected dividend yield is 5.0 percent ($1.00 / $20 = 5.0 percent). If the stock price is also expected to increase to $21.20 after one year, this one dollar and 20 cent expected gain adds an additional 6.0 percent to the expected total rate of return ($1.20 / $20 = 6.0 percent). Therefore, buying the stock at $20 per share, the investor expects a total return of 11.0 percent: 5.0 percent dividend yield, plus 6.0 percent price appreciation. In this example, the total expected rate of return of 11.0 percent is the appropriate measure of the cost of equity capital, because it is this rate of return that caused the investor to commit the $20 of equity capital in the first place. If the stock were riskier, or if expected returns from other investments were higher, investors would have required a higher rate of return from the stock, which would have resulted in a lower initial purchase price in market trading.

Each day market rates of return and prices change to reflect new investor

expectations and requirements. For example, when interest rates on bonds and savings accounts rise, utility stock prices usually fall. This is true, at least in part, because higher interest rates on these alternative investments make utility stocks relatively less attractive, which causes utility stock prices to decline in market trading. This competitive market adjustment process is quick and continuous, so that market prices generally reflect investor expectations and the relative attractiveness of one investment versus another. In this context, to estimate the cost of equity one must apply informed judgment about the relative risk of the company in question and knowledge about the risk and expected rate of return characteristics of other available investments as well.

Q. How does the market account for risk differences among the various investments?

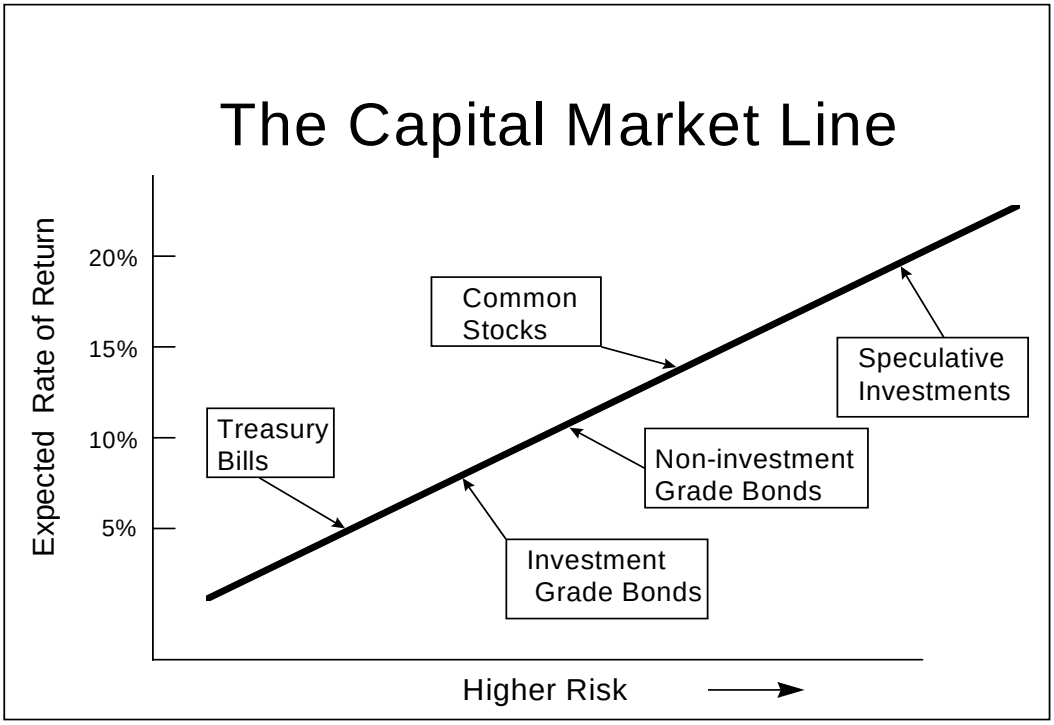
A. Risk-return tradeoffs among capital market investments have been the subject of extensive financial research. Literally dozens of textbooks and hundreds of academic articles have addressed the issue. Generally, such research confirms the common sense conclusion that investors will take additional risks only if they expect to receive a higher rate of return. Empirical tests consistently show that returns from low risk securities, such as U.S. Treasury bills, are the lowest; that returns from longer-term Treasury bonds and corporate bonds are increasingly higher as risks increase; and generally, returns from common stocks and other more risky investments are even higher. These observations provide a sound theoretical foundation for both the DCF and risk premium methods for estimating the cost of equity capital. These methods attempt to capture the well founded

risk-return principle and explicitly measure investors' rate of return requirements.

Q. Can you illustrate the capital market risk-return principle that you just described?

A. Yes. The following graph depicts the risk-return relationship that has become widely known as the Capital Market Line ("CML"). The CML offers a graphical representation of the capital market risk-return principle. The graph is not meant to illustrate the actual expected rate of return for any particular investment, but merely to illustrate in a general way the risk-return relationship.

Risk-Return Tradeoffs



As a continuum, the CML can be viewed as an available opportunity set for investors. Those investors with low risk tolerance or investment objectives that mandate a low risk profile should invest in assets depicted in the lower left-hand portion of the graph. Investments in this area, such as Treasury bills and short-maturity, high quality corporate commercial paper, offer a high degree of investor certainty. In nominal terms (before considering the potential effects of inflation), such assets are virtually risk-free.

Investment risks increase as one moves up and to the right along the CML. A higher degree of uncertainty exists about the level of investment value at any point in time and about the level of income payments that may be received. Among these investments, long-term bonds and preferred stocks, which offer priority claims to assets and income payments, are relatively low risk, but they are not risk-free. The market value of long-term bonds, even those issued by the U.S. Treasury, often fluctuates widely when government policies or other factors cause interest rates to change.

Farther up the CML continuum, common stocks are exposed to even more risk, depending on the nature of the underlying business and the financial strength of the issuing corporation. Common stock risks include market-wide factors, such as general changes in capital costs, as well as industry and company specific elements that may add further to the volatility of a given company's performance. As I will illustrate in my risk premium analysis, common stocks typically are more volatile (have higher risk) than high quality bond investments and, therefore, they reside above and to the right of bonds on the CML graph. Other

more speculative investments, such as stock options and commodity futures contracts, offer even higher risks (and higher potential returns). The CML's depiction of the risk-return trade-offs available in the capital markets provides a useful perspective for estimating investors' required rates of return.

Q. How is the fair rate of return in the regulatory process related to the estimated cost of equity capital?

A. The regulatory process is guided by fair rate of return principles established in the U.S. Supreme Court cases, *Bluefield Water Works* and *Hope Natural Gas*:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. *Bluefield Water Works & Improvement Company v. Public Service Commission of West Virginia*, 262 U.S. 679, 692-693 (1923).

> From the investor or company point of view, it is important that there be enough revenue not only for operating expenses, but also for the capital costs of the business. These include service on the debt and dividends on the stock. By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital. *Federal Power Commission v. Hope Natural Gas Co*., 320 U.S. 591, 603 (1944).

Based on these principles, the fair rate of return should closely parallel investor opportunity costs as discussed above. If a utility earns its market cost of equity, neither its stockholders nor its customers should be disadvantaged.

Q. What specific methods and capital market data are used to evaluate the cost of equity?

A. Techniques for estimating the cost of equity normally fall into three groups: comparable earnings methods, risk premium methods, and DCF methods. The first set of estimation techniques, the comparable earnings methods, has evolved over time. The original comparable earnings methods were based on book accounting returns. This approach developed ROE estimates by reviewing accounting returns for unregulated companies thought to have risks similar to those of the regulated company in question. These methods have generally been rejected because they assume that the unregulated group is earning its actual cost of capital, and that its equity book value is the same as its market value. In most situations these assumptions are not valid, and, therefore, accounting-based methods do not generally provide reliable cost of equity estimates.

More recent comparable earnings methods are based on historical stock market returns rather than book accounting returns. While this approach has some merit, it too has been criticized because there can be no assurance that historical returns actually reflect current or future market requirements. Also, in practical application, earned market returns tend to fluctuate widely from year to year. For these reasons, a current cost of equity estimate (based on the DCF model or a risk premium analysis) is usually required.

The second set of estimation techniques is grouped under the heading of risk premium methods. These methods begin with currently observable market returns, such as yields on government or corporate bonds, and add an increment to

account for the additional equity risk. The capital asset pricing model ("CAPM") and arbitrage pricing theory ("APT") model are more sophisticated risk premium approaches. The CAPM and APT methods estimate the cost of equity directly by combining the "risk-free" government bond rate with explicit risk measures to determine the risk premium required by the market. Although these methods are widely used in academic cost of capital research, their additional data requirements and their potentially questionable underlying assumptions have detracted from their use in most regulatory jurisdictions. The basic risk premium methods provide a useful parallel approach with the DCF model and assures consistency with other capital market data in the equity cost estimation process.

The third set of estimation techniques, based on the DCF model, is the most widely used regulatory cost of equity estimation method. Like the risk premium approach, the DCF model has a sound basis in theory, and many argue that it has the additional advantage of simplicity. I will describe the DCF model in detail below, but in essence its estimate of ROE is simply the sum of the expected dividend yield and the expected long-term dividend, earnings, or price growth rate (all of which are assumed to grow at the same rate). While dividend yields are easy to obtain, estimating long-term growth is more difficult. Because the constant growth DCF model also requires very long-term growth estimates (technically to infinity), some argue that its application is too speculative to provide reliable results, resulting in the preference for the multistage growth DCF analysis.

Q. Of the three estimation methods, which do you believe provides the most reliable results?

A. From my experience, a combination of DCF and risk premium methods provides the most reliable approach. While the caveat about estimating long-term growth must be observed, the DCF model's other inputs are readily obtainable, and the model's results typically are consistent with capital market behavior. The risk premium methods provide a parallel approach to the DCF model and generally reflect current market conditions.

Q. Please explain the DCF model.

A. The DCF model is predicated on the concept that stock prices represent the present value or discounted value of all future dividends that investors expect to receive. In the most general form, the DCF model is expressed in the following formula:

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \ldots + \frac{D_\infty}{(1+k)^\infty} \qquad (1)$$

where P_0 is today's stock price; D_1, D_2, etc. are all future dividends and k is the discount rate, or the investor's required rate of return on equity. Equation (1) is a routine present value calculation based on the assumption that the stock's price is the present value of all dividends expected to be paid in the future.

Under the additional assumption that dividends are expected to grow at a constant rate "g" and that k is strictly greater than g, equation (1) can be solved for k and rearranged into the simple form:

$$k = \frac{D_1}{P_0} + g \qquad (2)$$

Equation (2) is the familiar constant growth DCF model for cost of equity estimation, where D_1/P_0 is the expected dividend yield and g is the long-term expected dividend growth rate.

Under circumstances when growth rates are expected to fluctuate or when future growth rates are highly uncertain, the constant growth model may not give reliable results. Although the DCF model itself is still valid (equation 1 is mathematically correct), under such circumstances the simplified form of the model must be modified to capture market expectations accurately.

Recent events and current market conditions in the electric utility industry as discussed later appear to challenge the constant growth assumption of the traditional DCF model. Since the mid-1980s, dividend growth expectations for many electric utilities have fluctuated widely. In fact, over one-third of the electric utilities in the U.S. have reduced or eliminated their common dividends over this time period. Some of these companies have reestablished their dividends, producing exceptionally high growth rates. Under these circumstances, long-term growth rate estimates may be highly uncertain, and estimating a reliable "constant" growth rate for many companies is often difficult.

Q. Can the DCF model be applied when the constant growth assumption is violated?

A. Yes. When growth expectations are uncertain, the more general version of the model represented in equation (1) should be solved explicitly over a finite "transition" period while uncertainty prevails. The constant growth version of the model can then be applied after the transition period, under the assumption that

more stable conditions will prevail in the future. There are two alternatives for dealing with the nonconstant growth transition period.

Under the "terminal price" nonconstant growth approach, equation (1) is written in a slightly different form:

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \ ... + \frac{P_T}{(1+k)^T} \qquad (3)$$

where the variables are the same as in equation (1) except that P_T is the estimated stock price at the end of the transition period T. Under the assumption that normal growth resumes after the transition period, the price P_T is then expected to be based on constant growth assumptions. With the terminal price approach, the estimated cost of equity, k, is just the rate of return that investors would expect to earn if they bought the stock at today's market price, held it and received dividends through the transition period (until period T), and then sold it for price P_T. In this approach, the analyst's task is to estimate the rate of return that investors expect to receive given the current level of market prices they are willing to pay.

Under the "multistage" nonconstant growth approach, equation (1) is simply expanded to incorporate two or more growth rate periods, with the assumption that a permanent constant growth rate can be estimated for some point in the future:

$$P_0 = \frac{D_0(1+g_1)}{(1+k)} + \ ... + \frac{D_2(1+g_2)^n}{(1+k)^n} + \ ... + \frac{\frac{[D_T(1+g_T)^{(T+1)}]}{(k-g_T)}}{(1+k)^T} \qquad (4)$$

where the variables are the same as in equation (1), but g_1 represents the growth rate for the first period; D_2 is the dividend at the beginning of the second period

and g_2 is the growth rate for the second period; and D_T is the dividend at the beginning of the third period and g_T for the period from year T (the end of the transition period) to infinity. The difficult task for analysts in the multistage approach is determining the various growth rates for each period.

Although less convenient for exposition purposes, the nonconstant growth models are based on the same valid capital market assumptions as the constant growth version. The nonconstant growth approach simply requires more explicit data inputs and more work to solve for the discount rate, k. Fortunately, the required data are available from investment and economic forecasting services, and computer algorithms can easily produce the required solutions. Both constant and nonconstant growth DCF analyses are presented in a subsequent section of my testimony.

Q. Please explain the risk premium methodology.

A. Risk premium methods are based on the assumption that equity securities are riskier than debt and, therefore, that equity investors require a higher rate of return. This basic premise is well supported by legal and economic distinctions between debt and equity securities, and it is widely accepted as a fundamental capital market principle. For example, debt holders' claims to the earnings and assets of the borrower have priority over all claims of equity investors. The contractual interest on mortgage debt must be paid in full before any dividends can be paid to shareholders, and secured mortgage claims must be fully satisfied before any assets can be distributed to shareholders in bankruptcy. Also, the guaranteed, fixed-income nature of interest payments makes year-to-year returns

from bonds typically more stable than capital gains and dividend payments on stocks. All these factors demonstrate the more risky position of stockholders and support the equity risk premium concept.

Q. Are risk premium estimates of the cost of equity consistent with other current capital market costs?

A. Yes. The risk premium approach is especially useful because it is founded on current market interest rates, which are directly observable. This feature assures that risk premium estimates of the cost of equity begin with a sound basis, which is tied directly to current capital market costs.

Q. Is there consensus about how risk premium data should be employed?

A. No. In regulatory practice there is often considerable debate about how risk premium data should be interpreted and used. Since the analyst's basic task is to gauge investors' required returns on long-term investments, some argue that the estimated equity risk premium should be based on the longest possible time period. Others argue that market relationships between debt and equity from several decades ago are irrelevant and that only recent debt-equity observations should be given any weight in estimating investor requirements. There is no consensus on this issue. Since analysts cannot observe or measure investors' expectations directly, it is not possible to know exactly how such expectations are formed or, therefore, to know exactly what time period is most appropriate in a risk premium analysis.

The important point is to answer the following question: "What rate of return should equity investors reasonably expect relative to returns that are

currently available from long-term bonds?" The risk premium studies and analyses I discuss later address this question. My risk premium recommendation is based on an intermediate position that avoids some of the problems and concerns that have been expressed about both very long and very short periods of analysis with the risk premium model.

Q. Please summarize your discussion of cost of equity estimation techniques.

A. Estimating the cost of equity is one of the most controversial issues in utility ratemaking. Because actual investor requirements are not directly observable, several methods have been developed to assist in the estimation process. The comparable earnings method is the oldest but perhaps least reliable. Its use of accounting rates of return, or even historical market returns, may or may not reflect current investor requirements. Differences in accounting methods among companies and issues of comparability also detract from this approach.

The DCF and risk premium methods have become the most widely accepted in regulatory practice. In my professional judgment, a combination of the DCF model and a review of risk premium data provides the most reliable cost of equity estimate. While the DCF model does require judgment about future growth rates, the dividend yield is straightforward, and the model's results are generally consistent with actual capital market behavior. For these reasons, I will rely on a combination of the DCF model and a risk premium analysis in the cost of equity studies that follow.

Fundamental Factors That Affect the Cost of Equity

Q. What is the purpose of this section of your testimony?

A. In this section, I review recent capital market conditions and industry factors that should be reflected in the cost of capital estimate.

Q. What has been the experience in the U.S. capital markets for the past several years?

A. In Exhibit PPL/203, page 1, I provide a review of annual interest rates and rates of inflation in the U.S. economy over the past ten years. During that time inflation and fixed income market costs declined and, generally, have been lower than rates that prevailed in the previous decade. Inflation, as measured by the Consumer Price Index ("CPI"), until 2003 had remained at historically low levels not seen consistently since the early 1960s. Since 2003, however, inflation rates have increased with the average for 2004 though 2006 similar to the longer-term historical average above three percent. The inflation rate for 2007 was even higher at 4.1 percent. Following the economic slowdown, and especially the sharp drop in energy prices, the consumer price index was essentially unchanged in 2008.

Having reduced the Federal Funds overnight bank interest rate to virtually zero, the Federal Reserve System's current monetary policy options are limited. During the period from mid-2004 until mid-2006, the Federal Reserve System increased the short-term Federal Funds interest rate 17 times, raising it from one percent to 5.25 percent. In late 2007, in response to the early turbulence in the sub-prime credit markets, the Federal Reserve Open Market Committee began

aggressively reducing the Federal Funds rate. Since September 2007, the rate has been lowered eleven times to its current target level of between zero and one-quarter percent. While governmental policies and "flight to safety"[1] issues have driven down short-term interest rates for banks and rates on U.S. Treasury securities, the cost of equity for utilities has not declined over the past year.

Q. Has the recent extreme turbulence in the capital markets increased the cost of capital for utilities?

A. Yes. During the past year, capital markets in the U.S. have been more turbulent than at any time since the 1930s. During late 2008 and early 2009, extremely large daily swings in the stock market and unprecedented corporate interest rate spreads in the debt markets resulted in near chaos. The S&P 500 and the Dow Jones Industrial Average have fluctuated by 50 percent since their highest levels in late 2007. In this environment, many large financial institutions such as Countrywide Financial, Washington Mutual, the Federal Home Loan Mortgage Association, the Federal National Mortgage Association, Wachovia, Bear Stearns, and Merrill Lynch were unable to survive as independent institutions. Lehman Brothers was forced to file for bankruptcy. Other surviving institutions such as Citigroup, Goldman Sachs, American International Group, Morgan Stanley and others have required multibillion dollar capital infusions.

[1] The term "flight to safety" refers to the tendency for investors, during periods of market turbulence, to remove money from more risky investments, such as corporate bonds and stocks, and to put the money into government securities such as Treasury bills and bonds. The effect causes a reduction in the supply of funds to corporations and an increase in funds invested in government securities. The result is wider "spreads" between corporate bond and government bond interest rates and higher capital costs for corporations.

In October 2008, the federal government enacted emergency legislation (the $700 billion Troubled Asset Relief Program) in an attempt to stabilize the economy. As part of that effort the government increased federal deposit insurance, lent billions of dollars to financial institutions, purchased hundreds of billions of dollars in illiquid securities, guaranteed loans between financial institutions, and purchased equity in banks. In November 2008, the Federal Reserve pledged to pump another $800 billion into ailing credit markets - $600 billion to purchase federal government agency mortgage securities and, with support from the U.S. Treasury, the Federal Reserve was authorized to provide up to $200 billion in financing to investors buying securities tied to student loans, car loans, credit card debt and small business loans. In addition, President Obama signed an additional $789 billion economic package in early 2009 providing further economic stimulus for the economy. There is no question that the economic and financial uncertainties generated by the credit crisis have significantly impacted the risks surrounding public utility company cost of capital.

Q. Can you be more specific regarding the impact of the credit crisis on the cost of capital of public utilities?

A. Yes. The month-by-month interest rate data for the past two years are presented in Exhibit PPL/203, page 2. Those data are summarized below in Table 1.

Table 1
Long-Term Interest Rate Trends

Month	Single-A Utility Rate	30-Year Treasury Rate	Single-A Utility Spread
Jan-07	5.96	4.85	1.11
Feb-07	5.90	4.82	1.08
Mar-07	5.85	4.72	1.13
Apr-07	5.97	4.87	1.10
May-07	5.99	4.90	1.09
Jun-07	6.30	5.20	1.10
Jul-07	6.25	5.11	1.14
Aug-07	6.24	4.93	1.31
Sep-07	6.18	4.79	1.39
Oct-07	6.11	4.77	1.34
Nov-07	5.97	4.52	1.45
Dec-07	6.16	4.53	1.63
Jan-08	6.02	4.33	1.69
Feb-08	6.21	4.52	1.69
Mar-08	6.21	4.39	1.82
Apr-08	6.29	4.44	1.85
May-08	6.28	4.60	1.68
Jun-08	6.38	4.69	1.69
Jul-08	6.40	4.57	1.83
Aug-08	6.37	4.50	1.87
Sep-08	6.49	4.27	2.22
Oct-08	7.56	4.17	3.39
Nov-08	7.60	4.00	3.60
Dec-08	6.52	2.87	3.65
Jan-09	6.39	3.13	3.26
Feb-09	6.30	3.59	2.71
Mar-09	6.42	3.64	2.78
Apr-09	6.48	3.76	2.72
May-09	6.49	4.23	2.26
Jun-09	6.20	4.52	1.68
Jul-09	5.97	4.41	1.56
Aug-09	5.71	4.37	1.34
Sep-09	5.53	4.19	1.34
Oct-09	5.55	4.19	1.36
3-Mo Avg	**5.60**	**4.25**	**1.35**
12-Mo Avg	**6.26**	**3.91**	**2.36**

Mergent Bond Record (Utility Rates); www.federalreserve.gov (Treasury Rates).
Three month average is for August 2009 through October 2009.

The data in Table 1 vividly illustrate the market turmoil that has occurred. The Federal Reserve's efforts to reduce short-term borrowing cost for banks (the Fed Funds rate) and lower rates on U.S. Treasury bonds have a lesser effect for corporate borrowers. In fact, increased risk aversion and continuing market volatility have resulted in ongoing difficulties for many corporations. While the effects of market turbulence may not be easily captured in financial models for estimating the rate of return, the market's turbulence and continuing elevated risk aversion should be considered explicitly in estimates of the cost of equity capital.

Q. What do forecasts for the economy and interest rates show for the coming year?

A. Exhibit PPL/203, page 3, provides S&P's most recent economic forecast from its *Trends & Projection*s publication for October 2009. The S&P data shows that there was significant economic contraction through the first two quarters of 2009. For all of 2009, S&P forecasts that real gross domestic product ("GDP") will decline by 2.7 percent. S&P expects real GDP growth to become positive during the 3rd Quarter of 2009 and for GDP to increase in real terms (before inflation) during 2010 by 1.8 percent.

S&P also forecasts that long-term government and high grade corporate interest rates will rise somewhat from recent levels. The summary interest rate data are presented in Table 2 below:

Table 2
Standard & Poor's Interest Rate Forecast

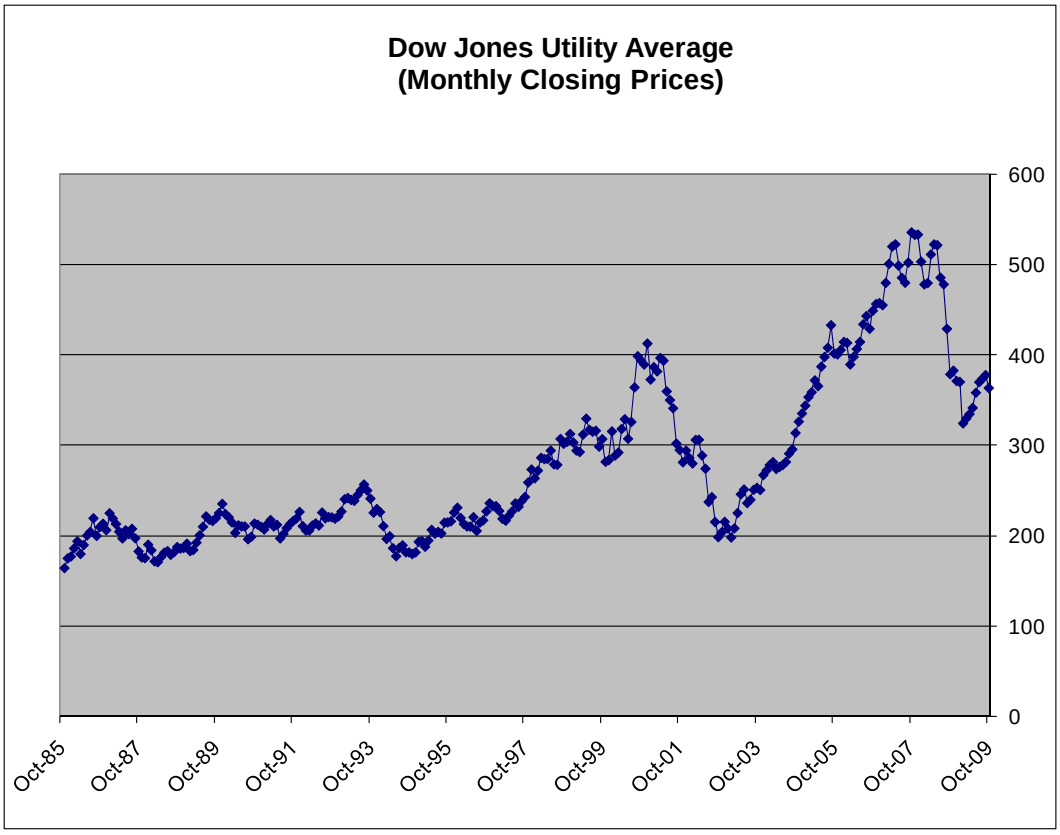
	Oct. 2009 Average	Average 2009 Est.	Average 2010 Est.
Treasury Bills	0.1%	0.2%	0.4%
10-Yr. T-Bonds	3.4%	3.2%	3.8%
30-Yr. T-Bonds	4.2%	4.0%	4.5%
Aaa Corporate Bonds	5.2%	5.3%	5.5%

Sources: www.federalreserve.gov, (Current Rates). Standard & Poor's *Trends & Projections*, October 2009, page 8 (Projected Rates).

The data in Table 2 show that long-term Treasury interest rates during 2010 are projected to increase by 30 basis points from current levels. The rate on highest grade Aaa corporate bonds is also expected to increase by 30 basis points. Although in the recently turbulent market environment it has been difficult to project interest rates, these market data offer perspective for judging the cost of capital in the present case.

Q. How have utility stocks performed during the past several years?

A. Utility stock prices have fluctuated widely. After reaching a level of over 400 in 2000, the Dow Jones Utility Average ("DJUA") dropped to about 200 by October 2002. From late 2002 until 2008, the DJUA trended upward. More recently, utility stock prices have dropped with the overall market decline. The current level for the DJUA is over 30 percent below the record high levels attained in 2007. The wider fluctuations in more recent years are vividly illustrated in the following graph, which depicts DJUA prices over the past 25 years.



In this environment, investors' return expectations and requirements for providing capital to the utility industry remain high relative to the longer-term traditional view of the utility industry. Increased market volatility for utility shares causes investors to require a higher rate of return.

Q. What is the industry's current fundamental position?

A. Many electric utilities are attempting to return to their core businesses and hope to see more stable results over the next several years. S&P reflects this sentiment in its most recent Electric Utility Industry Survey:

> **Standard & Poor's Industry Surveys**
>
> We expect the performance of both the electric utility sector and the individual companies within the sector to remain relatively volatile over the next several years. However, assuming that the

> housing, financial, and credit markets begin to stabilize, we believe the stocks will be less volatile in 2010 than they were in 2008 and 2009, or during the first few years of this decade…. *** The performance of the sector, however, will remain sensitive to the macroeconomic environment and market forces surrounding it. (Standard & Poor's Industry Surveys, Electric Utilities August 13, 2009, page 6.)

Value Line also comments on the industry's relatively poor stock price performance:

> **Value Line Investment Survey**
>
> Electric utility stocks have not participated in the partial recovery that the market has made so far this year after the horrible showing in 2008. To date, the Value Line Composite Average is up over 25%, but the Value Line Utility Average has hardly budged. (Value Line Investment Survey, Electric Utility Industry, September 25, 2009, page 687.)

Credit market gyrations and the volatility of utility shares demonstrate the increased uncertainties that utility investors face. These uncertainties translate into a higher cost of capital for utilities than has been experienced in recent years.

Q. Do utilities continue to face the operating and financial risks that existed prior to the recent financial crisis?

A. Yes. Prior to the recent financial crisis, the greatest consideration for utility investors was the industry's continuing transition to more open market conditions and competition. With the passage of the Energy Policy Act ("EPACT") in 1992 and the Federal Energy Regulatory Commission's ("FERC") Order 888 in 1996, the stage was set for vastly increased competition in the electric utility industry. EPACT's mandate for open access to the transmission grid and FERC's implementation through Order 888 effectively opened the market for wholesale electricity to competition. Previously protected utility service territory and lack of

transmission access in some parts of the country had limited the availability of competitive bulk power prices. EPACT and Order 888 have essentially eliminated such constraints for incremental power needs.

In addition to wholesale issues at the federal level, several states implemented retail access and have opened their retail markets to competition. Prior to the Western energy crisis, investors' concerns had focused principally on appropriate transition mechanisms and the recovery of stranded costs. More recently, however, provisions for dealing with power cost adjustments have become a larger concern. As expected, the opening of previously protected utility markets to competition, the uncertainty created by the removal of regulatory protection, and continuing fuel price volatility have raised the level of uncertainty about investment returns across the entire industry.

Q. Is PacifiCorp affected by these same uncertainties and increasing utility capital costs?

A. Yes. To some extent all electric utilities are being affected by the industry's transition to competition. Although retail deregulation no longer applies in PacifiCorp's service territory in California, the Company's power costs and other operating activities have been significantly affected by transition and restructuring events around the country. In fact, the uncertainty associated with the changes that are transforming the utility industry as a whole, as viewed from the perspective of the investor, remain a factor in assessing any utility's required ROE, including the ROE from PacifiCorp's operations in California.

Q. How do capital market concerns and financial risk perceptions affect the cost of equity capital?

A. As I discussed previously, equity investors respond to changing assessments of risk and financial prospects by changing the price they are willing to pay for a given security. When the risk perceptions increase or financial prospects decline, investors refuse to pay the previously existing market price for a company's securities and market supply and demand forces then establish a new lower price. The lower market price typically translates into a higher cost of capital through a higher dividend yield requirement as well as the potential for increased capital gains if prospects improve. In addition to market losses for prior shareholders, the higher cost of capital is transmitted directly to the company by the need to earn a higher cost of capital on existing and new investment just to maintain the stock's new lower price level and the reality that the firm must issue more shares to raise any given amount of capital for future investment. The additional shares also impose additional future dividend requirements and may reduce future earnings per share growth prospects if the proceeds of the share issuance are unable to earn their expected rate of return.

Cost of Equity Capital for PacifiCorp

Q. What is the purpose of this section of your testimony?

A. The purpose of this section is to present my quantitative studies of the cost of equity capital for PacifiCorp and to discuss the details and results of my analysis.

Q. How are your studies organized?

A. In the first part of my analysis, I apply three versions of the DCF model to a 21-

company group of electric utilities based on the selection criteria discussed previously. In the second part of my analysis, I apply various equity risk premium models and review projected economic conditions and projected capital costs for the coming year.

My DCF analysis is based on three versions of the DCF model. In the first version of the DCF model, I use the constant growth format with long-term expected growth based on analysts' estimates of five-year utility earnings growth. While I continue to endorse a longer-term growth estimation approach based on growth in overall GDP, I show the analyst growth rate DCF results because this is the approach that has traditionally been used by many regulators. In the second version of the DCF model, for the estimated growth rate, I use only the long-term estimated GDP growth rate. In the third version of the DCF model, I use a two-stage growth approach, with stage one based on Value Line's three-to-five-year dividend projections and stage two based on long-term projected growth in GDP. The dividend yields in all three of the annual models are from Value Line's projections of dividends for the coming year and stock prices are from the three-month average for the months that correspond to the Value Line editions from which the underlying financial data are taken.

Q. Why do you believe the long-term GDP growth rate should be used to estimate long-term growth expectations in the DCF model?

A. Growth in nominal GDP (real GDP plus inflation) is the most general measure of economic growth in the U.S. economy. For long time periods, such as those used in the Morningstar/Ibbotson Associates rate of return data, nominal GDP growth

has averaged between five percent and eight percent per year. From this observation, Professors Brigham and Houston offer the following observation concerning the appropriate long-term growth rate in the DCF Model:

> Expected growth rates vary somewhat among companies, but dividends for mature firms are often expected to grow in the future at about the same rate as nominal gross domestic product (real GDP plus inflation). On this basis, one might expect the dividend of an average, or "normal," company to grow at a rate of 5 to 8 percent a year. (Eugene F. Brigham and Joel F. Houston, *Fundamentals of Financial Management,* 11th Ed. 2007, page 298.)

Other academic research on corporate growth rates offers similar conclusions about GDP growth as well as concerns about the long-term adequacy of analysts' forecasts:

> Our estimated median growth rate is reasonable when compared to the overall economy's growth rate. On average over the sample period, the median growth rate over 10 years for income before extraordinary items is about 10 percent for all firms. ... After deducting the dividend yield (the median yield is 2.5 percent per year), as well as inflation (which averages 4 percent per year over the sample period), the growth in real income before extraordinary items is roughly 3.5 percent per year. This is consistent with the historical growth rate in real gross domestic product, which has averaged about 3.4 percent per year over the period 1950-1998. (Louis K. C. Chan, Jason Karceski, and Josef Lakonishok, "The Level and Persistence of Growth Rates," The Journal of Finance, April 2003, p. 649.)

> IBES long-term growth estimates are associated with realized growth in the immediate short-term future. Over long horizons, however, there is little forecastability in earnings, and analysts' estimates tend to be overly optimistic. … On the whole, the absence of predictability in growth fits in with the economic intuition that competitive pressures ultimately work to correct excessively high or excessively low profitability growth. (Ibid, page 683.)

These findings support the notion that long-term growth expectations are more closely predicted by broader measures of economic growth than by near-term analysts' estimates. For the very long-term growth rate requirements of the DCF model, the growth in nominal GDP should be considered an especially important input.

Q. How did you estimate the expected long-run nominal GDP growth rate?

A. I developed my long-term GDP growth forecast from nominal GDP data contained in the St. Louis Federal Reserve Bank data base. That data for the period 1948 through 2008 are summarized in my Exhibit PPL/204. As shown at the bottom of that exhibit, the overall average for the period was 6.9 percent. The data also shows, however, that in the more recent years since 1980, lower inflation has resulted in lower overall GDP growth. For this reason, I gave more weight to the more recent years in my GDP forecast. This approach is consistent with the concept that more recent data should have a greater effect on expectations and with generally lower near-and intermediate-term growth rate forecasts that presently exist. Based on this approach, my overall forecast for long-term GDP growth is 70 basis points lower than the long-term average, at a level of 6.2 percent.

Q. The DCF model requires an estimate of investors' long-term growth rate expectations. Why do you believe your forecast of GDP growth based on long-term historical data is appropriate?

A. There are at least three reasons. First, most econometric forecasts are derived from the trending of historical data or the use of weighted averages. This is the

approach I have taken in Exhibit PPL/204. The long-run historical average GDP growth rate is 6.9 percent, but my estimate of long-term expected growth is only 6.2 percent. My forecast is lower because my forecasting method gives much more weight to the more recent 10- and 20- year periods.

Second, some currently lower GDP growth forecasts likely understate very long growth rate expectations that are required in the DCF model. Many of those forecasts are currently low because they are based on the assumption of permanently low inflation rates, in the range of two percent. As shown in my Exhibit PPL/204, the average long-term inflation rate has been over 3 percent in all but the most recent 10- and 20- year periods. Also, earlier in 2008, it was clearly shown that a long-run two percent inflation rate cannot be maintained in the face of rising energy prices.

Finally, the current economic turmoil makes it even more important to consider longer-term economic data in the growth rate estimate. To the extent that the longer-term outlooks of professional economists are depressed by the influence of the recent recession, their forecasts will be low. Under these circumstances, a longer-term balance is even more important. Although I am also presenting other growth rate approaches based on analysts' estimates in this testimony, I believe it is appropriate also to consider long-term GDP growth in estimating the DCF growth rate for all the reasons previously stated.

Q. Please summarize the results of your electric utility DCF analyses.

A. The DCF results for my comparable company group are presented in Exhibit PPL/205. As shown in the first column of page 1 of that exhibit, the traditional

constant growth model indicates an ROE of 11.0 percent to 11.3 percent. In the second column of page 1, I recalculate the constant growth results with the growth rate based on long-term forecasted growth in GDP. With the GDP growth rate, the constant growth model indicates an ROE range of 11.2 percent to 11.3 percent. Finally, in the third column of page 1, I present the results from the multistage DCF model. The multistage model indicates an ROE range of 10.9 percent to 11.0 percent. The results from the DCF model, therefore, indicate a reasonable ROE range of 10.9 percent to 11.3 percent.

Q. What are the results of your equity risk premium studies?

A. The details and results of my equity risk premium studies are shown in Exhibit PPL/206. These studies indicate an ROE range of 10.26 percent to 10.40 percent. These results reflect the sharp drop in interest rates that has occurred for high quality borrowers. The Federal Reserve System's continuing "easy money" policies have provided renewed liquidity in the credit markets that is reflected in these lower yields. These results are not consistent with DCF results, which continue to reflect equity market risk aversion, which is reflected in continuing volatility and relatively low stock prices for utility shares. These circumstances indicate that the cost of equity capital has not declined even though interest rates on utility debt have dropped.

Q. How are your equity risk premium studies structured?

A. My equity risk premium studies are divided into two parts. First, I compare electric utility authorized ROEs for the period 1980-2008 to contemporaneous long-term utility interest rates. The differences between the average authorized

ROEs and the average interest rate for the year is the indicated equity risk premium. I then add the indicated equity risk premium to the forecasted and current single-A utility bond interest rate to estimate ROE. Because there is a strong inverse relationship between equity risk premiums and interest rates (when interest rates are high, risk premiums are low and vice versa), further analysis is required to estimate the current equity risk premium level.

The inverse relationship between equity risk premiums and interest rate levels is well documented in numerous, well-respected academic studies. These studies typically use regression analysis or other statistical methods to predict or measure the equity risk premium relationship under varying interest rate conditions. On page 3 of Exhibit PPL/206, I provide regression analyses of the allowed annual equity risk premiums relative to interest rate levels. The negative and statistically significant regression coefficients confirm the inverse relationship between equity risk premiums and interest rates. This means that when interest rates rise by one percentage point, the cost of equity increases, but by a smaller amount. Similarly, when interest rates decline by one percentage point, the cost of equity declines by less than one percentage point. I use this negative interest rate change coefficient in conjunction with current and forecasted interest rates to establish the appropriate ROE.

Q. Please summarize the results of your cost of equity analysis.

A. The following Table 3 summarizes my results:

Table 3

Summary of Cost of Equity Estimates

DCF Analysis	Indicated Cost
Constant Growth (Analysts' Growth)	11.0%-11.3%
Constant Growth (GDP Growth)	11.2%-11.3%
Multistage Growth Model	10.9%-11.0%
Reasonable DCF Range	10.9%-11.3%

Equity Risk Premium Analysis	Indicated Cost
Forecast Utility Yield + Equity Risk Premium	
Equity Risk Premium ROE (5.85% + 4.55%)	10.40%
Recent Utility Yield + Equity Risk Premium	
Equity Risk Premium ROE (5.60% + 4.66%)	10.26%

PacifiCorp Estimated ROE	11.0%

Q. How should these results be interpreted to determine the fair cost of equity for PacifiCorp?

A. My estimated ROE of 11.0 percent is a reasonable estimate of PacifiCorp's cost of equity capital. The requested ROE is below the midpoint of my DCF range and above the risk premium estimates based on recently lower single-A utility interest rates. The recent market turmoil and the continuing effects on capital market conditions make it difficult to strictly interpret quantitative model estimates for the cost of equity. While corporate interest rates have dropped from the extremely high levels relative to Treasury bond yields that existed in late 2008, the DCF results, based on continuing relatively low utility stock prices, indicates a higher ROE. Under these conditions, use of a lower DCF range or equity risk premium estimates based strictly on historical risk premium relationships likely understate the cost of equity. From this perspective, and with consideration of the Company's large on-going capital requirements, I estimate

the fair and reasonable cost of equity capital for PacifiCorp at 11.0 percent.

Q. Does this conclude your testimony?

A. Yes, it does.