Exhibit No.___(SCH-1T)
Docket No. UE-09___
Witness: Samuel C. Hadaway

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, Complainant, vs. PACIFICORP dba Pacific Power Respondent.	)	Docket No. UE-09_____

PACIFICORP

DIRECT TESTIMONY OF SAMUEL C. HADAWAY

February 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 (hereinafter the 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 25 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 (Commission) of Texas where I supervised the Commission's finance, economics, and accounting staff, and served as the 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 No.___(SCH-2).

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 11.5 percent. My risk premium analysis indicates an ROE range of 11.05 percent to 11.21 percent, with other risk premium data indicating ROEs of 11.73 percent or higher. 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 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 Investors Service* (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 A3 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 as required by the DCF model. The fundamental characteristics and bond ratings of the sixteen companies in my comparable group are presented in Exhibit No.___(SCH-3).

In my risk premium analysis, I used Moody's average public utility bond yields and projected single-A utility bond interest rates. These rates are consistent with PacifiCorp's bond rating. Under current market conditions, I believe this combination of DCF and risk premium approaches is the most reliable method for estimating the cost of equity. The data sources and the details of my cost of equity studies are contained in Exhibit No.___(SCH-3) through Exhibit No.___(SCH-8).

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, risk premium methods, and the discounted cash flow 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.

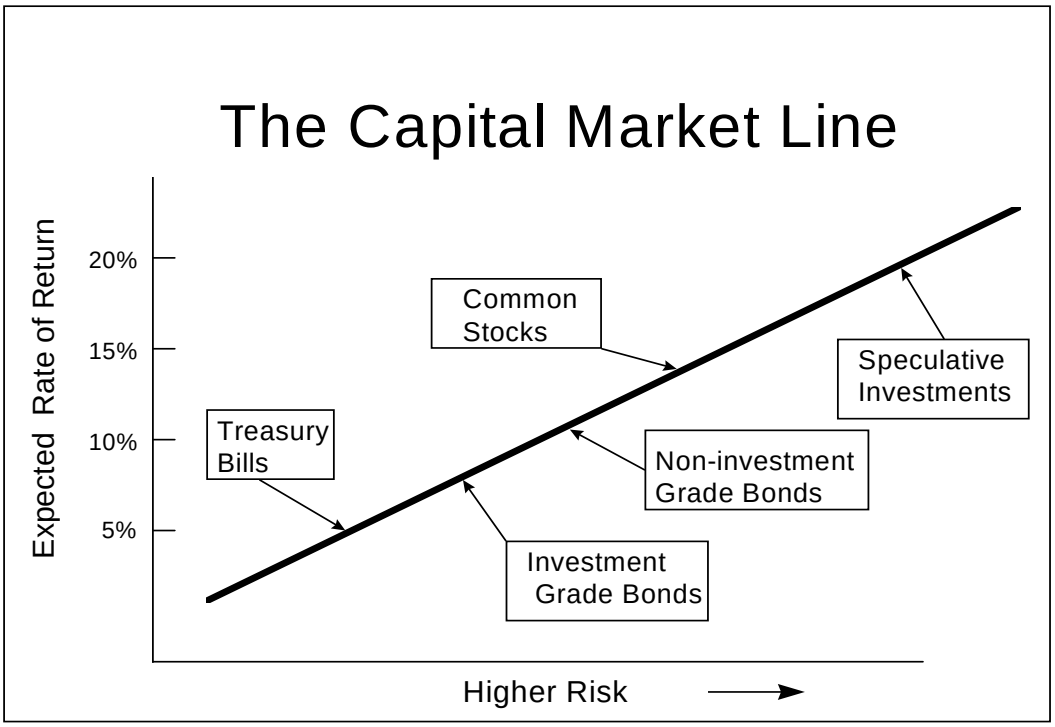
Q. How does the market account for risk differences among the various investments?

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 tradeoffs 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 good parallel approach to the DCF model and further ensure that current market conditions are accurately reflected in the cost of equity estimate.

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:

$$P_0 = D_1/(1+k) + D_2/(1+k)^2 + ... + D_\infty/(1+k)^\infty \qquad (1)$$

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:

$$k = D_1/P_0 + g \qquad (2)$$

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:

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

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:

$$P_0 = D_0(1+g_1)/(1+k) + ... + D_0(1+g_2)^n/(1+k)^n +$$
$$... + D_0(1+g_T)^{(T+1)}/(k-g_T) \qquad (4)$$

where the variables are the same as in equation (1), but g_1 represents the growth rate for the first period, g_2 for a second period, and g_T for the period from year T (the end of the transition period) to infinity. The first two growth rates are simply estimates for fluctuating growth over "n" years (typically 5 or 10 years) and g_T is a constant growth rate assumed to prevail forever after year T. 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 No.___(SCH-4), 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 3 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 1 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. Also, with the "flight to safety" that the markets' recent turmoil has caused, U.S. Treasury rates have declined significantly, with short-term Treasury bill rates at the lowest levels ever. However, corporate borrowers are

being required to pay historically high risk premiums. As a result, corporate spreads relative to Treasuries are the widest in history and corporate interest rates have increased significantly.

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

A. Yes. During the past several months, capital markets in the U.S. have been more turbulent than at any time since the 1930s. Extremely large daily swings in the stock market and unprecedented corporate interest rate spreads in the debt markets have resulted in near chaos. The S&P 500 and the Dow Jones Industrial Average have fluctuated by 50 percent since a year ago. 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 Sterns, 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.

The Federal government enacted emergency legislation (the $700 billion Troubled Asset Relief Program) in October 2008 in an attempt to stabilize the economy. As part of that effort the government has 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 will 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 is pledging further economic stimulus programs 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. In Exhibit No.___(SCH-4), page 2, I provide data that illustrate the dramatic increase in the spread between the yields on utility debt and U.S. Treasury securities. The exhibit shows that during the past several months single-A spreads for utility companies have been in excess of 300 basis points. This level is three times higher than the spreads that existed little more than a year ago. The month-by-month interest rates paid by single-A rated utilities and the U.S. Treasury over the past two years are presented in Exhibit No.___(SCH-4), page 2. These interest rate data are summarized in Table 1 below.

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

Sources: Mergent Bond Record (Utility Rates); www.federalreserve.gov (Treasury Rates).

The data in Table 1 show that over the past two years, single-A utility interest rates have increased significantly. The November level was the highest seen during the past decade. More important, continuing market turbulence has increased interest rate spreads to the highest levels on record. The Federal Reserve's efforts to reduce short-term borrowing costs for banks (the Fed Funds rate) and lower rates on U.S. Treasury bonds have not helped corporate borrowers. In fact, increased risk aversion and market illiquidity have resulted in

significantly higher borrowing costs for corporations. While the effects of market turbulence may not be easily captured in financial models for estimating the rate of return, the much higher borrowing costs that corporations now face should be considered explicitly in estimates of the cost of equity capital.

Q. Are there other market data for utilities that further demonstrate the increases in capital costs?

A. Yes. I have prepared in Table 2 a listing, with pertinent descriptive data, of electric utility bond issuances since October 1, 2008. These data further demonstrate that capital costs have increased significantly.

Table 2
New Issues of Public Utility Debt

Date	Issuer	Ratings	Maturity (Years)	Yield	Spread over Treasuries
10/1/2008	Interstate Power	A3/BBB+	10	7.38%	3.58%
10/1/2008	Wisconsin Power	A2/A-	30	7.75%	3.50%
10/7/2008	Southern Calf. Ed.	A2/A	5	5.86%	3.40%
10/7/2008	Detroit Edison	A3/A-	5	6.46%	4.00%
10/15/2008	PPL Electric	A3/A-	5	7.14%	4.13%
10/20/2008	Ohio Edison	Baa1/BBB+	30	8.50%	4.27%
10/21/2008	Pacific G&E	A3/BBB+	10	8.50%	4.56%
10/23/2008	Illinois Power	Baa3/BBB	10	10.00%	6.09%
11/3/2008	Va. Elec. Power	Baa1/A-	30	8.88%	4.56%
11/6/2008	Atlantic City Elec.	A3/A-	10	7.82%	4.13%
11/12/2008	Georgia Power	A2/A	5	6.02%	3.60%
11/12/2008	Duke En. Carolinas	A2/A	10	7.04%	3.40%
11/13/2008	Cleveland Electric	Baa2/BBB+	10	8.88%	5.14%
11/13/2008	Pacific G&E	A3/BBB+	10	7.69%	3.95%
11/13/2008	Cleveland Electric	Baa2/BBB+	10	8.88%	5.14%
11/14/2008	Alabama Power	A2/A	5	5.83%	3.55%
11/14/2008	Southwestern P.S.	Baa1/BBB+	10	8.88%	5.15%
11/17/2008	Sempra Energy	Baa1/BBB+	10	8.99%	6.19%
11/18/2008	Delmarva P&L	Baa1/A-	5	6.45%	4.20%
11/18/2008	Southern Calf. Gas	A1/A+	6	5.54%	3.32%
11/18/2008	Westar Energy	Baa2/BBB	10	8.75%	5.21%
11/24/2008	Pub. Service E&G	A3/A-	5	6.34%	4.13%
11/25/2008	Dominion Resources	Baa2/A-	10	8.88%	6.79%
12/1/2008	Wisconsin Pub. Svc.	Aa3/A	7	6.38%	4.34%
12/2/2008	ConEd of NY	A1/A-	10	7.72%	4.50%
12/3/2008	Potomac Electric	Baa1/BBB+	30	7.90%	4.63%
12/4/2008	Central Ill. Light	Baa2/BBB+	5	8.88%	7.35%
12/8/2008	Oklahoma G&E	A2/BBB+	10	8.25%	5.68%
12/8/2008	Wisconsin Electric	A1/A-	7	6.26%	4.25%
12/9/2008	FPL Group	A2/A-	7	7.88%	5.97%
12/10/2008	Monongahela Power	Baa2/BBB+	5	9.97%	6.39%
12/19/2008	Rochester G&E	A3/A	25	8.00%	5.46%
1//5/2009	PacifiCorp	A3/A-	30	6.07%	3.10%
1//5/2009	PacifiCorp	A3/A-	10	5.58%	3.10%
1//6/2009	CenterPoint Energy	Baa2/BBB+	5	7.00%	5.29%
1//7/2009	Nevada Power	Baa3/BBB	5	7.38%	5.72%
1//8/2009	Progress Energy	A2/A-	10	5.31%	2.85%
1//9/2009	Indiana Michigan	Baa2/BBB	10	7.10%	4.75%
1//14/2009	Metropolitan Edison	Baa2/BBB	10	7.70%	5.27%
1//20/2009	Puget Sound Energy	Baa2/A-	7	6.75%	4.80%

Source: Barclays Capital, Electric Utilities: New Issues Monitor, Jan. 5 and Jan. 21, 2009.

These data vividly illustrate the market turbulence effect. Since the beginning of October, only six long-term (25-years or more) utility bond issuances have occurred. In October and early November, the Ohio Edison and Virginia Electric Power issues required spreads of over 425 basis points relative to the rate on contemporaneous 30-year Treasury bonds. The 10.0 percent yield, 10-year issue by Illinois Power on October 23 required a spread of more than 600 basis points above the interest rate on 10-year Treasury notes. On December 10, Monongahela Power was also required to pay more than 600 basis points above Treasuries for its 5-year issue. Although some fully secured, A-rated issues (such as the First Mortgage Bonds issued by PacifiCorp and Progress Energy in January) have obtained somewhat lower rates, the spreads for most issues remain three times or more higher than those that existed earlier in 2008. These difficult and expensive issues reflect the market conditions and increased capital costs that utilities face.

Q. What levels of interest rates are forecast for the coming year?

A. While Treasury rate forecasts have moderated in recent months, corporate spreads relative to Treasuries have widened significantly. Exhibit No.__(SCH-3), page 3, provides S&P's most recent economic forecast from its *Trends & Projection*s publication for December 2008. S&P forecasts significant economic contraction in the 4th Quarter of 2008 and 1st and 2nd Quarters of 2009. For all of 2009, S&P forecasts that real GDP will decline 1.2 percent. These projected growth rates compare to positive real GDP growth rates of 2.0 percent for 2007 and 1.2 percent expected for all of 2008.

S&P also forecasts that government and high grade corporate interest rates will rise from recent levels. The summary interest rate data are presented in the following table:

Table 3
Standard & Poor's Interest Rate Forecast

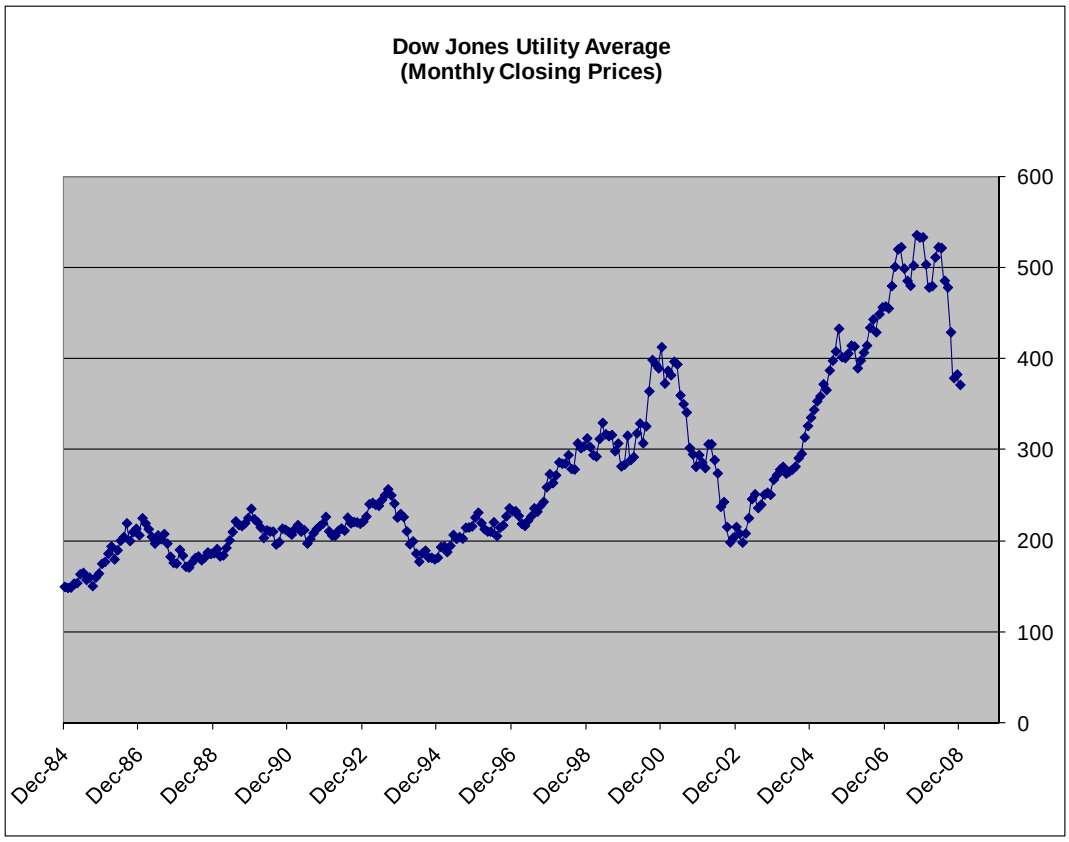
	Dec. 2008 Average	Average 2008 Est.	Average 2009 Est.
Treasury Bills	0.3%	1.4%	0.6%
10-Yr. T-Bonds	2.4%	3.7%	2.9%
30-Yr. T-Bonds	2.9%	4.3%	3.4%
Aaa Corporate Bonds	5.1%	5.6%	5.3%

Sources: www.federalreserve.gov, (Current Rates).
Standard & Poor's *Trends & Projections*, December 2008, page 8 (Projected Rates).

The data in Table 3 show that Treasury interest rates during 2009 are projected to increase from current levels. The rate on Aaa corporate bonds is also expected to increase somewhat. Although it is difficult to project rates for lower rated securities, the wider spreads for utilities that were shown previously offer important 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 mid-2008, the DJUA trended upward. Its current level is approximately 30 percent below the record high level attained in 2007 and 2008. The wider fluctuations in more recent years are vividly illustrated in the following graph of 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.

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 volatile over the next several years. However, we believe the stocks will be less volatile than they were in the first few years of the 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 14, 2008, p. 4)

Value Line also reflects concerns about prospects for the industry:

> **Value Line Investors' Service**
>
> Demand for power from industrial customers, and commercial customers to a lesser extent, is influenced by the health of the economy. Some electric companies are already seeing year-to-year declines in sales to their largest customers. What's more, since economic hard times make it difficult for some residential customers to pay their bills, many utilities will have to increase their reserves for uncollectible accounts…. (Value Line Investment Survey, Electric Utility (West) Industry, November 7, 2008, p. 2230.

Price volatility for utility shares and credit market gyrations make it all the more difficult to estimate the fair, on-going cost of capital.

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 National Energy Policy Act (NEPA) 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. NEPA'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. NEPA and Order 888 have essentially eliminated such constraints for incremental power needs.

In addition to wholesale issues at the federal level, many 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 deregulation has not occurred in the state of Washington, PacifiCorp'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 Washington.

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.

Q. How have regulatory commissions responded to these changing market and industry conditions?

A. Over the past five years, allowed equity returns have generally followed interest rate changes. During 2008, allowed rates have increased from the lowest levels provided during 2006 and 2007. Furthermore, the historical averages obviously cannot reflect the recent extreme market turmoil that has occurred. The following Table 4 summarizes the overall average ROEs allowed for electric utilities since 2004:

TABLE 4
Authorized Electric Utility Equity Returns

	2004	2005	2006	2007	2008
1st Quarter	11.00%	10.51%	10.38%	10.27%	10.45%
2nd Quarter	10.54%	10.05%	10.68%	10.27%	10.57%
3rd Quarter	10.33%	10.84%	10.06%	10.02%	10.47%
4th Quarter	10.91%	10.75%	10.39%	10.56%	10.33%
Full Year Average	10.75%	10.54%	10.36%	10.36%	10.46%
Average Utility Debt Cost	6.20%	5.67%	6.07%	6.12%	6.65%
Indicated Average Risk Premium	4.55%	4.87%	4.29%	4.24%	3.81%

Source: *Regulatory Focus*, Regulatory Research Associates, Inc., Major Rate Case Decisions, January 4, 2008.

Since 2004, equity risk premiums (the difference between allowed equity returns and utility interest rates) have ranged from 3.81 percent to 4.87 percent. At the low end of this range, based on average single-A utility interest rates for the three months ended December, the indicated cost of equity is 11.04 percent (7.23% current single-A interest rate + 3.81% equity risk premium = 11.04%). At the upper end of this range, with an allowed equity risk premium of 4.87 percent, the indicated cost of equity is 12.10 percent (7.23% current single-A interest rate + 4.87% equity risk premium = 12.10%).

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 16-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 gross domestic product, 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, GDP growth has averaged between 5 percent and 8 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. Especially for the very long-term growth rate requirements of the DCF model, the growth in nominal GDP should be considered an important input.

Q. How did you estimate the expected long-run 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 is summarized in my Exhibit No.___(SCH-5). As shown at the bottom of that exhibit, the overall average for the period was 6.9 percent. The data also show, 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. In Docket UE-050684 (Order 4/17/06 at 94), the Commission found that if GDP growth is used in the DCF model, it should be forward-looking and not an historical average. Why do you believe your forecast based on long-term historical data is appropriate?

A. There are at least three reasons. First, in the prior case I obviously did not make it clear that my GDP growth rate was intended to be a *forecast* of investors' long-term expectations. Trending historical data and the use of weighted averages of

that data are simply the mechanical foundations of most econometric forecasts. This can been seen in my current Exhibit No.___(SCH-5). 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 recent 10- and 20-year periods.

Second, the even lower GDP growth forecasts that were preferred by the Commission likely understate the very long growth rate expectations that are required in the DCF model. Those forecasts may be low because they are based on the assumption of permanently low inflation rates, in the range of 2 percent. As shown in my Exhibit No.___(SCH-5), 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 2 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. As discussed in the previous section, current near-term forecasts for both real GDP and inflation are severely depressed. To the extent that even the longer-term outlooks of professional economists are also depressed, their forecasts will be low. Under these circumstances, a longer-term balance is even more important. For all these reasons, while I am also presenting other growth rate approaches in this testimony, I believe it is appropriate also to consider long-term GDP growth in estimating the DCF growth rate.

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

A. The DCF results for my comparable company group are presented in Exhibit No.__(SCH-6). As shown in the first column of page 1 of that exhibit, the traditional constant growth model indicates an ROE of 11.2 percent to 11.5 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 11.1 percent to 11.2 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 11.5 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 my Exhibit No.___(SCH-7) and Exhibit No.___(SCH-8) These studies indicate an ROE range of 11.05 percent to 11.21 percent. Other equity risk premium data, which I will discuss below, indicate ROEs of 11.73 percent or higher.

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.[1]

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 2 of Exhibit No.___(SCH-7) and Exhibit No.___(SCH-8), 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 interest rates to establish the appropriate current equity risk premium.

[1] In Docket UE050684 (Order 4/17/06 at 94), the Commission found that risk premium analyses that rely on utility bond yields are better calibrated to known yields rather than forecast yields. In the present case, I provide both known and forecasted yields although the Commission preferred approach currently results in a higher ROE estimate.

Q. How do the results of your equity risk premium study compare to levels found in other published equity risk premium studies?

A. Based on my equity risk premium studies, I am conservatively recommending a lower equity risk premium than is often found in other published risk premium studies. For example, the most widely followed equity risk premium data are provided in studies published annually by Morningstar. These data, for the period 1926-2007, indicate an arithmetic mean equity risk premium of 6.1 percent for common stocks versus long-term corporate bonds. Under the assumption of geometric mean compounding, the Morningstar equity risk premium for common stocks versus corporate bonds is 4.5 percent. Based on the more conservative geometric mean equity risk premium, the Morningstar data indicate a cost of equity of 11.73 percent (7.23% debt cost + 4.5% risk premium = 11.73%). Based on the arithmetic risk premium, the Morningstar data indicate a cost of equity of 13.33 percent (7.23% debt cost + 6.1% risk premium = 13.33%). Although the Morningstar (previously known as Ibbotson) results should not be extrapolated directly as stand-alone estimates of the cost of equity for regulated utilities, their results provide a reasonable long-term perspective on capital market expectations for debt and equity rates of return.

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

A. The following table summarizes my results:

TABLE 5

Summary of Cost of Equity Estimates

DCF Analysis	Indicated Cost
Constant Growth (Analysts' Growth)	11.2%-11.5%
Constant Growth (GDP Growth)	11.1%-11.2%
Multistage Growth Model	10.9%-11.0%
Reasonable DCF Range	10.9%-11.5%

Equity Risk Premium Analysis	Indicated Cost
Forecast Utility Debt + Equity Risk Premium	
Equity Risk Premium ROE (6.95% + 4.10%)	11.05%
Current Utility Debt + Equity Risk Premium	
Equity Risk Premium ROE (7.23% + 3.98%)	11.21%
Ibbotson Equity Risk Premium Analysis	
Equity Risk Premium ROE (7.23% + 4.5%)	11.73%

PacifiCorp Estimated ROE	11.0%

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

A. Current market conditions make it difficult to strictly interpret quantitative model estimates of the cost of capital. While the DCF results, based on lower stock prices and higher resulting dividend yields, have increased, the changes in the cost of equity indicated by that model are much smaller than the increased borrowing costs that most utilities currently face. More current equity risk premium estimates are also conservative because they are based on historical risk premiums that may not fully reflect cost of capital increase that the current financial crisis has caused. Under these conditions, use of a lower DCF range or equity risk premium estimates based 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, the fair and

reasonable cost of equity capital for PacifiCorp is at least 11.0 percent.

Q. Does this conclude your testimony?

A. Yes, it does.