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 (the Company).

Qualifications

Q. Briefly describe your education and business experience.

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 almost 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 (Texas Commission) of Texas 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 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 10.75 percent. My discounted cash flow (DCF) analysis indicates a reasonable ROE range of 10.4 percent to 10.8 percent. My risk premium analysis indicates an ROE of 10.52 percent, with other risk premium estimates between 10.5 percent and 11.1 percent. Based on these quantitative results and my further review of other economic data, I recommend a point ROE estimate of 10.75 percent.

Q. How is your analysis structured?

A. 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- (single-A minus) from Standard & Poor's (S&P) and A3 (single-A minus) from Moody's, I restricted the group to companies with senior secured bond ratings of at least single-A minus by either S&P or by Moody's. I also required the comparable companies to derive at least 65 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 my comparable companies 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.[1] These rates are consistent with PacifiCorp's single-A minus 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

[1] The current single-A utility bond interest rate is 6.01 percent (Moody's.com, January 25, 2008).

details of my cost of equity studies are contained in Exhibit Nos.___(SCH-3) through ___(SCH-8).

Q. In PacifiCorp's prior cases you have relied on estimates of nominal growth in U.S. gross domestic product and have discounted the use of analyst's growth rates in your DCF analysis? Why are you now presenting constant growth DCF results that include analysts' growth rate projections?

A. I am presenting these results, along with alternative DCF and other risk premium estimates of ROE, because my use of forecasted GDP growth has been criticized**.** [2] However, I also continue to offer several alternative approaches because the utility industry has changed in ways that challenge the assumptions of the traditional DCF model. For electric utilities in particular the traditional assumption of *constant* dividend growth simply is not met. The electric utility industry has become increasingly volatile and this has led to wide fluctuations in earnings and earnings growth rates for many companies. Additionally, changes in dividend policies and currently low dividend yields raise further issues about the model's applicability. As I will demonstrate later in this testimony, electric utility growth rate estimates, in contrast to the DCF model's requirement for a constant growth rate, have not been constant at all. In this context, an expanded approach to estimating ROE is required.

[2] Washington Utilities and Transportation Commission, Docket UE-050684, Order 04, at 94.

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. In concept 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 at 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.

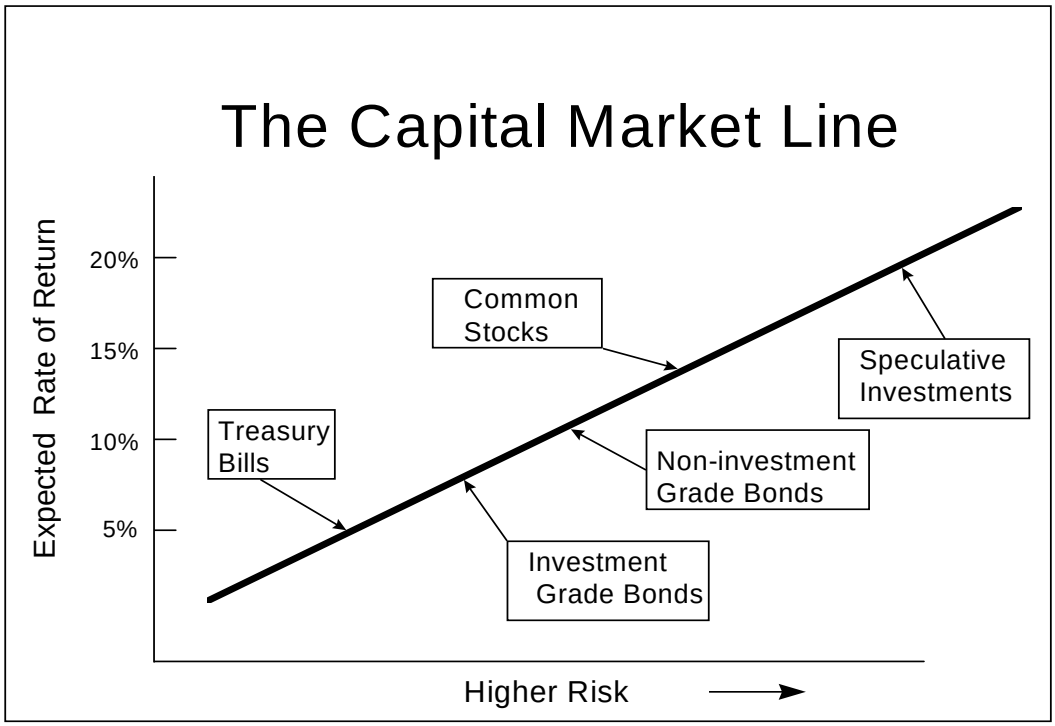
Q. How does the market account for risk differences among the various investments?

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:

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

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 the following section.

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 similar 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 spread 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 and company-specific factors that should be reflected in the cost of capital estimate.

Q. What has been the recent experience in the U.S. capital markets?

A. Exhibit No.___(SCH 4), page 1, provides 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 capital market costs have declined and, generally, have been lower than rates that prevailed in the previous decade. Inflation, as measured by the Consumer Price Index, until 2005 had remained at historically low levels not seen consistently since the early 1960s. Inflation rates for 2005 and 2006 were similar to longer-term historical averages in excess of 3 percent. With improving economic conditions, since mid-2004, the Federal Reserve System increased the short-term Federal Funds interest rate 17 times between June 30, 2004 and June 29, 2006, raising it from 1 percent to 5.25 percent. More recently, in response to the extreme turbulence in the sub-prime lending markets, the Federal Reserve Open Market Committee has reduced the Federal Funds rate, dropping the rate to a current level of 3.5 percent. However, long-term corporate interest rates, which are not directly affected by the Federal Reserve's short-term rate policies, have not declined significantly and remain well above the lowest levels they reached in mid-2005. Estimates for the coming year are also for continued economic growth and for stable long-term interest rates.

Q. How have long-term interest rates changed since their lowest levels in 2005?

A. The following table provides the month-by-month interest rates paid by utilities and the U.S. Treasury:

Table 1
Long-Term Interest Rate Trends

Month	Single-A Utility Rates	Average Utility Rates	Long-Term Treasury Rates	Single-A Utility to L-T Treasury Spreads
Jun-05	5.40%	5.39%	4.35%	1.05%
Jul-05	5.51%	5.50%	4.48%	1.03%
Aug-05	5.50%	5.51%	4.53%	0.97%
Sep-05	5.52%	5.54%	4.51%	1.01%
Oct-05	5.79%	5.79%	4.74%	1.05%
Nov-05	5.88%	5.88%	4.83%	1.05%
Dec-05	5.80%	5.83%	4.73%	1.07%
Jan-06	5.75%	5.77%	4.65%	1.10%
Feb-06	5.82%	5.83%	4.73%	1.09%
Mar-06	5.98%	5.98%	4.91%	1.07%
Apr-06	6.29%	6.28%	5.22%	1.07%
May-06	6.42%	6.39%	5.35%	1.07%
Jun-06	6.43%	6.41%	5.29%	1.14%
Jul-06	6.39%	6.39%	5.25%	1.14%
Aug-06	6.20%	6.20%	5.08%	1.12%
Sep-06	6.00%	6.02%	4.93%	1.07%
Oct-06	5.98%	6.01%	4.94%	1.04%
Nov-06	5.80%	5.82%	4.78%	1.02%
Dec-06	5.81%	5.83%	4.78%	1.03%
Jan-07	5.96%	5.97%	4.95%	1.01%
Feb-07	5.90%	5.91%	4.93%	0.97%
Mar-07	5.85%	5.87%	4.81%	1.04%
Apr-07	5.97%	6.01%	4.95%	1.02%
May-07	5.99%	6.03%	4.98%	1.01%
Jun-07	6.30%	6.34%	5.29%	1.01%
Jul-07	6.25%	6.28%	5.19%	1.06%
Aug-07	6.24%	6.29%	5.00%	1.24%
Sep-07	6.18%	6.24%	4.84%	1.34%
Oct-07	6.11%	6.17%	4.79%	1.32%
Nov-07	5.97%	6.04%	4.56%	1.41%
Dec-07	6.07%	6.14%	4.57%	1.50%

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

The data in Table 1 represent yields on bonds with maturities of twenty years and longer and show that long-term utility interest rates are 60 to almost 80 basis points higher than they were in mid-2005. Borrowing costs for single-A rated utilities like PacifiCorp increased from 5.40 percent to 6.07 percent during this period. While "flight to safety" issues due to the subprime credit crisis have reduced Treasury rates from the higher levels reached in 2006 and 2007, corporate spreads relative to Treasuries have widened significantly. This relationship is illustrated in the last column of Table 1. The increased perceived risk for corporate borrowers and the resulting higher long-term borrowing costs should be considered explicitly in estimating PacifiCorp's cost of capital.

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-4), page 3, provides Standard & Poor's most recent economic forecast from its *Trends & Projection*s publication for December 2007. S&P forecasts continuing, albeit slower, economic growth for early 2008 with an improving growth rate for 2009. For 2008, growth in real Gross Domestic Product (GDP) is projected at 1.9 percent with nominal GDP (real GDP plus inflation) at 3.6 percent. By the first quarter of 2009, real GDP is expected to grow at a 2.9 percent rate with the nominal growth rate at 4.8 percent. These projected growth rates compare to real GDP growth rates of 2.9 percent for 2006 and approximately 2.2 percent expected for 2007.

S&P also forecasts that interest rates will remain at current levels. The

summary interest rate data are presented in the following table:

Table 2
Standard & Poor's Interest Rate Forecast

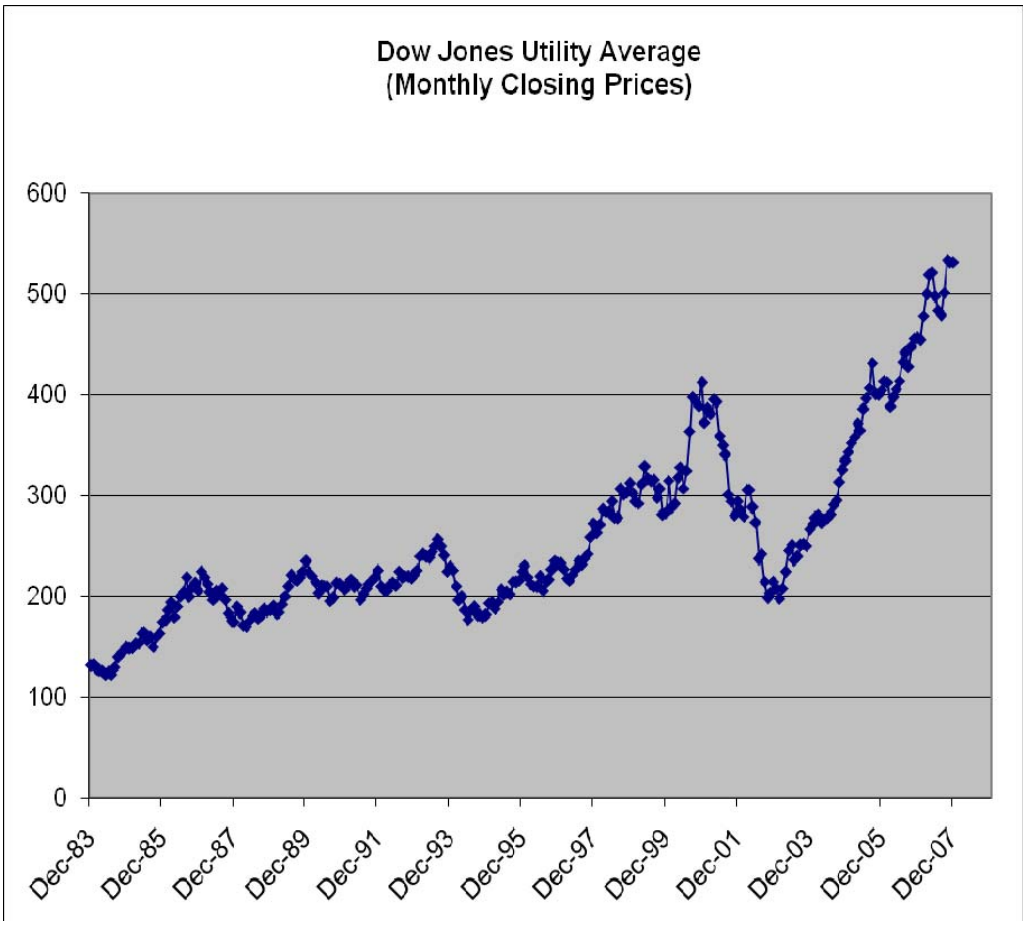
	Dec. 2007 Average	Average 2007	Average 2008 Est.
Treasury Bills	3.1%	4.4%	3.1%
10-Yr. T-Bonds	4.1%	4.6%	4.2%
30-Yr. T-Bonds	4.5%	4.8%	4.5%
Aaa Corporate Bonds	5.5%	5.5%	5.3%

Sources: www.federalreserve.gov, (Current Rates).
Standard & Poor's *Trends & Projections*, December 2007, page 8 (Projected Rates).

The data in Table 2 show that average interest rates are projected to remain relatively stable during the coming year. The long-term Treasury bond rate for 2008 is projected by S&P to average 4.5 percent. Similarly, the rate on Aaa corporate bonds is expected to decrease from 5.5 percent to 5.3 percent. While highest quality corporate and Treasury rates are expected to remain approximately at current levels in 2008, 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. Since late 2002, the Average has trended upward. Its current level at over 500 is near a record high level. The wider fluctuations in more recent years are vividly illustrated in the following graph of DJUA prices over the past 25 years.



Concerns about the extent of the effects of the sub-prime mortgage credit crunch on the overall U.S. economy, the extent of fiscal and/or monetary response to the situation, uncertainty inherent in an election year and the unknown policies of a new administration, the immediate and long-run response of Congress to climate change worries, and continuing concerns for the more competitive markets for utility services will all likely create further uncertainties and market volatility for utility shares. 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**
>
> Although 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, we expect the stocks to become less volatile than they have been in the past few years. (Standard & Poor's *Industry Surveys*, Electric Utilities, August 9, 2007, p. 5)

Value Line also reflects concerns about prospects for the industry:

> **Value Line Investors' Service**
>
> Although the Value Line Utility Average has lagged the Value Line Composite Average so far in 2007, this does not mean that electric utility stocks have become cheap. Indeed, the average yield of the group isn't much higher than the low level of 2006. Many of these issues are trading within their 2010-2012 Target Price Range, thereby making the 3- to 5-year total-return potential unspectacular. (*Value Line Investment Survey*, Electric Utility (West) Industry, November 9, 2007, p. 1771.)

Price volatility for utility shares and credit market gyrations make it all the more difficult to estimate the fair, on-going cost of capital. Analysts' near-term growth estimates for utilities reflect the issues described by Value Line and Value Line's current three-to-five-year projections are lower than they have been in previous years. As I will discuss in more detail later, the volatility in analysts' growth forecasts continues to raise questions about using analysts' projections as proxies for long-term growth in the DCF model.

Over the past several years, the greatest consideration for utility investors

has been the industry's transition to 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. The Western energy crisis refocused market concerns and contributed significantly to increased market risk perceptions for companies without power cost recovery provisions. As expected, the opening of previously protected utility markets to competition, and the uncertainty created by the removal of regulatory protection, has 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.

For PacifiCorp specifically, its use of long-term purchased power agreements can significantly impact the Company's credit quality and perceived financial risk because credit rating agencies view such contracts as debt equivalents. The Company's equity infusions and its efforts to strengthen the equity component of its capital structure in order to maintain its credit rating are constructive efforts to mitigate this debt equivalent risk caused by its long-term power contracts. But PacifiCorp is effectively financially isolated from its parent and other affiliates as a result of the ring fencing measures put in place at the time of its acquisition by MidAmerican Energy Holdings Company. While PacifiCorp has no responsibility for the debt or other obligations of its parent or other affiliates, most of MidAmerican Energy Holdings Company's subsidiaries are ring fenced and as such, those subsidiaries have no financial responsibility for PacifiCorp's obligations either.

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. On balance, allowed rates of return have changed less than interest rates over the past five years. The following table summarizes the overall average ROEs allowed for electric utilities since 2003:

Authorized Electric Utility Equity Returns

	2003	2004	2005	2006	2007
1st Quarter	11.47%	11.00%	10.51%	10.38%	10.27%
2nd Quarter	11.16%	10.54%	10.05%	10.69%	10.27%
3rd Quarter	9.95%	10.33%	10.84%	10.06%	10.02%
4th Quarter	11.09%	10.91%	10.75%	10.39%	10.56%
Full Year Average	10.97%	10.75%	10.54%	10.36%	10.36%
Average Utility Debt Cost	6.61%	6.20%	5.67%	6.08%	6.11%
Indicated Average Risk Premium	4.36%	4.55%	4.87%	4.28%	4.25%

Source: *Regulatory Focus*, Regulatory Research Associates, Inc., Major Rate Case Decisions, January 8, 2008.

Over the past five years, as interest rates have declined, allowed equity returns have followed the interest rate decline.

Since 2003, equity risk premiums (the difference between allowed equity returns and utility interest rates) have ranged from 4.25 percent to 4.87 percent. At the low end of this risk premium range, with an allowed equity risk premium of about 4.3 percent, the indicated cost of equity is 10.3 percent (6.0 percent projected single-A interest rate + 4.3 percent risk premium = 10.3 percent). At the upper end of this risk premium range, with an allowed equity risk premium of about 4.9 percent, the indicated cost of equity is 10.9 percent (6.0 percent projected single-A interest rate + 4.9 percent risk premium = 10.9 percent).

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 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. As I will explain, however, changes in the nature of the utility industry and wide fluctuations in analysts' growth projections for electric utilities call into question this approach. 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 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)

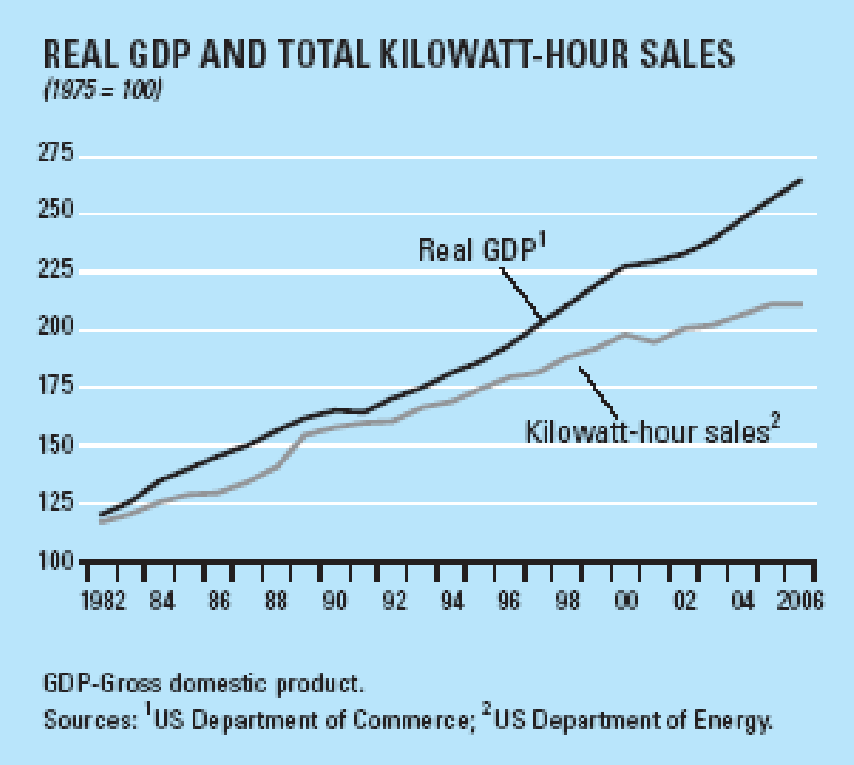
> IBES long-term growth estimates are associated with realized growth in the immediate short-term future. Over long horizons, however, there is little forecastability in earnings, and analysts' estimates tend to be overly optimistic. … On the whole, the absence of predictability in growth fits in with 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. Are there other fundamental indications that electricity utility growth rates closely follow GDP growth?

A. Yes. The chart below from S&P's *Electric Utility Industry Survey* shows that electric utility kilowatt hour sales closely track GDP growth. S&P offers the following discussion of the close relationship:

> Reported quarterly by the US Department of Commerce, GDP is a broad measure of aggregate economic activity. It is the market value of goods and services produced by labor and capital in the United States. Growth in the economy is measured by changes in inflation adjusted (or real) GDP.
>
> Changes in demand for electricity closely mirror the rate of economic growth. However, weather patterns can cause swings in electric consumption. In addition, demand growth for an individual utility company depends heavily on economic trends with its geographic region.
>
> Real GDP grew 3.3% in 2006, following a 3.5% increase in 2005. (Standard & Poor's Industry Survey, August 8, 2007, p. 23.)



Q. How have analysts' three-to-five year growth projections changed over the past five years?

A. Analysts' forecasted growth rates for electric utilities declined precipitously following the Western energy crisis and industry turmoil. While analysts' growth projections have increased somewhat during the past year, they are still significantly lower than they were in 2002. In Exhibit No.___(SCH-5), I compare current forecasts from Value Line for my comparable group companies to those that existed in 2002. During 2002, Value Line's projected three-to-five year earnings growth rate was 6.31 percent per year. In the most recent Value Line editions, the average projected earnings growth rate is 5.78 percent. The "b times r" sustainable growth rate based on Value Line's projected retention rates and

earned ROEs shows an even larger decline. During 2002, for the comparable electric group the average "b times r" growth rate was 5.68 percent per year. Currently, the "b times r" growth rate from the three most recent Value Line editions is only 4.55 percent. These comparisons further illustrate that analysts' growth rate projections are more volatile than one would expect for perpetual growth rate expectations, and that current projections are very low as compared to those used just five years ago. These results strongly support using more general long-term economic growth rates, such as GDP, in the DCF model.

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 1947 through 2006 is summarized in my Exhibit No.___(SCH-6). As shown at the bottom of that exhibit, the overall average for the period was 7.0 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 40 basis points lower than the long-term average, at a level of 6.6 percent.

Q. In Docket UE-050684, the Commission found that a lower GDP forecast based on current economic data was preferred. Why do you believe your forecast based on longer-term data is appropriate?

A. Many current GDP growth forecasts are significantly influenced by historically low inflation rates. As shown in my Exhibit No.___(SCH-6), the average long-term inflation rate has been over 3 percent in all but the most recent 10- and 20-year periods. The nominal GDP growth rate forecasts that the Commission preferred in the prior case are based on inflation projections of only about 2 percent. 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-7). As shown in the first column of page 1 of that exhibit, the traditional constant growth model indicates an ROE of 10.0 percent to 10.8 percent. Because the lower end of this range is well below my risk premium checks of reasonableness, it is excluded from my recommended DCF range. 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 higher GDP growth rate, the constant growth model indicates an ROE range of 10.7 percent to 10.8 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 10.4 percent to 10.6 percent. The results from the DCF model, therefore, indicate a

reasonable ROE range of 10.4 percent to 10.8 percent for the comparable company group.

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

A. The details and results of my risk premium studies are shown in my Exhibit No.___(SCH-8). These studies and other risk premium data indicate an ROE range of 10.5 percent to 11.1 percent.

Q. How are your risk premium studies structured?

A. My risk premium studies are divided into two parts. First, I compare electric utility authorized ROEs for the period 1980-2007 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 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 risk premium level.

The inverse relationship between 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 risk premium relationship under varying interest rate conditions. On page 2 of 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 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.

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

A. Based on my risk premium studies, I am conservatively recommending a lower risk premium than is often found in other published risk premium studies. For example, the most widely followed risk premium data are provided in studies published annually by Morningstar. These data, for the period 1926-2006, indicate an arithmetic mean risk premium of 6.1 percent for common stocks versus long-term corporate bonds. Under the assumption of geometric mean compounding, the Morningstar risk premium for common stocks versus corporate bonds is 4.5 percent. Based on the more conservative geometric mean risk premium, the Morningstar data indicate a cost of equity of 10.5 percent (6.0 percent debt cost + 4.5 percent risk premium = 10.5 percent). Based on the arithmetic risk premium, the Morningstar data indicate a cost of equity of 12.1 percent (6.0 percent debt cost + 6.1 percent risk premium = 12.1 percent).

Harris and Marston (H&M) also provide specific equity risk premium estimates.[3] Using analysts' growth estimates to estimate equity returns, H&M found equity risk premiums of 6.47 percent relative to U.S. Government bonds and 5.13 percent relative to yields on corporate debt. H&M's equity risk premium relative to corporate debt also indicates a current cost of equity of 11.1 percent (6.0 percent debt cost + 5.13 percent risk premium = 11.13 percent). Although the Morningstar (previously known as Ibbotson) and Harris and Marston 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:

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[3] Robert S. Harris and Felicia C. Marston, "Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts," *Financial Management*, Summer 1992.

Summary of Cost of Equity Estimates

DCF Analysis	Indicated Cost
Constant Growth (Analysts' Growth)	10.0%-10.8%
Constant Growth (GDP Growth)	10.7%-10.8%
Multistage Growth Model	10.4%-10.6%
Reasonable DCF Range	10.4%-10.8%

Risk Premium Analysis	Indicated Cost
Utility Debt + Risk Premium	
Risk Premium (6.0% + 4.52%)	10.52%
Morningstar Risk Premium Analysis	
Risk Premium (6.0% + 4.5%)	10.50%
Harris-Marston Risk Premium	
Risk Premium (6.0% + 5.13%)	11.13%
PacifiCorp Estimated ROE	10.75%

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

A. Caution should be exercised in interpreting the basic quantitative DCF and risk premium results, because they are based on recent historically low points in the economic cycle. Under such conditions, economic projections should also be considered. Additionally, use of a lower DCF range would fail to recognize the ongoing risks and uncertainties that continue to exist in the electric utility industry business as well as the uncertainties PacifiCorp is currently facing. 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 10.75 percent.

Q. Does this conclude your direct testimony?

A. Yes.