I. Introduction and Qualifications

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).

Q. Please state your educational background and describe your professional training and experience.

A. I have an economics degree from Southern Methodist University and MBA and Ph.D. degrees in finance from the University of Texas at Austin (UT Austin). I serve as an adjunct professor in the Graduate School of Business at UT Austin. I have taught economics and finance courses, and I have conducted research and directed graduate students writing in these areas. I was previously Director of the Economic Research Division at the Public Utility 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 in 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 UP&L ___.7 (SCH-7).

II. Purpose and Summary of Testimony

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to estimate the Company's market required rate of return on equity (ROE) and summarize the overall cost of capital.

Q. Please outline and describe the testimony you will present.

A. My testimony is divided into six sections. In Section III, I present the Company's requested capital structure and overall rate of return. In Section IV, I review various methods for estimating the cost of equity. In this section, I discuss comparable earnings methods, risk premium methods, and discounted cash flow (DCF) methods. In Section V, I review general capital market costs and conditions and discuss recent developments in the electric utility that may affect the cost of capital. In Section VI, I discuss the details of my cost of equity studies and summarize my ROE recommendations.

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

A. My ROE recommendation is based on a combination of the DCF and risk premium models. I apply the DCF model to all single-A or higher rated utilities followed by *Value Line* for which electric revenues are at least 75 percent of total revenues and for which complete and reliable data are available. My risk premium analysis is based on *Moody's* average cost of debt for single-A utilities.

PacifiCorp's senior secured bonds are presently rated single-A by the major bond rating agencies (A+ by *Standard & Poor's* and A2 by *Moody's*). Under current market and electric utility industry conditions, I believe a combination approach, based on the DCF and risk premium models, is the most reliable method for estimating the Company's cost of equity capital. The data sources and the details of my return on equity studies are contained in Exhibits UP&L ___.1 (SCH-1) through UP&L ___.6 (SCH-6).

My DCF analysis indicates that an ROE range of 11.1 percent-11.7 percent is appropriate. My risk premium analysis indicates that an ROE of 11.9 percent is appropriate. Based on these quantitative results and my review of the current market, industry, and company-specific factors discussed in the remainder of my testimony, I estimate the fair cost of equity for PacifiCorp at 11.5 percent.

III. Capital Structure and Overall Rate of Return

Q. Please summarize the Company's requested capital structure and overall rate of return.

A. The following table identifies the requested capital structure components and the resulting overall rate of return.

Capital Components	Ratio	Cost	Weighted Cost
Debt	49.2%	7.092%	3.49%
Preferred	3.2%	6.055%	0.19%
Common Equity	47.6%	11.50%	5.47%
TOTAL	100.0%		9.16%

Q. What is the basis for the Company's requested capital structure?

A. The requested capital structure is based on the average capital structure for the companies in the comparable ROE group presented in Exhibit UP&L ___.1 (SCH-1). In Docket No. 98-2035-04 the Commission described one of the conditions for approval of the PacifiCorp/ScottishPower merger, stating: "ScottishPower agrees to maintain current practice whereby an A-rated hypothetical capital structure is used for regulatory determination of PacifiCorp's cost of capital (Condition 19)..."[1] To be compliant with that condition the Company sponsors s capitalization based on the comparable company group average capitalization which is comprised of 49.2 percent long-term debt, 3.2 percent preferred stock, and 47.6 percent common equity.

IV. 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 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 profit or rate of return that equity investors expect to receive. In concept it is no different than the cost of debt or the cost of

[1] Order in Docket No. 98-2035-04 dated November 23, 1999, page 19.

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 $1.05, the expected dividend yield is 5.25 percent ($1.05 / $20 = 5.25%). If the stock price is also expected to increase to $21.25 after one year, this expected gain adds an additional 6.25 percent to the expected total rate of return ($1.25 / $20 = 6.25%). Therefore, buying the stock at $20 per share, the investor expects a total return of 11.5 percent: 5.25 percent dividend yield, plus 6.25 percent price appreciation. In this example, the total expected rate of return at 11.5 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?

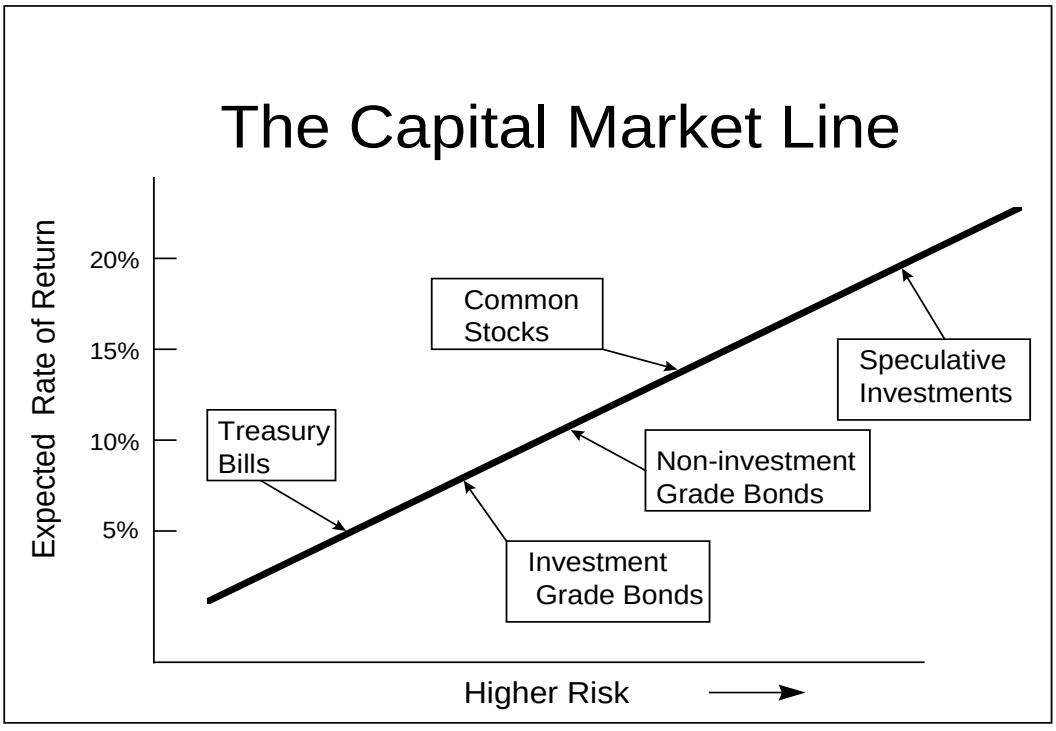
A. Risk-return tradeoffs among capital market investments have been the subject of extensive financial research. Literally dozens of textbooks and hundreds of academic articles have addressed the issue. Generally, such research confirms the common sense conclusion that investors will take additional 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 Waterworks* 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 Waterworks & 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 provides a useful parallel approach with the DCF model and assures consistency with other capital market data in the cost of 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 (or price) growth 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 discounted cash flow 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 in Section V, 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 during the past several years. 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 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 in Section VI 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. 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 in Section VI of this testimony.

V. Fundamental Factors that Affect the Cost of Equity

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

A. The purpose of this section is to review recent capital market costs and conditions as well as industry- and Company-specific factors that should be reflected in the cost of equity capital in this case.

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

A. Exhibit UP&L __.2 (SCH-2) provides a review of annual interest rates and rates of inflation that have prevailed in the U.S. economy since 1991. During that period, inflation and capital market costs have been relatively low. Inflation, as measured by the Consumer Price Index, fell to below two percent in 1998, a level not seen consistently since the 1960s. More recently, rising energy prices and continuing rapid economic growth have increased the inflation rate again to over 3.0 percent. Long-term interest rates have followed a similar pattern, in 1998 dipping to their lowest levels in 30 years. The Treasury bond rate dropped to near five percent in October 1998. Since then, however, that rate has fluctuated between 5.75 percent and 6.25 percent, and widening interest rate spreads for corporate debt relative to government bonds have significantly increased corporate borrowing costs.

Fluctuations in long-term government bond interest rates cannot be extrapolated directly to the costs for other forms of capital. Increasing uncertainty and extreme volatility in world-wide capital markets have changed many traditional cost of capital relationships. The 1998 “flight to safety” following the Asian financial crisis caused literally billions of dollars to flow out of more risky investments and into U.S. Treasury bonds. More recently, unusual supply and demand conditions for U.S. Treasury bonds have caused other market anomalies,

with the government rate declining much more rapidly than rates on other securities.

These relationships are borne out in market data. For example, prior to the events of 1998, for the 15 years ended in 1997, rates on single-A industrial bonds averaged 116 basis points (1.16 percent) above long-term Treasury bonds. By October 1998, in the midst of the Asian, Russian, and other international monetary difficulties, the U.S. industrial single-A spread widened to 172 basis points and the single-A public utility spread was even wider at 195 basis points. As of October 2000, Moody's single-A industrial and average single-A utility yield spreads have continued to widen, with current spreads at 210 to 235 basis points, respectively. This relationship reflects on-going concerns about increasing capital market risks and vividly illustrates the increasing corporate cost of capital relative to U.S. Treasury bond interest rates.

Exhibit UP&L __.3 (SCH-3) provides a summary of Moody's Single-A and Average Utility Bond Yields for the most recent three months (August-October 2000). For the three months ended October 2000, the Average Utility rate was 8.10 percent and the Single-A rate was 8.17 percent.

Q. How have utility stocks performed during the past year?

A. Stock prices for many utilities increased significantly during the past year. The Dow Jones Utility Average (DJUA) reached a record level of 416.06 on December 28, 2000. *Value Line* attributed increased utility stock prices to a more stable interest rate environment, rapidly rising electrical demands, and the continuation of high profile utility mergers (September 8, 2000, page 154).

During the first few days of the New Year, however, the DJUA dropped precipitously, closing on January 4, 2001 at 352.84. This 63.22 point (15.2 percent) drop stems directly from the California energy crisis and the resulting bond downgrades of the state's two largest electric companies. With discussion of potential bankruptcy protection for the California companies, risk perceptions for the entire industry have increased.

Q. How do capital market concerns about competition affect the cost of equity capital?

A. As I discussed previously in Section IV, 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 issue more shares to raise any given amount of capital for future investment. The additional shares also impose additional future dividend requirements and reduce future earnings per share growth prospects.

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

A. On balance, allowed rates of return have changed very little over the past five years. The following table summarizes the electric utility ROEs allowed by state regulatory commissions since 1996.

Electric Authorized Equity Returns

	1996	1997	1998	1999	2000
1st Quarter	11.28%	11.30%	11.31%	10.58%	11.06%
2nd Quarter	11.46%	11.62%	12.20%	10.94%	11.11%
3rd Quarter	10.76%	12.00%	11.80%	10.63%	11.68%
4th Quarter	11.58%	11.11%	11.83%	11.08%	
Full Year	11.39%	11.40%	11.66%	10.77%	11.21%
Average Utility Debt Cost	7.74%	7.63%	7.00%	7.55%	8.19%
Indicated Risk Premium	3.65%	3.77%	4.66%	3.22%	3.02%

Source: *Regulatory Focus*, Regulatory Research Associates, Inc., Major Rate Case Decisions, January-September 2000, October 10, 2000.

Although long-term interest rates in 1998 and early 1999 declined to their lowest levels since 1968, allowed equity returns declined by a smaller amount and remained near 11 percent. Since March of 1999, average utility interest rates have increased by more than 100 basis points, with the average rate for the three months ended October 2000 at 8.10 percent. At the low end of the risk premium range shown above, the indicated cost of equity based on recent utility debt costs exceeds 11 percent (8.10% + 3.02% = 11.12%). At the high end of the range based on the 1998 period, the indicated ROE is over 12.5 percent (8.10% + 4.66% = 12.76%). These data show that my recommended ROE range of 11.1 percent to 11.9 percent is reasonable.

VI. 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 the Company and to discuss the details and results of my analyses.

Q. How are your studies organized?

A. In the first part of my cost of equity analysis, I apply the DCF model to a group of single-A and higher rated electric utility companies. The group was selected to include all such electric utilities covered in *Value Line* for which complete and reliable data are available and for which at least 75 percent of revenues are derived from domestic electric utility operations. The results of my DCF analyses are summarized in Exhibit UP&L ___.5 (SCH-5), page 1 of 5. The DCF models indicate a range of 11.1 percent to 11.7 percent. In the second part of my analysis, I discuss and develop cost of equity estimates based on the risk premium approach. I present my risk premium study in Exhibit UP&L ___.6 (SCH-6). That analysis, which is based on allowed regulatory ROEs relative to contemporaneous utility debt costs for the period 1980-1999, indicates a cost of equity of 11.9 percent. Given current market and utility industry conditions, I believe the risk premium approach adds important perspective for judging current investor requirements. Based on the results of my DCF and risk premium studies and my review of current market and industry conditions, I estimate PacifiCorp's cost of equity at 11.5 percent.

Discounted Cash Flow Analysis

Q. What stock prices are used in your DCF analyses?

A. Throughout my analysis I have used average stock prices from August through October 2000 for each company. Although technically either average or spot stock prices can be used in a DCF analysis, a reasonably current price consistent with present market conditions and the other data employed in the analysis is most appropriate. Since the cost of equity is a current and forward-looking concept, the important issue is that the price should be representative of current market conditions and not unduly influenced by unusual or special circumstances.

To ensure that my DCF analyses are not skewed by unrepresentative initial stock prices, I calculate, in Exhibit UP&L ___.4 (SCH-4), the average of high and low prices for each of the three months ending October 2000 for each company in my comparable group. I then compare the three-month average price for each company to *Value Line's* single-month prices. As shown in column 6 of Exhibit UP&L ___.4 (SCH-4), the three-month average price used in my analysis is $.30 per company higher than *Value Line's* single-month prices. This comparison shows that either three-month average stock prices or *Value Line's* single month prices can be used in the DCF analysis without any material impact on the results.

Q. Please summarize the results of your comparable company DCF analyses.

A. The results from the constant growth DCF model are presented in Exhibit UP&L ___.5 (SCH-5), on page 2. The constant growth DCF model indicates that an ROE range of 11.1 percent to 11.2 percent is appropriate. The nonconstant growth Market Price DCF Model indicates that an ROE of 11.6 percent is

appropriate. The Ten-Year Transition DCF model indicates that an ROE range of 11.6 percent to 11.7 percent is appropriate. Overall, the electric company DCF analyses indicate that a range of 11.1 percent to 11.7 percent is appropriate

Risk Premium Analysis

Q. What are the results of your risk premium study?

A. The results of my risk premium study are shown in Exhibit UP&L ___.6 (SCH-6). My analysis compares average ROEs allowed each year by the various state regulatory commissions to contemporaneous utility debt costs for the period 1980-1999. The study indicates a risk premium of 3.73 percent. When this risk premium is added to the recent average single-A utility debt cost (8.17 percent), the indicated ROE is 11.9 percent (8.17% + 3.73% = 11.90%).

Q. How is your risk premium study structured?

A. My risk premium study is divided into two parts. First, I compare electric utility authorized ROEs for the period 1980-1999 to contemporaneous long-term utility debt rates. The difference between the average authorized ROE and the average cost of debt for each year is the indicated equity risk premium. I present this calculation for each year of the study in my Exhibit UP&L ___.6 (SCH-6), page 1. A brief review of the annual risk premium data shows that risk premiums are small when interest rates are high and larger when interest rates are low. For example, in the early 1980s when utility interest rates exceeded 15 percent, allowed equity risk premiums were generally less than two percent. In more recent years, with much lower interest rates, regulatory allowed risk premiums in the three percent to four percent range have been the norm.

The inverse relationship between risk premiums and interest rate levels is well documented in numerous, well respected academic studies.[2] These studies typically use regression analysis or other statistical methods to predict or measure the risk premium relationship under varying interest rate conditions. In Exhibit UP&L ___.6 (SCH-6), page 2, I present a regression analysis of the allowed annual equity risk premiums relative to interest rate levels. The regression coefficient of –43.59 percent confirms the inverse relationship between risk premiums and interest rates and indicates that risk premiums expand and contract by about 56 percent of the change in interest rates. This means that when interest rates rise by one percentage point, the cost of equity increases by only 0.56 percent, because the risk premium declines by about 0.44 percent. Similarly, when interest rates decline by one percentage point, the cost of equity declines by only 0.56 percent. I use the –43.59 percent interest rate change coefficient in conjunction with current interest rates to establish the appropriate current equity risk premium. This calculation is shown in the lower portion of my Exhibit UP&L ___.6 (SCH-6), page 1.

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

A. My risk premium studies indicate a lower risk premium than found in many published studies. The most widely followed risk premium studies are those

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

published annually by Ibbotson Associates.[3] These data, for the period 1926-1999, indicate an arithmetic mean risk premium of 7.4 percent for common stocks versus long-term corporate bonds. Under the assumption of geometric mean compounding, Ibbotson's risk premium for common stocks versus corporate bonds is 5.7 percent. Ibbotson argues extensively for the arithmetic mean approach as the appropriate basis for estimating the cost of equity. Even with the more conservative geometric mean risk premium, Ibbotson's data indicate a single-A cost of equity of 13.9 percent (8.17% debt cost + 5.7% risk premium = 13.87%).

The Harris and Marston (H&M) study noted above also provides specific equity risk premium estimates. 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 indicates a current single-A cost of equity of 13.3 percent (8.17% debt cost + 5.13% risk premium = 13.30%).

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

---

[3] Ibbotson Associates, *Stocks, Bonds, Bills and Inflation 2000 Yearbook.*

A. The following table summarizes my results:

Summary of Cost of Equity Estimates	
DCF Analysis	Indicated Cost
Constant Growth Model	11.1%-11.2%
Multistage Growth Models	
Four-Year Market Price Model	11.6%%
Ten-Year Transition Model	11.6%-11.7%
DCF Range	11.1%-11.7%
Risk Premium Analysis	
Utility Debt + Risk Premium	
Risk Premium Analysis (8.17% + 3.73%)	11.9%
Ibbotson Risk Premium Analysis	
Risk Premium (8.17% + 5.7%)	13.9%
Harris-Marston Risk Premium	
Risk Premium (8.17% + 5.13%)	13.3%
PacifiCorp Cost of Equity Estimate	11.5%

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

A. Based on my review of the DCF results and my risk premium analysis, and my review of current market and electric utility industry conditions I estimate PacifiCorp's fair cost of equity capital at 11.5 percent.

Q. Does this conclude your testimony?

A. Yes, it does.