CONTENTS

Testimony of Charles E. Peterson

I. INTRODUCTION AND SUMMARY

Q: Please state your name, business address and title.

A: My name is Charles E. Peterson; my business address is 160 East 300 South, Salt Lake City, Utah 84114; I am a Technical Consultant in the Division of Public Utilities (Division).

Q: On whose behalf are you testifying?

A: The Division.

Q: Please summarize your educational and professional experience.

A: I attended the University of Utah and earned a B.A. in mathematics in 1978 and a Master of Statistics (M.Stat.) through the Graduate School of Business in 1980. In 1990, I earned an M.S. in economics, also from the University of Utah.

Between 1980 and 1991, I worked as an economic and financial consultant and business appraiser for several local firms or local offices of national firms. My work frequently involved litigation support consulting and I have testified as an expert witness in both federal and state courts.

In 1991, I joined the Property Tax Division of the Utah State Tax Commission. In 1992, I was promoted to manager over the Centrally Assessed Utility Valuation Section. I have

provided expert testimony regarding valuation, economic and cost of capital issues, both in deposition and formal hearing before the Utah State Tax Commission.

I joined the Division in January 2005 as a Utility Analyst; in May 2006, I was promoted to Technical Consultant. I have worked primarily in the energy section of the Division. In 2007, I earned the Certified Rate of Return Analyst (CRRA) from the Society of Utility and Regulatory Financial Analysts (SURFA).

My current resume is attached as DPU Exhibit 2.1.

Q: Please outline the projects you have worked on since coming to the Division.

A: I was involved in evaluating cost of capital issues in the 2004 rate case that was settled in February 2005. I subsequently co-authored a paper regarding the Capital Asset Pricing Model (CAPM) published in the *The NRRI Journal of Applied Regulation*[1]. I have recently co-authored an article related to ring-fencing that was published in Public Utilities Fortnightly.[2]

In 2006 I provided written and oral testimony on cost equity supporting the stipulation that settled most issues in the previous PacifiCorp general rate case (Docket No. 06-035-21).

I have worked on DSM, HELP, and service quality and customer guarantees involving PacifiCorp. I was the Division lead on an internal research project regarding ring-fencing that

[1] The NRRI Journal of Applied Research, vol. 3, December 2005, Ohio State University, Columbus, OH, pp. 57-70.
[2] Public Utilities Fortnightly, Vol. 146, No. 2, February 2008, pp. 32-35, 66.

resulted in a report to the Public Service Commission. I was the lead of the economics and finance group within the Division assigned to evaluate the proposed acquisition (Acquisition) of PacifiCorp (Company) by MidAmerican Energy Holdings Company (MEHC). Please see Docket No. 05-035-54. I have been the lead on a number of QF contract cases.

Q: Have you previously provided testimony to the Commission?

A: Yes. I first filed testimony in the Uinta Basin Telephone case (Docket No. 05-053-01) regarding ring-fencing issues. I subsequently filed testimony in the PacifiCorp Acquisition matter (Docket No. 05-035-54) as the primary Division witness. I provided testimony in support of the stipulation regarding cost of equity in the last PacifiCorp general rate case Docket No. 06-035-21. I have testified at hearing before the Commission on a number of smaller matters, including special and QF contracts, without pre-filing formal testimony.

Q: What is the purpose of your testimony in this matter?

A: My testimony discusses issues related to the cost of capital of the Company. Cost of capital includes capital structure, cost of common equity, cost of debt and cost of preferred stock. Cost of equity and overall cost of capital are important parts of the revenue requirement of a regulated utility. I will provide testimony supporting the Division's belief that the appropriate cost of equity for PacifiCorp is 10.10 percent. As discussed briefly below, the Division has no significant disagreement with the Company's requested capital structure of 50.4 percent common equity, 0.4 percent preferred stock and 49.2 percent long-term debt. The Division also has no disagreement with the Company's preferred stock return of 5.41 percent. However, the Division will update the Company's cost of debt to reflect current interest rates

with respect to the issuance of approximately $700 million in first mortgage bonds later this year.

Q: Are you asking the Commission to modify its view of the use of different methodologies?

A: Yes. The Commission last adjudicated cost of capital issues in the most recent previous Questar Gas Company (Questar Gas) general rate case (Docket No. 02-057-02). In that case, which follows earlier decisions, the Commission expressed justified skepticism about the CAPM model. The Commission appears to largely reject consideration of the CAPM. However, the CAPM continues to be one of the most widely taught and used models to estimate the cost of equity capital. Additionally, it is appropriate for rate of return witnesses to consider more than one model in their testimony in order to, hopefully, have increased confidence in and to refine their estimates. For these reasons, I recommend that the Commission recognize and consider this model as part of the decision-making process in arriving at an appropriate authorized rate of return for a utility.[3]

Q: Please outline the scope of your testimony.

A: First I will review and comment on the basis of the Company's capital structure request. Then I will review and comment on the Company's requests for cost of preferred stock and long-term debt. I will review and comment in a confidential appendix on the analyses performed for PacifiCorp in support of its satisfaction of Acquisition Commitment 37 in Docket No. 05-035-54 that were provided as part of the Company's cost of debt testimony.

[3] By extension the Commission may want to consider other models as they are from time to time offered and supported by testimony.

Then I will describe the methods, data, and analyses that I used to arrive at the Division's recommendation for cost of equity including the selection of comparable companies.

Finally, I will review and comment on those areas of the testimony of the Company's cost of equity witness, Dr. Samuel Hadaway, with which I agree and disagree.

In order to prepare testimony, I set a cut-off of March 14, 2008 for stock prices and debt yields.

Q: Please briefly summarize the work and investigations that you have performed in this matter.

A: I have reviewed and analyzed the testimonies of PacifiCorp witnesses Bruce N. Williams, the Company's Treasurer, and Samuel C. Hadaway, Ph.D., an outside cost of equity witness. Mr. Williams provided testimony regarding cost of debt, cost of preferred stock and capital structure. Dr. Hadaway filed testimony on cost of equity. I have also performed my own independent estimation of cost of capital, particularly with respect to cost of equity.

Q: What was the Company's original filed position regarding cost of capital?

A: Originally, for a June 30, 2009 test year, the Company asked for the following cost of capital rates of return:[4]

[4] Direct Testimony of Bruce N. Williams, December 2007, page 3.

Component	Structure	Cost
Long-Term Debt	47.9%	6.28%
Preferred Stock	0.4%	5.41%
Common Stock	51.7%	10.75%
WACC	100.0%	8.59%

Subsequently the Commission ordered that the test year end December 31, 2008 causing the Company to file revised testimony. Mr. Williams revised the Company's cost of capital request to the following:[5]

Component	Structure	Cost
Long-Term Debt	49.2%	6.30%
Preferred Stock	0.4%	5.41%
Common Stock	50.4%	10.75%
WACC	100.0%	8.54%

Q: With respect to the Company's filed testimony what have you concluded?

A: As outlined above, I determined that the capital structure and the cost of preferred stock are reasonable. As noted above, I believe the cost of debt needs to be updated to reflect the current environment. I believe that the cost of equity point recommendation by Dr. Hadaway is too high and even lies outside what I would consider a reasonable range for PacifiCorp. I believe the public interest would be better served if PacifiCorp's authorized cost of equity were about 10 percent.

[5] Direct Testimony of Bruce N. Williams, March 2008, page 3.

Division Exhibit 2.2 summarizes the capital structure and cost of capital point estimates supported by the Division. The final weighted average cost of capital is 8.20 percent. The following table summarizes the capital structure and cost of capital point estimates supported by the Division.

Component	Structure	Cost
Long-Term Debt	49.2%	6.28%
Preferred Stock	0.4%	5.41%
Common Stock	50.4%	10.10%
WACC	100.0%	8.20%

II. CAPITAL STRUCTURE

Q: What is PacifiCorp's current capital structure?

A: I examined the latest actual capital structure of the Company that was available from the Company's SEC Form 10-K as of December 31, 2007. At that date, the capital structure was 50.4 percent common equity, 49.2 percent long-term debt and 0.4 percent preferred stock—virtually identical to the Company's requested capital structure.

Q. Did you compare this capital structure with other companies in the electric utility industry?

Yes. I had the capital structures compiled of publicly traded proxy or comparable companies.[6] The data are derived from the SEC Form 10-K filed by each company. Division Exhibit 2.3 summarizes the capital structures of the comparable companies for both the most recent fiscal year and a multi-year average. These comparable companies have bond ratings from the principal rating agencies that are similar to PacifiCorp's bond ratings.

The equity percentage in the capital structures of these comparable companies varied from the 30s percent to high 50s percent. PacifiCorp's capital structure has more equity than is typical of the comparable companies; however it is well within the range of the comparable companies' equity percentages.

Q: Did the Division consider the capital structure effects on the Company's debt ratings?

A: Yes. Standard & Poor's published criteria indicated that among other factors, a company with PacifiCorp's risk profile[7] needs to have an equity (common and preferred) percentage of 50 percent, or higher, to maintain PacifiCorp's current bond rating. Because Standard & Poor's includes short-term debt and adds an amount for purchased power agreements to the debt side of the equation, the result is the regulatory capital structure needs to be higher than 50 percent equity in order to satisfy this particular rating agency criterion. However, as suggested by the data in Division Exhibit 2.3, the possession of a capital structure somewhat below this criterion does not automatically result in a reduced debt rating. However, the Company's efforts to date to maintain or increase somewhat its equity capital percentage are

[6] The selection of the comparable companies will be described in detail in the cost of equity section of my testimony.

[7] Standard & Poor's gives a utility a risk profile grade between 1 and 10 (1 is best), based on its evaluation of the company's business and regulatory environment. PacifiCorp has a risk rating of 5, the middle of the range.

reasonable in light of this rating agency criterion, especially given the large capital expenditure program the Company is undertaking.

Q. What is your conclusion regarding capital structure?

A. PacifiCorp's request for a capital structure of 50.4 percent common stock, 0.4 percent preferred stock and 49.2 percent long-term debt is reasonable.

III. COST OF DEBT AND PREFERRED STOCK

Q: What did you do with respect to the cost of debt and preferred stock?

A: I studied the testimony of Company witness Bruce Williams and the related exhibits. Mr. Williams requested the following cost of capital rates of return: Long-term Debt, 6.30 percent and Preferred Stock, 5.41 percent. In addition to this testimony and exhibits, I submitted a number of data requests asking for clarification and further information. The Company satisfactorily answered these data requests. I studied the answers to these data requests as well as compared this information to readily available public information.

Q: What conclusions did you draw from this analysis?

A: I concluded that the requests appeared to be reasonable within the established regulatory framework, which uses embedded costs and historic balances to directly calculate these amounts. The information provided by the Company supported the accuracy of the embedded costs.

Q: Although you concluded that the embedded costs are reasonable, are you recommending any adjustments?

A: Yes. While I have concluded that no change is necessary to the requested cost of preferred stock (5.41%), as I noted earlier, the cost of long-term debt includes an estimate for new debt that is expected to be issued later this year. The forecast interest rate was arrived at in November 2007. Since that time the underlying interest rate used as a basis for that forecast—20-year U.S. treasury bonds—has declined noticeably. Specifically, I estimate that the decline is 21 basis points through March 14, 2008.

Q: What is the reason for the decline in interest rates?

A: The reason is the well-publicized problems in the credit markets initially related to sub-prime mortgages. The Federal Reserve (the Fed) has sought to reduce interest rates and taken other actions to avert or mitigate a recession in this country. There are indications that the Fed may seek to move interest rates lower still in the coming months.

Q: Might interest rates rise significantly between now and when the expected PacifiCorp debt issuance occurs?

A: While it is possible, at this time it appears unlikely. If the economy is or shortly will be in a recession as many seem to believe, then there will be economic and institutional forces at work, including the Fed, to keep interest rates down.

Q: How did you arrive at the 21 basis point adjustment?

A: Based upon published data by the Fed, the average November 2007 yield on 20-year U.S. treasury bonds was 4.56 percent. The latest data from the Fed indicates that the yields on these bonds were 4.39 percent for the week ending March 14, and 4.30 percent on March 14 itself. Based on this data I assumed that 4.35 percent was an appropriate estimate for this matter; 4.35 percent is 21 basis points below the November 2007 interest rate used by the Company to construct its forecast.

Q: What did you conclude regarding the cost of long-term debt?

A: I reduced the forecast coupon rate of the prospective debt issuance by 21 basis points. This reduction in the cost of the new debt combined with the cost of the debt already outstanding has the effect of reducing the overall cost of debt from the 6.30 percent as requested by the Company to 6.28 percent. That is, the 21 basis point reduction in the cost of the new debt results in a 2 basis point reduction when combined with the already outstanding debt.

IV. COST OF COMMON EQUITY

A. SUMMARY AND CONCLUSIONS

Q: Please summarize your cost of equity calculations and conclusion.

A: First I identified comparable (proxy) companies that I would use to estimate the cost of equity for PacifiCorp. These comparable companies are summarized on Division Exhibit 2.4. I will explain the selection process for the comparable companies later in my testimony. Using data from public sources related to the comparable companies, I calculated several variations of the standard single-stage discounted cash flow (DCF) model and the two-stage

DCF model. In calculating these models, I used both the closing (spot) price of the common stock of these companies as of March 14, 2008 and the 30-day average closing stock price. I considered several variations of the capital asset pricing model (CAPM) using different historical periods to estimate the market risk premium, different sources of beta, and the 20-year U.S. Treasury bond and the 90-day U.S. Treasury Bill rates as estimates of the risk-free rate. Finally, I constructed estimates using a risk-premium model based upon Value Line financial strength ratings. This last Value Line-based model is considered here primarily as a "reasonableness test." I am not asking the Commission to endorse this model.

Division Exhibit 2.5 sets forth the results of the models and calculations that I have made. As indicated at the bottom of Exhibit 2.5, I recommend a point estimate of 10.10 percent as the cost of common equity applicable to PacifiCorp at this point in time.

B. AN OVERVIEW OF COST OF COMMON EQUITY MODELS

Q: What methods did you look at in order to estimate the current market cost of equity for PacifiCorp?

A: I used standard discounted cash flow models (DCF) coupled with two types of risk premium models to support and complement the DCF analyses. Regarding the DCF models I considered both the simple or single stage model and two-stage DCF models. Within each model I considered variations of different growth rates.

Risk premium models included the CAPM and a model I used at the Utah State Tax Commission that uses factors based upon Value Line financial strength ratings to adjust the expected market return for varying risk.

Q: Please briefly describe the Single-Stage DCF model.

A: The single-stage DCF model is based upon the assumption that the value of ownership in a common stock is based upon the returns the stockholder expects to receive into perpetuity. It incorporates the current dividend and the prospects for growth in that dividend over time. Among other things, the model assumes that the expected price-to-earnings ratio for the company's stock will remain constant at the current level. In the single-stage model it is assumed that there exists a growth rate "g" that is constant, that is, this "g" will adequately serve as a surrogate for the growth in dividends for all periods of time in the future. The formula used is

$$k_e = D_0*(1+g)/P_0 + g$$

Where: k_e is the cost of common equity
D_0 is the current dividend
P_0 is the current stock price
g is the (constant) growth rate

Q: Please describe Two-Stage DCF models.

A: Two-stage DCF models are based upon the same principles and assumptions that the single-stage models are based upon except that for an initial period of years, usually five to ten years, the dividends are explicitly forecast. Following this initial period, a "terminal value" or lump-sum price is calculated which represents the estimated present value of the future dividends following the initial period. A discount rate is found for the explicitly forecast

initial period dividends and the terminal value such that the present value of the forecast dividends and terminal value equals the current stock price. This discount rate is the cost of equity in the two-stage DCF model.

Q: What are the strengths and weaknesses of the DCF models?

A: Briefly, the strengths of the model are its simplicity and ease of application, particularly in the single-stage version of the model. DCF models are derived directly from the financial theory that the price of a common stock is equal to the present value of the future cash flow available to stockholders. Two of the three principal components of the model are directly observable in the market: the dividend and the stock price. The future growth rate is necessarily an estimate, and thus can be controversial. The single-stage model can be faulted for the assumption that there is a single growth rate that will apply to the company into the indefinite future (theoretically, forever). Non-constant and multi-stage DCF models can handle changing growth rates in the future and even changing discount rates, but they are increasingly complex.

Q: As you cited earlier, the Utah Public Service Commission in the 2002 Questar Gas general rate case adopted a 75 percent weighting on earnings growth estimates and a 25 percent weighting on dividend growth estimates. Do you have any comments on this weighting scheme?

A: For a single-stage model this weighting appears reasonable to me. It gives consideration to the fact that the model is theoretically about dividends and not earnings, but also reflects that dividend growth is related to earnings growth. There is implicit as well the concept that

differences between dividend growth and earnings growth rates in the near-term has a greater effect on the cost of equity than any such differentials in the far future. Therefore, I find that this weighting scheme is reasonable.

Q: Do you have any comments comparing Single-Stage DCF models with Two-Stage models?

A: Yes I do. The main advantage of two-stage (and even three-stage, or more) models is simply the ability to separate out the estimate into two or more components. If the analyst has a good basis for the specific separation of future cash flows into two or more components and has a good basis for the length of time of the initial stage(s) as well as the growth differentials for different components, then these models can be very useful. They would also be useful if the goal was to develop "what if" scenarios. However, in the case of cost of equity estimates for a company in a mature industry, the time periods used and the growth rate differentials tend to be subjective and even arbitrary. The analyst has to make more judgments and assumptions including the length of the periods of different growth rates, the growth rates for different periods, the calculation of the terminal value (if any), and whether, or not, to assume the discount rate should remain constant and if not, how is it going to be estimated. Given these complexities with two-stage or higher multi-stage DCF models, it is difficult to imagine that they will generally be better estimators of cost of capital.

In the final analysis, the results of a two- or more stage DCF model has a single-stage equivalent with a growth rate that is unlikely to be much different from the growth rates used

in a multi-stage model especially in a mature and price-regulated industry such as the electric utility industry.

For these reasons, I do not believe two-stage DCF models currently add a lot of new information to the estimate of cost of equity for electric utilities. However, further theoretical developments or better data, or both, for multi-stage models may increase the usefulness of these types of models.

Q: Please briefly describe the CAPM model.

A: The CAPM is a type of risk premium model. CAPM grew out of theoretical work in modern portfolio theory in the 1960s. Modern portfolio theory had shown that diversified portfolios could reduce the variability in the value of those portfolios and that a risk factor called "beta" could be used to estimate the relative variability of a portfolio to the market portfolio. The theory of CAPM is that the cost of equity is equal to the risk free rate plus a market risk premium adjusted by the risk factor beta. The market risk premium is the additional return over the risk free rate that a portfolio of all risky investments, i.e. the "market," would expect to earn. One of the theoretical underpinnings of CAPM is that investors through a diversified portfolio could virtually eliminate risk specific to a particular investment such that if the investor were sufficiently diversified, he would only face the risk of the market, which is also called systematic risk. Beta is a measure of the volatility of an investment's value compared to the market as a whole and will indicate to an investor how a given investment will affect the systematic risk of his portfolio.

Under CAPM theory investors are not rewarded for the specific risks of a particular investment because these risks can be diversified away. The only reward the investor receives is the systematic risk, represented by the beta that an investment brings with it to the portfolio.

The calculation of the CAPM cost of equity for a company is straightforward and is based upon readily available information. This model is widely taught in the academic literature and is widely used in industry.[8]

The formula for the CAPM is as follows:

$$k_e = RFR_0 + \beta * (MR\text{-}RFR)$$

Where: k_e is the cost of common equity
RFR_0 is the current risk free rate
β is beta, the risk adjustment factor
(MR-RFR) is the market risk premium, which can be decomposed into two factors: The overall market return, MR, and the RFR that is compatible with the way the MR was estimated.

Q: Please briefly discuss the strengths and weaknesses of the CAPM.

A: The strengths include a firm theoretical basis for the model, its relative simplicity and intuitive appeal. The model is widely taught and apparently widely used in corporate

[8] Modern portfolio theory and the capital asset pricing model are discussed in detail in texts on corporate finance and investment valuation. See, for example:

Brealey, Richard A., Stewart C Myers and Franklin Allen. (2006). *Principles of Corporate Finance 8th ed*. New York: McGraw-Hill Irwin.

Brigham, Eugene F. and Joel F. Houston. (2007). *Fundamentals of Financial Management 5th ed*. Mason, Ohio: Thomson South-Western.

Damodaran, Aswarh. (2002). *Investment Valuation*. New York: John Wiley & Sons, Inc.

Parcell, David C. (1997). *The Cost of Capital – A Practitioners Guide*.

America. The downside of the model is that there is little consensus on how each of the factors are developed and the model implemented.

Different analysts will choose different risk free rates, which will affect the outcome as I demonstrate in my application. Academics sometimes favor using a Treasury Bill rate as the most nearly true risk free security, while practitioners (including this one) favor longer-term bond rates to match the apparent holding period of the asset. Beta is calculated in various ways using different base periods, market proxies and other measurement differences such as the frequency of the observations and even the day of the week the observations are made. Some services offer "adjusted" betas that "correct" the calculated or "raw" beta to account for the apparent tendency of betas to revert to a mean over time. The available services assume that the mean that the betas revert to is the market beta, 1.0.

There is evidence that utility company betas should not be assumed to revert to a mean of 1.0. Gombola and Kahl studied 109 utilities and found that the mean that their betas reverted to was 0.52. (Gombola, Michael J., and Douglas R. Kahl, "Time-Series Processes of Utility Betas: Implications for Forecasting Systematic Risk," Financial Management, Autumn 1990, pp. 84-93). A more recent study by Buckland and Fraser of British water utilities found a mean of about 0.7. However, this study is less compelling due to its limited scope and geographic location (Buckland, Roger and Patricia Fraser, "Political and Regulatory Risk in Water Utilities: Beta Sensitivity in the United Kingdom," Journal of Business Finance & Accounting, 28(7) & (8), September/October 2001, pp. 877-904.) In addition to these studies, I compiled betas on the comparable companies and their predecessors from Value

Line data back to 1981. These data are set forth in DPU Exhibit 2.16. This shows an average over this period of 0.67. There is no clear indication of a trend to 1.0. Given the way Value Line adjusts its betas, this would correspond to a raw beta of about 0.49, which is very close to the Gombola and Kahl results. These data suggest that Value Line's, and other similarly adjusted betas, are too high for regulated utilities.

Perhaps the most hotly debated factor is the market risk premium; that is, the premium return investors demand form stocks over the risk free rate. Some practitioners support the use of the arithmetic average of the difference between historical stock market returns (with the Standard & Poor's 500 Index as a proxy) and long-term (approximately 20 years) treasury bond returns since 1926 as popularized by Ibbotson Associates over the last 30 years or so.[9] However this approach has been criticized by academics and others on a number of grounds. Some say the historical time period is too long reaching back to a much different economy than we have today. Others have cited technical problems with the data Ibbotson compiled. One technical problem is referred to as "survivor bias." Survivor bias refers to the fact that the underlying Ibbotson data is composed of companies that were successful; losers are not included. Studies indicate that this bias inflates the Ibbotson-based market risk premiums by about 1 to 2 percentage points.[10] Another issue is the use of arithmetic averages versus geometric averages. Ibbotson Associates, Brealey, Myers, and Allen among others, argue that arithmetic averages produce the appropriate unbiased estimates of returns. Usually a decision tree-type analysis covering one or two years is produced showing how this would work. However, the use of arithmetic averages significantly overstates the actual returns an

[9] Stocks, Bonds, Bills, and Inflation (SBBI), any edition, published annually by Ibbotson Associates (now a division of Morningstar).
[10] Brigham and Houston, supra, p. 272.

investor would have actually received over a long historical period of time, a time period in which the geometric average much more accurately reflects the actual experiences of investors. For this reason and others, some experts advocate geometric returns.[11] In short there is great dispute about how the market risk premium should be estimated.

I have used the Ibbotson Associates data because it is readily available and widely used. The errors that are known, primarily the survivorship bias, can be corrected for or otherwise taken into account. A distinction must be made between the Ibbotson data and the "Ibbotson method." The "Ibbotson method" primarily refers to using an arithmetic average of the entire historical period since 1926, without any adjustment, to calculate the market risk premium. It is this "Ibbotson method" that I disagree with.

Empirical studies of stock returns have turned up anomalies that have suggested flaws in the CAPM. In order to correct for these anomalies (and save the basic theoretical construction) additional factors have been specified for the model such as the Fama-French three-factor model or add-ons to the model such as adjustments for size or industry. None of these adjustments have avoided controversy.

The practical implementation of the model has resulted in much controversy and consternation. Despite these problems the CAPM is a widely used and has an established

[11] For a discussion of geometric versus arithmetic averages, see Damodaran, Op. Cit. pp. 161-162 and PPC's Guide to Business Valuations, Volume 1, paragraph 502.8, Practitioners Publishing Company, Fort Worth Texas, February 2006

theoretical basis. These facts necessitate that an analyst at least consider the CAPM in evaluating a cost of equity problem.

Q: Please briefly describe the model based upon Value Line financial strength ratings.

A: This model begins with an estimate of the expected market return on common stock derived in the same manner as with the CAPM. The expected return for the entire market is then adjusted by a risk factor based upon the average Value Line financial strength rating for the comparable companies. Using the entire Value Line data set, a regression equation is matched to the average forecast total returns by financial strength rating class; this equation is constructed, in part, to estimate the returns between whole ratings. Starting with a weighted average rating for the entire Value Line universe of companies, a ratio of the expected returns to this average return is constructed. This ratio becomes the "risk factor" that adjusts the expected market return. Algebraically the formula is

$$k_e = f * MR = f * (MRP + RFR)$$

Where: k_e is the cost of common equity
RFR is the risk free rate
MR is the expected market return
MRP is the market risk premium
f is the risk adjustment factor

Generally, the higher the rating (i.e., the lower the risks as measured by that rating), the lower the expected return. Thus, higher ratings than the weighted average will result in a risk factor less than one; the highest financial strength rating should have the lowest risk factor, and vice versa. This all comports with current financial theory: the higher the risk, the higher the expected return; the lower the risk, the lower the return.

Q: Where has this model been used?

A: I used this model as a secondary estimate of cost of equity at the Utah State Tax Commission for about ten years.[12] Its use has been included in contested cases heard by the Tax Commission where other parties' experts had the opportunity to review and comment on it and I was subject to cross-examination.

Q: Do you expect the Utah Public Service Commission to rely on this model now, or in the future?

A: No. I offer it because I personally use it as another check on reasonableness.

Q: What are the strengths and weaknesses of the model?

A: The model is an alternative risk premium model that uses a factor based upon Value Line's widely known financial strength rating to adjust the expected market return. The market return is derived in the same way as the CAPM market return is estimated, so this provides an accepted starting point for the method. The risk factor is then empirically calculated based upon the industry financial strength rating (as represented by the comparable companies). Over several years the model has yielded reasonable results.

The negatives include the reliance on Value Line as the source of the financial strength ratings and the relative forecast returns of the individual companies. The risks of a particular industry, e.g. the electric utility industry, may differ from companies in the Value Line universe even though they share the same financial strength rating. Finally, the model has not been published and consequently is not widely known or tested.

[12] By Tax Commission rule, the primary cost of equity model is a variation of CAPM.

C. COMPARABLE (PROXY) COMPANIES

Q: What are the "comparable companies" you referred to and how were they chosen?

A: One of the first steps in the estimate of cost of equity was the selection of publicly traded "comparable" companies whose market returns and characteristics would be studied in order to infer from them what the appropriate cost of equity should be for PacifiCorp. The selection and use of comparable companies is obviously critical since PacifiCorp itself is not an independent, publicly traded company. However, even if PacifiCorp were publicly traded it would be advisable to compare it with closely related companies in its industry. The Company's witness, Dr. Hadaway, chose 15 companies as cited in his testimony. I made a preliminary selection of 15 companies also, but only seven of the 15 overlapped with Dr. Hadaway's list. After further analysis I eliminated three companies from my list. The criteria I used to select comparable companies included (1) similar bond ratings to PacifiCorp; (2) similar size to PacifiCorp; (3) significant thermal generation capacity; (4) at least 70 percent of revenue and/or income derived from electric utility operations; and (5) "Other."

More specifically, I chose companies whose bond ratings ranged from BBB- to AA- with at least one rating agency (Standard & Poor's or Moody's) rating the bonds at least BBB (Moody's Baa), and at least one rating agency rating the debt no higher than A. For size the company's revenues and net plant in service had to be within plus or minus 5 times that of PacifiCorp. Thermal generation capacity was considered "significant" if it was at least 30 percent of the total. Percent of revenues and income was explained above, although I stretched this a bit in the case of DTE (which was also selected by Dr. Hadaway) since it

otherwise met my criteria and had significant regulated gas operations which I gave some credit for in this selection process; DTE received 65 percent of its income from its electric operations and 10 percent from its regulated natural gas business. "Other" served to eliminate PNM resources since recent financial difficulties have resulted in its stock declining 50 percent since the first of the year; Northeast Utilities was eliminated because of its complex and diversified structure and the fact that it's financial statements show its utility businesses as investments and not as operating companies.

DPU Exhibit 2.4 lists my selection of comparable companies along with summary data supporting their selection. I will discuss the issues I have with the additional companies Dr. Hadaway uses later in my discussion of Dr. Hadaway's analysis.

D. APPLICATION OF COST OF EQUITY MODELS

1. Single-Stage DCF Models

Q: Please describe how you developed the Single-Stage DCF models.

A: First, I calculated the current dividend yield for each of the comparable companies. The dividend was based upon annualizing the latest quarterly dividend. I considered both a spot price and a 30-trading day average closing price. The 30-trading day average closing price was used to smooth out random noise that might exist in the stock price data. These stock prices were based upon the closing prices as of March 14, 2008 and were obtained from Yahoo! Finance. Next, I took earnings and dividend growth rates from the latest Value Line reports on each comparable company as well as the latest updates on Value Line's web site accessed March 14, 2008 and combined those with the consensus earnings growth estimates

reported on the Yahoo! Finance, Zack's and Reuters web sites for each comparable company. The Zack's and Reuters web sites were accessed after the markets closed on March 14, 2008. The Yahoo! Finance web site was accessed March 17, 2008. DPU Exhibit 2.6 sets forth the earnings growth rate forecasts. Included in Exhibit 2.6 is an alternative Value Line calculation explicitly based upon the latest historical earnings per share as reported by Value Line and its 3- to 5-year forecast. In general, I did not use this forecast but relied on Value Line's "official" 3- to 5-year growth rate forecast located about in the middle of the left hand column in the printed edition. The one exception is DPL which is coming off very low earnings and whose future earnings growth rate appears to be noticeably below the "official" forecast. DPL's price-to-earnings ratio and dividend yield do not seem to support the idea that investors expect that DPL will grow over 10 percent annually over the long-term. Value Line, in an effort to smooth earnings averages three historical years and compares that average with the last three years of its forecast to calculate its growth rate forecast. This method sometimes creates anomalies (as any method arbitrarily applied will occasionally do), and this appears to be the case with DPL.

I considered several different growth rate estimates for the single-stage models. First I calculated growth rates based upon a weighted-average by applying a 75 percent weight to the average earnings growth rate from Value Line, Zack's, Reuters, and Yahoo!, and 25 percent weight to the dividend growth rate (from Value Line) pursuant to the Commission's decision in Questar Gas, Docket No. 02-057-02. Division Exhibit 2.7a sets forth the calculation of the DCF model using this weighted growth rate and the March 14 spot price and Exhibit 2.7b sets forth the same calculations but based upon the 30-day average price.

Exhibit 2.8a and 2.8b set forth my adjusted rates using the spot and 30-day average prices, respectively. The adjusted rates were derived by eliminating any cost of equity estimates that were less than 8.0 percent or equal to or greater than 13.0. The 8.0 percent lower bound was selected based upon my judgment that a rate less than 8.0 percent is unreasonable within this particular exercise. The upper bound is more than two standard deviations above the mean cost of equity estimate based upon the 75-25 percent weighting. Along with the weighted average growth rate, cost of equity estimates were also made using just earnings growth rates and just dividend growth rates. All of these estimates are summarized on Exhibit 2.5.

An additional set of single-stage DCF estimates is included on Exhibits 2.9a and 2.9b; where again Exhibit 2.9a is based upon the spot price and Exhibit 2.9b is based upon the 30-day average price. In these exhibits I have calculated cost of equity estimates using the historical10-year average growth in earnings and dividends as reported by Value Line. In the lower portion of these exhibits I have calculated an adjusted cost of equity by eliminating certain estimates that were, in my judgment, too low or too high. In this case I do not believe these results warrant consideration in any final estimate of the cost of equity for PacifiCorp; however, I believe it is useful to see what the DCF results are based upon historical growth rates.

As set forth on DPU Exhibit 2.5, the results of the single-stage models using the 75-25 percent weighting on earnings and dividend growth resulted in a range of 10.03 to 10.38 percent. The earnings-only growth models ranged from 10.37 to 10.69 percent. The dividend-only growth models ranged from 8.63 percent to 10.09 percent.

In each growth case with the single-stage models, I prefer the "adjusted" models since they, in my judgment, remove outliers that distort the results. This would make the range of single-stage DCF models 10.00 to 10.47 percent.

2. Two-Stage DCF Models

Q: Please describe the Two-Stage DCF models you developed.

A: In developing two-stage DCF models I forecast the current dividends of each comparable company out five years a couple of different ways. First I assumed that the dividends grew at the dividend growth rate forecast by Value Line. Second I assumed that the dividends grew at the simple average of the earnings and dividend growth rates. In each case, for discounting purposes, the dividends were assumed to occur in the middle of the year. A "sixth" dividend was forecasted to occur at the end of the fifth year. This sixth dividend was used as a factor to estimate the terminal value. The terminal value was calculated by dividing the sixth dividend by the cost of equity less the terminal growth rate. The terminal growth rate was assumed in the first instance to equal the 75-25 percent weighted average of the earning and dividend forecast growth rates. In the second instance the terminal growth rate was assumed to be the earnings forecast growth rates. DPU Exhibits 2.10a and 2.10b set forth the calculations of the two-stage DCF growth rates based upon spot prices and 30-day average prices, respectively. The estimates from these two-stage DCF models ranged from 9.76 percent to 10.32 percent.

3. CAPM Results

Q: How did you develop your CAPM models?

A: I looked at the CAPM model using different risk free rates, time periods, betas, and market risk premiums. I did this to give the flavor of how different factors in the CAPM affect the cost of equity estimate. As stated earlier, there is no consensus on precisely how the components of the CAPM should be estimated.

Q: What risk-free rates did you choose?

A: I chose the current 90-day Treasury bill (T-bill) yield, which is about 1.18 percent, and the 20-year Treasury bond, which is 4.31 percent. Academics have tended to use the T-bill rate, the closest rate to a "true" risk free rate since it excludes inflation and time horizon risks. Practitioners often use longer-term rates in order to match the holding period of the asset under consideration. I favor the longer-term rate and use the 20-year Treasury bond since it is approximately equivalent to the long-term government bond historical series compiled by Ibbotson and Associates (now part of Morningstar). However, I show the effects of the Treasury Bill rate. However, the estimated market risk premium should correspond to the type of risk free rate one chooses to be consistent.

Q: What beta estimates did you use?

A: For four of the five CAPM exhibits I used Value Line's latest adjusted beta. However, in DPU Exhibit 12e I use an average of betas derived from Zack's, Reuters and Yahoo! Finance web sites. The web sites were accessed March 14, 2008 for Zacks and Reuters and March 17, 2008 for Yahoo!. DPU Exhibit 11 summarizes the beta estimates for each comparable company from the four sources.

Q: Please describe the market risk premiums you used?

A: All of my market risk premiums are derived from historical data published by Ibbotson Associates. These data have been the subject of criticism for a number of reasons, some of which were cited above. I consider the 82 year "Ibbotson period" to be problematic since it includes market situations much different than today. The most obvious examples are the rise of mutual funds for small investors and more recently the internet making publicly available information almost instantaneously available anywhere in the world. There are also institutional changes since 1926 such as the creation of the Securities and Exchange Commission, multitudinous changes in accounting rules, and Sarbanes-Oxley. Furthermore, there have been suggestions and studies that indicate that investors' expectations may change over time. Thus a long historical period may not accurately reflect today's market and expectations.

Q: What historical period, if any, would you recommend?

A: I feel most comfortable with a 30- to 50-year time period. A 30- to 50-year period is long enough to smooth out the sometimes wide fluctuations in the data, but focuses on the more recent data of the modern financial markets. A 30- to 50-year period does not avoid all of the

pitfalls of using historical data. Other authorities recommend that at least 30 years be used when basing an estimate on historical data.[13]

Q: Why, then, do you include calculations in three of your CAPM exhibits that reflect the 82-year time period?

A: Because this time period has been widely promoted by Ibbotson and others as the "correct" time period, I did not want to exclude it completely from my analysis. I also wanted the Commission to be able to evaluate for itself the results of using that time period but applying different betas or using geometric as opposed to arithmetic averages.

Q: You have included the 82-year period calculations in your recommended average for CAPM, but not in your "reasonable range." Why have you done that?

A: As implied above, I'm not completely throwing out the data from a widely advocated method simply because I do not agree with it. However, the 82-year period market risk premium as advocated by Ibbotson represents an estimate that in my opinion is biased upwards. For example, in the proceedings of a conference on market risk premium sponsored by the AIMR published in November 2001, of all the experts presenting at the conference, the Ibbotson representative was at the top end at 7 percent. Most of the experts thought that the market risk premium should be 5 percent or less going forward, and some were as low as 2 percent, or even less.[14] Thus while I am willing to include the results for the 82-year period

[13] PPC's Guide to Business Valuations, Volume 1, paragraph 502.9, Practitioners Publishing Company, Fort Worth Texas, February 2006

[14] AIMR, Equity Risk Premium Forum Report, November, 2001, pp. 30-50. Also, see Shannon Pratt who discusses another reason to think the market risk premium is lower than the long-term historical Ibbotson data (Pratt, Shannon. "Valuers should lower equity risk premium component of discount rate," Business Valuation, 9 (11), November, 2003, pp. 1,6.).

for the consideration of the Public Service Commission, I believe these estimates may not be appropriate for identifying the top end of the reasonable range.

Q: What were your results from CAPM?

A: The CAPM models using T-bills as the risk free rate produce results in the 6 and 7 percent range. In my opinion these rates are unreasonably low since they are only about 0 to 1 percent higher than current bond yields. I do not recommend these rates for consideration.

The CAPM models using the 20-year T-bond yields as the risk free rate range from 8.2 percent to 9.9 percent with an average of 9.1 percent. I consider the 9.1 and the 9.9 percent figures to lie within the reasonable range for PacifiCorp. DPU Exhibits 12a through 12e detail the CAPM calculations. DPU Exhibit 2.5 gives a summary of the results.

4. Risk Premium Results

Q: What were the results of your risk premium model based upon Value Line financial strength weightings?

A: The results ranged from 8.8 to 10.3 percent based upon the 20-year Treasury bond. The average was about 9.5 percent. I do not consider the Treasury bill-based results to be particularly useful although they support a somewhat higher rate than the similar CAPM results based upon Treasury bills. DPU Exhibit 2.13 details these results.

Q: What do the risk premium results suggest to you?

A: The risk premium results generally agree with and support the results of the other models.

V. MODELS AT THE UTAH STATE TAX COMMISSION

Q: When you worked at the Utah State Tax Commission what cost of equity models did you employ?

A: Since its adoption in December 1998, the Utah State Tax Commission's Property Tax Division (PTD) was obligated to follow Administrative Rule R884-24P-62 (commonly referred to as "Rule 62"). Rule 62 specified in some detail how cost of equity was to be calculated by the PTD for property tax valuation purposes. Specifically the PTD was to use primarily the CAPM using the full period Ibbotson data (now 82 years) and arithmetic averages to compute the market risk premium. The PTD was to use Value Line betas. The risk free rate was to be based upon the 20-year Treasury bond. Originally the PTD was told to put "at least" 75 percent weight on the specified CAPM, but this was later amended to "at least" 50 percent weight. To my knowledge this amendment had no significant affect on the actual practice of the PTD.

The PTD also used a single-stage DCF model similar to the one I have used here and the risk premium model I have used here. However, relatively little weight was given to either model.

Q: Did you agree with the "Rule 62" specification of CAPM?

A: No. I personally disagreed with the formulation because it adopted many of the specific procedures that I find particularly problematic in that they result in cost of equity estimates that I believe to be strongly biased upward.

Q: Prior to the adoption of "Rule 62" how did the PTD typically compute CAPM?

A: The PTD would typically use a 30- to 35-year historical period to estimate the market risk premium. The PTD also put less weight on the CAPM in arriving at a final cost of equity estimate.

Q: What relevance does "Rule 62" have in this proceeding?

A: I think the only relevance would be to inform the Public Service Commission that another Utah State agency has adopted the CAPM as its primary method of estimating cost of equity and the Commission may wish to consider it.

VI. COMMENTS ON DR. HADAWAY'S COST OF EQUITY RESULTS

Q: Please outline your comments on Dr. Hadaway's cost of equity testimony.

A: I will first comment briefly on areas that I'm in general agreement with Dr. Hadaway. Then I will discuss areas of differences and disagreements in some detail.

Q: Please outline the areas of general agreement you have with Dr. Hadaway.

A: Dr. Hadaway has begun to include CAPM calculations for consideration along with his other models. I believe that Dr. Hadaway is correct that an analyst should consider several different models including CAPM. However, I don't necessarily agree that the CAPM should now be used "because the utility industry has changed in ways that challenge the assumptions of the

traditional DCF model."[15] Dr. Hadaway's application of the CAPM is to use Value Line betas with the full period Ibbotson (now Morningstar) for the market risk premium. He also considers long-term risk free rates and T-bills, similar to my own formulation. I have commented above on the use of the full period (82-year) Ibbotson data. I do agree with Dr. Hadaway that one approach to deal with the issue of geometric and arithmetic growth rates is to average the two. Dr. Hadaway recognizes that there is a great deal of disagreement regarding the implementation of the model, particularly with respect to the market risk premium about which he concludes "There is no consensus on this issue…."[16] Dr. Hadaway needs to update his risk free rates to the current period, however. His risk free rates date back to 2007 and conditions have changed considerably since then.

As I alluded to earlier, I have included seven of Dr. Hadaway's 15 comparable or proxy companies, so I'm in agreement with his comparable companies to that extent. I agree with the Dr. Hadaway's general formulation of his DCF model and agree with the use of analyst growth forecasts. I generally agree with his statement that "Growth in nominal GDP (real GDP plus inflation) is the most general measure of economic growth in the U.S. economy."[17] That outlines my general agreements.

Q: With regards to differences or disagreements, let's start with the comparable companies, why did you not include the other eight companies that Dr. Hadaway included?

[15] Direct Testimony of Samuel C. Hadaway, December 2007, lines 71-72.
[16] Id. line 358.
[17] Id. lines 591-592.

A: The bottom part of DPU Exhibit 2.4 summarizes my reasons for exclusion. ALLETE, CH Energy, MGE Energy, were judged to be too small. Dr. Hadaway's Exhibit 5, page 2 also highlights that there is less information available on CH Energy and MGE Energy. ALLETE also has a significant real estate development operation in Florida that is affecting its earnings and outlook. CH Energy and MGE Energy as well as Energy East, Vectren, and PPL have relatively low domestic electric utility operations. PPL receives about 16 percent of its income from domestic electric operations and 31 percent from its utility investments in the United Kingdom. Vectren is more of a natural gas utility than an electric utility. Consolidated Edison, Energy East, and NSTAR have essentially no generating capacity of their own; instead they purchase all of their power. Based on these observations, I have elected to exclude these eight companies from my comparable list.

Q: What is your disagreement with Dr. Hadaway's DCF models?

A: While Dr. Hadaway computes DCF results based upon analyst forecasts, he puts little or no weight on these results because, as he explains, "the traditional constant growth model indicates an ROE of *only* 9.6 percent to 9.9 percent. Because this result is well below my risk premium checks of reasonableness, it is excluded from my recommended risk premium range. [italics added]"[18] I would note that the 9.6 to 9.9 percent range almost exactly brackets Dr. Hadaway's "long-term CAPM" figure of 9.83 percent, which apparently he does not reject out of hand.

Dr. Hadaway asserts on page 31 that "Analysts' forecasted growth rates for electric utilities declined precipitously following the Western energy crisis and industry turmoil." The

[18] Id. lines 681-684.

implication is that analyst forecasts used to be higher and *correct* in the past, but are now "too low." To test this I compiled data from Value Line back to 1981. DPU Exhibit 2.14 demonstrates that contrary to Dr. Hadaway's assertions, current Value Line estimates, are in line with the longer term Value Line averages and that the forecasts just prior to and during the energy crisis of 2000-2002 should be viewed as *too high.* The higher growth forecasts were likely driven by the anticipation of the deregulation of generation industry wide; an anticipation that is now greatly diminished.

Dr. Hadaway concludes that the best growth rate is his estimate of 6.6 percent which he calculates as a weighted average of change in nominal GDP back to 1947, basically the post World War II period. He seeks to bolster his assertion that GDP is a proper growth estimate by presenting a chart on page 30 of his testimony comparing electric demand with real GDP. While he avoids providing the actual statistics two things are completely clear from this chart: (1) real GDP and electric demand are positively correlated, and (2) electric demand has been growing at a noticeably slower rate than real GDP at least since 1982. In my view, Dr. Hadaway's use of GDP growth data is undermined by his own supporting data. It should not be surprising that electric demand grows at a slower rate than the economy as a whole since consumers at all levels of the economy have various incentives to continuously improve their energy efficiency.

Assuming that GDP growth is a reasonable estimate for electric utilities, the growth rate used must reflect investors' expectations of future growth. Rather than calculate some weighted average of past GDP growth rates, I believe Dr. Hadaway would have better served the

Commission by obtaining long-term GDP forecasts. For example, the U.S. Congressional Budget Office (CBO) publishes 10-year GDP forecasts annually; the current version is CBO's Economic Projections for Calendar Years 2008 to 2018 (updated February 2008). Likewise the Energy Information Administration (EIA) annually publishes their long-term GDP forecast in *Annual Energy Outlook 2008*. Currently the CBO forecast is for nominal GDP to grow 3.7 and 4.1 percent for 2008 and 2009, respectively; 5.2 percent annually over the period 2010 to 2013; and 4.4 percent annually from 2014 to 2018. The EIA's forecast is for a growth rate of about 4.4 percent over the period 2006-2030.[19]

Besides CAPM, Dr. Hadaway computes three additional risk premium models.[20] One model is a fairly standard risk premium calculation whereby Dr. Hadaway develops a risk premium of common stocks versus corporate bonds (4.5 percent) using the Ibbotson/Morningstar full period and adds to that his assumed forecasted rate on PacifiCorp debt (6.4 percent). A second model is based upon the risk premium estimates in a somewhat dated study by Harris and Marston in 1992. Harris and Marston found the risk premium of common equity returns compared to corporate debt to be 5.13 percent; Dr. Hadaway adds the 5.13 percent risk premium to the 6.4 percent PacifiCorp debt rate forecast to get a cost of equity of 11.53 percent.

Dr. Hadaway computed a third risk premium model whereby he analyzes average electric utility authorized rates of return and compares them to average public utility bond yields as compiled by Moody's over the 1980 to 2006 time period. From these data Dr. Hadaway

[19] Energy Information Administration, U.S. Department Of Energy, "Annual Energy Outlook 2008," Table 19.
[20] Id. see pages 33 to 35.

imputes an equity return of 10.77 percent. There are questions about the reliability of published authorized rates of return as estimates of cost of equity and the comparability of these rates of return to the average public utility bond yield. Moreover, the Harris and Marston study is over 15 years old. A basic problem with these approaches is the assumption that the market risk premiums, which are applicable to stocks generally, assuming they're accurately calculated, are the correct premiums for regulated electric utilities.

Assuming that Value Line betas are correct, the typical electric utility is about 20 percent less risky than the typical stock in the market (electric beta of 0.80 versus the market beta of 1.0). This suggests that the market risk premium should be reduced 80 to 100 basis points for an electric utility. Such a reduction would put Dr. Hadaway's risk premium estimates at, or below 10 percent, consistent with my analysis. I believe that Dr. Hadaway should also reduce the Company's forecast debt yield by about 20 basis points to reflect the current market conditions. This would put his risk premium models at just about 9.75 percent.

A final observation regarding the average authorized rates of return analysis. If the point is to use these data to support Dr. Hadaway's estimate for an authorized rate of return, it seems straight forward to do a simple time-trend analysis. Page 1 of DPU Exhibit 2.15 analyzes the authorized return data found on page 26 of Dr. Hadaway's testimony. The simple trend analysis predicts that authorized returns in the first half of 2008 will approximate 10 percent. Similarly the trend analysis of the data on Dr. Hadaway's Schedule 6, page 1 results in an

estimate of about 9.5 percent for 2008 (see page 2 of DPU Exhibit 2.14). This data may indicate the principal of gradualism in regulation in response to changing interest rates.[21]

My conclusion is that if one rejects Dr. Hadaway's 6.6 percent GDP-based growth rate, and I do, and apply a more supportable 5 percent growth rate along with risk adjustments to Dr. Hadaway's risk premium models, then Dr, Hadaway's data supports about a 10 percent cost of equity.

VII. CONCLUSIONS AND RECOMMENDATIONS

Q: Please summarize your cost of capital and capital structure conclusions, excluding the cost of equity results.

A: I have concluded that the Company's requested cost of preferred stock and capital structure are reasonable. The cost of debt needs to be adjusted downward by 2 basis points to reflect current interest rate conditions.

Q: What conclusions with respect to cost of equity have you come to?

A: The first conclusion is that the DCF models using analyst forecasts form a reasonable basis for a cost of equity estimate. These DCF models are compared to alternative CAPM calculations as well as my own risk premium model. All of these models support an overall conclusion of a cost of equity estimate in the low 10 percent or, perhaps, in high 9 percent range. My point estimate is 10.10 percent.

[21] Phillips, Charles F. Jr. The Regulation of Public Utilities Theory and Practice. 1993. Public Utilities Reports, Inc. Arlington, VA, pp. 408-409.

Q: On DPU Exhibit 2.5 you give a range of 8.63 to 10.47 percent, what is the meaning of that range?

A: That is the maximum range of values that I considered justifiable based upon the models I used and my interpretation of those models. They identify for me approximate boundaries between estimates that might be considered reasonable and those that are likely not reasonable. As I have implicitly done in my discussion of these models and at the bottom of DPU Exhibit 2.5, the range can be narrowed further to the high 9 percent to lower 10 percent range. The reasoning is as follows: There are three DCF models whose averages are 10.05 to 10.08 percent, and then there are two DCF models whose averages are about 10.30 to 10.40 percent. The CAPM and the risk premium models would pull an average to 10 percent or just below depending on the weight one gives them. I conclude that the point estimate should be just above these and approximately equal to the rounded values of the three DCF estimates that are just above 10 percent, which gives the point estimate of 10.10 percent.

Q: Please discuss some of the implications of your weighted cost of capital estimate and specifically your cost of equity estimate.

A: In arriving at a decision on cost of capital the Commission needs to consider principles and issues set forth in the well known U.S. Supreme Court decisions commonly referred to as the Bluefield and Hope cases.[22,23]

[22] Bluefield Water Works and Improvement Company v. Public Service Commission of the State of West Virginia (262 U.S. 679), decided in 1923.
[23] Federal Power Commission et. al. v. Hope Natural Gas Company (320 U.S. 591)

The Bluefield and Hope cases established economic and financial principles for proper regulation. These principles included (1) that the utility be allowed to earn a return on its utility property generally equal to returns earned by other companies of similar risk; (2) this return should assure confidence in the financial soundness of the utility; (3) this allowed return should maintain and support the credit of the company and allow it to attract capital; (4) recognition that a return a return that is "right" at one time may become high or low by changes in the economy regarding alternative investments; and (5) particularly in Hope, what is important is that the "end result" of the rate order be just and reasonable, it is less important how that result is arrived at. While the above list reflects the rights of the utility, Hope and Bluefield balance that with the obligation that "just and reasonable" rates include fairness to the customers.

Q: Do you believe your conclusions and recommendations arrive at a just and reasonable result in the public interest? Please explain.

A: Yes. The capital structure is well within the norms of the Company's industry as indicated by the analysis comparing the Company's recommended capital structure with the comparable companies. The use of embedded cost of debt and preferred stock is well established in regulation. The prospective future debt issuance is assumed to pay the forecast expected market return. I have demonstrated that my cost of equity estimate sits well within the estimates arrived at using standard financial models and forecasts derived from market participants. In rebuttal to Dr. Hadaway, I have shown that a 10.10 percent cost of equity is well within the range of the authorizations granted other utility companies. As a result, I conclude that the 10.10 percent cost of equity is not outside any range of expectations of

Wall Street. Therefore I conclude that the cost of capital estimates set forth on DPU Exhibit 2.2 are just and reasonable and in the public interest.

Q: What is your recommendation?

A: My recommendation is that the Commission adopt as the authorized cost of equity for PacifiCorp and its division Rocky Mountain Power for its operations in Utah of 10.10 percent and an overall weighted average cost of capital of 8.20 percent.

Q: Does this conclude your testimony?

A: Yes.