BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Application of Rocky Mountain Power for Authority to Increase Its Retail Electric Service Rates in Utah and for Approval of Its Proposed Electric Service Schedules and Electric Service Regulations	)	**DOCKET NO. 09-035-23** **Exhibit No. DPU 1.0** **Direct Testimony and Exhibits** **Charles E. Peterson**

FOR THE DIVISION OF PUBLIC UTILITIES
DEPARTMENT OF COMMERCE
STATE OF UTAH

Direct Testimony of

Charles E. Peterson

September 17, 2009

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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 Utah Division of Public Utilities (Division, or DPU).

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 1.1.

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 NRRI Journal of Applied Regulation.*[1] In 2008 I 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 of equity supporting the stipulation that settled most issues in the PacifiCorp general rate case in Docket No. 06-035-21. In May 2008 I provided written and oral testimony on cost of capital and related issues in both the PacifiCorp and Questar Gas Company general rate cases (Docket Nos. 07-035-93 and 07-

[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.

057-13, respectively). Earlier in 2009 I provided written testimony and oral testimony in support of the stipulation on Cost of Capital in the PacifiCorp rate case Docket No. 08-035-38.

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 resulted in a report to the Utah Public Service Commission (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 testified on behalf of the Division in PacifiCorp's purchase of the Chehalis power plant on July 17, 2008 (see Docket No. 08-035-35). I have been the lead on a number of QF contract cases.

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.[3] 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 provide testimony supporting the Division's position that currently the appropriate cost of equity for PacifiCorp is 10.50 percent. As discussed below, the Company's requested capital structure of 51 percent common equity is overstated, and

[3] Rocky Mountain Power (RMP) is an operating division of PacifiCorp primarily performing the retail distribution operations of PacifiCorp in the eastern part (i.e. Utah, Wyoming and Idaho) of PacifiCorp's system. RMP runs no electric generators, and more importantly for my purposes, it has no debt, no preferred stock and no common stock. The fact that PacifiCorp files with the Commission under the name Rocky Mountain Power, doesn't change the fact that any cost of capital calculations are necessarily of the whole company (i.e. PacifiCorp) and not its local division. Therefore, throughout this testimony will primarily refer to PacifiCorp, rather than RMP.

should be reduced to 50.5 percent; as a consequence, the 48.7 long-term debt percentage should be increased to 49.2 percent. The Division accepts 0.3 percent for preferred stock.

The Company issued $1.0 billion in long-term debt in January 2009 at an average cost of under 6.0 percent. The Company does not anticipate issuing additional long-term debt during the test period in this docket. The Division accepts PacifiCorp's proposed long-term cost of debt of 5.98 percent. The Division has no disagreement with the Company's preferred stock return of 5.41 percent.[4]

Q. In a previous PacifiCorp rate case, you testified that you were asking the Commission to modify its view of the use of different methodologies. What is your position on this subject in this rate case?

A. The Commission's decisions in Docket Nos. 07-035-93 and 07-057-13 made reference to different methodologies, but did not discuss the merits of the methodologies.[5] In this case I continue to use the same methodologies (cost of equity estimation techniques) as I did in those dockets and in Docket No. 08-035-38. In Docket No. 08-035-38 my testimony was written during a period of serious turmoil in the financial markets. However, for the last five or so months, the financial markets have calmed considerably and appear to be functioning in a normal manner at this time.

[4] Direct testimony of Bruce N. Williams in the Docket on page 2. See table following line 41 summarizing the Company's requested cost of capital and capital structure.

[5] In particular, I advocated giving some credence to the Capital Asset Pricing Model (CAPM) due to its wide use and acceptance, while at the same time recognizing the difficulties previously discussed by the Commission in implementing this model in practice. I also suggested that the Commission may want to consider other models as they are from time to time offered and supported by testimony.

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

A. I have reviewed data and commentary on the economy generally. 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. Please outline the scope of your testimony.

A. First, I review the general economic situation in the United States and in Utah. Second, I will review and comment on the basis of the Company's capital structure request. Next I will review and comment on the Company's requests for cost of preferred stock and long-term debt. In that section I will review my areas of agreement and disagreement with Mr. Williams.

Next, 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 testimony by Dr. Samuel Hadaway with which I agree and disagree.

In order to prepare testimony, I set a cut-off of August 31, 2009 for stock prices and debt yields.

Q. What is the Company's filed position regarding cost of capital?

A. In its filing dated June 23, 2009 the Company asked for the following cost of capital rates of return:[6]

Component	Structure	Cost
Long-Term Debt	48.7%	5.98%
Preferred Stock	0.3%	5.41%
Common Stock	51.0%	11.00%
WACC	100.0%	8.54%

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

A. As outlined above, I concluded that the cost of the preferred stock and the preferred stock capital structure recommended by the Company is reasonable. As noted above, I believe the cost of debt recommended by the Company is reasonable. I believe that the cost of equity range estimate recommendation by Dr. Hadaway is on the high side. I believe the public interest would be better served if PacifiCorp's authorized cost of equity were set lower at about 10.50 percent. I also believe the Company's equity capital structure percentage should be lowered to 50.5 percent, which consequently increases the long-term debt capital structure to 49.2 percent.

[6] Williams direct testimony, June 2009, page 2.

DPU Exhibit 1.2 summarizes the capital structure and cost of capital point estimates supported by the Division. The final weighted average cost of capital is 8.26 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%	5.98%
Preferred Stock	0.3%	5.41%
Common Stock	50.5%	10.50%
WACC	100.00%	8.26%

II. REVIEW OF THE CURRENT ECONOMIC SITUATION

A. The General United States Economy

Q. Please briefly summarize the current state of the United States economy.

A. The U.S. economy officially entered a recession in December 2007.[7] This recession has been characterized by declining housing prices, mortgage foreclosures, rising unemployment, and, of course, nearly unprecedented turmoil in the financial markets. The severe difficulties in the banking systems have resulted in bankruptcies of financial companies and massive government intervention, both domestically and around the world in order to stave off the collapse of the financial system. This recession is probably the worst since the 1930s.[8]

[7] National Bureau of Economic Research, http://www.nber.org/cycles/dec2008.html Accessed September 16, 2009.
[8] The Value Line Investment Survey, "Economic and Stock Market Commentary," August 29, 2009.
Also see Bernanke, Ben S., "Reflections on a Year of Crisis" (Speech), Board of Governors of the Federal Reserve System, August 21, 2009.

After the stock market bottomed in the first half of March 2009, there have been increasing signs of improvement both here and in foreign markets. While unemployment continues to rise, it does so at a slowing rate. There are indications that the housing market is bottoming. And, on an annualized basis, the country's gross domestic product (GDP) declined about 1.0 percent in the second quarter. Many expect that the GDP will grow in the third quarter, and in recent weeks there have been widespread pronouncements that the recession is "over." [9]

Q. So the economy is "out of the woods"?

A. Perhaps. The indications are that there is slow improvement in certain economic sectors. Certainly the financial markets are more stable. But many problems remain and the recovery, if indeed it is underway, is likely fragile and there are a number of possible scenarios in which it could turnback down.[10]

Q. What does this mean for PacifiCorp?

A. It likely means that electric load growth for PacifiCorp will likely remain sluggish, that is below trend, for a few more quarters, at least. Of course, if things worsen, then loads could decline.

Q. What opportunities might this slower growth create for the Company?

(Footnote 8, continued) "This Downturn is Noticeably Different," by Mark Knold, Trendlines, Utah Department of Workforce Services, September/October 2009.

[9] The Value Line Investment Survey, Op. Cit.
Bernanke, Op.Cit.
[10] Ibid.

A. One opportunity is that the Company might be able to slow its capital spending for a few quarters, thus reducing interest expense and the need for further debt financing.

B. The US Stock Market

Q. What has happened in the stock market since last year?

The financial markets are generally supporting the view that the recession, if not over, then its end is at least in view. The stock market indices have risen approximately 50 percent from their March 2009 lows to date, and Value Line analysts, thinks the market is "overbought," that is, it has risen too far too fast. Charles Schwab and Company strategists also suggest that a near-term pullback is likely.[11]

Q. What effect does a rising stock market have on cost of capital calculations?

A. Generally, rising stock prices are an indication that investors view future risks as diminishing, in other words, that the cost of equity is declining.

Q. So, from general stock market conditions you would expect cost of equity to be lower now than nine months ago.

A. Generally, yes. Of course, with specific companies and specific industries this may not be true, so one must look at the specific data for a company or industry.

[11] The Value Line Investment Survey, "Today's Market Update with…" Harvey Katz. September 15, 2009 Schwab Market Perspective: Recession, Recovery and Reaction, September 4, 2009.

C. The U.S. Bond Market

Q. How would you characterize the bond markets since the fall 2008?

A. There has been a significant improvement. While it would be difficult to exaggerate the difficulties faced by market participants especially in October 2008, most of the worst of the situation has been reduced if not eliminated. My understanding is that credit worthy borrowers are able to borrow now at rates that are not too much different than before the credit collapse in the Fall of 2008.[12]

Q. Do interest rates generally support this view?

A. Yes. DPU Exhibit 1.15 sets forth data from the Federal Reserve comparing AAA and Baa corporate bond rates with 10 and 30 year U.S. Treasury notes and bonds. These data show that while not quite back to the easy money days of 2006 and early 2007, the rates and the spreads between government and corporate bonds have improved noticeably since last fall, and are nearing the range of pre-crisis spreads. In absolute terms, the Baa bond rates are about back where they were in Spring 2007, before problems started to become apparent. Federal Reserve Chairman Ben Bernanke recently commented that "corporate bond issuance has been strong"[13] which also suggests that the markets for long-term corporate debt are functioning fairly normally.

Short-term rates likewise show improvement as set forth on DPU Exhibit 1.16 that compares 90-day T-Bill rates with 90-day LIBOR (London Inter-Bank Offer Rate) rates. The Exhibit shows that rates and spreads are more favorable now than they were a few months ago. The

[12] Bernanke, Op. Cit.
[13] Ibid.

lower rates and the narrower spreads are indicative of improved liquidity and market conditions. Ben Bernanke also commented that "Short-term funding markets are functioning more normally…."[14]

Q. What are your conclusions concerning the financial markets?

A. While the markets may not yet be back to where they were before the recession and financial crisis began, there is noticeable improvement since the end of last year. The stock market in particular has retraced a significant amount of its loss in a relatively few months. There are many signs of improvement in the debt markets as well. Certainly, the last few months have not been characterized by high volatility and panic moves. I conclude that at this point the financial markets are fairly stable and functioning.

D. Summary of the Utah Economy

Q. Has Utah's economy been affected by the downturn in the U.S. economy?

A. Yes, although in some ways it has not, as yet at least, been as severe. For example, in July 2009 Utah had lost 52,600 jobs, a decline of 4.2 percent, similar to the percentage decline in U.S. jobs, but Utah's unemployment rate stood at 6.0 percent compared to the country's 9.4 percent.[15] Particularly hard hit have been residential construction, manufacturing and business services jobs. Among the areas in the Utah, the St. George area has been one of the hardest hit.[16]

[14] Bernanke, Op. Cit.
[15] Utah Department of Workforce Services, News Release, August 20, 2009.
[16] Ibid.

However, if the unemployment rate is a high point, all is not rosy. Furthermore, the year-over-year change in housing prices is down 13.7 percent as of July 1, 2009. Foreclosure rates in Utah for the first quarter were 2.36 percent, ranking Utah 23rd lowest in the nation; the national rate was 3.85 percent. [17] However, that changed in the second quarter as reported by the Utah Department of Workforce Services:

> Utah is fifth in the nation, from June to July, for the number of households on the verge of losing their homes, with foreclosure filings rising 6.42 percent over the preceding month. Nationally, filings rose 7 percent over the last month, as the escalating foreclosure crisis continued to outpace government efforts to limit the damage…Utah's home-price appreciation, among the highest in the country three years ago, today is sixth-worst among all states. Home values dropped 11.6 percent from the second quarter 2008 to the second quarter 2009, according to a report issued by the Federal Housing Finance Agency, a government entity that tracks state values based on appraisals made during home purchases. Utah is among 46 states with a home-price decline.
>
> A second wave of home foreclosures is sweeping across St. George, among the fastest-growing U.S. metropolitan regions, with banks unloading properties seized from investors onto the market, driving down other homeowners' values.[18]

Q. What is the outlook for Utah?

A. Like the rest of the country, there is cautious optimism that the worst is over, and that the Utah economy will begin to improve. Noting that the current economic downturn is shaping up "like none seen in Utah since the Great Depression," Utah Workforce Services chief economist Mark Knold states that there are some indications that the declining work force and economy could turn around soon. "Yet, the pace of rebound will be sluggish, with stops and starts along the way. The prospects for a forceful Utah job hiring environment are not in

[17] Utah Governor's Office of Planning and Budget, "Economic Summary", August 2009.
[18] Utah Department of Workforce Services, Utah TrendLines Extra, September 1, 2009 Utah Economic News and Data.

the picture for 2009. There are concerns that it may not even emerge in 2010, although for now, that scenario seems unlikely."[19]

Q. Given the current economic situation, what are some of the ramifications for PacifiCorp?

A. As mentioned above, PacifiCorp may be able to reasonably delay some capital spending and thus avoid some debt costs. A lingering recessionary or slow-growth economy suggests that demand for electricity in PacifiCorp's service territory, including Utah, will likely also be slow-growth or, perhaps even decline. Flat or declining revenues could put pressure on Company earnings unless costs are contained. Longer term, there is reason to expect that PacifiCorp will also participate in the expected eventual return to more normal economic growth.

III. 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, 2008, along with second quarter, June 30, 2009 10-Q results. As of June 30, 2009, the capital structure was 48.35 percent common equity, 51.35 percent long-term debt and 0.3 percent preferred stock. I note that the equity percentage has been reduced significantly by the $1 billion debt issuance in January 2009. Over the course of the test year in this docket, the equity percentage is expected to increase

[19] "This Downturn is Noticeably Different," by Mark Knold, Trendlines, Utah Department of Workforce Services, September/October 2009.

288 due to equity capital contributions by MEHC and retained earnings, and as described below,
289 should average about 50.5 percent for the test year.
290
291 **Q. What are the capital structures of the comparable, or guideline, companies you used in**
292 **your analysis?** [20]
293 A. DPU Exhibit 1.3 sets forth calculated capital structures for the comparable companies I used.
294 It shows that as of June 30, 2009, only three companies, Alliant Energy, Duke Energy and
295 Portland General, have total equity percentages higher than PacifiCorp's; the average is
296 about 48 percent.
297
298 **Q. Dr. Hadaway uses some companies as comparables that you did not use. Do Dr.**
299 **Hadaway's comparable companies support an equity percentage above 50 percent?**
300 A. No. There are ten companies in Dr. Hadaway's comparable list that I did not include in my
301 list. Of these ten companies only two, ALLETE at about 58 percent and Sempra (new to Dr.
302 Hadaway's list) at about 52 percent, have an equity capital percentage above 50 percent. The
303 average of these ten companies is 46 percent equity; and, if you exclude ALLETE, the
304 average drops to 45 percent.[21]
305
306 **Q. What are the effects of PacifiCorp having a stronger balance sheet, as represented by**
307 **the equity percentage, than the average of your comparable companies?**

[20] The selection of the comparable companies will be described in detail in the cost of equity section of my testimony.
[21] See DPU Exhibit 2.4. The equity percentage data is from AUS Monthly Report, August 2009, ALLETE June 30, 2009 SEC Form 10-Q.

A. Having a stronger balance sheet helps PacifiCorp maintain its Standard & Poor's A bond rating, which in turn helps the Company to obtain debt financing at relatively favorable interest rates. On the negative side, increasing the equity capital percentage and combining that with a higher cost of equity rate may unduly increase costs to the Company's ratepayers. There is no evidence that a slight increase (i.e. one or two percentage points) in the Company's capital structure will improve the Company's bond ratings.

Q. Why do you say this "unduly" increases costs to ratepayers?

A. Because in my view there is no reason to increase the equity percentage structure at this time. The proposed increase in the equity structure is neither likely to result in an increase in the Company's bond rating, either as part of MEHC or on a stand-alone basis, nor is it likely to result in any measurable decrease in its cost of debt.[22] Thus there is no benefit to ratepayers, only the Company's shareholder. As I pointed out above, neither Dr. Hadaway's nor my list of comparable companies suggests a current weakness in PacifiCorp's capital structure *vis-á-vis* the publicly traded companies we have chosen to be reflective of PacifiCorp.

Q. What common equity percentage in the capital structure are you recommending?

A. I am recommending 50.5 percent. This percentage is based upon the Company's balance sheet from its June 30, 2009 SEC Form 10-Q and the Company's confidential responses to DPU data request 3.1 along with my estimate of Company net income for the six months ending December 31, 2009. The balance sheet as of December 31, 2009 is at the midpoint of the test year in the rate case and is assumed to represent the average for the test year.

[22] Moody's suggests that a capital structure of 50 percent equity should be adequate to maintain an A3 rating. In fact Moody's gives a range of 40 to 60 percent equity as a criterion for an A3 rating. See Moody's Investors Service, Credit Opinion: PacifiCorp, October 17, 2008, esp. last page.

Q. How did you estimate the Company's six months net income?

A. First I compiled the Company's net income for each quarter beginning March 2007 through June 2009. Based upon these data, the Company's net income for the six months ended June 30, 2007 was 46.5 percent of the final annual 2007 net income; the six months ended June 30, 2008 was 45.2 percent of the final annual 2008 net income—the average of the two periods is 45.9 percent. The net income for the six months ended June 30, 2009 amounts to $233 million. Dividing $233 million by 45.9 percent suggests that PacifiCorp will earn a total of $508 million for calendar year ended December 31, 2009, or $275 million for the last six months of the year. This compares favorably with the actual 2008 annual net income of $458 million.

Q. Why didn't you accept the Company's forecast for the last half of 2009?

A. The Company's forecast was prepared prior to the June 30, 2009 quarterly 10-Q report and had a forecasted earnings amount that was higher than the actual result for the quarter ended June 30, 2009. This suggested that a downward adjustment of the earnings forecast was warranted, and I made such an adjustment as described above.

Q. Is PacifiCorp able to control what its capital structure is?

A. Yes, to a certain extent. PacifiCorp and/or its parent, MEHC can take actions that affect capital structure. For example, in the instant matter, Mr. Williams testifies that he expects further equity capital contributions from MEHC.[23,24] The Company's equity capital

[23] Williams direct testimony, pages 3 and 7. Also see the Company's confidential response to DPU data request 3.1.

percentage could be kept at, or near, the current 48.4 percent through reduced capital contributions from its parent (or dividend payments, as necessary). However, given the Company's capital expenditure levels, and its stated intent to not pay dividends, allowing the Company to increase its equity capital percentage to approximately the levels it has been at during the last couple of years is reasonable.

Q. What are you recommending with respect to the capital structures of long-term debt and preferred stock?

A. I recommend that the capital structure for preferred stock remain at 0.3 percent. Given the 50.5 percent of common equity and the 0.3 percent preferred stock level, the long-term debt percentage becomes 49.2 percent.

IV. COST OF DEBT AND PREFERRED STOCK

Q. What did you do with respect to the cost of preferred stock?

A. I studied the testimony of Company witness Bruce Williams and the related exhibits. Mr. Williams requested the cost of preferred stock be set at 5.41 percent. The 5.41 percent figure is the imbedded cost of preferred stock. PacifiCorp has not issued new preferred stock in several years and has, in fact, retired most of the preferred stock it had outstanding at the start

[24] Although PacifiCorp has not paid dividends on its common stock to its parent since the Acquisition in March 2006, and it has indicated that it does not expect to pay dividends in the coming year. Payment of common stock dividends is another way the Company (or its parent) can control its equity capital percentage.

of this decade. The Company has not indicated any intention of issuing new preferred stock in the future. I recommend accepting the Company's cost of preferred stock rate of 5.41 percent.

Q. Do you have any issues with the Company's long-term debt rate?

A. The Company has indicated that it does not intend to issue additional debt within the test period in this docket. Therefore the requested cost of debt is the imbedded cost of debt on the Company's current balance sheet. This imbedded cost of debt includes the $1 billion in long-term debt sold in January 2009. The Division does not dispute the imbedded cost of debt of 5.98 percent.

Q. Do you have any further comments regarding Mr. Williams' testimony?

A. Yes. As he has in past cases Mr. Williams continues to bring up the issue of purchase power agreements (PPAs) and debt ratings. Mr. Williams correctly points out that rating agencies, especially Standard & Poor's, indicate that they consider PPAs as an addition to long-term debt, often at 50 percent of the estimated present value of the PPA. Mr. Williams suggests that the PPAs the Company has creates a real risk to the Company's bond ratings.[25] While that may be hypothetically true, Mr. Williams has never offered any evidence of an actual effect on the Company's bond rating and the Company's actual cost of debt. Until such time as an actual effect is demonstrated, the Division gives little credence to this part of the testimony.

[25] Williams direct testimony, p. 15.

Perhaps more significantly Mr. Williams continues to raise the market turmoil of the recent past as a real current threat.[26] While nearly a year ago the credit markets were clearly in turmoil and, on a few days, short term money was apparently completely unavailable, those issues appear to be largely behind us. Indeed, in this regard, Mr. Williams must downplay the Company's issuance of $1 billion in bonds on January 9, 2009 at very favorable rates. At the present time, it appears reasonable to assume that the credit markets are, and will continue to, operate in a relatively stable, smooth fashion.

V. COST OF COMMON EQUITY

A. SUMMARY AND CONCLUSIONS

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

A. First I identified comparable (proxy or guideline) companies that I would use to estimate the cost of equity for PacifiCorp. These comparable companies are summarized in DPU Exhibit 1.4. 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 August 31, 2009 and the 30-day (August) 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

[26] Williams direct testimony, pp. 11-14.

risk-free rate. Finally, similar to what I did in my previous testimony in Docket Nos. 07-035-93 and 08-035-38, I constructed estimates using a risk-premium model based upon Value Line financial strength ratings.

DPU Exhibit 1.5a sets forth a detailed summary of the results of the models and calculations that I have made. DPU Exhibit 1.5 sets forth my final recommendation, which is a point estimate of 10.50 percent as the cost of common equity applicable to PacifiCorp at this point in time. I would consider a reasonable range to be between 10.1 percent and 10.8 percent.

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.

The justification of using a two-stage model is that the analyst has disaggregated the future period into two distinct parts and wants to explicitly model the different parts. Usually, the analyst has two growth rate forecasts that he wants to show separately, one growth rate for the initial period, and a different terminal or perpetuity growth rate. Rarely, the analyst may also want to show different discount rates for the initial and terminal periods. The concepts of a two-stage model are sometimes extended to a three-stage (i.e. two "initial" periods followed by a terminal period) or even more.

Any multi-stage DCF model can be reduced to a single stage equivalent. Consequently, it makes no sense to use a two or more-stage model if the growth rates in the different periods are the same, since that would be equivalent to a single-stage model with that growth rate.

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). As discussed above, 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 and usually require the analyst to make many subjective judgments.

Q. As you cited earlier, the Commission in the 2002 Questar Gas Company general rate case adopted a formula using 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. Implicit as well is the concept that differences between dividend growth and earnings growth rates in the near-term have 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 and I use it as part of my analysis.

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

A. Yes. 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 useful. They would also be useful if the goal was to develop "what if" scenarios. However, in the case of cost of equity estimates, even 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, they are unlikely to be much better estimators of cost of capital, unless the analyst has a solid basis for the different growth estimates

As describe above, the results of a two or more stage DCF model have a single-stage equivalent growth rate that may not be much different from the growth rates used in a multi-stage model in a mature and price-regulated industry such as the electric utility industry. This is especially true if the long-term growth rates are expected to be approximately the same as short-term rates. However, if long-term growth rates are expected to be different from the short-term rates, then a multi-stage model is more appropriate.

In my analyses in previous dockets I did not conclude that two-stage DCF models added a lot of new information to the estimate of cost of equity for the Company. However, upon further reflection, especially given the continuing issue of using historical GDP growth rates to estimate long-term future growth for electric utilities, I have changed my mind in that the use of two-stage models, with proper inputs, gives better insight to the cost of equity issue than I previously asserted. Therefore, as discussed further below, I am giving more consideration to such models than previously.

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 through a diversified portfolio investors 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.

552 The calculation of the CAPM cost of equity for a company is straightforward and is based
553 upon readily available information. This model is widely taught in the academic literature
554 and is widely used in industry.[27]
555
556 The formula for the CAPM is as follows:
557 $$k_e = RFR_0 + \beta * (MR\text{-}RFR)$$
558 Where: k_e is the cost of common equity
559 RFR_0 is the current risk free rate
560 β is beta, the risk adjustment factor
561 (MR-RFR) is the market risk premium, which can be decomposed
562 into two factors: the overall market return, MR, and the
563 RFR that is compatible with the way the MR was
564 estimated.
565

566 **Q. Please briefly discuss the strengths and weaknesses of the CAPM.**

567 A. The strengths include a firm theoretical basis for the model, its relative simplicity and
568 intuitive appeal. The model is widely taught and apparently widely used in corporate
569 America. The downside of the model is that there is little consensus on how each of the
570 factors are developed and the model implemented.
571
572 Different analysts will choose different risk free rates, which will affect the outcome, as I
573 demonstrate in my application. Academics sometimes favor using a Treasury Bill rate as the
574 most nearly true risk free security, while practitioners (including this one) favor longer-term

[27] 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.*

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 my analyses I use Value Line betas and betas from other sources.

Perhaps the most hotly debated factor is the market risk premium; that is, the premium return investors demand from 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.[28] 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 are 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.[29]

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 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. Indro and Lee demonstrated that both the arithmetic and geometric returns are biased estimates of investor returns over more than one period of time (they used months as their units of time), but that for longer periods of time, the geometric return becomes the better estimator. For one period forward the arithmetic average is an unbiased estimator of investor returns (the geometric is biased for one period as well), but if the returns are to be calculated for longer terms, the geometric return becomes better. Indro and Lee advocate using a weighted average between arithmetic

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

and geometric returns for terms of more than one period.[30] For these reasons and others, some experts advocate geometric returns.[31] In short, there is great dispute about how the market risk premium should be estimated.

I have used the Ibbotson Associates data because they are 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 in academic literature, by

[30] Indro, Daniel C. and Wayne Y. Lee, "Biases in Arithmetic and Geometric Averages as Estimates of Long-Run Expected Returns and Risk Premia," Financial Management, Vol. 26, No. 4, Winter 1997, pp. 81-90.
[31] For a discussion of geometric versus arithmetic averages, see Damodaran, Op. Cit. pp. 161-162.
PPC's Guide to Business Valuations, Volume 1, paragraph 502.8, Practitioners Publishing Company, Fort Worth Texas, February 2006.
and
Damodaran, Aswath, "Equity Risk Premiums (ERP): Determinants, Estimation and Implications," September 2008 (with an October update reflecting the market crisis)" http://www.damodaran.com, see recently published articles.

corporate chief financial officers, and Wall Street analysts, and has an established 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.[32] 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. Not necessarily. I offer it because I personally use it and compare it with other estimates.

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 weaknesses 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

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

687 universe even though they share the same financial strength rating. Finally, the model has
688 not been published and consequently is not widely known or tested.
689
690 **C. COMPARABLE (PROXY) COMPANIES**
691 **Q. What are the "comparable companies" you referred to and how were they chosen?**
692 A. One of the first steps in the estimate of cost of equity is the selection of publicly traded
693 "comparable" companies whose market returns and characteristics are studied in order to
694 infer from them what the appropriate cost of equity should be for PacifiCorp. The selection
695 and use of comparable companies is obviously critical since PacifiCorp itself is not an
696 independent, publicly traded company. However, even if PacifiCorp were publicly traded it
697 would be advisable to compare it with closely related companies in its industry. The
698 Company's witness, Dr. Hadaway, chose 19 companies as cited in his testimony.[33] I made a
699 selection of 12 companies, but only nine overlap with Dr. Hadaway's list. The criteria I used
700 to select comparable companies included (1) similar bond ratings to PacifiCorp; (2) similar
701 size to PacifiCorp; (3) significant thermal generation capacity; (4) at least 60 percent of
702 revenue and/or income derived from electric utility operations; and (5) "Other."
703
704 More specifically, I chose companies whose bond ratings ranged from BBB+ to A+
705 (Moody's Baa1 to A1) for at least one of Standard & Poor's or Moody's. This range is based
706 upon PacifiCorp's bond rating of A as part of MEHC and BBB as a free-standing firm. For
707 size the company's revenues and net plant in service had to be within plus or minus 2.5 times
708 that of PacifiCorp. Thermal generation capacity was considered "significant" if it was at least
709 30 percent of the total. Percent of revenues and income was explained above, although I

[33] In his supplemental testimony in Docket No. 08-035-93, Dr. Hadaway used 15 companies as comparables.

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 60 percent of its income from its electric operations and 16 percent from its regulated natural gas business.

DPU Exhibit 1.4 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.

Q. Did you perform any other analyses that show that the companies you selected are generally comparable to PacifiCorp?

A. Yes. DPU Exhibits 1.17a and 1.17b was created to compare PacifiCorp with my list of comparable companies using ratio and other financial measures. For a number of these measures PacifiCorp is fairly typical of the comparable companies. However, the Company is consistently average or below average in return on equity and return on assets and in revenues per fixed assets. Part of the reason for the below average ranking for revenues per fixed assets may be due to the Company's wide geographic area that services a relatively small population base (i.e. the Company's customers per square mile of service territory is below average). This requires PacifiCorp to invest in plant to service this large region without the population density that other utilities have.

On the other hand the Company's operating income as a percentage of revenues is favorable compared to the other companies which suggests relatively good cost control performance by

the Company. Despite this favorable performance, the Company has failed to earn its authorized return on equity for a number of years.

Q. What are your conclusions regarding comparable, or proxy, companies?

A. I conclude that the companies I have selected and set forth on DPU Exhibit 1.3 and following exhibits are reasonably similar to PacifiCorp. The financial ratio and rate of return analysis indicates that PacifiCorp is generally close to the average of these proxy companies, although it is not currently earning its authorized rate of return and the low revenue-to-fixed-asset ratios are probably a practical result of the Company's extensive geography.

D. APPLICATION OF COST OF EQUITY MODELS

Q. What is the consequence of the turmoil in the financial markets in the preceding year on your equity models?

A. In the first instance, all of the cost of equity models assume the existence of functioning markets that are reasonably stable and rational. For the last quarter of 2008 through first quarter 2009, it was questionable that this underlying assumption was valid. However, as discussed above, the markets have rallied from their March 2009 lows, credit spreads have significantly narrowed back towards their normal ranges and market volatility has been greatly reduce in recent months. Therefore, there is relatively little concern in this regard with using the standard 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 day average closing price. The 30 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 August 31, 2009 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 September 1, 2009, and combined those with the consensus earnings growth estimates reported on the Yahoo! Finance, Zack's and Reuters web sites for each comparable company. I also considered the recent Standard & Poor's reports on these companies. The Zack's, Reuters, and Yahoo's web sites were accessed on September 1, 2009. DPU Exhibit 1.6 sets forth the earnings growth rate forecasts. Included in DPU Exhibit 1.6 is an alternative Value Line calculation explicitly based upon the latest historical earnings per share as reported by Value Line in its 3- to 5-year forecast. DPU Exhibit 1.6 also contains 3 to 5 year dividend growth forecasts from Value Line and AUS Consultants as well as Gross Domestic Product growth forecasts.

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, Standard & Poor's and Yahoo!, and a 25 percent weight to the average forecast dividend growth rate from Value Line and AUS, and to the earnings growth-only models pursuant to the Commission's decision in Questar Gas Company, Docket No. 02-057-02. For comparison I have also made

dividend growth-only calculations. DPU Exhibit 1.7a sets forth these calculations of the DCF model using this weighted growth rate and the August 31, 2009 spot price and DPU Exhibit 1.7b sets forth the same calculations but based upon the August 2009 average price. DPU Exhibits 1.8a and 1.8b set forth my adjusted rates using the spot and August 2009 monthly average prices, respectively. The adjusted rates were derived by eliminating any cost of equity estimates that were less than 9.5 percent or equal to or greater than 11.5. The lower and upper bounds were selected based upon my judgment that a rate less than 9.5 percent is unreasonable within this particular exercise and that the upper bound symmetrically eliminated the highest two estimates based upon the 75-25 percent weighting. All of these estimates are summarized on DPU Exhibit 1.5.

An additional set of single-stage DCF estimates is included on DPU Exhibits 1.9a and 1.9b; where again DPU Exhibit 1.9a is based upon the spot price and DPU Exhibit 1.9b is based upon the August 2009 monthly average price. In these exhibits I have calculated cost of equity estimates using the historical 10-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 based upon historical growth rates warrant significant consideration in the final estimate of the cost of equity for PacifiCorp. However, a comparison between the actual growth rates and the forecast growth rates is useful, and highlights the possibility that analysts' forecast growth rates may be optimistic.

As set forth on DPU Exhibit 1.5a, the results of the single-stage models using the 75-25 percent weighting, on earnings, and on dividend growth resulted in a range of 9.71 to10.91 percent. The adjusted earnings-only growth models yielded an average of 10.9 percent. The dividend-only growth models ranged from 9.71 to 10.75 percent.

I gave more weight to the forecast earnings models and the 75 percent EPS and 25 percent dividend forecast growth models.

Q. In DPU Exhibit 1.6 the Standard & Poor's (S&P) earnings growth estimates contain two estimates of negative growth. Is it reasonable to include a negative growth rate when calculating a rate of return in this instance?

A. Yes and no. The analyst growth rate forecasts, including S&P's, are relatively short-term forecasts covering three to five years. During a relatively brief interval a company's earnings can decline for various reasons. S&P has identified reasons for the negative growth forecasts. Longer term, it is less reasonable to assume a negative growth rate unless one expects a company to go out of business.

Q. How did you deal with the S&P negative growth rates?

A. I left them in the mean growth rates calculated in DPU Exhibit 1.6 if the growth rate was going to be used for short-term calculations. Specifically, in the two-stage models (discussed below) if the first five years' dividend growth were based in whole or in part on the earnings growth rate forecasts, then the negative growth rates were included in the estimate of the near-term dividend growth. The two negative growth rates were excluded from both the "adjusted S&P" growth rates, which were used in all single-stage DCF models that included earnings growth rates, and the two-stage models where the terminal stock price was determined by the earnings growth rate forecast. In this way, the short-term growth rates accounted for the possibility of negative growth, but in the longer term, such growth rates were assumed in this case to be unreasonable and therefore excluded.

2. Two-Stage DCF Models

Q. Please describe the Two-Stage DCF models you used.

A. I noted from the results of the single-stage models that there was little practical difference from the results using the August 31, 2009 spot price and the August 2009 monthly average price. Therefore, to reduce the total number of models that would largely be duplicative; I used only the August 2009 monthly average stock prices.

In developing two-stage DCF models I forecast the current dividends of each comparable company out five years in three different ways. First, I assumed that the dividends grew at the average forecast dividend growth rate. Second, I assumed that the dividends grew at the weighted average of 25 percent average forecast dividend growth rate and 75 percent of the average forecast earnings growth rate. And lastly, I assumed average forecast earnings only.

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 a terminal growth rate. The terminal growth rate was estimated several different ways. One estimate was the PacifiCorp IRP long-term growth rate that was based upon the Company's 1.9 percent inflation factor and the 2.2 percent average long-term growth rate in peak load forecast for Utah resulting in about a 4.1 percent long-term growth rate.[34] The second long-term growth estimate was to use the average of the long-term forecast GDP growth estimates set forth on DPU Exhibit 1.6 which was 4.51 percent.

The final long-term growth estimate is based upon the hypothesis that electric growth will be less than long-run GDP growth due to continued efforts at efficiency. In this regard (for energy generally) Value Line recently stated "[e]nergy use in the United States has traditionally increased slowly as demand from a growing population and economy was partially offset by steady gains in energy efficiency."[35] Comparing the average historical real GDP growth over the 1968 to 2008 time period compared to growth in electric load demand and to the GDP's own "utility" subcomponent yields ratios of electric load growth to GDP growth and GDP Utility growth to GDP of about 38 percent and 84 percent, respectively (see DPU Exhibit 1.6). Accepting that electric demand and consequently real long-term growth for an electric company is about 84 percent of real GDP, a long term growth estimate for an

[34] PacifiCorp 2008 Integrated Resource Plan,, p. 72 and p. 138.
[35] Value Line Investment Survey, September 11, 2009, p. 517.

electric company can be estimated. Using the EIA's real long-term growth estimate in GDP of 2.4 percent times 84 percent and combining that with the long-term forecast inflation rate of 2.02 percent results in a long-term nominal growth rate of approximately 4.1 percent.[36] DPU Exhibit 1.10 sets forth the calculations of the two-stage DCF growth rates based upon the above forecast assumptions. The estimates from these two-stage DCF models range from 9.63 percent to 10.74 percent.

By design, the estimate based upon a terminal value using earnings growth is likely to be toward the higher end of the range, because the terminal value arrived at by capitalizing dividends at the earnings forecast growth rate gives the highest likely estimate.[37] Similarly, the estimate using the Treasury bond yield in the terminal value may be at the low end because of the relatively low Treasury bond yields.[38]

3. CAPM Results

Q. How did you develop your CAPM models?

[36] In my testimony in Docket No. 08-035-38 a terminal growth rate was assumed to be equal to the yield on 20-year U.S. Treasury bonds, which averaged 4.33 percent in August 2009. Use of a long-term interest rate is based upon the assumption that the real rate of return component of the bond yield is equal to the real growth rate, thus the long-term growth rate is equal to the U.S. Treasury bond rate. Note that the 4.33 percent figure is consistent with the other long-term growth estimates. See Demodaran, October 2008, page 53.

[37] That is, the 5 percent average estimated growth rate is a faster growth rate than the economy as a whole is expected to grow going forward. A regulated utility is unlikely to grow faster than the economy for long periods of time. See Section VI. COMMENTS ON DR. HADAWAY'S COST OF EQUITY RESULTS for a discussion regarding GDP growth rates and utility companies.

[38] I note that the median estimates of the two-stage growth models are consistently higher than the mean by an average of 13 basis points. This might be justification for increasing the average two-stage estimate by 10 to 15 basis points (0.10 to 0.15 percent).

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 August 2009 month average of the 90-day Treasury bill (T-bill) yield, which was about 0.17 percent, and the 20-year Treasury bond, which was 4.33 percent. Academics have tended to use the T-bill rate, the closest rate to a "true" risk free rate since it contains inflation and little time horizon risk. Practitioners often use longer-term rates in order to match the assumed 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). Nonetheless, I show the results of the Treasury bill rate as the risk-free rate in the CAPM. However, to be consistent, the estimated market risk premium should correspond to the type of risk free rate one chooses.

One of the reasons that the Treasury bill gives noticeably lower CAPM results than the 20-year bond is current Federal policy. The market turmoil of the recent past has led the U.S. Federal Reserve to maintain policies that tend to keep short-term interest rates abnormally low, especially when compared to longer-term bond rates. This is reflected in the historically very low rate on the short-term 90-day U.S. Treasury bill. Therefore, at this time, I do not consider the CAPM results using Treasury bills to be reasonable estimates of cost of equity.

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 1.12e I use an average of betas derived from Zack's, Reuters and Yahoo! Finance web sites. DPU Exhibit 1.11 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 include the rise of mutual funds for small investors and more recently exchange traded funds (EFTs) as well as 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 the Sarbanes-Oxley legislation. Furthermore, there have been suggestions and studies that indicate 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 short enough to focus on the more recent data of the modern financial markets. However, a 30- to 50-year period does not avoid all of the pitfalls of using historical data. Some authorities recommend that at least 30 years be used when basing an estimate on historical data.[39]

Q. Why 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.

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's calculation 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.[40] Thus while I am willing to include the results for the 82-year period for the consideration of the Public Service Commission, I believe these estimates may not be appropriate.

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

[40] 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.

945

946 **Q. What were your results from CAPM?**

947 A. The CAPM models using the 20-year T-bond yields as the risk free rate range from 7.66
948 percent to 9.14 percent with an average of 8.30 percent. DPU Exhibits 1.12a through 1.12e
949 detail the CAPM calculations. DPU Exhibit 1.5a gives a summary of the results.

950

951 **Q. These results are about 1.15 percentage points higher than the results you had for**
952 **Docket No. 08-035-38. Can these relatively higher figures be considered reasonable?**

953 A. I think they should be given some consideration since they reflect the current values given by
954 this widely used model. The upper 8.6 to 9.1 percent range is 400 to 450 basis points above
955 the risk-free rate, which is fairly typical for utility companies. Given the opportunity to earn
956 4.3 percent on a Treasury bond, or 8.6 to 9.1 percent on a utility stock, an investor may well
957 choose the utility stock as a reasonable expected return for the additional risk.

958

959 4. Risk Premium Results

960 **Q. What were the results of your risk premium model based upon Value Line financial**
961 **strength weightings?**

962 A. The results ranged from 8.78 to 10.24 percent based upon the 20-year Treasury bond,
963 roughly 120 basis points higher than the CAPM results. Again, I do not consider the
964 Treasury bill-based results to be particularly useful. DPU Exhibit 1.13 details these results.

965

966 **Q. What do the risk premium results suggest to you?**

"Values should lower equity risk premium component of discount rate," Business Valuation, 9 (11), November, 2003, pp. 1,6.).

A. The risk premium results support the high-end CAPM results, and the low-end DCF results. I give some consideration to them in that they are suggestive that the DCF model results may be too high.

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 am in general agreement with Dr. Hadaway. Then I will discuss areas of differences and disagreements.

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

A. Dr. Hadaway points out that the assumptions supporting the DCF model in general and the single-stage version of that model in particular, may be violated by the lack of stability in the markets and stability in the historical results and forecasts.[41] I generally agree with his discussion of this point. I would add that for the whole of my professional career, back to the early 1980s, dividend growth forecasts have generally been lower than earnings growth forecasts. This raises the question of whether investors really expect, or should expect, dividends to equal earnings over the long term. The historical data set forth on DPU Exhibit 1.9a support this contention. This brings into question the direct use of earnings growth rates, whether forecast or historically based. The problem with these questions is what should the replacement model be? CAPM and other risk premium models have their problems as well.

[41] Hadaway direct testimony, p. 13, lines 278 to 284.

In this regard I note my agreement with Dr. Hadaway that there is no consensus on "how risk premium data should be used."[42] I would indicate that Dr. Hadaway should have at least considered a CAPM estimate, even if he later declined to give it any weight. I believe that an analyst should consider all of the widely used models, of which, especially CAPM is one.

As I alluded to earlier, I have included in my list of comparable companies nine of Dr. Hadaway's nineteen comparable or proxy companies, so I am in agreement with his comparable companies to that extent. I agree with Dr. Hadaway's general formulation of his DCF model and also agree with the use of analyst growth forecasts.

That outlines my general agreements.

Q. With regard to differences or disagreements, let us start with the comparable companies. Why did you not include the other ten companies that Dr. Hadaway included?

A. The bottom part of DPU Exhibit 1.4 summarizes my reasons for excluding these ten companies. ALLETE, DPL and IDACORP were judged to be too small based on the criteria I outlined earlier. Moreover, ALLETE also has a significant real estate development operation in Florida that is affecting its earnings and outlook. Vectren has relatively low electric utility operations and is more of a natural gas utility than an electric utility. Consolidated Edison and NSTAR have essentially no generating capacity of their own; instead they purchase all of their power. I might have included Edison International and PG&E except that their thermal generation capacities are minimal. Sempra Energy, which

[42] Hadaway direct testimony, p. 16, lines 347 to 348.

Dr. Hadaway adds to his list for the first time, purchases most of its energy and has substantial income (about 47 percent) from non-regulated activities. Last year I included FPL Group, as Dr. Hadaway does this year, but I have excluded it this year because I have concluded that its recent historical and its forecast growth rates are driven primarily by its non-regulated businesses. Based on these observations, I have elected to exclude these ten 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. As he did in his testimony in the previous PacifiCorp general rate case, Docket No. 08-035-38, Dr. Hadaway concludes that the best growth rate is his estimate of 6.2 percent which he calculates as a weighted average of change in nominal GDP back to 1947, basically the post World War II period. While it is omitted this time, in an earlier PacifiCorp rate case, Docket No. 07-035-93, he sought 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. Although he avoided providing the actual statistics along with his chart, 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. 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 2009 to 2019 (updated August 2009). Likewise the Energy Information Administration (EIA) annually publishes their long-term GDP forecast in *Annual Energy Outlook 2009* (April 2009). Currently the CBO forecast is for nominal GDP to grow -0.7 and 2.9 percent for 2009 and 2010, respectively; and 4.17 percent annually over the 2009 to 2019. The CBO also provides the private *Blue Chip* forecasts for comparison. Blue Chip is forecasting a 4.9 percent nominal GDP growth rate out in the 2016 to 2020 time period. The EIA forecasts growth rates of -2.9 percent for 2009 and 1.4 percent for 2010. Its long-term growth rate is about 4.47 percent over the period 2007-2030. If these estimates of GDP growth were used in Hadaway's DCF models, his results would be about a percentage point less than he reported in his direct testimony.

Dr. Hadaway computed two risk premium models 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 2008 time period. From these data Dr. Hadaway imputes an equity return of 11.66 percent for the first model, and 10.77 percent for the second model. 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. For example, many of the rates may be based upon negotiated

settlements for which tradeoffs between stated cost of equity rates and other parts of the rate case may have been made. Another question is the policies in the different jurisdictions in terms of what evidence for rate of return testimony is accepted and how the regulators ultimately use that testimony.

In a third risk premium model Dr. Hadaway adds 370 to 550 basis points to a 6.47 percent March to May 2009 average of long-term single-A utility bond yields The 370 to 550 basis point add-ons are based upon Ibbotson/Morningstar data from 1926 to the present. The lower risk premium, 370 basis points is based upon a geometric average return and the 550 basis point risk premium is based upon an arithmetic average. I have previously commented on the use of the 1926 to present time period in that it includes business and economic conditions that are now far different from the current situation. For this type of risk premium model I would use the Company's own (current market) cost of debt for which, based on its last debt issuance, is about 6.0 percent, which would lower Dr. Hadaway's estimates by 47 basis points.

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. DPU Exhibit 1.14 analyzes the authorized return data found on Schedule 5 of Dr. Hadaway's testimony in this docket. The simple trend analysis predicts that authorized returns in 2010 will approximate 9.5 percent. These data may indicate the principal of gradualism in regulation in response to changing interest rates and also may say something about the timing of rate applications; that is, a

utility may choose when to come in for a rate case when the utility believes the results from the rate case will be most favorable to it.[43] However, a trend analysis doesn't predict changes in the trend. Thus my analysis here only serves to show an alternative way to analyze Dr. Hadaway's data and not, in this case at least, to estimate what PacifiCorp's allowed rate of return should be.

Some of the differences between my calculations and Dr. Hadaway's relate to the differences in time. Since Dr. Hadaway prepared his analysis, analysts have systematically reduced their forecast growth rates. Also stock prices are higher which have reduced dividend yields. Also, for reasons stated earlier, my list of comparable companies is not the same as his. And I have included earnings growth estimates from Standard & Poor's which, on average, are lower than the other analyst estimates. Together these effects would reduce Dr. Hadaway's estimates using analyst forecasts about 100 basis points. The effect of reducing Dr. Hadaway's historical weighted average GDP growth rate to a 4.50 percent forecast GDP growth rate would reduce his estimates using GDP growth by about 170 basis points.

My conclusion is that while I reject Dr. Hadaway's 6.2 percent GDP-based growth rate, and question his use of historical authorized returns as a basis for a current cost of equity estimate, the range of his estimates 10.17 to 12.00 percent overlap my point estimate and my reasonable range although only Dr. Hadaway's lower risk premium models do. In this regard, Dr. Hadaway's results support my own conclusions. Making further adjustments cited above would put Dr. Hadaway's estimates in the 10.1 to 10.8 percent range.

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

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 long-term debt is reasonable.

With respect to cost of capital, I have estimated the average equity capital structure to be 50.5 percent, which is 50 basis points lower than the Company's request.

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 10.1 to 10.8 percent range. After reviewing all of the data I concluded that a point estimate of 10.50 percent is appropriate.

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.[44,45]

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 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 those rights 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. My recommended 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. It is also well within the range of equity capital percentages required by Moody's and other rating agencies for the maintenance of an "A"debt rating. The

[44] Bluefield Water Works and Improvement Company v. Public Service Commission (262 U.S. 679), (1923).
[45] Federal Power Commission v. Hope Natural Gas Company (320 U.S. 591), (1944).

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. Some of Dr. Hadaway's results also support a 10.50 percent cost of equity. As a result, I conclude that the 10.50 percent cost of equity is not outside any range of expectations of Wall Street. Therefore I conclude that at this time the cost of capital estimates set forth on DPU Exhibit 1.2 are just and reasonable and in the public interest.

Q. What is your recommendation?

A. My recommendation is that for PacifiCorp and its division Rocky Mountain Power the Commission adopt as the authorized cost of equity for its operations in Utah of 10.50 percent and an overall weighted average cost of capital of 8.26 percent.

Q. Does this conclude your testimony?

A. Yes.