BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Application of Rocky Mountain Power for Authority To Increase its Retail Electric Utility Service Rates in Utah and for Approval of Its Proposed Electric Service Schedules and Electric Service Regulations.	))))))))	**DOCKET NO. 11-035-200** **Exhibit No. DPU 1.0 Direct COC** **Direct Testimony and Exhibits** **Charles E. Peterson**

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

Direct Cost of Capital Testimony of

Charles E. Peterson

May 31, 2012

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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 began working at 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. 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 07-057-13, respectively). In early 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. Subsequently I provided written testimony and oral cost of capital testimony in the previous PacifiCorp general rate case Docket No. 09-035-23 and written testimony in Docket No. 10-035-124.

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 have been the lead on a number of QF contract cases. 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). More recently, I was the Division's primary witness in the ECAM docket (Docket No. 09-035-15) and the All Source RFP docket (Docket No. 10-035-126).

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.[1] 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.

[1] 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 I will primarily refer to PacifiCorp, rather than RMP.

Q. In previous PacifiCorp rate cases, 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, 07-057-13 and 09-035-23 made reference to different methodologies, but did not discuss the merits of the methodologies.[2] In this case I continue to use the same methodologies (cost of equity estimation techniques) as I did in those dockets and most recently in Docket No. 10-035-124.

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. 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.

[2] In particular, in those dockets 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. With the same caveats, I provide CAPM information in this docket.

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 Dr. Hadaway's testimony with which I agree and disagree.

In order to prepare testimony, I set a cut-off of May 14, 2012 for stock prices, and the considered the average debt rates for the month of April and first two weeks of May 2012.

Q. Please summarize your conclusions.

A. I have concluded that the appropriate point cost of equity for PacifiCorp is 9.30 percent; I suggest that a reasonable range for cost of equity would be 9.00 percent to 9.60 percent. The Division does not challenge at this time the Company's requested returns on preferred stock or its requested capital structure. Generally, I do not dispute the Company's long-term cost of debt calculations; however, subsequent to the writing of the Company's direct testimony, PacifiCorp issued $100 million in 10-year debt at a coupon rate of 2.95 percent which it primarily used to pay off four relatively high-yield municipal pollution control revenue bonds.[3] I have estimated the effects of these transactions to arrive at a cost of debt of 5.36 percent. Company witness Mr. Bruce Williams had testified in his direct testimony to a cost of debt figure of 5.41 percent.[4] It is my understanding that Mr. Williams will be updating his

[3] In January 2012 the Company issued $650 million in long-term debt: $350 million in 10-year bonds at 2.95 percent and $300 million in 30-year bonds at 4.10 percent. The average coupon rate was 3.48 percent. These debt issuances are included in the Company's testimony (Williams).
[4] Direct Testimony of Bruce N. Williams, Docket No. 11-035-200, February 2012, page 2.

testimony in rebuttal. I may adjust my estimate in surrebuttal based upon Mr. Williams' revision.

The Company anticipates issuing $400 million of additional long-term debt in March 2013 at a coupon rate of 4.32 percent.[5] The Division has no disagreement with the Company's preferred stock return of 5.43 percent.[6]

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

A. In its filing dated January 24, 2011, the Company asked for the following cost of capital rates of return:[7]

Component	Structure	Cost
Long-Term Debt	47.6%	5.41%
Preferred Stock	0.3%	5.43%
Common Stock	52.1%	10.20%
WACC	100.0%	7.91%

Q. What have you concluded with respect to the Company's filed testimony?

A. As outlined above, I concluded that the costs of the preferred stock and, with the adjustment described above, long-term debt are reasonable. I have also concluded that the requested capital structure is not unreasonable given the Company's on-going capital expenditure program. I believe that the cost of equity estimate recommendation by Dr. Hadaway is

[5] Williams, Exhibit RMP (BNW-7), page 2 of 3.
[6] Williams, Exhibit RMP (BNW-10).
[7] Williams, page 2.

outside a reasonable range on the high side. I believe the public interest would be better served if PacifiCorp's authorized cost of equity were set at 9.30 percent.

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 7.41 percent. The following table summarizes the capital structure and cost of capital point estimates supported by the Division.

Component	Structure	Cost
Long-Term Debt	47.6%	5.36%
Preferred Stock	0.3%	5.43%
Common Stock	52.1%	9.30%
WACC	100.0%	7.41%

II. REVIEW OF THE CURRENT ECONOMY

A. The United States Economy

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

A. The U.S. economy officially suffered through a recession between December 2007 and June 2009.[8] This recession was characterized by declining housing prices, an increase in mortgage foreclosures, rising unemployment, and, of course, nearly unprecedented turmoil in the financial markets. The severe difficulties in the banking systems have resulted in

[8] National Bureau of Economic Research, Business Cycle Dating Committee, Report, September 10, 2010. http://www.nber.org/cycles/sept2010.html Last accessed May 4, 2011.

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 was probably the worst since the 1930s.[9]

Since the summer of 2009, the U.S. economy has been growing. The stock market is essentially up 100 percent since its March 2009 lows. Unemployment has declined, although not as much as hoped, industrial capacity utilization has improved, and corporate profits are up from their recession lows which have been driving the stock market upward. In spite of the improvement in the economy since the end of the recession, economic growth has been somewhat sporadic with unemployment and housing being notable laggards, although there are signs that the housing industry is finally on an upward trend. Industrial production and retail sales have also been improving.[10] In this regard the Federal Reserve's Open Market Committee recently stated that "Information received since the Federal Open Market Committee met in March suggests that the economy has been expanding moderately. Labor market conditions have improved in recent months; the unemployment rate has declined but remains elevated. Household spending and business fixed investment have continued to advance. Despite some signs of improvement, the housing sector remains depressed. Inflation has picked up somewhat, mainly reflecting higher prices of crude oil and gasoline. However, longer-term inflation expectations have remained stable."[11]

[9] 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. "This Downturn is Noticeably Different," by Mark Knold, Trendlines, Utah Department of Workforce Services, September/October 2009.
[10] Value Line. "Quarterly Economic Review," May 25, 2012.
[11] Federal Reserve "Press Release," April 25, 2012.
http://www.federalreserve.gov/newsevents/press/monetary/20120425a.htm Accessed May 25, 2012.

Value Line estimates that real U.S. gross domestic product (GDP) will increase by 2.3 percent in 2012 and 2.5 percent in 2013. Value Line forecasts inflation as measured by the GDP price deflator to remain fairly subdued at about 1.8 percent over the next 3 to 5 years.[12] The Congressional Budget Office (CBO) forecasts real GDP to increase 2.2 percent in 2012 and 1.0 percent in 2013. Over the period of 2011-2022, the CBO forecasts real GDP annual growth to average 2.89 percent[13] The Energy Information Administration (EIA) forecasts annual real GDP growth at 2.56 percent over the 2010-2025 period, declining to 2.56 percent over the 2010-2035 period.[14] Despite the somewhat disparate forecasts, the important point to note is that these forecasts all suggest modest growth for the United States economy.

Q. In the media the term "fiscal cliff" has come up. What is the "fiscal cliff'' and how might that affect the economic outlook?

A. The "fiscal cliff" refers to the U.S. federal tax increases and spending cuts scheduled to occur at the end of 2012 if Congress and the President do not act. Tax increases approximate $410 billion and spending cuts amount to roughly $120 billion. The negative impact on the economy of these tax increases and spending cuts is estimated to reduce GDP by 2.4 to 4.0 percent depending on who's doing the estimating.[15] "We remain concerned about [the Congress and President's] ability to get anything substantial done and believe this is one of the biggest current risks to our relatively optimistic outlook."[16] The "fiscal cliff" does have

[12] Value Line Investment Survey, Economic Series, May 25, 2012.
[13] CBO, Economic Projections, Table 2.1, January 2012.
[14] Energy Information Administration , "Annual Energy Outlook 2012 Early Release Overview," Release Date: January 23, 2012.
[15] "Month of May: Sell and Go Away, or Hang in There?" Liz Ann Sonders, Charles Schwab & Co., Inc. May 14, 2012
[16] "Schwab Market Perspective: Here We Go Again…or Not?" Sonders, Liz Ann, Brad Sorensen , Charles Schwab & Co., Inc., May 11, 2012

the potential of significantly impacting stock prices in a negative way. Everything else being equal, falling stock prices would result in a general increase in the cost of equity.

Q. What about the international economy, couldn't that have an effect too?

A. Yes. The developed economies of the United States, Canada, Europe, and Japan, as well as the rapidly developing economies of China, India, and Brazil, among others, are increasingly tied together through international trade and certainly through international finance. Significant problems in any of those areas will have some negative effect on the U.S. economy.

Q. What is your understanding of the current state of the international economy?

A. One does not have to look too hard to find daily reports of turmoil in Europe as a result of the debt crises in several countries, especially Greece. There are also signs that the Chinese economy is slowing down. Generally, the world economy is currently not booming ahead.

Q. How does this situation affect the United States economy?

A. Generally the current international situation will be a drag on the on-going efforts to recover from the 2008-2009 recession. On the positive side, these foreign difficulties have kept the U.S. dollar and U.S. dollar denominated debt in demand. Consequently, the European problems in particular are probably helping to keep U.S. interest rates low.

Q. What does this mean for PacifiCorp?

A. It likely means that electric load growth for PacifiCorp will remain sluggish, that is below

trend, for a few more quarters. Of course, if things become worse, then loads could decline. For now, though, PacifiCorp has been experiencing growing revenues and load demand over the last year or so.[17] Based upon the Federal Reserves' stated intention to keep interest rates low through late 2014, and the problems in Europe and elsewhere keeping the demand up for the U.S. dollar, PacifiCorp can reasonably expect to continue to issue debt at relatively low interest rates probably through 2013 and perhaps beyond.

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

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?

Over the past twelve months (roughly mid-May 2011 to mid-May 2012) there has been a dichotomy in the stock market. The stock prices of generally larger, well-established companies have held up well over that period as indicated by the 12-month changes in the Dow Jones Industrial Average (up 0.4 percent), the Standard & Poor's 500 Index (down 0.4 percent) and the NASDAQ 100 (up 9.6 percent). However, smaller companies have not fared as well as suggested by the New York Stock Exchange Composite Index (down 8.9 percent) and the American Stock Exchange Index (down 3.6 percent).

[17] Energy Information Administration (EIA), Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions."

Q. What is the outlook for the stock market over the next year or so?

A. Value Line in its "Quarterly Economic Review" dated May 25, 2012, makes the following comments:

> **The stock market—underpinned by better-than-expected earnings, and supported by reasonable valuations and the sense that such celebrated investment alternatives as money market funds, other fixed-income vehicles, and real estate, offer fewer potential opportunities near term—has done well so far this year. However, recently, profit taking has cut into the 2012 gains, as fears of slowing GDP growth in the United States and the fast-eroding outlook in the euro zone have raised the level of fear among traders and investors. We do not think that we are in a full-blown correction, although conceding that some retracement—after the furious bullish run we've had—is normal. That said, we sense that the market, albeit vulnerable to a further pullback, given the current troubled global outlook, could resume its climb, and rather soon, should the economy and profits both improve—even irregularly—as 2012 proceeds.**
>
> **We remain generally positive on the U.S. equity market, particularly given the lower valuations likely to evolve from the presumed modest bout of profit taking that is now under way.**

Charles Schwab market strategist, Liz Ann Sonders, was recently more ambiguous with her comment "[That] there's much to fret about, and volatility is likely to remain elevated until this correction has run its course. But a lot has changed in the past two years—much for the better—particularly for domestically oriented US companies. There's at least a little bit of decoupling underway, certainly between the United States and Europe, and that's likely to assist in keeping the correction from mirroring the ones in 2010 and 2011." [18]

Q. What effect does this mean for cost of capital calculations?

[18] Liz Ann Sonders, Op. Cit., May 14, 2012.

A. My view is that we are in a period of generally side-ways action in the stock market. There will be periods of decline and periods when the market rallies. The effect is that cost of equity is likely to have no consistent trend, up or down, over the next few quarters. However, if the financial situation in Europe worsens, it is possible that that would benefit the United States financial markets as money come here seeking a safe haven.

C. The U.S. Bond Market

Q. How would you characterize the bond markets?

A. Since July 2009 corporate bond rates have steadily declined in concert with the Federal Reserve's low interest rate policies. Over this period the interest rate spread between Aaa rated corporate bonds and Baa rated corporate bonds have been reasonably stable, but have fluctuated somewhat between about 0.75 percent and 1.30 percent. The average spread has been somewhat higher than the approximately 0.90 percent spread that was typical of the period 2006-2007; however, during that period there was no discernible trend in rates, whereas in the recent period Aaa rates have declined somewhat faster than the Baa rates as investors focused on safety. DPU Exhibit 1.14 sets forth data from the Federal Reserve comparing Aaa and Baa corporate bond rates.

Short-term rates likewise show improvement as set forth on DPU Exhibit 1.15. This Exhibit 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 during the peak of the financial crisis in late 2008 and early 2009. The lower rates and the narrower spreads are indicative of improved liquidity and market conditions. The spreads now are similar to

the pre-recession rate spreads.

Q. What is the outlook for interest rates?

A. In its "Quarterly Economic Review" dated May 25, 2012, Value Line makes the following observations: "…the [Federal Reserve] has advertised its intent to keep short-term interest rates—namely the federal funds rate target—near current record lows through 2014, at least. Now, the lead bank is not necessarily wedded to that easy money policy. In view of the undistinguished character of the continuing business recovery, however, it is unlikely that the Fed [i.e. the Federal Reserve] would deviate significantly from its present course." This suggests that the current interest rate environment is likely to continue for perhaps two years or more.

Q. So, from general stock and bond market conditions you would expect cost of equity to be lower now than a year ago.

A. 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.

Q. What are your conclusions concerning the financial markets?

A. The U.S. financial markets appear to have largely returned to their pre-crisis operations. The stock market in particular has retraced a significant amount of its loss over the past three years. Based upon Federal Reserve policies and turmoil in Europe in particular, interest rates have been kept at multi-decade lows; and are likely to remain low for several more quarters.

D. Summary of the Utah Economy

Q. Has Utah's economy been recovering from the 2008-2009 recession with the rest of the U.S. economy?

A. Yes. For example, the unemployment rate in Utah as of March 2012 stood at 5.8 percent versus to 7.1 percent in March 2011, this compares with the national unemployment rate of 8.2 percent versus 8.9 percent for the same periods. Total personal income in Utah gained 4.8 percent in the fourth quarter of 2011 versus the fourth quarter of 2010, which was the 11th best in the nation. On the downside (if you are a homeowner), or the upside (if you are looking for a home), for the fourth quarter 2011 year-over-year, Utah's housing prices declined 3.66 percent.[19]

Q. What is the current economic outlook for Utah?

A. In early 2012 the Utah Governor's Office of Planning and Budget (GOPB), published the following:

> **Utah typically grows more rapidly than the nation after recessions, and this pattern is taking hold in the current recovery. For the U.S., employment grew 0.9% in 2011, compared to 2.3% for Utah. While employment increased during 2011, Utah's unemployment rate improved, falling to 7.7%. Though housing stabilized, with building permits at 8,700 in 2011, home building is not leading the economy as it does during a typical recovery.**
>
> **Economic growth in Utah is expected to accelerate during 2012. Employment is forecast to increase 2.7% for the year as a whole, with larger increases as the year progresses. Housing permits are forecast to move up slightly from historic lows. As the overall unemployment rate declines to 6.7%, the improving labor market will support increased consumer spending and a strengthening recovery.[20]**

[19] "Economic Summary," Utah Governor's Office of Planning and Budget, April 2012..
[20] "Economic Outlook 2012," Governor's Office of Planning and Budget, January 2012.

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 relatively slow-growth economy suggests that demand for electricity in PacifiCorp's service territory, including Utah, will likely also be slow-growth over the next few quarters. Longer term, there is reason to expect that PacifiCorp will participate in a 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, 2011 and The SEC Form 10-Q as of March 31, 2012. As of December 31, 2011, the capital structure was 53.8 percent common equity, 45.9 percent long-term debt and 0.3 percent preferred stock.[21] Subsequent to the end of 2011, the Company paid common stock dividends in February 2011 to its parent company totaling $50 million. The dividend payments, combined with the issuance of long-term debt in January and March 2012, tend to have the effect of reducing the common equity ratio. The Company has indicated it intends to pay additional dividends in 2012-2013 test year as well. The March 31, 2012 10-Q balance sheet indicated a capital structure of 51.6 percent common stock, 0.3 percent preferred stock, and 48.1 percent long-term debt.

[21] The Company's SEC filings include about $50 million in capital leases as part of long-term debt that are not included as part of the regulatory capital structure.

Q. What are the capital structures of the comparable, or guideline, companies you used in your analysis? [22]

A. DPU Exhibit 1.4 sets forth the average common equity structure for the guideline companies I used based upon AUS data. The average is 44 percent, with none of the guideline companies having common equity percentages above 50 percent. The average equity percentage is about 8 percentage points below PacifiCorp's.

Q. Dr. Hadaway uses some companies as comparables that you did not use. Do Dr. Hadaway's comparable companies support an equity percentage above 50 percent?

A. According to the May 2012 AUS Monthly Report, two of Dr. Hadaway's guideline companies, ALLETE and IDACORP, had common equity ratios of 56 and 52 percent, respectively. The remaining companies appear to have common equity ratios typically in the mid-40 percent range, similar to my guideline companies. I did not include ALLETE and IDACORP in my list of guideline companies because of their small size relative to PacifiCorp.

Q. What are the effects of PacifiCorp having a stronger balance sheet, as represented by its higher equity percentage, than the average of your comparable companies?

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 common equity percentage increases costs to the Company's ratepayers, all other things held equal.

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

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

A. I am not disputing the Company's requested capital structure at this time. The Company is in a build cycle and arguably is viewed more favorably on Wall Street because of its relatively strong capital structure. This helps the Company to finance its projects more readily at favorable costs. As pointed out by Mr. Williams in his direct testimony, the Company's requested capital structure is similar to its requests in recent years.[23] Mr. Williams also states that the long-term capital structure should approximate 50 percent common equity.[24] At this point I have no strong basis to try to "fine tune" the capital structure.

V. 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 5.43 percent. The 5.43 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 ten years ago. 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 5.43 percent.

[23] Williams, page 14.
[24] Williams, page 3.

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

A. As stated above, Mr. Williams' direct testimony indicates that the Company intends to issue $400 million in long-term debt in March 2013. The expected rate for this debt is 4.32 percent. While I am not proposing to make an adjustment, the Company has consistently overestimated the cost of future new debt issuances over the last few years. This is likely due, in part, to the natural upward curve in the debt futures market (time horizon premium) and in part to the continual decline in interest rates aided by Federal Reserve policies. The Federal Reserve has committed itself to keeping interest rates low until late 2014. In January 2012 the Company issued $650 million in long-term debt at an average coupon rate of 3.48 percent. The estimated overall debt rate of 5.41 percent appears reasonable, prior to adjustments for the March 2012 financing activity. Therefore, the Division does not dispute the *pro forma* embedded cost of debt of 5.41 percent, prior to adjustment for the March debt transactions.

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

A. No.

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.

Then, 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 the average closing price covering 30 trading days ending May 14, 2012.[25] 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, similar to what I did in my previous testimony in Docket Nos. 07-035-93, 08-035-38, 09-035-23, and 10-035-124, I constructed estimates using a risk-premium model based upon Value Line financial strength ratings.

DPU Exhibit 1.3 sets forth a detailed summary of the results of the models and calculations that I considered relevant to determining the cost of equity for PacifiCorp. DPU Exhibit 1.3 sets forth my final recommendation, which is a point estimate of 9.30 percent as the cost of common equity applicable to PacifiCorp at this point in time. I would consider a reasonable range to be between 9.00 percent and 9.60 percent.

[25] In previous dockets I have also used a "spot" price for each guideline company. However, I have concluded that the spot price analyses in previous dockets added little to the discussion, and would not have made a significant contribution in this Docket. Therefore, I have not included spot price analyses.

Q. This is the first time you have advocated a cost of equity rate less than 10 percent for PacifiCorp, and not only less but 70 basis points less. Do you have any comments on this potential issue?

A. Yes. While there may be reasonable arguments from the data for cost of equity estimates up to about 30 basis points higher than my point estimate (i.e., within my suggested reasonable range), there appears to be no reasonable basis current market data for a cost of equity rate of 10 percent or higher. Two ways to get to a 10 percent, or higher, figure is to assume much higher growth rates in the DCF-type models, or a major decline in the stock market that would boost dividend yields; or assume that, say, 20-year treasury securities will suddenly--and quite unexpectedly--trade at interest rates on the order of 400 basis points higher over the next year or so for the CAPM and risk premium models.

B. 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 is the selection of publicly traded "comparable" companies (also referred to as "guideline" companies and proxy companies) whose market returns and characteristics are 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 14 companies as cited in his testimony. I made a selection of 13 companies, eight of which are included in Dr. Hadaway's list. The criteria I used to select comparable

companies included (1) similar bond ratings to PacifiCorp; (2) similar size to PacifiCorp; (3) significant owned generation capacity including some thermal generation,[26] (4) at least 70 percent of revenue and/or income derived from regulated electric utility operations, or alternatively at least 50 percent from regulated electric utility operations and the sum of regulated electric and regulated gas utility operations is over 85 percent; and (5) "Other."

More specifically, I chose companies whose bond ratings ranged from BBB to AA- (Moody's Baa to Aa3) from at least one of the rating agencies, Standard & Poor's or Moody's. This range is based upon PacifiCorp's bond rating of A as part of MEHC and BBB+ as a free-standing firm. For size, the company's annual revenues had to be between $1.5 and $13.8 billion, and net plant in service had to be between $5.8 billion and $35 billion.

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 Exhibit 1.16 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. While consistently low, the Company's return on equity is within the "average" range (i.e. within plus or minus one

[26] In the past I have been stricter on this criterion; however, with several potential proxy companies engaged in merger and acquisition activity, and therefore excluded, I found it necessary to relax this criterion in order to present a reasonable number of guideline companies.

standard deviation of the mean). 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 1.4 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.

C. Application of Cost of Equity Models

Q. What is the consequence of the current economic situation 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 current U.S. economic situation appears to be relatively stable, and the financial market status appears to be reasonably "normal." 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 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 through May 14, 2012 and were obtained from Yahoo! Finance. Next, I took earnings and dividend growth rates from the latest Value Line reports on each comparable company, 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 and Argus Research reports on these companies (collectively, "financial sources"). These financial sources were accessed via the internet primarily on May 7-9, 2012. DPU Exhibit 1.5 sets forth the earnings growth rate forecasts. Included in DPU Exhibit 1.5 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 1.5 also contains 3 to 5 year dividend growth forecasts from Value Line and Argus Research 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 the financial sources, 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 1.6 sets forth these calculations of the DCF model using this weighted growth rate. DPU Exhibit 1.7 sets forth my adjusted rates. The adjusted rates were derived by eliminating any cost of equity estimates that were less than 7.5 percent or equal to or greater than 11.0 percent. The lower and upper bounds were selected based upon my judgment that a rate less than 7.5 percent is unreasonable within this particular exercise. For example, the upper bound eliminated Wisconsin Energy's and CMS's noticeable out-sized and likely unsustainable growth forecasts. All of these estimates are summarized on DPU Exhibit 1.5.

Additional sets of single-stage DCF estimates are included on DPU Exhibit 1.8. On this exhibit I have calculated cost of equity estimates using the historical 5- and 10-year average growth in earnings and dividends as reported by Value Line. In the lower portion of these exhibits I have calculated a cost of equity. 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 the 5-year model yields an estimate comparable to the other DCF techniques. A comparison between the long-term 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 1.6, the results of the single-stage model resulted in estimates in a range of 9.27 to 9.35 percent. The "adjusted" model set forth on DPU Exhibit 1.7 widened the range to 8.64 to 9.64 percent.

Q. In DPU Exhibit 1.5 a few earnings growth are negative. 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 are relatively short-term forecasts covering three to five years. During a relatively brief interval a company's earnings can decline for various reasons. For Entergy and Edison International, analysts have 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 negative growth rates?

A. The two negative growth rates were excluded from both the adjusted growth rates, which were used in all single-stage DCF models that included earnings growth rates. 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. In the two-stage models these negative growth rates were included in the explicit annual forecasts (the first five years), but they were excluded from the terminal value calculations. 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 to be unreasonable and therefore excluded.

2. Two-Stage DCF Models

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

A. In developing two-stage DCF models I forecast the current dividends of each comparable company out five years in four 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 two different ways. First, I estimate the long-term growth rate using the average of the long-term forecast GDP growth estimates set forth on DPU Exhibit 1.6 which was 4.57 percent. The second long-term growth estimate is based upon the hypothesis that long-term growth will equal the adjusted forecast earnings growth. This may be optimistic since the EIA is currently forecasting long-term real growth in energy consumption to be about 0.38 percent annually.[27] Adding a forecast long-term inflation rate of about 2.0 percent, would require long-term productivity gains of 2.0 percent annually to reach a five percent earnings growth rate. The high

[27] Energy Information Administration, Op. Cit.

productivity gains seem unlikely for the electric utility industry.[28] It is more likely that electric growth will be less than long-run GDP growth due to continued efforts at energy efficiency. In this regard (for energy generally) Value Line has 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."[29]

DPU Exhibit 1.9 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 8.91 percent to 9.25 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.[30]

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 premia. I did this to give the flavor of how different factors in the CAPM affect the cost

[28] The U.S. Department of Labor, Bureau of Labor Statistics compiles data on labor productivity. For the period 2001-2008, the most recent period for which I can find comparable data, labor productivity across all business increased at an average rate of 2.4 percent, whereas for power generation and supply (a subset of "Utility") the growth rate was 0.3 percent.
http://www.bls.gov/lpc/ipr_aiin.pdf
http://data.bls.gov/cgi-bin/surveymost?pr
http://www.bls.gov/news.release/archives/prin_06102010.htm
http://www.bls.gov/lpc/faqs.htm

[29] Value Line Investment Survey, September 11, 2009, page 517.

[30] 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 further discussion regarding GDP growth rates and utility companies.

of equity estimate. As discussed in the Appendix, 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 considered the average of the month of April 2012 and the first two weeks in May 2012. The average of the 90-day Treasury bill (T-bill) yield, which was 0.10 percent; and the accepted figure for the 20-year Treasury bond was 2.72 percent. Academics have tended to use the T-bill rate, the closest rate to a "true" risk free rate since it contains little inflation or time horizon risks. 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 recession 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 1.11, page 3, I use an average of betas derived from financial sources excluding Value Line. DPU Exhibit 1.10 summarizes the beta estimates for each comparable company from the financial 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 85 year "Ibbotson period" to be problematic since it reflects 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 public 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.[31]

Q. Why do you include calculations in three of your CAPM exhibits that reflect the 85-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 1926-to-the-present 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.[32] These are somewhat dated comments coming before the 2008-2009 recession. However, I believe a market risk premium around 5 percent is still likely a good number.

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

[32] AIMR, Equity Risk Premium Forum Report, November, 2001, pages 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. "Values should lower equity risk premium component of discount rate," Business Valuation, 9 (11), November, 2003, pages 1,6.).

Q. What were your results from CAPM?

A. The CAPM models using the 20-year T-bond yields as the risk free rate range from 5.52 percent to 7.43. DPU Exhibit 1.11 details the CAPM calculations. I only consider the 7.43 percent as set forth on DPU Exhibit 1.3.

Q. Can the CAPM results be considered reasonable?

A. They might be given some consideration since they reflect the current value given by this widely used model. The CAPM range is 300 to 450 basis points above the risk-free rate, which is fairly typical for utility companies. Given the opportunity to earn 2.72 percent on a Treasury bond, or 7.43 percent on a utility stock, an investor may well choose the utility stock as a reasonable expected return for the additional risk.

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 7.48 to 8.48 percent based upon the 20-year Treasury bond, the latter figure being roughly 100 basis points higher than the highest CAPM result. Again, I do not consider the Treasury bill-based results to be particularly useful. DPU Exhibit 1.12 details these results.

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

A. The risk premium results support the high-end CAPM result, and roughly 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. I do not attempt to comment on all statements and calculations made by Dr. Hadaway; therefore, silence regarding a particular statement or comment does not necessarily mean that I agree, or disagree, with what Dr. Hadaway has said or done.

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

A. I generally agree with Dr. Hadaway's discussion of the development of the DCF models and their strengths. I also generally agree with his discussion regarding the problems with CAPM. I would continue to point out, however, that CAPM appears to remain the most widely used model to estimate cost of equity. The other point I would make is that all models have their supporters and detractors. 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.

As I alluded to earlier, I have included in my list of comparable companies eight of Dr. Hadaway's 14 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 six companies that Dr. Hadaway included?

A. The bottom part of DPU Exhibit 1.4 summarizes my reasons for excluding these six companies in the "comments" section. ALLETE, Black Hills, and IDACORP were judged to be too small based on the criteria I outlined earlier. Vectren has relatively low electric utility operations and is more of a natural gas utility than an electric utility. Sempra is also more of a natural gas company than an electric company, and it has significant non-regulated operations accounting for half or more of the parent company. Finally, Southern Company was judged to be so much larger than PacifiCorp that it was not really comparable. Based upon these observations, I excluded these 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 no weight on these results. In the previous PacifiCorp general rate cases, Dr. Hadaway had, arguably, put some weight on these DCF results. Typically, Dr. Hadaway concludes that the best

growth rate is based upon a weighted average of historical changes in nominal gross domestic product (GDP) in this docket going back to 1950, i.e. basically the post World War II period. His current calculation gives a weighted average change of 5.8 percent. 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 did not provide 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. [33]

Assuming that GDP growth is a reasonable estimate for electric utilities, the growth rate used must reflect investors' current 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 2012 to 2022 (released January 2012). Likewise the EIA annually publishes its long-term GDP forecast in *Annual Energy Outlook 2012 Early Release Overview* (released January 23, 2012). The CBO forecast is for nominal GDP to grow 4.66 percent annually over the years 2011 to 2022; the EIA forecast is

[33] Indeed PacifiCorp is tasked with promoting energy efficiency and conservation through its various DSM programs. Conservation is also the primary purpose of the inverted block rates in the Company's residential rate design.

4.48 percent. If these estimates of GDP growth were used in Dr. Hadaway's DCF model with the GDP growth rate, which he gave 100 percent of the weight to, he would have obtained a cost of capital estimator of about 9.0 percent instead of 10.2.

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 2011 time period. From these data Dr. Hadaway imputes an equity return of 9.70 percent for the first model, and 9.55 percent for the second model. With some caveats, I would consider these estimates to be in the correct ball park. However, 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. At a minimum, authorized returns are not direct market observations, and should only be useful if no direct market observations were available.

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 1.13 analyzes the authorized return data found on Schedule 5 of Dr. Hadaway's testimony in this docket along with the utility bond data he uses. The simple trend analysis predicts that authorized returns

in 2012 will approximate 9.49 percent. When viewed along with the trend in the bond yields, these data may suggest only the principal of gradualism in regulation in response to changing interest rates is in operation, not some "law" of financial economics. These data may also say something about the timing of rate applications; that is, absent a filing requirement, 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.[34] 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. However, one thing is perfectly clear: unlike in previous dockets, Dr. Hadaway puts no weight on his risk premium analyses because the results are too low, in his opinion.[35]

Dr. Hadaway attempts to make utility stocks' volatility an issue (see pp. 9-10, lines 148-157, particularly "Graph 1"). While I agree with some of what Dr. Hadaway says, it appears to be exaggerated in the negative direction as applied to utilities. Note, for example, that the vertical axis of Graph 1 is an arithmetic scale: a 10 percent change in the late 1980s is 20 points, a 10 percent change in the mid-to-late 2000 is about 50 points; therefore the graph exaggerates the relative volatility. Additionally, Dr. Hadaway should compare the utility stocks' with the broader market, say the S&P 500 index, in order to show the relative volatility of utility companies to the broader market. While I do not have utility betas back to

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

[35] Dr. Hadaway "[discounts] these risk premium estimates because they are directly affected by the government's ongoing efforts to keep interest rates artificially low." (page 28, lines 579-581). This is a more extended way of saying that the results are too low..

the late 1980s, I have not seen the betas of utility stocks behave noticeably different than I believe they were in the past; i.e. the utility betas are and were typically less than 1.0.

Dr. Hadaway enters into a philosophical discussion about his perception that investors are more risk averse, but that cost of equity is declining according to the "traditional" methods. He states "…investors are trying to react rationally to a market environment that has many risks but few income opportunities. Such circumstances raise significant questions about the ability of traditional rate of return estimation methods to function reasonably." ((pp. 11-12, lines 199-202). Dr. Hadaway adds comments from Value Line and Standard & Poor's suggesting that utility stocks are "high." (pp. 12-13, lines 203-253). Dr. Hadaway is missing the point of regulation—it is not the Commission's job to determine what the market rates of return should be, but merely what the market rates of return actually are in order for PacifiCorp to attract capital. Whether Dr. Hadaway believes that what the markets are demanding is in some sense "correct," "too high," or "too low" is irrelevant: his only concern should be with what returns are currently required by those markets. To this end, Dr. Hadaway actually quotes from the Bluefield and Hope cases on page 16; later he talks about "relative risk" and risk and return characteristics of alternative investment opportunities (pp. 17-18, lines 332-361). In arriving at his conclusions he appears to ignore this part of his own narrative.

Dr. Hadaway's Table 3 on page 15 shows the 2011 average authorized returns of electric utilities to be 10.22 percent compared with an average debt rate of 5.17 percent. Given that PacifiCorp is issuing 30-year bonds at 4.10 percent suggests that its ROE should be below

10.22 percent. (By Hadaway's model, the reduction should be (5.17%-4.10%)*.4162= .445 percent, or an ROE of about 9.78 percent); assuming the 2.95 percent coupon rate of the 10-year bonds issued in 2012 by the Company, the ROE is estimated at 9.30 percent. The average of these two estimates is 9.54 percent.

Dr. Hadaway continues to support his use of historical GDP growth rates by equating electric utilities with "average" companies. He also argues that long-term GDP forecasts by "professional economists" are "depressed;" implying that professional economist do not realize that the only reason their GDP forecasts are below trend is because they are influenced by the current state of the economy (see pp. 24-27). This also means that the markets are "wrong" because they may be influenced by those "depressed" forecasts. Dr. Hadaway ignores that his own GDP "forecasts" have been trending downward for years. Therefore, because Dr. Hadaway believes or assumes that the future will be the same as the past and consequently that real GDP will once again regularly be in the 3.5 percent range, the Commission should grant PacifiCorp a higher authorized ROE.

Some of the differences between my estimates and Dr. Hadaway's are related to the list of comparable companies used; for reasons stated earlier, my list of comparable companies is not the same as his. Some of the differences between my calculations and Dr. Hadaway's relate to the differences in time. Since Dr. Hadaway prepared his analyses, analysts have reduced their forecast growth rates somewhat. Also stock prices are higher which have reduced dividend yields. But the primary difference is Dr. Hadaway's GDP growth method. As noted earlier, the effect of reducing Dr. Hadaway's historical weighted average GDP

growth rate to a 4.57 percent forecast GDP growth rate would reduce his estimates using GDP growth by about 120 basis points, which would result in an ROE estimate of 9.0.

Over the past few dockets, Dr. Hadaway has had to throw out or ignore increasing amounts of information in order to arrive at his conclusions. Over the years, Dr. Hadaway has reduced the number of estimators of cost of equity he calculates. In the past he has first "discounted" the use of CAPM and now he does not even bother to compute the most widely used model (at least outside of regulation). This year he could have reduced the number of estimators further to exactly one—his highest estimator—since that is all he gave any credence to. He previously published statistics and graphs that related electric utility growth rates to growth in the economy as a whole, but after it was pointed out that they don't support his GDP growth rate theory, he has stopped publishing those results. This time he ignores or argues away all of his calculations, except the one that gives him the highest result.

In his direct testimony, Dr. Hadaway concludes that the appropriate return on equity for PacifiCorp should be 10.20 percent, which is the highest estimate he calculated. Thus his "reasonable range" is really just this point estimate. If he had taken even the mid-point of the range of the estimates he bothered to calculate, the result would have been 9.90 percent, which, at least, would have gotten him closer to a reasonable number.

Dr. Hadaway clings to his significantly flawed GDP growth model more tightly now than ever. He constantly refers to modest fluctuations in the upwardly trending stock indices as "market turmoil" along with "artificially low interest rates," to justify his conclusion based

upon the highest result of a single estimator. The Commission should reject Dr. Hadaway's estimate since it is detached from the actual markets faced by investors and violates good practice of basing the cost of equity point estimate on several actual estimates grounded in market observations.

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, prior to adjustment for recent transactions, is reasonable. I have also concluded not to challenge the Company's proposed capital structure.

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. Based upon historical risk premia calculated by Dr. Hadaway, a CAPM model estimate of 7.41 percent gives a risk premium that is 3.31 percent above the coupon rate of the latest 30-year bond issuance by the Company. This risk premium is almost exactly the average risk premium calculated by Dr. Hadaway himself. This should give some pause to the idea that the CAPM results are impossibly low.

After reviewing all of the data, I conclude that a point estimate of 9.30 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.[36,37] I comment on these cases below as an economist and regulator.

The Bluefield and Hope cases established economic and financial principles for proper regulation. These principles included (1) that the utility be allowed an opportunity 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.

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

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 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 from models he has relied on in the past, also support a cost of equity noticeably below 10 percent. As a result, I conclude that the 9.30 percent cost of equity is not outside any range of expectations of investors. 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. As set forth on Exhibit DPU 1.2, 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 9.30 percent and an overall weighted average cost of capital of 7.41 percent.

Q. Does this conclude your testimony?

A. Yes.

APPENDIX: AN OVERVIEW OF COST OF EQUITY ESTIMATION METHODS

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 developed at the Utah State Tax Commission and included in previous testimony before this 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 models are their 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 were 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.

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.

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.[38]

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 consistent with the way the MR was estimated.

Q. Please briefly discuss some of 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

[38] 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 services that adjust their betas 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[39] and betas from other sources.

Perhaps the most hotly debated factor is the market risk premium, also called the equity 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.[40] 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.[41] For these reasons, I generally prefer to examine a 30 to 50 year time period. Thirty to 50 years is long enough to smooth out most of the annual fluctuation and mitigate many of the criticisms leveled at the Ibbotson historical period.

[39] Value Line adjusts its betas for mean reversion. The formula is $\beta_a = \beta_r \times .65 + .35$, where β_a is the Value Line adjusted beta and β_r is the raw beta. Applying this formula to the 0.67 mean Value Line beta found in DPU Exhibit 1.10 results in a raw beta estimate of 0.49, which is similar to the estimated mean found in the Gombola and Kahl study. It is also similar to the mean of the non-Value Line beta estimates of 0.50.
[40] Stocks, Bonds, Bills, and Inflation (SBBI), any edition, published annually by Ibbotson Associates (now a division of Morningstar).
[41] Brigham and Houston, supra, p. 272.

Another issue is the use of arithmetic averages versus geometric averages.[42] 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 and geometric returns for terms of more than one period.[43] For these reasons and others, some experts advocate geometric returns.[44] In short, there is great dispute about how the market risk premium should be estimated.

[42] "Arithmetic" averages are simply averaging the annual changes over a time period without accounting for any compounding effects. "Geometric" averages account for compounding effects and answer the question of "what was my average annual compounded return over a given period."

[43] 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, pages 81-90.

[44] For a discussion of geometric versus arithmetic averages, see Damodaran, Op. Cit. pages 161-162. PPC's Guide to Business Valuations, Volume 1, paragraph 502.8, Practitioners Publishing Company, Fort Worth Texas, February 2006. Also see Damodaran, Aswath, "Equity Risk Premiums (ERP): Determinants, Estimation and Implications, The 2011 Edition" http://pages.stern.nyu.edu/~adamodar/ , see recently published articles. Accessed May 4, 2011.

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" in particular 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 widely used in academic literature, by 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.[45] 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.

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

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 "Value Line Financial Strength" 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 universe generally even though they share the same financial strength rating. Finally, the model has not been published and consequently is not widely known or tested.