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. 13-035-184** **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

April 17, 2014

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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 first involved in evaluating cost of capital issues in PacifiCorp's 2004 rate case[1] 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). Since then, I have provided

[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, RMP. Therefore, throughout this testimony I will primarily refer to PacifiCorp, rather than RMP.

written and/or oral on Cost of Capital in the PacifiCorp rate case Docket Nos. 08-035-38, 09-035-23, 10-035-124, and 11-035-200.

Among other matters, 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) in Docket No. 05-035-54. I testified on behalf of the Division in PacifiCorp's purchase of the Chehalis power plant on July 17, 2008 (see Docket No. 08-035-35). I 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. 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.

Q. Please state your primary conclusions.

A. As detailed below, I am recommending a return on equity of 9.25 percent. With some caveats, I accept the Company's recommended returns on debt and preferred stock, and capital structure.

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 consultant. 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.

Then, I will briefly 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. A more extended discussion of cost of equity estimation methods is found in the

Appendix 1. 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 March 28, 2014 for stock prices, and considered the average stock prices and debt rates for the 30 trading days up through March 28, 2014.

Q. Please summarize your conclusions.

A. I have concluded that the appropriate point cost of equity for PacifiCorp is 9.25 percent; I suggest that a reasonable range for cost of equity would be 8.65 percent to 9.55 percent. The Division does not challenge at this time the Company's requested returns on preferred stock or its requested capital structure.

However, as discussed below the Division believes that the common equity portion of the capital structure has become excessive and should be reduced over the next two or three years.

Generally, I do not dispute the Company's long-term cost of debt calculations; however, subsequent to the filing of the Company's direct testimony, PacifiCorp issued $425 million in 10-year debt at a coupon rate of 3.60 percent. This debt issuance was partially anticipated in Company witness Mr. Williams' direct testimony; however, the direct testimony anticipated that a 30-year debt issuance would be made among other things. The debt calculation needs to be adjusted from the filed position. I have estimated the effects of these

transactions to arrive at a cost of debt of 5.21 percent. If Mr. Williams revises his testimony I may adjust my estimate in rebuttal or surrebuttal testimony.

According to Mr. Williams' direct testimony, the Company anticipates issuing $300 million of additional long-term debt in March 2015 at an estimated coupon rate of 5.051 percent.[2] The Division does not dispute the Company's preferred stock return of 6.75 percent.[3]

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

A. In its filing dated January 3, 2014, the Company asked for the following cost of capital rates of return:[4]

Table 1

	Rate	Capital Structure	Weighted Rate
Common Stock	10.00%	51.60%	5.16%
Preferred Stock	6.75%	0.02%	0.00%
Long-term Debt	5.28%	48.38%	2.55%
WACC		100.0%	7.72%

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, long-term debt with the adjustment described above, are reasonable.

I have concluded that the requested capital structure is no longer reasonable given the Company's significant reduction in its capital expenditure program; however, rather than

[2] Williams, Direct Testimony, Exhibit RMP (BNW-11), page 2 of 3.
[3] Ibid., Exhibit RMP (BNW-10).
[4] Ibid., page 2.

recommend that the Commission use a hypothetical capital structure in this docket as has been done elsewhere,[5] I recommend that the Company be given three years to bring its capital structure more in line with industry averages, and if no such change occurs, that the appropriateness of a hypothetical capital structure be examined when the Company files a rate case.

I believe that the cost of equity estimate recommendation by Dr. Hadaway is outside a reasonable range, falling on the high side. I believe that the reasonable range for PacifiCorp's cost of equity is currently 8.65 to 9.55 percent. I recommend that PacifiCorp's authorized cost of equity be set at 9.25 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 7.29 percent. The following table summarizes the capital structure and cost of capital point estimates supported by the Division.

Table 2

	Rate	Capital Structure	Weighted Rate
Common Stock	9.25%	51.60%	4.77%
Preferred Stock	6.75%	0.02%	0.00%
Long-term Debt	5.21%	48.38%	2.55%
WACC		100.0%	7.29%

[5] Washington Utilities and Transportation Commission, Order 05, Docket UE-130043, December 4, 2013. http://www.wutc.wa.gov/rms2.nsf/177d98baa5918c7388256a550064a61e/9d7cb3b25800e12a88257c37007baf4c!OpenDocument

II. CAPITAL STRUCTURE

Q. What is PacifiCorp's current capital structure?

A. I examined the latest actual capital structure of the Company that was available from the Company's SEC Form 10-K as of December 31, 2013. As of December 31, 2013 the capital structure was 53.09 percent common equity, 46.90 percent long-term debt and 0.01 percent preferred stock.[6] Subsequent to the end of 2013, the Company paid a common stock dividend in March 2014 to its parent company totaling $500 million. The dividend payment combined with the issuance of long-term debt in March 2014 tends to keep the common equity ratio stable. The Company has indicated it intends to pay additional dividends and issue more debt in the first half of 2014 and in the 2014-2015 test year. For this rate case the Company is requesting a capital structure of 51.60 percent common equity, 48.38 percent debt, and 0.02 percent preferred stock.[7]

Q. What are the capital structures of the comparable, or guideline, companies you used in your analysis? [8]

A. DPU Exhibit 1.4 sets forth the average common equity structure for the guideline companies I used based upon April 2014 AUS data. The average is 45 percent, with Ameren and Pinnacle West having common equity percentages of 50.0 and 53.6 percent, respectively. The average equity percentage is about 8 percentage points below PacifiCorp's.

[6] 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.
[7] Williams, op. cit., page 2.
[8] The selection of the comparable companies is described in detail in the cost of equity section of my testimony.

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. Not upon closer examination. According to the AUS Monthly Report, two of Dr. Hadaway's guideline companies, ALLETE and IDACORP, had common equity ratios of 54.7 and 52.5 percent, respectively. The remaining three companies have common equity ratios that range from 44 to 49 percent, similar to the average of 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.

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 has been in a build cycle and arguably Wall Street views a relatively strong capital structure favorably in such a cycle. However, as set forth on the table and chart below, the Company's capital expenditures have declined noticeably since 2011 and the Company projects that they will decline below $1 billion to about $900 million in 2016. While I believe that beyond 2016 the Company will likely continue to have annual capital

expenditures in the $1 billion range, the Company can no longer be said to be in a build cycle justifying a premium capital structure. Over the next two or three years the Company should manage its common equity capital percentage into the 48 to 50 percent range to be more in line with the majority of its peer group. This would still position the Company in approximately the upper 30 percentile range of its peer group.

Table 3

PacifiCorp Expenditures
2006 to Forecast 2016

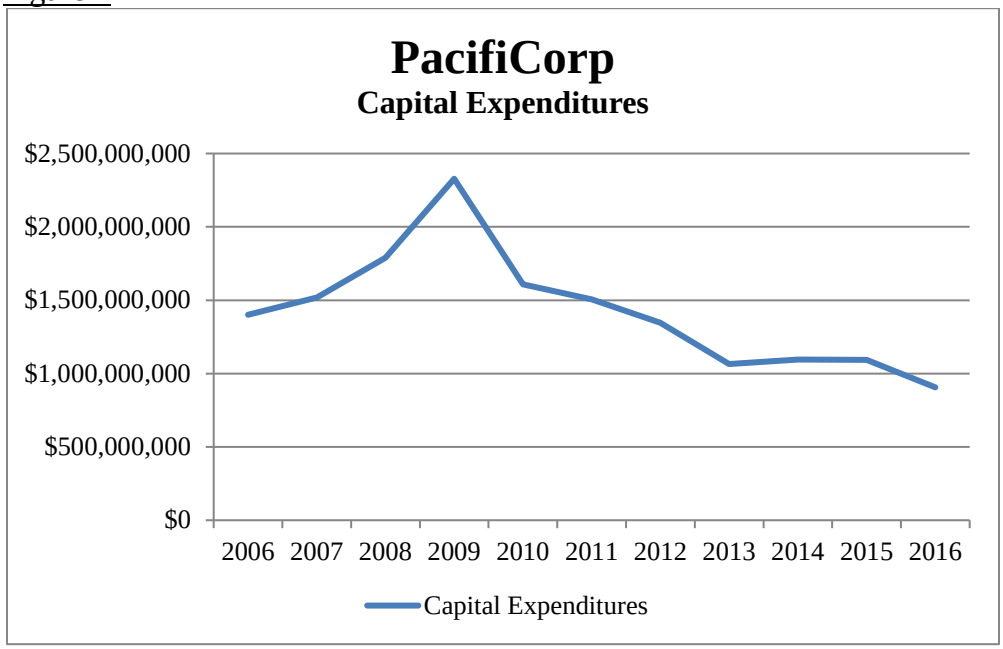
2006	$1,401,333,333	1/
2007	$1,519,000,000	
2008	$1,789,000,000	
2009	$2,328,000,000	
2010	$1,607,000,000	
2011	$1,506,000,000	
2012	$1,346,000,000	
2013	$1,065,000,000	
2014	$1,096,000,000	2/ Company Forecast
2015	$1,093,000,000	2/ Company Forecast
2016	$906,000,000	2/ Company Forecast

1/ 2006 is annualized from the nine-month amount of $1,051 million.

2/ 2014-2016 forecast are from the Company's 2013 10K, page 36.

Source: PacifiCorp SEC Form 10K, various years

Figure 1



III. 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 6.75 percent. This is noticeably higher than the 5.43 percent figure which the Company requested in the previous rate case, Docket No. 11-035-200. Since its last rate case the Company has redeemed all but about $2 million of its preferred stock. The remaining preferred stock has higher imbedded dividend yield than the preferred stock that was redeemed. The requested capital structure percentage of the Company's preferred stock has declined from about 0.3 percent to 0.02 percent—a

nearly *de minis* amount. At the same time, the percentage of long-term debt has increased from approximately 47.6 percent to 48.4 percent and common equity has declined from 52.1 percent to 51.6 percent. Arguably, the Company has replaced relatively cheap preferred stock capital with even cheaper long-term debt capital. This is an advantage to ratepayers at least until the new long-term debt matures.

The Company has not indicated any intention of issuing new preferred stock in the future. The Company has also indicated that, at this time, it does not intend to redeem the remaining shares of preferred stock. I recommend accepting the Company's cost of preferred stock rate of 6.75 percent.

Q. The Company is requesting an accounting order to amortize the redemption premiums of the preferred stock. Do you believe this request is reasonable?

A. The request is set forth in Mr. Williams' direct testimony lines 343 to 362 and Exhibit RMP_(BNW-10). As I understand it, the costs associated with the redemption of the preferred stock amounted to $1.94 million. The Company is proposing to amortize this over 30 years. The trade-off between the preferred stock and lower-cost debt appears reasonable overall. Therefore, the request to amortize the redemption premium appears reasonable as well.

Q. On pages 19 and 20 of his Direct Testimony, Mr. Williams discusses the Standard & Poor's (S&P) adjustments for power purchase agreements. Do you have any comments on that?

A. Yes. Mr. Williams has included this discussion for a number of years to support a higher equity capital structure and higher rates generally. While it is true that S&P makes this adjustment as part of its analyses, Mr. Williams has never demonstrated that it has had a material effect on PacifiCorp's S&P bond rating, or on the bond rating of any other comparable company. Therefore, I do not believe this issue is as significant as Mr. Williams tries to make it appear.

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

A. Mr. Williams' direct testimony indicates that the Company intended to issue $375 million in long-term debt in March 2014 with a 30-year term at an expected coupon rate of 4.841 percent. The Company actually issued $425 million in 10-year debt at a 3.60 percent coupon rate. This means that the Company's embedded cost of debt has declined from its direct testimony position of 5.28 percent to5.21 percent.[9] Furthermore, the Company continues to anticipate issuing $300 million in 30-year debt in March 2015 with a forecast coupon rate of 5.051 percent.[10] 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 past decline in interest rates aided by Federal Reserve policies. Beginning in December 2013 the Federal Reserve began to "taper" its quantitative easing program, which will likely result in upward pressure on bond yields if the economy recovers and the Federal Reserve continues to reduce its bond purchases. However, the

[9] The 5.21 percent is based upon the Company's response to a DPU data request that asked for the effect of this debt issuance (DPU 31).
[10] The Division understands that Mr. Williams will be revising his cost of debt request in rebuttal testimony.

latest data has shown that interest rates have been relatively flat so far this year and have even declined from their 2013 peaks. (See DPU Exhibits 1.14 and 1.15 for examples). The estimated overall debt rate of 5.21 percent appears reasonable; therefore, the Division does not dispute the *pro forma* embedded cost of debt of 5.21 percent, subject to any additional revisions that may result in the Company's rebuttal testimony.

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

A. No.

IV. COST OF COMMON EQUITY

A. Overview 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. Further comparison is made between the comparable companies and PacifiCorp on DPU Exhibit 1.16. 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 March 28, 2014. 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, the 20-year U.S. Treasury bond and the 90-day U.S. Treasury bill rates as estimates of the risk-free rate.

As I have done in my previous cost of capital testimony before the Commission, I constructed estimates using a risk-premium model based upon Value Line financial strength ratings. In this docket I have added an additional risk premium model wherein the expected total market return is estimated using different inputs and then these market returns are adjusted using current general bond yields and PacifiCorp's own estimated bond yield to arrive at an estimate of PacifiCorp's cost of equity.

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 9.25 percent as the cost of common equity applicable to PacifiCorp at this point in time. I would consider a reasonable range to be between 8.65 percent and 9.55 percent.

Q. Besides the fact that they are the calculated results of various formulae, why do you believe a result in the 8.65 to 9.55 percent range is reasonable?

A. One only has to consider what alternative investments are available to an investor. As Company cost of equity witness Dr. Samuel Hadaway correctly states "[b]ased on these principles [that are set forth in the *Bluefield* and *Hope* decisions of the U.S. Supreme Court],

the fair rate of return should closely parallel investor opportunity costs as discussed above. If a utility earns its market COE [cost of equity], neither its stockholders nor its customers should be disadvantaged."[11]

All investors currently face a low interest rate environment. Savings accounts at banks currently range from 0.01 percent to about 1.0 percent based upon the size and term of the deposits.[12] Federal treasury rates can be as high as about 3.60 percent for 30-year bonds.[13] An investor in long-term investment grade bonds can earn about 5.0 percent.[14]

The widely followed and respected market news letter, Value Line, recently estimated that the current market risk premium is 5.50 percent and that the current expected total market return is 8.50 percent.[15] Well known finance expert, Dr. Aswath Damodaran, who is cited in the Value Line commentary, regularly publishes his estimate of the current market risk premium, which, as of April 2014 is 5.15 percent.[16] Professor Damodaran's current expected total market using the 3.0 percent risk free rate applied by Value Line would be 8.15 percent. Electric utility investments are usually expected to be less risky than the overall stock market (as evidenced by their betas typically being less than 1.0) and consequently would be expected to return less than the market as a whole, e.g. an investor in an electric utility currently would be expecting to receive a return less than Value Line's

[11] Direct Testimony of Samuel C. Hadaway, Docket No. 13-035-184, January 2014, lines 309-311.
[12] http://www.money-rates.com/savings.htm accessed April 8, 2014
[13] http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield accessed April 8, 2014
[14] http://www.federalreserve.gov/releases/h15/update/ accessed April 8, 2014
[15] Value Line, March 11, 2014. Accessed April 7, 2014. http://www.valueline.com/Stocks/Commentaries/Equity_Risk_Premiums_And_Stocks_Today.aspx
[16] http://pages.stern.nyu.edu/~adamodar/ accessed April 7, 2014.

8.50 percent. Based on these data, an investor could not expect to get a higher return than 8.50 percent unless the investor takes on more risk than is represented by the market as a whole.

My recommendation of 9.25 percent as well as my reasonable range of 8.65 to 9.55 percent for PacifiCorp are well above these market-based returns available to investors and more than takes into account any uncertainties associated in Value Line's or Professor Damodaran's estimates. Therefore I believe my recommendation is reasonable and complies with the principles of the *Bluefield* and *Hope* cases.

Q. Are authorized rates of return in other states in the range of what you are recommending?

A. Yes. The Commission should note that PacifiCorp itself currently has the following authorized rates of return on equity:

Table 4

PacifiCorp
Authorized Return on Equity
By State

	ROE	Date Approved
California	na	na
Idaho	9.90%	October 8, 2013
Oregon	9.80%	December 18, 2013
Utah	9.80%	September 19, 2012
Washington	9.50%	December 4, 2013
Wyoming	9.80%	October 8, 2012

To add context, I would like to briefly discuss a recent Arkansas decision in a case Dr. Hadaway provided testimony. At the end of December 2013, the Arkansas Public Service Commission ordered that a subsidiary of Entergy be granted an authorized return of 9.30 percent.[17] Dr. Hadaway, testifying for the utility, recommended an authorized return of 10.20 percent. This decision is under review by the Arkansas Commission based upon Entergy's petition for review and clarification.

Dr. Hadaway's direct testimony, while only containing data through September 2013, shows that a number of electric utilities have been granted authorized ROEs under 10 percent, one as low as 9.00 percent.[18] Finally, though it is unclear in the report in many cases when the rate orders were issued, AUS in its April 2014 Monthly report also indicates a number of authorized ROEs under 10 percent; Excelon is shown having an ROE of 8.72 percent. (The AUS report is included with my work papers).

Q. Why do you believe the Commission should authorize a 9.25 percent return on equity for PacifiCorp when it recently awarded Questar Gas a 9.85 percent return on equity?

A. The Division believes that the Commission may have been implicitly invoking the principle of gradualism in Questar Gas case.[19] Before moving on to the direct question, I would like to discuss the principle of gradualism specifically. In December 2013 the Washington commission specifically invoked the regulatory principle of gradualism in recently awarding PacifiCorp a 9.50 percent authorized return on equity.[20] The implication is that absent the

[17] http://www.apscservices.info/pdf/13/13-028-U_431_1.pdf
[18] Hadaway, Exhibit RMP_(SCH-3), page 1 of 5.
[19] See Docket No. 13-057-05.
[20] Washington Utilities and Transportation Commission, op.cit.; for example see page 27, paragraph 70

application of that principle, the authorized return would have been lower; perhaps in the 9.00 to 9.25 percent range advocated by non-Company witnesses. Charles F. Phillips, Jr. discusses gradualism in the relevant context of rate of return.[21] Writing in the early 1990s, Mr. Phillips quotes from a Virginia commission decision that describes the principle of gradually adjusting rates in the face of changing market conditions.[22] Mr. Phillips concludes that "[g]iven volatile markets, combined with a trend toward greater reliance upon market forces, the issue of gradualism cannot be ignored."

Although not explicitly stated in the Utah Commission's decision, the Division views the Commission's recent Questar Gas decision in light of the regulatory principle of gradualism; that is, the Commission did not adopt the recommendations of the Division or the Office at least in part because, just as the Washington commission explicitly stated in its PacifiCorp decision, the Commission believed that it would reduce Questar's authorized rate of return too far, too fast.

In this regard, if the Commission believes that reducing PacifiCorp's authorized ROE from 9.80 to 9.25 percent is too great a move under the principle of gradualism, then it would be appropriate for the Commission to find a rate toward the top of the reasonable range. The

[21] Charles F. Phillips, Jr., *The Regulation of Public Utilities* Arlington, Virginia: Public Utilities Reports, Inc., 1993, pp. 408-409.

[22] Mr. Phillips quoted the Virginia commission which said "The commission has no control over a rapidly changing economy or volatile interest rates. We do, however, have the power to regulate authorized returns on equity. The commission feels that stability in the cost of equity is in the interest of utilities, ratepayers and the economic environment of the commonwealth. When interest rates soared and the prime rate exceeded 20%, we did not allow exorbitant authorized returns which would have exacerbated the situation. We allowed returns to gradually increase, recognizing the trends of the day but avoiding extreme reaction. Recently interest rates have plummeted. Our appropriate reaction should not be to cut authorized equity returns drastically, but to once again gradually move in the direction of the trend. Our goal is a fair and stable environment which will allow Virginia's utilities to better plan for the future and continue to provide economical, reliable service." Ibid., page 409.

Division acknowledges that PacifiCorp's business suggests a slightly riskier investment profile than Questar's.

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 13 companies as cited in his testimony. I made a selection of 14 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, (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 75 percent; and (5) "Other."

More specifically, I chose companies whose bond ratings ranged from BBB to A+ (Moody's Baa to A1) 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 A- as a free-

standing firm. For size, the company's annual revenues had to be between $1.7 and $15.4 billion, and net plant in service had to be between $6.2 billion and $55.5 billion.

DPU Exhibit 1.4 lists my selection of comparable companies along with summary data supporting their selection. The five companies included in Dr. Hadaway's list were not included in mine primarily because they were either too small, or had natural gas and unregulated activities that dominated the operations of the parent, publicly traded company.

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

A. Yes. In addition to some comparisons made on DPU Exhibit 1.4, DPU Exhibit 1.16 was created to compare PacifiCorp with my list of comparable companies using ratio and other financial measures. Most of these measures on DPU Exhibits 1.4 and 1.16 show that PacifiCorp is typical of the comparable companies. PacifiCorp's ratio of revenues to fixed assets, set forth on DPU Exhibit 1.4, is below average; on DPU Exhibit 1.16 PacifiCorp's PP&E [property plant and equipment] to Assets is above average. Part of the reason for these results 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. Total Debt to Total Equity is also better than average reflecting the Company's relatively high common equity percentage in its capital structure, as discussed earlier.

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 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. The current U.S. economic situation appears to be relatively stable, and the financial markets appear to be functioning reasonably normally. 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 March 28, 2014 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 March 28, 2014. 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 noticeable out-sized and likely unsustainable dividend growth forecast. 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-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. Generally results based upon historical growth rates do not warrant significant consideration in the final estimate of the cost of equity because they likely give little insight into investor expectations which are based upon current market and economic conditions; however, the 5-year model yields an estimate comparable to the other DCF techniques. In previous rate cases, historical returns have significantly lagged the forecast returns. This suggests that in the last two or three years electric utility companies generally have been able to "catch up."

As set forth on DPU Exhibit 1.6, the results of the single-stage model resulted in estimates in a range of 8.63 to 9.32 percent. The "adjusted" model results set forth on DPU Exhibit 1.7 affect only the dividend growth calculations resulting in a shortened range 9.15 to 9.32 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 Ameren and Entergy some 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 DCF models that included earnings growth rates. As mentioned above, the negative growth rates could have been included in short-term forecasts such as in the first five years of the two-stage models. However, in my analyses I chose to exclude them given that the results are much below the Company's current authorized rate of return (9.8 percent). This exclusion gives results slightly more favorable to the Company than they otherwise would be.

2. Two-Stage DCF Models

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

A. In developing two-stage DCF models I calculated the results of different combinations of short-term and long-term growth rates. The lowest short-term rates tended to be dividend growth forecasts and the highest rates tended to be earnings growth forecasts. For terminal, or long-term growth rates I used GDP forecasts and earnings growth forecasts. The results ranged from 8.40 percent to 9.29 percent.

Briefly, the two-stage models were computed by forecasting five years of dividends based upon the short-term growth rates. 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, or long-term, 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 page 2 of DPU Exhibit 1.5. The second long-term growth estimate is based upon the hypothesis that long-term growth will equal the adjusted forecast earnings growth. 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."[23]

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.[24]

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

[24] That is, the 5.27 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.

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 of equity estimate. As discussed in Appendix 1, 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 yields of the 30-days ending March 28, 2014. The average of the 90-day Treasury bill (T-bill) yield, which was 0.05 percent; and the accepted figure for the 20-year Treasury bond was 3.36 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 Reserve policy. The recession of 2008-2009 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 87 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 legal changes such as 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. Some authorities recommend that at least 30 years be used when basing an estimate on historical data.[25] 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.

Q. Why do you include calculations in three of your CAPM exhibits that reflect the 87-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

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

2 percent, or even less.[26] These are somewhat dated comments coming before the 2008-2009 recession. As discussed above, Value Line published an article wherein it concluded that the current market risk premium is about 5.50 percent, approximately the mid-point of an historical range of 3 to 7 percent.[27] Similarly, Aswarth Damodaran opines that the current market risk premium is 5.15 percent.[28] I have previously stated that I believe a market risk premium around 5 percent will likely be a good number.[29]

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 6.71 percent to 8.65. DPU Exhibit 1.11 details the CAPM calculations. In arriving at a final result for PacifiCorp, the only CAPM estimate I considered was the 8.65 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 340 to 530 basis points above the risk-free rate, which is fairly typical for utility companies. Given the opportunity to earn 3.36 percent on a Treasury bond, or 8.65 percent on a utility stock, an investor may well choose the utility stock as a reasonable expected return for the additional risk. The Value Line data cited above supports this contention.

[26] 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.
[27] Value Line, op. cit.
[28] Damodaran, op. cit.
[29] Direct Testimony of Charles E. Peterson, Docket No. 11-035-200, lines 686-687.

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 7.41 to 9.52 percent based upon the 20-year Treasury bond, the latter figure being roughly 70 to 90 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 higher CAPM results, and, roughly, the DCF results. I give some consideration to risk premium in that they are suggestive that the DCF model results may be too high.

Q. You have included a risk premium model that you have not used before. Please describe this model.

A. I have included the results of a relatively simple risk premium model where one starts with an estimate of the expected market return (e.g. Value Line's 8.50 percent cited above), and adjust that result up or down based upon the relative current borrowing rate of the company to the average market borrowing rate. The thinking here is that the difference in the risk of the common equity and hence the required return on the common equity of a company can be directly estimated by the difference between the required return on the company's debt

and the required return on "average" debt in the market. This assumption may not be valid beyond a rough approximation; but, as discussed be they are a check on the other models.

Q. How did you implement this model?

A. I made three different calculations based upon the Value Line, Damodaran, and long-term historical estimates of the market risk premium and the current yield on 20 year U.S. Treasury bonds. (Note that Value Line used the lower 10-year treasury yield which is fairly common practice on Wall Street). I used the current average yield on Baa corporate bonds as an estimate of the average market debt yield.[30] I assumed that the Company's current borrowing cost is the estimated coupon rate for the 30-year March 2014 debt issuance found in Mr. Williams' direct testimony. Note too that there is a mismatch between the Company's 30-year borrowing rate and the approximately 20-year average returns in the other rates.

Q. What were the results?

A. As set forth on page 3 of DPU Exhibit 1.12, the results ranged from 8.27 to 10.08 percent, overlapping most of the results of the other models.

Q. Did you put very much weight on the results of this bond differential indicator?

A. No. The underlying assumptions that, among others, unadjusted differences in debt yields directly relate to differences in common equity risk between the company and the market, make this model a weak indicator and should be used primarily as a check on the reasonableness of the other estimators.

[30] Morin uses Baa rated corporate bonds as the market benchmark for a risk premium model, although he doesn't explicitly endorse that rating. Roger A. Morin, Ph.D., *New Regulatory Finance*. Vienna, Virginia: Public Utility Reports, Inc., 2006, page 109.

V. 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 limited discussion regarding risk premium models (of which CAPM is a member). I would continue to point out, however, that CAPM appears to remain the most widely used model to estimate cost of equity in business and academia. 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.

I also agree with a change that Dr. Hadaway has made in this rate case regarding the application of his models. In the previous rate case (Docket No. 11-035-200), Dr. Hadaway

put 100 percent weight on his DCF model using his gross historical domestic product (GDP) growth rate. In that docket I was very critical of Dr. Hadaway for putting 100 percent weight on this one estimate, which produced his highest estimate. In rate cases prior to 2011, Dr. Hadaway had clearly considered other estimates although it was also clear that he favored DCF estimators using the GDP growth rate. In the current docket he puts, at best, very little weight on estimates using his GDP growth. I agree with the procedure of putting little weight on the GDP growth models and some weight on more than one model, which Dr. Hadaway appears to have done.

However, as discussed below, he now has shifted his weighting to put almost all of his weight on his "Forecast Utility Debt Yield plus Equity Risk Premium" model, plus, perhaps, a very little weight on some combination of his other models.

As I alluded to earlier, I have included in my list of comparable companies eight of Dr. Hadaway's 13 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 five companies that Dr. Hadaway included?

A. The bottom part of DPU Exhibit 1.4 summarizes my reasons for excluding these five companies in the "comments" section. ALLETE, Avista, and IDACORP were judged to be

too small based on the criteria I outlined earlier. Integrys Energy and Sempra have relatively low electric utility operations and are as much or more natural gas utilities than electric utilities. Both have significant non-regulated operations accounting for half or more of the parent company. 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 little or no weight on these results. As he has in the past before the Commission, Dr. Hadaway concludes that the best growth rate is based upon a weighted average of historical changes in nominal gross domestic product (GDP) going back to 1952, i.e. basically the post-World War II period. His current calculation gives a weighted average change of 5.6 percent. While it is omitted this time, in an earlier PacifiCorp rate case before the Commission, 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. [31]

[31] 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.

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 2014 to 2024 (released February 2014). Likewise the EIA annually publishes its long-term GDP forecast in *Annual Energy Outlook 2014Early Release Overview* (released December 16, 2013). The CBO forecast is for nominal GDP to grow 4.46 percent annually over the years 2013 to 2024; the EIA forecast is 4.24 percent. If these estimates of GDP growth were used in Dr. Hadaway's DCF model with the GDP growth rate, which in the previous rate case he gave 100 percent of the weight to, he would have obtained a cost of capital estimate of about 8.5 percent instead of 9.7 percent.

Q. Do you have comments on Dr. Hadaway's use of risk premium models?

A. Yes. 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 2012 time period. From these data Dr. Hadaway imputes an equity return of 10.05 percent for the first model, and 9.85 percent for the second model. There are questions about the reliability of published authorized rates of return as estimates of cost of equity and the comparability of these rates of return to the average public utility bond yield. For example, many of the rates may be based upon

negotiated settlements for which tradeoffs between stated cost of equity rates and other parts of the rate case may have been made. Another question is the policies in the different jurisdictions in terms of what evidence for rate of return testimony is accepted and how the regulators ultimately use that testimony. At a minimum, authorized returns are not direct market observations, and should only be useful if no direct market observations were available.

Q. Do you have other thoughts regarding his rate of return analyses?

A. Yes, I have some final observations 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 2014 will approximate 9.26 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. This is exactly the point of the Virginia commission discussed above,[32] wherein in it said

> When interest rates soared and the prime rate exceeded 20%, we did not allow exorbitant authorized returns which would have exacerbated the situation. We allowed returns to gradually increase, recognizing the trends of the day but avoiding extreme reaction. Recently interest rates have plummeted. Our appropriate reaction should not be to cut authorized equity returns drastically, but to once again gradually move in the direction of the trend.

[32] See page 17.

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.[33] However, a trend analysis does not predict changes in the trend. Thus my analysis here only serves to show an alternative way to analyze Dr. Hadaway's data and not to estimate what PacifiCorp's allowed rate of return should be. However, one thing is perfectly clear: unlike the previous docket, here Dr. Hadaway puts nearly all of his weight on his risk premium analysis, which happens to give the highest result; whereas in the previous rate case another indicator gave the highest results, so his risk premium models, that have now become highly reliable, were previously essentially ignored.[34]

Dr. Hadaway adds comments from Value Line and Standard & Poor's suggesting that utility stocks are "high." [35] 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 rather it is to determine 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 are 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. Dr. Hadaway also frequently refers to "current economic turmoil, and seems to call modest price fluctuations in the financial markets "credit market gyrations" and the "volatility of utility shares" that are increasing

[33] Phillips, Charles F. Jr. The Regulation of Public Utilities Theory and Practice. 1993. Public Utilities Reports, Inc. Arlington, VA, pages 408-409.
[34] In the previous rate case Dr. Hadaway "[discounts] these risk premium estimates because they are directly affected by the government's ongoing efforts to keep interest rates artificially low." (Direct Testimony of Samuel C. Hadaway, Docket No. 11-035-200, page 28, lines 579-581).
[35] Hadaway direct testimony, page 10, lines 202-234.

802 uncertainty and that these uncertainties "translate into a higher cost of capital."[36] These
803 statements may have been valid observations during the Fall of 2008, when daily swings of
804 500 to 1000 points in the Dow Jones Industrial Average (DJIA) were common and the level
805 of the DJIA was about 50 percent of today's level, but seem completely incongruous with
806 the relatively mild financial markets of the past year.
807
808 Beginning on line 240 of his direct testimony, Dr. Hadaway correctly identifies higher cost
809 of capital with lower stock prices: "Equity investors respond to changing assessments of risk
810 and financial prospects by changing the price they are willing to pay for a given security.
811 When the risk perceptions increase or financial prospects decline, investors refuse to pay the
812 previously existing market price for a company's securities and market supply and demand
813 forces then establish a new lower price."[37] This seems to suggest that Dr. Hadaway also
814 understands (correctly) that higher stock prices reflect lower costs of capital. As of April 9,
815 2014 electric utility stock prices are up over 10 percent since the beginning of 2014; and
816 based on his own statement cited above, Dr. Hadaway should agree that the cost of equity
817 has declined a proportional amount during that time.
818
819 Dr. Hadaway continues to support his use of historical GDP growth rates by equating
820 electric utilities with "average" companies. He also argues that long-term GDP forecasts by
821 government and other economists are wrong because they assume low, roughly 2 percent
822 annual inflation indefinitely. While future inflation may indeed at times exceed the Federal
823 Reserve's efforts to keep it at or below 2 percent, the "real" question is whether or not the

[36] Ibid., lines 235-236.
[37] Ibid., lines 240-244.

U.S. economy can ever again resume an annual long-term real growth rate of 3.3 percent that is assumed in his historical growth rates. Dr. Hadaway fails to explain how 3.3 percent long-term real growth in the United States economy will be achieved.

Over the past few dockets, it seems that Dr. Hadaway has selectively discarded 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. He 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). The past two rate cases in Utah he has given all or nearly all of the weight to his highest indicator, even though those indicators are significantly different in their construction and assumptions. He has ceased publishing statistics and graphs that related electric utility growth rates to growth in the economy as a whole, seemingly after it was pointed out that they don't support his GDP growth rate theory. In this and the previous rate cases, his analyses amount to ignoring or arguing away all of his calculations, except the one that gives him the highest result.

In my analyses I have tried to consistently give roughly the same weight to my indicators. DCF models have received the greatest consideration. But I have also given some weight to CAPM and my risk premium models because they provide additional insight into the problem of determining what investor expectations are.

In his direct testimony for this docket, Dr. Hadaway concludes that the appropriate return on equity for PacifiCorp should be 10.0 percent, which is very close to the highest estimate he

calculated. Unlike in the rate case in Docket No. 11-035-200 where he put 100 percent weight on his DCF model using historical GDP growth and zero percent weight on his risk premium methods, as the table and graph below illustrate, this time he puts nearly all of the weight on his risk premium models and little weight on his other models, including his (previously) favorite DCF model with historical GDP growth. If Dr. Hadaway were to weigh his models this time as he appears to have done in the past, the result would seem to be in the 9.50 to 9.70 percent range.

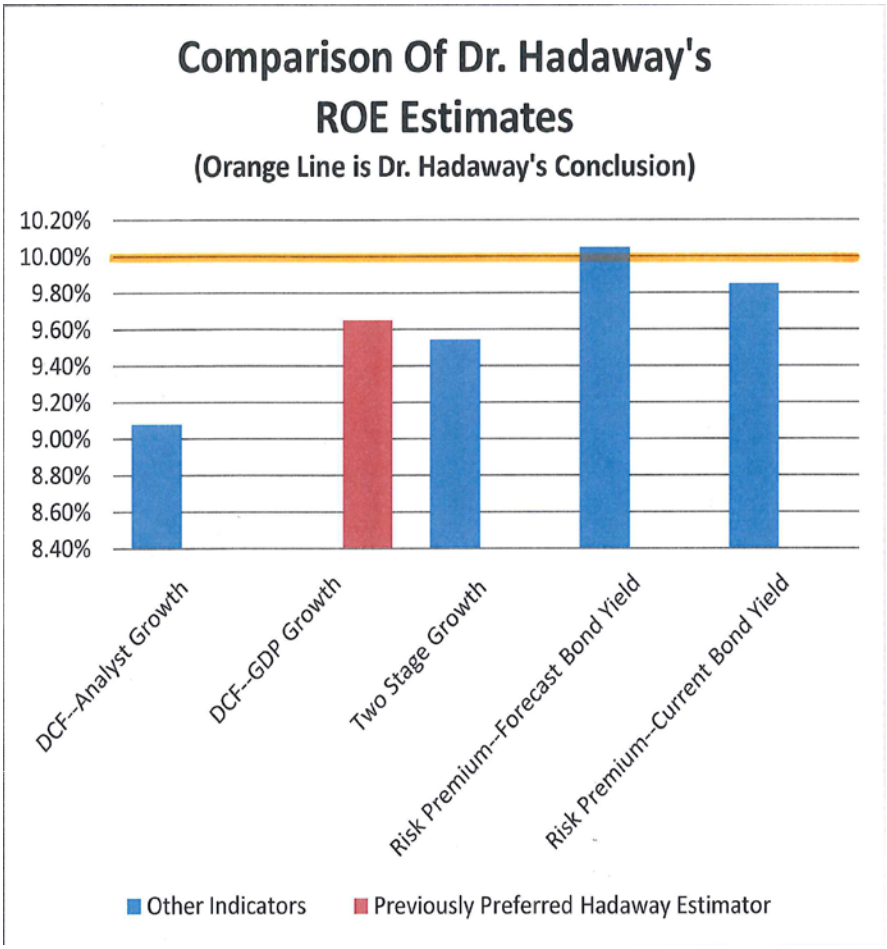
Table 5

PacifiCorp

Dr. Hadaway's ROE Estimators

Indicator	Midpoint of Median and Average
DCF--Analyst Growth	9.08%
DCF--GDP Growth	9.65%
Two Stage Growth	9.55%
Risk Premium--Forecast Bond Yield	10.05%
Risk Premium--Current Bond Yield	9.85%

Figure 2



Q. What do you conclude from the changes in Dr. Hadaway's analytical approach?

A. It is difficult to say what motivates the shifting between the various approaches. However, it is clear that neither consistency nor arriving at a cost of equity based on actual market data are high priorities in such an approach.

VI. 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. However, the Division believes that the common equity percentage should be reduced in future years to below 50 percent with the significant reduction in current and expected capital expenditures.

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 risk premium models. Market risk premia estimated recently by Value Line and Professor Damodaran in the range of 5 to 5.5 percent were also considered. After reviewing all of the data, I conclude that a point estimate of 9.25 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

888 the *Bluefield* and *Hope* cases.[38,39] I comment on these cases below as an economist and
889 regulator.
890
891 The *Bluefield* and *Hope* cases established economic and financial principles for proper
892 regulation. These principles included: (1) that the utility be allowed an opportunity to earn a
893 return on its utility property generally equal to returns earned by other companies of similar
894 risk; (2) this return should assure confidence in the financial soundness of the utility; (3) this
895 allowed return should maintain and support the credit of the company and allow it to attract
896 capital; (4) recognition that a return that is "right" at one time may become high or low by
897 changes in the economy regarding alternative investments; and (5) particularly in *Hope*,
898 what is important is that the "end result" of the rate order be just and reasonable; it is less
899 important how that result is arrived at. While the above list reflects the rights of the utility as
900 outlined in the *Bluefield* and *Hope* cases, the public interest requires rates to be "just and
901 reasonable," introducing a measure of fairness toward the Company's captive customers.
902
903 **Q. Do you believe your conclusions and recommendations arrive at a just and reasonable**
904 **result and are in the public interest? Please explain.**
905 A. Yes. My recommended capital structure is within the range of the comparable companies'
906 structure. It is also well within the range of equity capital percentages required by Moody's
907 and other rating agencies for the maintenance of an "A" debt rating. The use of embedded
908 cost of debt and preferred stock is well established in regulation. The prospective future debt
909 issuance is assumed to pay the forecast expected market return. I have demonstrated that

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

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 that fall within my reasonable range and are also noticeably below the 10 percent the Company is requesting. As a result of these and the other consideration discussed in my testimony, I conclude that the 9.25 percent cost of equity is not outside any range of expectations of investors and is warranted within the range because of the Company's business and risk profile. 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 9.25 percent as the authorized return on common equity for its operations in Utah and an overall weighted average cost of capital of 7.29 percent.

Q. Does this conclude your testimony?

A. Yes.

APPENDIX 1: 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. I have also included a risk premium model that could be referred to as the bond-yield differential method.

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 using that same 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 time frames and has a good basis for the length of time of the initial stage(s) as well as the growth differentials for different periods of time, 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. 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 different discount rates are 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.

A. The Capital Asset Pricing Model 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. 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. (Unsystematic risk is the risk associated with a particular company or industry). 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.[40]

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.

[40] Modern portfolio theory and the capital asset pricing model are discussed in detail in texts on corporate finance and investment valuation. Texts on utility company finance also discuss CAPM. 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*.
Roger A. Morin, Ph.D., (2006) *New Regulatory Finance*. Vienna, Virginia: Public Utility Reports, Inc.
Giacchino, Leonardo R. and Jonathan A. Lesser. (2011) Principles of Utility Corporate Finance. Vienna, Virginia: Public Utility Reports, Inc.

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 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.[41] A 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.[42] In 2013 Michelfelder and Theodossiou published a study of utility

[41] 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.
[42] 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.

betas and concluded that over time utility betas tend to converge to 0.59 and not the market beta of 1.0; they also concluded that the adjustments to betas performed by Value Line and some other sources "overpredicts utility betas…[and] are not appropriate."[43] In my analyses I use Value Line betas[44] but I compare those betas with 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.[45] 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.[46] For these reasons, I generally prefer to examine a 30 to 50 year time period. Thirty

[43] Richard A. Michelfelder and Panayiotis Theodossiou, "*Public Utility Beta Adjustment and Biased Costs of Capital in Public Utility Rate Proceedings,*" The Electricity Journal, vol. 29, issue 9 (November 2013), pages 60-68.

[44] Value Line adjusts its betas for market mean reversion. The formula is $\beta_a = \beta_r \times .66 + .34$, where β_a is the Value Line adjusted beta and β_r is the raw beta. Applying this formula to the 0.76 mean Value Line beta found in DPU Exhibit 1.10 results in a raw beta estimate of 0.64, which is similar to the estimated mean found by Michelfelder and Theodossiou.

[45] Stocks, Bonds, Bills, and Inflation (SBBI), any edition, published annually by Ibbotson Associates (now a division of Morningstar).

[46] Brigham and Houston, supra, p. 272.

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.

Another issue is the use of arithmetic averages versus geometric averages.[47] 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.[48] For these reasons and others, some experts advocate geometric returns.[49] In short, there is great dispute about how the market risk premium should be estimated.

[47] "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."

[48] 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.

[49] 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

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. These adjustments tend to be *ad hoc* in the sense that they statistically seem to "improve" CAPM to comply better with the theoretical expectation without a solid theoretical basis.

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.

and Implications, The 2011 Edition" http://pages.stern.nyu.edu/~adamodar/ , see recently published articles. Accessed May 4, 2011.

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 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.[50] Its use has been included in contested cases heard by the Tax Commission where other parties' experts had the opportunity to review and comment on it and I was subject to cross-examination.

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

A. Not necessarily. I primarily use this method to compare it to the other methods. I have included this model now in my cost of capital testimony beginning with my testimony on the stipulation in Docket No. 06-035-21, and in subsequent general rate cases.[51]

Q. What are the strengths and weaknesses of your "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.

[50] By Tax Commission rule, the primary cost of equity model is a variation of CAPM.
[51] See Docket Nos. 07-035-93, 07-057-13, 09-035-23, and 11-035-200.

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.

APPENDIX 2: 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 continues to recover from the Great Recession of December 2007 to June 2009.[52] While many segments of the economy have recovered, there are still pockets of weakness, in particular unemployment and under-employment remain relatively high. The minutes of the recent March 18-19, 2014 meeting of the Federal Open Market Committee of the Federal Reserve (FOMC) supports this view. Included in the FOMC minutes is a Summary of Economic Projections.[53] The FOMC participants

> expected that, under appropriate monetary policy, economic growth would pick up this year and next, before moving down a bit but remaining above its longer-run rate in 2016, and that the unemployment rate would decline gradually toward its longer-run normal level over the projection period…Most participants expected that highly accommodative monetary policy would remain warranted over the next few years to foster progress toward the Federal Reserve's longer-run objectives…all but one of the participants projected that it would be appropriate to wait until 2015 or later before beginning to increase the federal funds rate, and a large majority projected that it would then be appropriate to raise the target federal funds rate fairly gradually.[54]

The table below is taken from the Summary of Economic projections.

[52] 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.
[53] http://www.federalreserve.gov/monetarypolicy/fomcminutes20140319ep.htm accessed April 14, 2014.
[54] Ibid.

Table A1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, March 2014

Variable	Central tendency[1]				Range[2]			
	2014	2015	2016	Longer run	2014	2015	2016	Longer run
Change in real GDP	2.8 to 3.0	3.0 to 3.2	2.5 to 3.0	2.2 to 2.3	2.1 to 3.0	2.2 to 3.5	2.2 to 3.4	1.8 to 2.4
December projection	2.8 to 3.2	3.0 to 3.4	2.5 to 3.2	2.2 to 2.4	2.2 to 3.3	2.2 to 3.6	2.1 to 3.5	1.8 to 2.5
Unemployment rate	6.1 to 6.3	5.6 to 5.9	5.2 to 5.6	5.2 to 5.6	6.0 to 6.5	5.4 to 5.9	5.1 to 5.8	5.2 to 6.0
December projection	6.3 to 6.6	5.8 to 6.1	5.3 to 5.8	5.2 to 5.8	6.2 to 6.7	5.5 to 6.2	5.0 to 6.0	5.2 to 6.0
PCE inflation	1.5 to 1.6	1.5 to 2.0	1.7 to 2.0	2.0	1.3 to 1.8	1.5 to 2.4	1.6 to 2.0	2.0
December projection	1.4 to 1.6	1.5 to 2.0	1.7 to 2.0	2.0	1.3 to 1.8	1.4 to 2.3	1.6 to 2.2	2.0
Core PCE inflation[3]	1.4 to 1.6	1.7 to 2.0	1.8 to 2.0		1.3 to 1.8	1.5 to 2.4	1.6 to 2.0	
December projection	1.4 to 1.6	1.6 to 2.0	1.8 to 2.0		1.3 to 1.8	1.5 to 2.3	1.6 to 2.2	

Note: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The December projections were made in conjunction with the meeting of the Federal Open Market Committee on December 17-18, 2013.

1. The central tendency excludes the three highest and three lowest projections for each variable in each year.

2. The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

3. Longer-run projections for core PCE inflation are not collected.

Of note is the low GDP growth and inflation projections that are consistent with a long-term nominal GDP growth rate of less than 4.5 percent.

Value Line estimates that real U.S. gross domestic product (GDP) will increase by 2.9 percent in 2014 and 3.2 percent in 2015. Value Line forecasts inflation as measured by the GDP price deflator to remain fairly subdued at about 1.6 to 1.8 percent over the next 3 to 5

years.[55] The Congressional Budget Office (CBO) forecasts real GDP to increase 2.6 percent in 2014 and 3.2 percent in 2015. Over the period of 2013-2024, the CBO forecasts real GDP annual growth to average 2.44 percent[56] The Energy Information Administration (EIA) forecasts annual real GDP growth at 2.80 for 2014 and 3.24 for 2015; and over the 2013-2024 period it forecasts average real GDP growth to be 2.58 percent. The EIA also makes a very long forecast out to 2040. Over the 2024 to 2040 period average real GDP is projected to grow at only 2.38 percent.[57]

Economists at the Federal Reserve Bank of Cleveland recently published an estimate of real economic growth based upon an analysis of the yield curve. Their analysis suggests a relatively low rate of real growth of 1.4 percent over the next year, but with a low probability of a recession estimated at 1.81 percent.[58]

Despite the somewhat disparate forecasts, the important point to note is that all of these forecasts suggest modest growth for the United States economy.

Q. Could the international economy effect on the U.S. economy 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

[55] Value Line Investment Survey, *Selection & Opinion*, "Quarterly Economic Review," February 21, 2014, page 4991.
[56] CBO, Baseline Economic Forecast—February 2014 Baseline Projections. http://www.cbo.gov/publication/45010 accessed March 31, 2014.
[57] Energy Information Administration , "AEO2014 Early Release Overview," http://www.eia.gov/forecasts/aeo/er/index.cfm accessed March 31, 2014.
[58] Federal Reserve Bank of Cleveland http://www.clevelandfed.org/research/data/yield_curve/ accessed April 14, 2014.

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. Value Line indicated in its Quarterly Review that markets were doing less well overseas than in the U.S. Of note there are growth concerns in Japan and China where stock markets there are recently down around 10 percent from recent highs. In Europe,

> financial issues are affecting weaker euro-zone nations again, while fears are building in the equity, bond, and currency markets of such emerging nations as Argentina, Turkey, and Brazil. At this time, the major risks would appear to be on the global side, as is most often the case, given the less-settled nature of these economies and their generally poorly defined political prospects.[59]

Economists at Charles Schwab summarized their belief that "The European Central Bank continues to speak loudly and have a very small stick, but the outlook may be brightening, while Japan is watching to see if it shot itself in the foot economically. Chinese concerns are likely overblown and we believe there is an opportunity."[60] There has been much in the news recently regarding the situation with Russian and the Ukraine. Both Value Line and Schwab state that their views assume no worsening of the situation.[61]

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

[59] Ibid., page 4992.
[60] "Schwab Market Perspective: Proper Perspective," April 11, 2014. http://www.schwab.com/public/schwab/nn/articles/Market-Perspective accessed April 14, 2014.
[61] Schwab, Ibid. Also see, Value Line "Selection and Opinion" April 18, 2014 (written about one week before that date), page 4893.

A. Generally, the above mentioned international situations could be a drag on the continued improvements in the U.S. economy given the increased interconnection between world economies. If those international situations worsen markedly, or some other significant crisis arises, then the continued growth in the U.S. economy could be threatened for the duration of the crisis, and perhaps beyond. On the positive side, these foreign difficulties tend to keep the U.S. dollar and U.S. dollar denominated debt in demand, which in turn, tends to help to keep U.S. interest rates low.

Q. What does this mean for PacifiCorp?

A. In its recent 2013 IRP Update,[62] PacifiCorp has reduced its system coincident peak forecast through 2023 once again (see Figure ES.1) and now forecasts its average annual load growth to be 1.37 percent (Table 3.1). Average annual load growth represents the Company's load growth potential in real economic terms. After the nearly completed Lake Side II plant comes online about June 2014, the Company has no current plans to make major additions to its generation capacity before 2023. It plans to meet its load growth primarily with demand-side management (conservation) programs, and declining wholesale sales and market purchases known as front office transactions. The Company's 1.37 percent real growth forecast is below the 2.2 to 2.5 percent real growth forecast for the U.S. economy as a whole.[63]

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

[62] PacifiCorp—2013 Integrated Resource Plan Update, March 31, 2014.
[63] EIA, op. cit. forecast real U.S. annual economic growth to average about 2.4 percent between 2013-2023; the Congressional Budget Office, op. cit. forecasts real economic growth to average only 2.25 percent over the same period.

A. One opportunity is that the Company should be able to slow its capital spending for the next 10 years or so. While spending on new generation facilities will slow markedly in the foreseeable future, the Company may continue to spend relatively large amounts for pollution control equipment, transmission, and conversion of coal units to natural gas as well as spending on maintaining and expanding its distribution system.

B. The US Stock Market

Q. What has happened in the stock market since past year or so?

2013 was an outstanding year for the U.S. stock market generally. As compiled by Morningstar, large company stocks as represented by the Standard & Poor's 500 Index experienced a total return (capital gains and dividends) of 32.4 percent, small company stocks did even better with a one-year total return of almost 45.1 percent. Over the last 30 years large company and small company stocks have returned an average of 12.6 percent and 13.5 percent, respectively.[64] The Dow Jones Utility Index (which includes natural gas distribution companies as well as electric utilities) returned a much more modest 8.3 percent plus dividends.[65] Value Line reports that for the first quarter of 2014, the Dow Jones Industrial Average was down -0.7 percent, the Standard & Poor's 500 Index was up 1.3 percent and the small company Russell 2000 Index was up 0.8 percent. However, the Dow Jones Utility Index was up 8.5 percent.[66] As can be seen from these data, the stock market was generally only up slightly for the first three months of 2014; however, utility stocks significantly outpaced the market averages over this short span.

[64] *2014 Ibbotson SBBI Market Report*, Morningstar, Chicago, Ill., 2014
[65] http://finance.yahoo.com/q?s=^DJU&ql=1 accessed April 14, 2014. Return calculated by the author.
[66] Value Line, op. cit. April 11, 2014, page 4906,

For the first quarter 2014 Value Line makes the following comments:

> The first quarter was an uneven affair, with the bulls, the bears, and even the traders having had their way for a time. To wit, the period started with an ominous ring to it, as the key averages gave ground quickly and decisively through the opening stanza. Harsh winter weather; emerging market travail; slowing growth in China; an irregular fourth-quarter profit reporting season and forebodings about the just-ended period; a change in stewardship at the Federal Reserve…and escalating tensions between East and West over Ukraine and Crimea, were all front and center on the list of potential roadblocks for a market that is quite extended from a valuation point of view. It was against this challenging backdrop that Wall Street…wound up the three months more or less in place on a collective basis, which was fairly commendable, given where we are and the uncertain outlook at home and abroad….
>
> No sector held sway, but there was a swing toward the utilities. That group often stands out when the markets falter, as there is a tendency at such times to shy away from risk and search out high yields, which are the core attribute of the utilities' subset.[67]

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

A. Value Line in its "Selection & Opinion," dated April 11, 2014, makes the following comments:

> We are cautiously optimistic as we look ahead. Our sense is that the mostly better showing since January is a good portent going forward, in particular as it has been achieved in anything but a forgiving environment, especially late in the period when the first rumblings from the long-dormant Cold War were starting to be heard. How much there is to that story will likely play out in the months ahead. For now, with the bulls striving to bring the focus back on shore, the stock market ended the period with a flourish that may well have some room to run, assuming earnings come

[67] Value Line, "Selection & Opinion" April 11, 2014, page 4906.

through and things settle down off-shore—neither of which is all that certain to say the least.[68]

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

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 political situation in Europe worsens, the United States financial markets could possibly benefit as money come here seeking a safe haven; furthermore, as the Value Line comment stated above notes, utility stocks and bonds could benefit from investors seeking safe havens, thus reducing the utilities' cost of capital.

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. However, in December 2013 and January 2014 the Federal Reserve began to "taper" its quantitative easing "QE" program by significantly reducing its monthly bond buying from $85 billion to $55 billion.[69] As set forth on DPU Exhibit 1.14, the interest rate spread between Aaa rated corporate bonds and Baa rated corporate bonds has decline from 1.47 percentage points in July 2013 to 0.98 percentage

[68] Ibid.
[69] http://www.federalreserve.gov/newsevents/press/monetary/20131218a.htm
http://www.federalreserve.gov/newsevents/press/monetary/20140129a.htm
http://www.federalreserve.gov/newsevents/press/monetary/20140319a.htm

points; the spread has declined further in to 0.68 percentage points in March 2014. Generally the narrowing of the rate spread can be interpreted as improving confidence in that investors are willing to take on more risk. Corporate Aaa and Baa interest rates reached a low in about the third quarter 2012 mostly due to the Federal Reserve's QE program and continuing relative weakness in the economy driving down bond yields. However, in anticipation of the end of QE and the strengthening of the economy, bond yields rose noticeably in the second half of 2013, but have declined somewhat through the first 3 months of 2014. Value Line is forecasting AAA rated corporate bonds to average 4.7 percent in 2014 and 4.9 percent in 2015, then rising to the 5.0 to 6.0 percent range in 2016 to 2018.[70]

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 LIBOR rate has declined from a post-recession high of about 0.57 percent in January 2012 to a current yield of about 0.23 percent. During this period the T-Bill rate has been managed by the Federal Reserve to be under 0.10 percent; recently the T-Bill has been about 0.05 percent. The narrowing of the range between the LIBOR rate and the T-Bill implies increased liquidity in the European markets in which U.S. entities also participate. Value Line forecasts 90-day T-bills to average 0.10 percent in 2014 rising to 0.3 percent in 2015; in the 2016 to 2018 period, Value Line expects T-Bill rates to rise sharply to historically more normal levels of 2.5 to 3.5 percent. Value Line also expects the 10-year U.S. Treasury

[70] Value Line Investment Survey, *Selection & Opinion*, "Quarterly Economic Review," February 21, 2014, page 4991.

note to average around 3.0 percent in 2014. 3.3 percent in 2015, and rising steadily to about 4.3 percent in 2018.[71]

Q. What do you conclude regarding bond interest rates?

A. Generally the forecasts for interest rates as represented by Value Line and others[72] suggest confidence that the U.S. and world economies will generally improve over the next few years coupled with further declines in Federal Reserve interventions causing borrowing rates to rise. However, the rise in longer-term rates in particular is expected to be relatively gradual and orderly.

Q. What are your conclusions concerning the financial markets?

A. The U.S. financial markets appear to be behaving more or less normally. The common stocks did well in 2013 overall, and so far in 2014 have been flat. Bond prices rose in mid-2013 in anticipation of Federal Reserve "tapering" and the strengthening economy, but have since flattened out and even trended down slightly the last few months. Assuming the economy continues to strengthen and the Federal Reserve continues its tapering strategy, then bond yields will be expected to rise over time. The stock market is harder to predict, but it should continue to trend upward as long as investors anticipate continued economic

[71] Ibid.

[72] For example, both the CBO and EIA forecasts cited above make interest rate forecasts. The CBO forecasts 90-day T-Bill rates to average 0.2 percent in 2014 and 0.4 percent in 2015; the 10-year Treasury note is forecast to average 3.1 percent and 3.7 percent in 2014 and 2015 respectively. The EIA forecasts the 10-year treasury note to average 2.54 percent and 2.90 percent for 2014 and 2015.

improvement. Although electric utility stocks increased about an average of 10 percent since the beginning of 2014, such a growth rate is unlikely to continue. I would anticipate that they will likely be at best flat to slightly trending upward for the remainder of 2014. Therefore, I do not anticipate that the cost of equity for electric utility stocks will decline much more this year.

D. Summary of the Utah Economy

Q. How does the Utah economy compare to the rest of the nation?

A. A March 21, 2014 news release from the economics section of the Utah Department of Workforce Services, date, stated that

> Utah's nonfarm payroll employment for February 2014 grew by an estimated 2.5 percent, adding 32,200 jobs to the economy compared to February 2013. Utah's current employment level registers 1,301,200.
>
> February's seasonally adjusted unemployment rate remained steady from January at 3.9 percent …The national unemployment rate remained virtually unchanged from January, increasing on tenth to 6.7 percent.
>
> Utah continues to experience positive job growth. The current growth rate of 2.5 percent is below the state's long-run average of 3.1 but well above the 1.7 average the state has experienced since September 1997 when the state first reached the million-job threshold.[73]

Q. What is the current economic outlook for Utah?

A. In late 2013 the Bureau of Economic and Business Research (BEBR) and the Utah Governor's Office of Planning and Budget (GOPB), published the following summary in the "2014 Utah Economic Outlook:"

[73] http://www.jobs.utah.gov/wi/press/2001press/ratecurrent.pdf

> Overview of the Economy—Utah typically grows more rapidly than the nation after a recession, and this pattern is continuing in the current recovery. For the U.S., employment grew 1.6 percent in 2013, compared to 3.3 percent for Utah. While employment increased during 2013, Utah's unemployment rate also improved to 4.8 percent, lower than the rate in 2012. Though housing stabilized, with building permits at 12,500 in 2013, home-building is not leading the economy as it does during a typical recovery.
>
> Outlook 2014—Utah's employment is expected to grow at 3.1 percent, equal its long-term average, while the nation increases to 1.7 percent. With job growth near the long-term average, the unemployment rate will decrease to 4.2 percent. In contrast to the early stages of the recovery, housing will provide noticeable support to the expansion. Construction employment will grow 7 percent in 2014. The continuing housing recovery accounts for most of the strong showing in construction. [74]

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

A. With respect to cost of capital, the Utah economy by itself will have little effect beyond the obvious that much of PacifiCorp's potential profitability and growth is tied to Utah customers and the growth prospects of the state. As it stands, Utah is relatively healthy economically and should continue to provide modest growth opportunities to PacifiCorp.

[74] Utah Governor's Office of Management and Budget, "2014 Utah Economic Outlook" http://gomb.utah.gov/wp-content/uploads/sites/7/2014/01/2014UtahEconomicOutlook.pdf accessed April 15, 2014.