

Rocky Mountain Power  
Docket No. 13-035-184  
Witness: Samuel C. Hadaway

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

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Direct Testimony of Samuel C. Hadaway

Return on Equity

January 2014

1 **Introduction and Purpose of Testimony**

2 **Q. Please state your name, occupation, and business address.**

3 A. My name is Samuel C. Hadaway. I am a Principal in FINANCO, Inc., Financial  
4 Analysis Consultants, 3520 Executive Center Drive, Austin, Texas 78731.

5 **Q. On whose behalf are you testifying?**

6 A. I am testifying on behalf of Rocky Mountain Power (“RMP” or “the Company”).

7 **Q. Please describe your education and professional experience.**

8 A. A summary of my education and professional experience is contained in my  
9 resume, which is attached as Appendix A.

10 **Q. What is the purpose of your testimony?**

11 A. The purpose of my testimony is to explain why a 10.0 rate of return on equity  
12 (“ROE”) is appropriate for RMP.

13 **Q. Please define the term “cost of equity capital” (“COE”).**

14 A. The COE is the rate of return that equity investors require or expect to receive  
15 from their investment in common stocks. Conceptually, COE is no different than  
16 the interest rate on debt or the cost of preferred stock. Equity investors expect a  
17 return on their capital commensurate with the risks they take and consistent with  
18 returns that might be available from other similar investments.

19 **Q. Is COE the same as ROE?**

20 A. The terms are often used interchangeably. In regulatory proceedings, however,  
21 ROE is the commission-established component that, along with the utility’s cost  
22 of debt and preferred stock, is used to calculate the utility’s overall cost of capital,  
23 which is used in setting rates. To establish ROE, regulatory commissions typically

24 consider the quantitative results of various traditional cost of equity models,  
25 which I describe below, as well as other relevant economic factors and  
26 circumstances.

27 **Summary of Recommendations**

28 **Q. Have you determined the COE for utilities comparable to RMP?**

29 A. Yes. As I customarily do, I have applied a comparable company discounted cash  
30 flow (“DCF”) analysis and a bond-yield plus equity-risk premium approach to  
31 estimate COE for a group of utilities comparable to the Company. My analyses  
32 indicate a comparable group COE range of 9.1 percent to 10.1 percent. As I will  
33 explain in more detail later, however, I discount the lower portion of this range,  
34 from the DCF model, because that model continues to show lower COE estimates  
35 at a time when interest rates have increased significantly. The Utah Public Service  
36 Commission (“Commission”), the Division of Public Utilities (“DPU”), and the  
37 other parties in recent RMP cases have seen the difficulties with DCF and equity-  
38 risk premium models that have resulted from the federal government’s monetary  
39 policies. Until May 2013, these monetary policies had artificially reduced interest  
40 rates to levels well below the normal market cost of debt, leaving savers and other  
41 income-oriented investor with few options. These investors sought to maintain  
42 yield by buying utility stocks for their dividends, which in turn pumped up utility  
43 stock prices (and reduced utility dividend yields), further reducing DCF estimates  
44 of COE. The net result has been artificially low DCF and risk premium COE  
45 estimates.

46           Since the Federal Reserve System (“Fed”) Federal Open Market  
47           Committee (“FOMC”), in June 2013, announced plans to reduce its  
48           accommodative monetary policies, interest rates have increased by approximately  
49           100 basis points, with yields on the 30-year Treasury bonds at their highest levels  
50           since July 2011. Contrary to the rising interest rate trend, DCF results (due to  
51           higher stock prices and lower growth rate estimates) have continued to decline. A  
52           declining COE during a period of significantly rising interest rates is entirely  
53           counter-intuitive and not at all consistent with basic economic theory. For this  
54           reason, for the present case, I discount the lower DCF results and base my  
55           recommendation on the upper portions of my DCF and risk premium ranges. I  
56           recommend that the allowed ROE for RMP be set at 10.0 percent. This ROE  
57           request is comparable to the average allowed ROE for vertically integrated  
58           utilities for the first three quarters of 2013, at 9.9 percent, and consistent with the  
59           higher interest rates expected while rates from this case will be in effect. While  
60           this requested ROE is above the midpoint of my quantitative results, under current  
61           market conditions and economic circumstances, I believe this is a reasonable ROE  
62           for establishing the Company’s rates at this time.

63   **Q.   How is your analysis structured?**

64   A.   A comparable company approach is required to estimate RMP’s COE. COE  
65   cannot be estimated for RMP directly because the Company is a wholly-owned  
66   subsidiary of MidAmerican Energy Holdings Company. As such, RMP does not  
67   have publicly traded common stock or other independent market data that would  
68   be required to estimate its DCF cost directly. Therefore, I begin my comparable

69 company review with all the vertically-integrated electric utilities that are  
70 included in the *Value Line Investment Survey* (“Value Line”). Value Line is a  
71 widely-followed, reputable source of financial data that is often used by  
72 professional regulatory economists. To improve the group’s comparability with  
73 RMP, which has a senior secured bond rating of A from Standard & Poor’s  
74 (“S&P”) and A2 from Moody’s Investors Service (“Moody’s”), I restricted the  
75 group to integrated electric utilities with senior secured bond ratings of at least A-  
76 by S&P or A3 by Moody’s. I also required the companies to derive at least 70  
77 percent of their revenues from regulated utility sales, to have consistent financial  
78 records not affected by recent mergers or restructuring, to have a consistent  
79 dividend record with no dividend cuts or resumptions during the past two years,  
80 or to not have other abnormal financial issues. I also excluded delivery-only  
81 companies from the group. The fundamental characteristics and bond ratings of  
82 the 13 companies in my comparable group are presented in Exhibit  
83 RMP\_\_(SCH-1), page 1.

84 In my risk premium analysis, I present estimates from both current and  
85 projected single-A utility bond yields for 2014. These rates are consistent with the  
86 Company’s single-A bond ratings and reflect both the current government-  
87 influenced interest rate environment and the rate levels that are expected during  
88 the coming year. The data sources and the details of my COE studies are  
89 contained in Exhibits RMP\_\_(SCH-1) through RMP\_\_(SCH-6).

90 **Q. How is the remainder of your testimony organized?**

91 A. My testimony is divided into three additional sections. Following this

92 introduction, I review general capital market costs and conditions and discuss  
93 recent developments in the electric utility industry that may affect the cost of  
94 capital. In the following section, I review various methods for estimating the  
95 COE. In that section, I discuss comparable earnings methods, equity risk premium  
96 methods, and the discounted cash flow model. In the final section, I apply the  
97 DCF and risk premium models to estimate RMP's COE, I discuss the details of  
98 my COE studies, and I summarize my ROE recommendations.

### 99 **Fundamental Factors That Affect the Cost of Equity**

100 **Q. What is the current outlook for the U.S. economy?**

101 A. The U.S. economy is finally on what appears to be a sustainably improving track.  
102 The housing markets in many parts of the country have firmed up and prices are  
103 increasing. The stock market has largely recovered from its losses during the  
104 financial crisis and consumer confidence is improving. Although unemployment  
105 remains a concern, most economists now expect the government's monetary  
106 policies to become less accommodative over the coming year.

107 In this regard, on June 19, the FOMC issued the following policy  
108 statement, indicating somewhat improved economic conditions:

109 Information received since the Federal Open Market Committee  
110 met in May suggests that economic activity has been expanding at  
111 a moderate pace. Labor market conditions have shown further  
112 improvement in recent months, on balance, but the unemployment  
113 rate remains elevated. Household spending and business fixed  
114 investment advanced, and the housing sector has strengthened  
115 further, but fiscal policy is restraining economic growth. Partly  
116 reflecting transitory influences, inflation has been running below  
117 the Committee's longer-run objective, but longer-term inflation  
118 expectations have remained stable.

119 Consistent with its statutory mandate, the Committee seeks to  
120 foster maximum employment and price stability. The Committee  
121 expects that, with appropriate policy accommodation, economic  
122 growth will proceed at a moderate pace and the unemployment rate  
123 will gradually decline toward levels the Committee judges  
124 consistent with its dual mandate. The Committee sees the  
125 downside risks to the outlook for the economy and the labor  
126 market as having diminished since the fall. The Committee also  
127 anticipates that inflation over the medium term likely will run at or  
128 below its 2 percent objective.

129 The Committee will closely monitor incoming information on  
130 economic and financial developments in coming months. The  
131 Committee will continue its purchases of Treasury and agency  
132 mortgage-backed securities, and employ its other policy tools as  
133 appropriate, until the outlook for the labor market has improved  
134 substantially in a context of price stability. The Committee is  
135 prepared to increase or reduce the pace of its purchases to maintain  
136 appropriate policy accommodation as the outlook for the labor  
137 market or inflation changes. In determining the size, pace, and  
138 composition of its asset purchases, the Committee will continue to  
139 take appropriate account of the likely efficacy and costs of such  
140 purchases as well as the extent of progress toward its economic  
141 objectives.<sup>1</sup>

142 In its June 19 comments, the FOMC recognized the economy's improving  
143 conditions. This slightly changed stance from the FOMC has led to investors'  
144 expectations for less accommodative monetary policy, which, in turn, have led to  
145 significant increases in long-term interest rates.

146 **Q. What is the connection between FOMC monetary policy and the changes in**  
147 **interest rates?**

148 A. Over the past several years, the FOMC has attempted to stimulate the economy by  
149 various monetary policy methods. Recently, the most widely discussed of those

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<sup>1</sup>FOMC Press Release, June 19, 2013. While the FOMC, as of its most recent meeting, October 29-30, 2013, has not reduced its Treasury bond or mortgage backed securities purchases, its statements following each meeting have continued to indicate likely "tapering" of accommodative monetary policy as economic and, particularly, labor market conditions improve over the coming year.

150 methods have been programs called “Quantitative Easing 3” (“QE3” and  
151 “Operation Twist”). Under the QE3 program, the FOMC has directed the  
152 purchase of \$85 billion per month of long-term mortgage backed securities and  
153 other long-term U.S. Government instruments, thus pushing the yields on those  
154 securities down. Through Operation Twist, the Fed has issued short-term U.S.  
155 Treasury bills to repurchase longer-term U.S. Treasury bonds, thus again holding  
156 down yields in the longer-term markets. As noted above, in its June 19, 2013  
157 press release, the FOMC indicated that improving economic conditions might  
158 lead to tapering off of its stimulus programs. Since that announcement, long-term  
159 interest rates have increased significantly.

160 **Q. What has been the experience in the U.S. capital markets for the past several**  
161 **years?**

162 A. In Exhibit RMP\_\_\_\_(SCH-2), page 1, I provide a 10-year review of annual interest  
163 rates and rates of inflation. During this period, interest rates and inflation  
164 generally have been lower than in the previous decade. Inflation in this period, as  
165 measured by the Consumer Price Index (“CPI”), fluctuated between a low of zero  
166 percent (in 2008) and 4.1 percent (caused by the spike in energy costs that  
167 occurred in 2007). The decade’s average annual inflation rate (2.4 percent) was  
168 approximately 100 basis points lower than the longer-term average rate of the past  
169 60 years (see Exhibit RMP\_\_\_\_(SCH-4). Interest rates declined steadily over most  
170 of the period, with the 2012 Treasury bond and average utility rates at historically  
171 low levels (see Exhibit RMP\_\_\_\_(SCH-6), page 1).



172 **Q. What has been the more recent monthly trend in long-term interest rates?**

173 A. The month-by-month interest rate data for the period since December 2010 are  
174 presented in Exhibit RMP\_\_\_(SCH-2), page 2, with the most recent two years  
175 summarized in Table 1 below:

**Table 1**  
**Long-Term Interest Rate Trends**

<b>Month</b>	<b>Single-A Utility Rate</b>	<b>30-Year Treasury Rate</b>	<b>Single-A Spread</b>
Dec-11	4.33	2.98	1.35
Jan-12	4.34	3.03	1.31
Feb-12	4.36	3.11	1.25
Mar-12	4.48	3.28	1.20
Apr-12	4.40	3.18	1.22
May-12	4.20	2.93	1.27
Jun-12	4.08	2.70	1.38
Jul-12	3.93	2.59	1.34
Aug-12	4.00	2.77	1.23
Sep-12	4.02	2.88	1.14
Oct-12	3.91	2.90	1.01
Nov-12	3.84	2.80	1.04
Dec-12	4.00	2.88	1.12
Jan-13	4.15	3.08	1.07
Feb-13	4.18	3.17	1.01
Mar-13	4.20	3.16	1.04
Apr-13	4.00	2.93	1.07
May-13	4.17	3.11	1.06
Jun-13	4.53	3.40	1.13
Jul-13	4.68	3.61	1.07
Aug-13	4.73	3.76	0.97
Sep-13	4.80	3.79	1.01
Oct-13	4.70	3.68	1.02
Nov-13	4.77	3.80	0.97
3-Mo Avg	<b>4.76</b>	<b>3.76</b>	<b>1.00</b>
12-Mo Avg	<b>4.41</b>	<b>3.36</b>	<b>1.05</b>

Sources: Mergent Bond Record (Utility Rates); www.federalreserve.gov (Treasury rates)

Monthly averages are for the respective periods ending November 30, 2013.

176 The data in Table 1 track the steady decline in interest rates that occurred until  
177 May 2013. The Federal Reserve’s continuing intervention in the financial markets  
178 and its efforts to keep short-term rates near zero and rates on longer-term U.S.

179 Treasury bonds at historically low levels have dominated the capital markets for  
180 the past several years. While the effects of these monetary policy efforts are not  
181 easily captured in financial models for estimating COE (models that assume  
182 market equilibrium exists), continuing economic uncertainty and the recent rise in  
183 interest rates indicate that the decline in COE had not been nearly as large as the  
184 decline in interest rates.

185 **Q. What do forecasts for the economy and interest rates show for the coming**  
186 **year?**

187 A. Economic growth for 2013 is expected to be modest, but more normal growth in  
188 is expected for 2014 and later. Interest rates are expected to rise further during the  
189 coming year. On page 3 of Exhibit RMP\_\_\_(SCH-2), I provide the forward  
190 Bloomberg curve for Treasury yields through December 31, 2015. These forecasts  
191 reflect the significant further increases in interest rates that are expected. These  
192 data are summarized in Table 2 below.

**Table 2**  
**Interest Rate Forecast**

	Nov 2013	Dec 2014E	Dec 2015E
1-Yr. Treasuries	0. 1%	0. 5%	1. 4%
10-Yr. Treasuries	2. 7%	3. 3%	3. 6%
30-Yr. Treasuries	3. 8%	4. 1%	4. 3%

Source: [www.federalreserve.gov](http://www.federalreserve.gov) (November rates) and Bloomberg Active Treasuries, December 11, 2013 (Forecasted rates).

193 The Bloomberg data show that during the coming year long-term Treasury rates  
194 are expected to rise by an additional 30 to 50 basis points relative to their average  
195 November 2013 levels.

196 **Q. What is the industry’s current fundamental position?**

197 A. The industry has seen significant volatility both in terms of fundamental operating

198 characteristics and the effects of the economy. Slow economic growth in some  
199 parts of the country has reduced sales volumes and uncertain environmental rules  
200 have both increased the difficulty of planning for future load requirements. In the  
201 equity markets, lack of income opportunities and ongoing turmoil has increased  
202 investors' preferences for safer, dividend paying companies. Value Line discusses  
203 this phenomenon and provides a warning of possible overvaluation in its recent  
204 Electric Utility update.

205 **Value Line Investor Survey**

206 The average dividend yield of stocks in the Electric Utility  
207 Industry is 4.0%. This is twice the market median of dividend-  
208 paying equities, but is low for this industry, by historical standards.  
209 With a little over a month to go in 2013, the Value Line Utility  
210 Average has risen 15% year to date, as income-oriented investors  
211 can't count on savings accounts, CDs, or money-market funds for  
212 high yields. That's a substantial increase, though it falls well short  
213 of the 27% advance in the Value Line Composite Average. Almost  
214 every one of the stocks in the Electric Utility Industry is trading  
215 within its 2016-2018 Target Price Range, and a few (such as  
216 Dominion) are trading above that range. This indicates that  
217 valuations in this group are unattractive. (*Value Line Investor*  
218 *Survey*, November 22, 2013, p. 141).

219  
220 Standard & Poor's provides further perspective for investors' dividend  
221 preferences for utility shares.

222 **S&P Industry Survey**

223 Electric utility shares underperformed in 2012, but outperformed in  
224 first quarter of 2013. The S&P Electric Utilities subindex declined  
225 4.3% in 2012, versus a 13.4% increase for the benchmark S&P 500  
226 Composite stock index and a 13.7% increase in the broader S&P  
227 1500 SuperComposite stock index. We believe the  
228 underperformance in 2012 reflected, to some degree, a  
229 consolidation of the strong performance in 2011. Primarily,  
230 however, it was driven by the continuing weakness in the economy  
231 and the power markets, the uncertainties related to the federal tax  
232 policy on dividends, the strength of the broader market....  
233 (Standard & Poor's Electric Utility Industry Survey, March 2013,  
234 p. 6).

235 Credit market gyrations and the volatility of utility shares demonstrate the  
236 increased uncertainties that utility investors face. These uncertainties translate into  
237 a higher cost of equity capital.

238 **Q. How do capital market concerns and financial risk perceptions affect the cost**  
239 **of equity capital?**

240 A. Equity investors respond to changing assessments of risk and financial prospects  
241 by changing the price they are willing to pay for a given security. When the risk  
242 perceptions increase or financial prospects decline, investors refuse to pay the  
243 previously existing market price for a company's securities and market supply  
244 and demand forces then establish a new lower price. The lower market price  
245 typically translates into a higher cost of capital through a higher dividend yield  
246 requirement as well as the potential for increased capital gains if prospects  
247 improve. In addition to market losses for prior shareholders, the higher cost of  
248 capital is transmitted directly to the company by the need to earn a higher cost of  
249 capital on existing and new investments just to maintain the stock's new lower  
250 price level and the reality that the firm must issue more shares to raise any given  
251 amount of capital for future investment. The additional shares also impose  
252 additional future dividend requirements and may reduce future earnings per share  
253 growth prospects if the proceeds of the share issuance are unable to earn their  
254 expected rate of return.

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

257 A. Over the past five years, average allowed ROEs have ranged between 9.9 percent

258 and 10.6 percent. Table 3 below summarizes the ROE data for integrated electric  
259 utilities like RMP.

**Table 3**  
**Authorized Equity Returns for Vertically-Integrated Electric Utilities**

	2009	2010	2011	2012	2013*
1 <sup>st</sup> Quarter	10.57%	10.59%	10.09%	10.30%	9.83%
2 <sup>nd</sup> Quarter	10.75%	10.18%	10.39%	9.95%	9.86%
3 <sup>rd</sup> Quarter	10.50%	10.32%	10.11%	9.90%	10.03%
4 <sup>th</sup> Quarter	10.59%	10.32%	10.32%	10.16%	

Full Year Average 10.63% 10.38% 10.25% 10.10% 9.90%  
Source: Regulatory Focus, SNL Regulatory Research Associates, Major Rate Case Decisions,  
October 8, 2013; Exhibit RMP\_\_\_(SCH-3).  
\*2013 average is for first three quarters only.

260 **Q. What do these results indicate for the cost of equity relative to the decline in**  
261 **interest rates?**

262 A. While during the past three years interest rates had dropped by 150 basis points or  
263 more, allowed ROEs dropped by only about one-half that amount. This result is  
264 consistent with most regulators recognizing the artificial impact that the  
265 government’s expansive monetary policy had on interest rates. The federal  
266 government responded to the economic crisis by artificially depressing interest  
267 rates through its ongoing purchases of Treasury bonds and mortgage backed  
268 securities. This action dropped interest rates and removed yield opportunities for  
269 traditional investors in safe, fixed income investments. As discussed above,  
270 investors responded by buying dividend paying stocks, like utilities, at rates not  
271 consistent with normal risk-return relationships. Their search for income pushed  
272 up utility stock prices to potentially excessive levels, which thus reduced dividend  
273 yields and, therefore, ROE estimates from the traditional “yield plus growth”  
274 DCF model. The quantitative COE estimation models, both risk premium models

275 and DCF models, skewed by government-induced low interest rates and resulting  
276 low dividend yields, therefore, produced artificially low estimates of ROE.

277 **Estimating the Cost of Equity Capital**

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

279 A. The purpose of this section is to compare the strengths and weaknesses of several  
280 of the most widely used methods for estimating the COE. Estimating the COE is  
281 fundamentally a matter of informed judgment. The various models provide a  
282 concrete link to actual capital market data and assist with defining the various  
283 relationships that underlie the ROE estimation process. (Please see Appendix B  
284 for further technical discussion of the DCF and risk premium models).

285 **Q. How is the fair rate of return in the regulatory process related to the**  
286 **estimated cost of equity capital?**

287 A. The regulatory process is guided by fair rate of return principles established in the  
288 U.S. Supreme Court cases, *Bluefield Water Works* and *Hope Natural Gas*:

289 A public utility is entitled to such rates as will permit it to earn a  
290 return on the value of the property which it employs for the  
291 convenience of the public equal to that generally being made at the  
292 same time and in the same general part of the country on  
293 investments in other business undertakings which are attended by  
294 corresponding risks and uncertainties; but it has no constitutional  
295 right to profits such as are realized or anticipated in highly  
296 profitable enterprises or speculative ventures. (*Bluefield Water*  
297 *Works & Improvement Company v. Public Service Commission of*  
298 *West Virginia*, 262 U.S. 679, 692-693 (1923)).

299 From the investor or company point of view, it is important that  
300 there be enough revenue not only for operating expenses, but also  
301 for the capital costs of the business. These include service on the  
302 debt and dividends on the stock. By that standard the return to the  
303 equity owner should be commensurate with returns on investments  
304 in other enterprises having corresponding risks. That return,  
305 moreover, should be sufficient to assure confidence in the financial

306 integrity of the enterprise, so as to maintain its credit and to attract  
307 capital. (*Federal Power Commission v. Hope Natural Gas Co.*, 320  
308 U.S. 591, 603 (1944)).

309 Based on these principles, the fair rate of return should closely parallel investor  
310 opportunity costs as discussed above. If a utility earns its market COE, neither its  
311 stockholders nor its customers should be disadvantaged.

312 **Q. Please provide an overview of the cost of equity capital estimation process.**

313 A. The COE is the rate of return that common stockholders expect, just as interest on  
314 bonds and dividends on preferred stock are the returns that investors in those  
315 securities expect. Unlike returns from debt and preferred stocks, however, the  
316 equity return is not directly observable in advance and, therefore, it must be  
317 estimated or inferred from capital market data and trading activity.

318 An example helps to illustrate the COE concept. Assume that an investor  
319 buys a share of common stock for \$20 per share. If the stock's expected dividend  
320 is \$1.00, the expected dividend yield is 5.0 percent ( $\$1.00 / \$20 = 5.0$  percent). If  
321 the stock price is also expected to increase to \$21.20 after one year, this one dollar  
322 and 20 cent expected gain adds an additional 6.0 percent to the expected total rate  
323 of return ( $\$1.20 / \$20 = 6.0$  percent). Therefore, buying the stock at \$20 per share,  
324 the investor expects a total return of 11.0 percent: 5.0 percent dividend yield, plus  
325 6.0 percent price appreciation. In this example, the total expected rate of return of  
326 11.0 percent is the appropriate measure of the cost of equity capital, because it is  
327 this rate of return that caused the investor to commit the \$20 of equity capital in  
328 the first place. If the stock were riskier, or if expected returns from other  
329 investments were higher, investors would have required a higher rate of return

330 from the stock, which would have resulted in a lower initial purchase price in  
331 market trading.

332 Each day market rates of return and prices change to reflect new investor  
333 expectations and requirements. For example, when interest rates on bonds and  
334 savings accounts rise, utility stock prices usually fall. This is true, at least in part,  
335 because higher interest rates on these alternative investments make utility stocks  
336 relatively less attractive, which causes utility stock prices to decline in market  
337 trading. This competitive market adjustment process is quick and continuous, so  
338 that market prices generally reflect investor expectations and the relative  
339 attractiveness of one investment versus another. The data presented previously in  
340 Tables 1 and 2 illustrate this fundamental financial principle. Therefore, to  
341 estimate the COE, one must apply informed judgment about the relative risk of  
342 the company in question as well as knowledge about the risk and expected rate of  
343 return characteristics of other available investments.

344 **Q. How does the market account for risk differences among the various**  
345 **investments?**

346 A. Risk-return tradeoffs among capital market investments have been the subject of  
347 extensive financial research. Literally dozens of textbooks and hundreds of  
348 academic articles have addressed the issue. Generally, such research confirms the  
349 common sense conclusion that investors will take additional risks only if they  
350 expect to receive a higher rate of return. Empirical tests consistently show that  
351 returns from low risk securities, such as U.S. Treasury bills, are the lowest; that  
352 returns from longer-term Treasury bonds and corporate bonds are increasingly

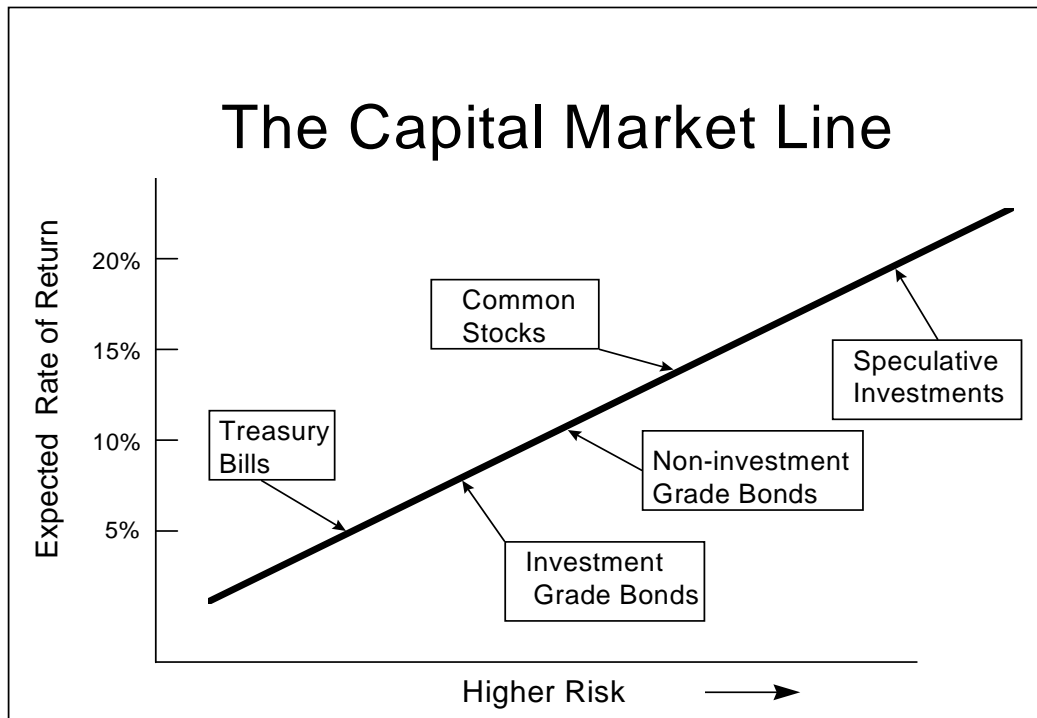


353 higher as risks increase; and generally, returns from common stocks and other  
354 more risky investments are even higher. These observations provide a sound  
355 theoretical foundation for both the DCF and risk premium methods for estimating  
356 the cost of equity capital. These methods attempt to capture the well founded risk-  
357 return principle and explicitly measure investors' rate of return requirements.

358 **Q. Can you illustrate the capital market risk-return principle that you just**  
359 **described?**

360 A. Yes. The following graph depicts the risk-return relationship that has become  
361 widely known as the Capital Market Line ("CML"). The CML offers a graphical  
362 representation of the capital market risk-return principle. The graph is not meant  
363 to illustrate the actual expected rate of return for any particular investment, but  
364 merely to illustrate in a general way the risk-return relationship.

# Risk-Return Tradeoffs



365 As a continuum, the CML can be viewed as an available opportunity set for  
366 investors. Those investors with low risk tolerance or investment objectives that  
367 mandate a low risk profile should invest in assets depicted in the lower left-hand  
368 portion of the graph. Investments in this area, such as Treasury bills and short-  
369 maturity, high quality corporate commercial paper, offer a high degree of investor  
370 certainty. Before considering the potential effects of inflation, such assets are  
371 virtually risk-free.

372 Investment risks increase as one moves up and to the right along the CML.  
373 A higher degree of uncertainty exists about the level of investment value at any  
374 point in time and about the level of income payments that may be received.  
375 Among these investments, long-term bonds and preferred stocks, which offer

376 priority claims to assets and income payments, are relatively low risk, but they are  
377 not risk-free. The market value of long-term bonds, even those issued by the U.S.  
378 Treasury, often fluctuates widely when government policies or other factors cause  
379 interest rates to change.

380 Farther up the CML continuum, common stocks are exposed to even more  
381 risk, depending on the nature of the underlying business and the financial strength  
382 of the issuing corporation. Common stock risks include market-wide factors, such  
383 as general changes in capital costs, as well as industry and company specific  
384 elements that may add further to the volatility of a given company's performance.  
385 As I will illustrate in my risk premium analysis, common stocks typically are  
386 more volatile (have higher risk) than high quality bond investments and,  
387 therefore, they reside above and to the right of bonds on the CML graph. Other  
388 more speculative investments, such as stock options and commodity futures  
389 contracts, offer even higher risks (and higher potential returns). The CML's  
390 depiction of the risk-return tradeoffs available in the capital markets provides a  
391 useful perspective for estimating investors' required rates of return.

392 **Q. What specific methods and capital market data are used to evaluate the**  
393 **COE?**

394 A. Techniques for estimating the COE normally fall into three groups: comparable  
395 earnings methods, risk premium methods, and DCF methods.

396 The first set of estimation techniques, the comparable earnings methods,  
397 has evolved over time. The original comparable earnings methods were based on  
398 book accounting returns. This approach developed ROE estimates by reviewing

399 accounting returns for unregulated companies thought to have risks similar to  
400 those of the regulated company in question. These methods have generally been  
401 rejected because they assume that the unregulated group is earning its actual cost  
402 of capital, and that its equity book value is the same as its market value. In most  
403 situations these assumptions are not valid, and, therefore, accounting-based  
404 methods do not generally provide reliable COE estimates.

405 More recent comparable earnings methods are based on historical stock  
406 market returns rather than book accounting returns. While this approach has some  
407 merit, it too has been criticized because there can be no assurance that historical  
408 returns actually reflect current or future market requirements. Also, in practical  
409 application, earned market returns tend to fluctuate widely from year-to-year. For  
410 these reasons, a current COE estimate (based on the DCF model or a risk  
411 premium analysis) is usually required.

412 The second set of estimation techniques is grouped under the heading of  
413 risk premium methods. These methods begin with currently observable market  
414 returns, such as yields on government or corporate bonds, and add an increment to  
415 account for the additional equity risk. The capital asset pricing model (“CAPM”)  
416 and arbitrage pricing theory (“APT”) model are more sophisticated risk premium  
417 approaches. The CAPM and APT methods estimate the COE directly by  
418 combining the “risk-free” government bond rate with explicit risk measures to  
419 determine the risk premium required by the market. Although these more  
420 sophisticated methods are widely used in academic cost of capital research, their  
421 additional data requirements and their potentially questionable underlying

422 assumptions have detracted from their use in most regulatory jurisdictions. On the  
423 other hand, the basic risk premium methods generally provide a useful parallel  
424 approach with the DCF model and assure consistency with other capital market  
425 data in the equity cost estimation process.

426 The third set of estimation techniques, based on the DCF model, is the  
427 most widely used regulatory COE estimation method. Like the risk premium  
428 approach, the DCF model has a sound basis in theory, and many argue that it has  
429 the additional advantage of simplicity. I will describe the DCF model in detail  
430 below, but in essence its estimate of ROE is simply the sum of the expected  
431 dividend yield and the expected long-term dividend, earnings, or price growth rate  
432 (all of which are assumed to grow at the same rate). While dividend yields are  
433 easy to obtain, estimating long-term growth is more difficult. Because the  
434 constant growth DCF model also requires very long-term growth estimates  
435 (technically to infinity), some argue that its application is too speculative to  
436 provide reliable results, resulting in the preference for the multistage growth DCF  
437 analysis.

438 **Q. Of the three estimation methods, which do you believe provides the most**  
439 **reliable results?**

440 A. From my experience, in periods of reasonable capital market equilibrium, a  
441 combination of DCF and the basic risk premium methods usually provide the  
442 most reliable approach. While the caveat about estimating long-term growth must  
443 be observed, the DCF model's other inputs are readily obtainable, and the model's  
444 results typically are consistent with equilibrium capital market behavior. The

445 basic risk premium methods provide a good parallel approach to the DCF model  
446 and further ensure that current market conditions are accurately reflected in the  
447 COE estimate. However, due to ongoing market turmoil and government  
448 monetary policy, which I discussed previously, the current extremely low ROE  
449 estimates from these methods should be discounted.

450 **Cost of Equity Capital for Rocky Mountain Power**

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

452 A. The purpose of this section is to present my quantitative studies of the cost of  
453 equity capital for RMP and to discuss the details and results of my analysis.

454 **Q. How are your studies organized?**

455 A. In the first part of my analysis, I apply three versions of the DCF model to a 13-  
456 company group of electric utilities based on the selection criteria discussed  
457 previously. In the second part of my analysis, I apply basic equity risk premium  
458 models and review projected economic conditions and projected capital costs for  
459 the coming year.

460 My DCF analysis is based on three versions of the DCF model. In the first  
461 version of the DCF model, I use the constant growth format with long-term  
462 expected growth based on analysts' estimates of five-year utility earnings growth.  
463 While I continue to endorse a longer-term growth estimation approach based on  
464 growth in overall gross domestic product, I show the analyst growth rate DCF  
465 results because this is the approach that has traditionally been used by many  
466 regulators. In the second version of the DCF model, for the estimated growth rate,  
467 I use only the long-term estimated GDP growth rate. Finally, in the third version

468 of the DCF model, I use a two-stage growth approach, with stage one growth  
469 based on Value Line's three-to-five-year dividend projections and stage two  
470 growth based on long-term projected GDP growth. The dividend yields in all  
471 three of the models are from Value Line's projections of dividends for the coming  
472 year and stock prices are from the three-month average for the months that  
473 correspond to the Value Line editions from which the underlying financial data  
474 are taken.

475 **Q. Why do you believe the long-term GDP growth rate should be used to**  
476 **estimate long-term growth expectations in the DCF model?**

477 A. Growth in nominal GDP (real GDP plus inflation) is the most general measure of  
478 economic growth in the U.S. economy. For long time periods, such as those used  
479 in the Morningstar/Ibbotson Associates rate of return data, nominal GDP growth  
480 has averaged between five percent and eight percent per year. From this  
481 observation, Professors Brigham and Houston offer the following observation  
482 concerning the appropriate long-term growth rate in the DCF Model:

483 Expected growth rates vary somewhat among companies, but  
484 dividends for mature firms are often expected to grow in the future  
485 at about the same rate as nominal gross domestic product (real  
486 GDP plus inflation). On this basis, one might expect the dividend  
487 of an average, or "normal," company to grow at a rate of 5 to 8  
488 percent a year. (Eugene F. Brigham and Joel F. Houston,  
489 *Fundamentals of Financial Management*, 11th Ed. 2007, page  
490 298).

491 Other academic research on corporate growth rates offers similar conclusions  
492 about GDP growth as well as concerns about the long-term adequacy of analysts'  
493 forecasts:

494 Our estimated median growth rate is reasonable when compared to  
495 the overall economy's growth rate. On average over the sample  
496 period, the median growth rate over 10 years for income before  
497 extraordinary items is about 10 percent for all firms.... After  
498 deducting the dividend yield (the median yield is 2.5 percent per  
499 year), as well as inflation (which averages 4 percent per year over  
500 the sample period), the growth in real income before extraordinary  
501 items is roughly 3.5 percent per year. This is consistent with the  
502 historical growth rate in real gross domestic product, which has  
503 averaged about 3.4 percent per year over the period 1950-1998.  
504 (Louis K. C. Chan, Jason Karceski, and Josef Lakonishok, "The  
505 Level and Persistence of Growth Rates," The Journal of Finance,  
506 April 2003, p. 649).

507 IBES long-term growth estimates are associated with realized  
508 growth in the immediate short-term future. Over long horizons,  
509 however, there is little forecastability in earnings, and analysts'  
510 estimates tend to be overly optimistic.... On the whole, the absence  
511 of predictability in growth fits in with the economic intuition that  
512 competitive pressures ultimately work to correct excessively high  
513 or excessively low profitability growth. (Ibid, page 683).

514 These findings support the notion that long-term growth expectations are more  
515 closely predicted by broader measures of economic growth than by near-term  
516 analysts' estimates. Especially for the very long-term growth rate requirements of  
517 the DCF model, the growth in nominal GDP should be considered an important  
518 input.

519 **Q. How did you estimate the expected long-run GDP growth rate?**

520 A. I developed my long-term GDP growth forecast from nominal GDP data  
521 contained in the St. Louis Federal Reserve Bank data base. That data for the  
522 period 1952 through 2012 are summarized in my Exhibit RMP\_\_\_\_(SCH-4). As  
523 shown at the bottom of that exhibit, the overall average for the period was 6.5  
524 percent. The data also show, however, that after the early 1980s, lower inflation  
525 has resulted in lower nominal GDP growth. For this reason I gave more weight to



526 the more recent years in my GDP forecast. Based on this approach, my overall  
527 forecast for long-term GDP growth at 5.6 percent is approximately 100 basis  
528 points lower than the long-term average GDP growth rate.

529 **Q. Why do you believe your forecast of GDP growth based on long-term**  
530 **historical data is appropriate in the DCF model?**

531 A. There are at least three reasons. First, most econometric forecasts are derived  
532 from the trending of historical data or the use of weighted averages. This is the  
533 approach I have taken in Exhibit RMP\_\_(SCH-4). The long-run historical  
534 average GDP growth rate is 6.5 percent, but my estimate of long-term expected  
535 growth is lower, at 5.6 percent. My forecast is lower because my forecasting  
536 method gives much more weight to the more recent 10- and 20-year periods.

537 Second, some currently lower GDP growth forecasts likely understate very  
538 long growth rate expectations that are required in the DCF model. Many of those  
539 forecasts are currently low because they are based on the assumption of  
540 permanently low inflation rates, in the range of two percent. As shown in my  
541 Exhibit RMP\_\_(SCH-4), the average long-term inflation rate measured by CPI  
542 has been at or over three percent in all but the most recent 10- and 20-year  
543 periods. Also, as shown in Exhibit RMP\_\_(SCH-2), page 1, from December  
544 2008 to December 2009, even with the continuing effects of the economic  
545 recession, the CPI increased by 2.8 percent and in 2007 the CPI increased by over  
546 four percent. Use of long-term inflation rates of two percent or less to estimate  
547 long-term nominal growth in the DCF model is not consistent with reasonable  
548 long-term expectations for the U.S. economy or investors' long-term experience.

549                   Finally, the current economic turmoil makes it even more important to  
550 consider longer-term economic data in the growth rate estimate. As discussed in  
551 the previous section, current near-term forecasts for both real GDP and inflation  
552 are severely depressed. The longer-term forecasts of professional economists are  
553 also depressed. Under these circumstances, a longer-term balance is even more  
554 important. For all these reasons, while I am also presenting other growth rate  
555 approaches based on analysts' estimates in this testimony, I believe it is  
556 appropriate also to consider long-term GDP growth in estimating the DCF growth  
557 rate.

558 **Q. Please summarize the results of your DCF analyses.**

559 A. The DCF results for my comparable company group are presented in Exhibit  
560 RMP\_\_\_\_(SCH-5). As shown in the first column of page 1 of that exhibit, the  
561 traditional constant growth model indicates a COE of 9.1 percent. In the second  
562 column of page 1, I recalculate the constant growth results with the growth rate  
563 based on long-term forecasted growth in GDP. With the GDP growth rate, the  
564 constant growth model indicates a cost of common equity range of 9.6 percent to  
565 9.7 percent. Finally, in the third column of page 1, I present the results from the  
566 multistage DCF model. The multistage model indicates a cost of common equity  
567 of 9.5 percent to 9.6 percent. The results from the DCF model, therefore, indicate  
568 a cost of common equity range of 9.1 percent to 9.7 percent. As noted previously,  
569 I discount the lower DCF estimates because they represent declining COEs at a  
570 time when interest rates have increased significantly and are expected to increase  
571 further during the coming year.

572 **Q. What are the results of your basic equity risk premium studies?**

573 A. The details and results of my basic equity risk premium studies are shown in my  
574 Exhibit RMP\_\_\_\_(SCH-6). These studies indicate a cost of common equity range  
575 of 9.9 percent to 10.1 percent.

576 **Q. How are your basic equity risk premium studies structured?**

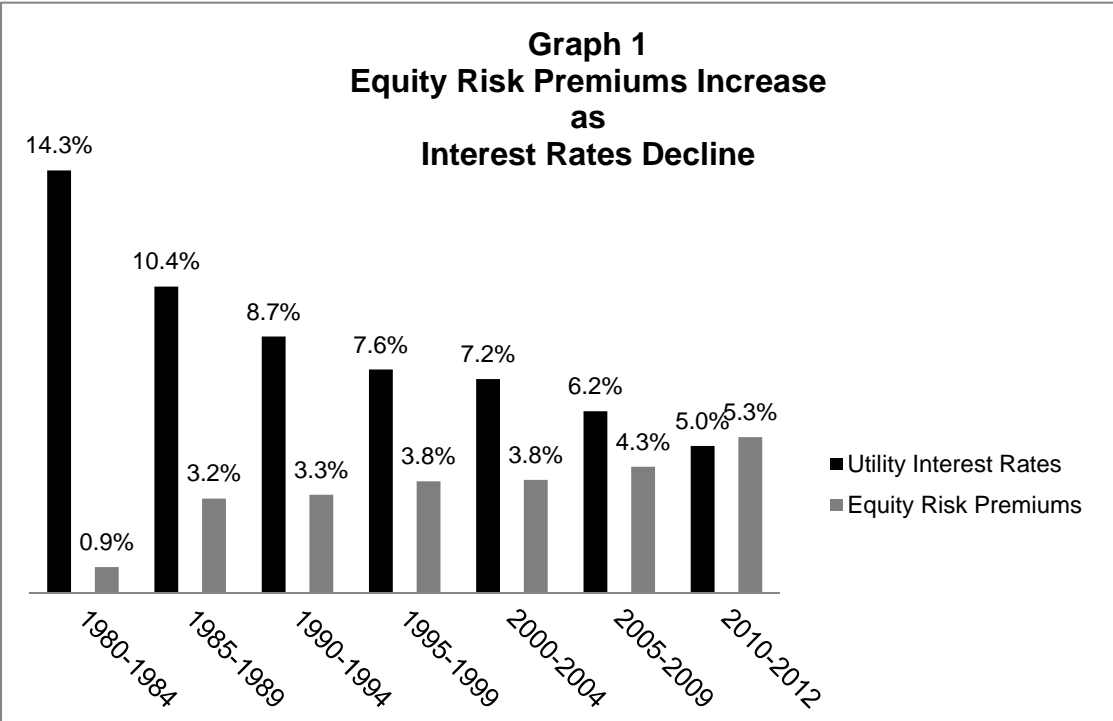
577 A. My basic equity risk premium studies are divided into two parts. First, I compare  
578 electric utility authorized ROEs for the period 1980-2012 to contemporaneous  
579 long-term utility interest rates. The differences between the average authorized  
580 ROEs and the average interest rate for each year is the indicated equity risk  
581 premium. I then add the indicated equity risk premium to the forecasted and  
582 current single-A utility bond interest rate to estimate the cost of common equity.  
583 Because there is a strong inverse relationship between equity risk premiums and  
584 interest rates (when interest rates are high, risk premiums are low and vice versa),  
585 further analysis is required to estimate the current equity risk premium level.

586 The inverse relationship between equity risk premiums and interest rate  
587 levels is well documented in numerous, well-respected academic studies. These  
588 studies typically use regression analysis or other statistical methods to predict or  
589 measure the equity risk premium relationship under varying interest rate  
590 conditions. On page 3 of Exhibit RMP\_\_\_\_(SCH-6), I provide a regression  
591 analysis of the allowed annual equity risk premiums relative to interest rate levels.  
592 The negative and statistically significant regression coefficients confirm the  
593 inverse relationship between equity risk premiums and interest rates. This means

594 that when interest rates rise by one percentage point, the COE increases, but by a  
595 smaller amount. Similarly, when interest rates decline by one percentage point,  
596 the COE will also decline but by less than one percentage point. I use this  
597 negative interest rate change coefficient in conjunction with current and  
598 forecasted interest rates to estimate the appropriate cost of common equity.

599 **Q. Can you illustrate the inverse relationship between equity risk premiums and**  
600 **interest rates without using the statistical analysis described above?**

601 A. Yes. Statistical analysis is often used, especially in academic research, to  
602 substantiate certain economic and financial relationships. For equity risk premium  
603 analysis, however, the fundamental issue can be observed by simply averaging the  
604 data for various time periods without further statistical analysis. In Graph 1  
605 below, I show average utility bond yields and equity risk premiums for each non-  
606 overlapping, five-year period between 1980 and 2010 and for 2011-2012.



607 These data show that equity risk premiums have consistently increased as interest  
 608 rates have declined, and that they were lower when interest rates were high. This  
 609 result is a market-based reflection, which shows that required rates of return in the  
 610 stock market do not move in lockstep with changes in interest rates. Because  
 611 utilities must compete with other types of equity investments for capital, the ROE  
 612 for utilities does not change by as much as the observed changes in interest rates.  
 613 Arguments that unadjusted, long-term average risk premiums can be used with  
 614 current, historically low interest rates to estimate COE are mistaken. That  
 615 approach to equity risk premium analysis will consistently understate the required  
 616 rate of return.

617 **Q. Please summarize the results of your COE analysis.**

618 A. My results are summarized in Table 4:

**Table 4**  
**Summary of Cost of Equity Estimates**

<u>DCF Analysis</u>	<u>Indicated Cost</u>
Constant Growth (Analysts' Growth)	9.1%
Constant Growth (GDP Growth)	9.6%-9.7%
Multistage Growth Model	9.5%-9.6%
Indicated DCF Range	<u>9.1%-9.7%</u>
<u>Equity Risk Premium Analysis</u>	<u>Indicated Cost</u>
Forecast Utility Debt Yield+ Equity Risk Premium	
Equity Risk Premium ROE (5.11% + 4.94%)	10.1%
Current Utility Debt + Equity Risk Premium	
Equity Risk Premium ROE (4.76% + 5.09%)	9.9%
<u>RMP Cost of Equity</u>	<u>10.0%</u>

619 **Q. How should these results be interpreted to determine a reasonable ROE**  
620 **upon which to base rates for Rocky Mountain Power?**

621 A. The fair and reasonable ROE for RMP is 10.0 percent. This requested ROE, near  
622 the top of my risk premium range, is appropriate given the current rising interest  
623 rate environment and continuing economic concerns that remain from the  
624 financial crisis. These factors make it difficult to strictly interpret quantitative  
625 model estimates for the cost of equity. While corporate interest rates had dropped  
626 to record low levels and the DCF results have continued to decline as utility  
627 dividend yields have dropped, equity market volatility remains high. Under these  
628 conditions, use of a lower DCF range based strictly on traditional estimation  
629 model results will understate the market cost of equity. Based on all these factors,  
630 an ROE of 10.0 percent is a reasonable rate of return to be used for setting rates in  
631 this case.

632 **Q. Does this conclude your direct testimony?**

633 A. Yes, it does.

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- Principal, Financial Analysis Consultants (FINANCO, Inc.).
- Ph.D. in Finance and Economics.
- Extensive expert witness testimony in court and before regulatory agencies.
- Management of professional research staff in academic and regulatory organizations.
- Professional presentations before executive development groups, the National Rate of Return Analysts' Forum, and the New York Society of Security Analysts.
- Financial Management Association, previously Vice President for Practitioner Services.

**EDUCATION**

**The University of Texas at Austin  
Ph.D., Finance and Econometrics  
January 1975**

*Dissertation: An Evaluation of the  
Original and Recent Variants of the  
Capital Asset Pricing Model.*

**The University of Texas at Austin  
MBA, Finance  
June 1973**

*Thesis: The Pricing of Risk on the  
New York Stock Exchange.*

**Southern Methodist University  
BA, Economics  
June 1969**

Honors program. Departmental  
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**OTHER EXPERIENCE**

**University of Texas at Austin  
Adjunct Associate Professor  
1985-1988, 2004-Present**

Corporate Financial Management,  
Investments, and Integrative Finance  
Cases.

**Texas State University San Marcos  
Associate Professor of Finance  
1983-1984, 2003-2004**

Graduate and undergraduate courses  
in Financial Management, Managerial  
Economics, and Investment Analysis.

**Public Utility Commission of Texas  
Chief Economist and Director of  
Economic Research Division  
August 1980-August 1983**

Lead financial witness. Supervised  
Commission staff in research and  
testimony on rate of return, financial  
condition, and economic analysis.

**Assistant Professor of Finance  
Texas Tech University  
July 1978-July 1980  
University of Alabama  
January 1975-June 1978**

Member of graduate faculty. Conducted  
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Served as consultant to industry,  
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**FINANCIAL AND ECONOMIC TESTIMONY IN REGULATORY  
PROCEEDINGS (Client in parenthesis)**

**Cost of Money Testimony**

- Texas Public Utility Commission, Docket No. 41791, September 25, 2013, (Entergy Texas, Inc.)
- New Hampshire Public Utilities Commission, Docket No. 2013-086, April 15, 2013 (Northern Utilities, Inc.)
- Maine Public Utilities Commission, Docket No. 2013-00133, April 1, 2013 (Northern Utilities, Inc.)
- Arkansas Public Service Commission, Docket No. 13-028-U, March 1, 2013, (Entergy-Arkansas)
- Louisiana Public Service Commission, Docket No. U-32707, February 15, 2013 (Entergy Gulf States Louisiana).
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- Washington Utilities and Transportation Commission, Docket UE-130043, January 11, 2013 (PacifiCorp).
- Louisiana Public Service Commission, Docket No. U-32425, October 5, 2012 (Entergy Gulf States Louisiana).
- Maryland Public Service Commission, Case No. 9299, July 27, 2012 (Baltimore Gas and Electric Company).
- Kansas Corporation Commission, Docket No. 12-KCPE-764-RTS, April 20, 2012 (Kansas City Power & Light Company).
- Oregon Public Utility Commission, Docket No. UE 246, March 1, 2012 (PacifiCorp).
- Missouri Public Service Commission, Case No. ER-2012-0174, February 27, 2012 (Kansas City Power & Light Company).
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- Utah Public Service Commission, Docket No. 11-035-200, February 15, 2012 (Rocky Mountain Power/PacifiCorp).
- Texas Public Utility Commission, Docket No. 40094, February 1, 2012, (El Paso Electric Company).
- Oregon Public Utility Commission, Docket No. UG 221, December 30, 2011 (NW Natural Gas Company).
- Wyoming Public Service Commission, Docket No. 20000-405-ER-11, December 9, 2011 (Rocky Mountain Power dba/PacifiCorp).
- Texas Public Utility Commission, Docket No. 39896, November 28, 2011, (Entergy Texas, Inc.)
- Idaho Public Utilities Commission, Case No. PAC-E-111-12, May 27, 2011 (Rocky Mountain Power/PacifiCorp).
- Maine Public Utilities Commission, Docket No. 2011-92, May 5, 2011 (Northern Utilities, Inc.)
- New Hampshire Public Utilities Commission, Docket No. DG 11-069, May 4, 2011 (Northern Utilities, Inc.)
- Arizona Corporation Commission, Docket No. G-04204A-11-0158, April 8, 2011 (UNS Gas, Inc.)
- Utah Public Service Commission, Docket No. 10-035-124, January 24, 2011 (Rocky Mountain Power/PacifiCorp).
- Massachusetts Department of Public Utilities, D.P.U. 11.01 (Electric) and D.P.U. 11.02 (Gas), January 14, 2011, (Fitchburg Gas and Electric Light Company d/b/a/ Until)
- Wyoming Public Service Commission, Docket No. 20000-384-ER-10, November 22, 2010 (Rocky Mountain Power dba/PacifiCorp).
- Illinois Commerce Commission, Docket No. 10-0467, July 28, 2010 (Commonwealth Edison Company).



- Missouri Public Service Commission, Case No. ER-2010-0355, June 4, 2010 (Kansas City Power & Light Company).
- Missouri Public Service Commission, Case No. ER-2010-0356, June 4, 2010 (KCP&L Greater Missouri Operations Company).
- Idaho Public Utilities Commission, Case No. PAC-E-10-07, May 28, 2010 (Rocky Mountain Power/PacifiCorp).
- Washington Utilities and Transportation Commission, Docket UE-100749, May 4, 2010 (PacifiCorp).
- New Hampshire Public Utilities Commission, Docket No. DE 10-055, April 15, 2010 (Unitil Energy Systems)
- Oregon Public Utility Commission, Docket No. UE-217, March 1, 2010 (PacifiCorp).
- Texas Public Utility Commission, Docket No. 37744, December 30, 2009,(Entergy Texas, Inc.)
- Kansas Corporation Commission, Docket No. 10-KCPE-415-RTS, December 17, 2009 (Kansas City Power & Light Company).
- Texas Public Utility Commission, Docket No. 37690, December 9, 2009,(El Paso Electric Company).
- California Public Utilities Commission, Application No. 09-11-015, November 20, 2009 (PacifiCorp).
- Federal Energy Regulatory Commission, Docket No. ER10-230-000, November 6, 2009 (Kansas City Power & Light Company and KCP&L Greater Missouri Operations Company).
- Wyoming Public Service Commission, Docket No. 20000-352-ER-09, October 2, 2009 (Rocky Mountain Power dba/PacifiCorp).
- Arkansas Public Service Commission, Docket No. 09-084-U, September 4, 2009, (Entergy-Arkansas)
- Texas Public Utility Commission, Docket No. 37364, August 28, 2009,(American Electric Power-SWEPCO)
- Utah Public Service Commission, Docket No. 09-035-23, June 23, 2009 (Rocky Mountain Power/PacifiCorp).
- New Mexico Public Regulation Commission, Case No. 09-00171-UT, May 2009, (El Paso Electric Company).
- Oregon Public Utility Commission, Docket No. UE-207, April 2, 2009 (PacifiCorp).
- Arkansas Public Service Commission, Docket No. 09-008-U, February 19, 2009 (American Electric Power-SWEPCO).
- Washington Utilities and Transportation Commission, Docket UE-090205, February 9, 2009 (PacifiCorp).
- Idaho Public Utilities Commission, Case No. PAC-E-08-07, September 19, 2008 (Rocky Mountain Power/PacifiCorp).
- Missouri Public Service Commission, Case No. ER-2009-089, September 5, 2008 (Kansas City Power & Light Company).
- Kansas Corporation Commission, Docket No. 09-KCPE-246-RTS, September 5, 2008 (Kansas City Power & Light Company).
- Missouri Public Service Commission, Case No. ER-2009-090, September 5, 2008 (Aquila, Inc. dba/KCP&L Greater Missouri Operations Company).
- Utah Public Service Commission, Docket No. 08-035-38, July 17, 2008 (Rocky Mountain Power/PacifiCorp).
- Wyoming Public Service Commission, Docket No. 20000-333-ER-08, July 2008 (Rocky Mountain Power dba/PacifiCorp).
- Texas Public Utility Commission, Docket No. 35717, June 27, 2008, (Oncor Electric Delivery Company LLC).
- Washington Utilities and Transportation Commission, Docket UG-080546, March 28, 2008 (NW Natural).
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- Texas Public Utility Commission, Docket No. 34800, September 26, 2007, (Entergy Gulf States, Inc.)
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- New Mexico Public Regulation Commission, Case No. 07-00077-UT, February 21, 2007, (Public Service Company of New Mexico).
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- Texas PUC Docket Nos. 33734, January 22, 2007 (Electric Transmission Texas, LLC).
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- Louisiana Public Service Commission, Docket No. U-23327, October 2006 and January 2005 (Southwestern Electric Power Company, American Electric Power Company)
- Missouri Public Service Commission, Case No. ER-2007-0004, July 3, 2006 (Aquila, Inc.).
- New Mexico Public Regulation Commission, Case No. 06-00258-UT, June 30, 2006 (El Paso Electric Company).
- New Mexico Public Regulation Commission, Case No. 06-00210-UT, May 30, 2006 (Public Service Company of New Mexico).
- Texas Public Utility Commission, Docket No. 32093, April 14, 2006 (CenterPoint Energy-Houston Electric, LLC).
- Utah Public Service Commission, Docket No. 06-035-21, March 7, 2006 (PacifiCorp).
- Oregon Public Utility Commission, Case No. UE-179, February 23, 2006 (PacifiCorp).
- Kansas Corporation Commission, Docket No. 06-KCPE-828-RTS, January 31, 2006 (Kansas City Power & Light Company).
- Missouri Public Service Commission, Case No. ER-2006-0314, January 27, 2006 (Kansas City Power & Light Company).
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- Texas Railroad Commission, Gas Utilities Division No. 9625, September 2005 (CenterPoint Energy Entex).
- Illinois Commerce Commission, Docket No. 05-0597, August 31, 2005 (Commonwealth Edison Company).
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- Utah Public Service Commission, Docket No. 04-2035-, August 4, 2004 (PacifiCorp).
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- Minnesota Public Utilities Commission, Docket No. G-008/GR-04-901, July 2004, (CenterPoint Energy Minnegasco).
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## Appendix B

### Technical Discussion of Discounted Cash Flow And Risk Premium Models

#### 1        **General Stock Price DCF Model**

2        The DCF model is predicated on the concept that stock prices are the present  
3        value or discounted value of all future dividends that investors expect to receive.

4        In the most general form, the DCF model is expressed in the following formula:

$$5 \qquad P_0 = D_1/(1+k) + D_2/(1+k)^2 + \dots + D_\infty/(1+k)^\infty \qquad (1)$$

6        where  $P_0$  is today's stock price;  $D_1$ ,  $D_2$ , etc. are all future dividends and  $k$  is the  
7        discount rate, or the investor's required rate of return on equity. Equation (1) is a  
8        routine present value calculation based on the assumption that the stock's price is  
9        the present value of all dividends expected to be paid in the future.

#### 10       **Constant Growth DCF Model**

11       Under the additional assumption that dividends are expected to grow at a constant  
12       rate "g" and that  $k$  is strictly greater than  $g$ , equation (1) can be solved for  $k$  and  
13       rearranged into the simple form:

$$14 \qquad k = D_1/P_0 + g \qquad (2)$$

15       Equation (2) is the familiar constant growth DCF model for cost of equity  
16       estimation, where  $D_1/P_0$  is the expected dividend yield and  $g$  is the long-term  
17       expected dividend growth rate.

#### 18       **Multi-stage DCF Models**

19       Under circumstances when growth rates are expected to fluctuate or when future  
20       growth rates are highly uncertain, the constant growth model may not give  
21       reliable results. Although the DCF model itself is still valid (equation 1 is

22 mathematically correct), under such circumstances the simplified form of the  
23 model must be modified to capture market expectations accurately.

24 Over the past several years, events in the electric utility industry have  
25 challenged the constant growth assumption of the traditional DCF model. Since  
26 the mid-1980s, dividend growth expectations for many electric utilities have  
27 fluctuated widely. In fact, over one-third of the electric utilities in the U.S.  
28 reduced or eliminated their common dividends during this time period. Some of  
29 these companies have reestablished their dividends, producing exceptionally high  
30 growth rates. Under these circumstances, long-term growth rate estimates may be  
31 highly uncertain, and estimating a reliable "constant" growth rate for many  
32 companies is often difficult.

33 When growth expectations are uncertain, the more general version of the  
34 model represented in equation (1) should be solved explicitly over a finite  
35 "transition" period while uncertainty prevails. The constant growth version of the  
36 model can then be applied after the transition period, under the assumption that  
37 more stable conditions will prevail in the future. There are two alternatives for  
38 dealing with the nonconstant growth transition period.

### 39 **Terminal Price Multi-stage DCF Model**

40 Under the "terminal price" multi-stage growth approach, equation (1) is written in  
41 a slightly different form:

$$42 \quad P_0 = D_1/(1+k) + D_2/(1+k)^2 + \dots + P_T/(1+k)^T \quad (3)$$

43 where the variables are the same as in equation (1) except that  $P_T$  is the estimated  
44 stock price at the end of the transition period  $T$ . Under the assumption that normal

45 growth resumes after the transition period, the price  $P_T$  is then expected to be  
 46 based on constant growth assumptions. With the terminal price approach, the  
 47 estimated cost of equity,  $k$ , is just the rate of return that investors would expect to  
 48 earn if they bought the stock at today's market price, held it and received  
 49 dividends through the transition period (until period  $T$ ), and then sold it for price  
 50  $P_T$ . In this approach, the analyst's task is to estimate the rate of return that  
 51 investors expect to receive given the current level of market prices they are  
 52 willing to pay.

### 53 **Generalized Multi-stage DCF Model**

54 Under the general "multistage" growth approach, equation (1) is simply expanded  
 55 to incorporate two or more growth rate periods, with the assumption that a  
 56 permanent constant growth rate can be estimated for some point in the future:

$$57 \quad P_0 = D_0(1+g_1)/(1+k) + \dots + D_2(1+g_2)^n/(1+k)^n +$$

$$58 \quad \dots + [D_T(1+g_T)^{(T+1)}/(k-g_T)]/(1+k)^T \quad (4)$$

59 where the variables are the same as in equation (1), but  $g_1$  represents the growth  
 60 rate for the first period;  $D_2$  is the dividend at the beginning of the second period  
 61 and  $g_2$  is the growth rate for the second period; and  $D_T$  is the dividend at the  
 62 beginning of the third period and  $g_T$  for the period from year  $T$  (the end of the  
 63 transition period) to infinity. The difficult task for analysts in the multistage  
 64 approach is determining the various growth rates for each period.

65 Although less convenient for exposition purposes, the multi-stage models  
 66 are based on the same valid capital market assumptions as the constant growth  
 67 version. This approach simply requires more explicit data inputs and more work  
 68 to solve for the discount rate,  $k$ . Fortunately, the required data are available from

69 investment and economic forecasting services, and computer algorithms can  
70 easily produce the required solutions.

### 71 **Equity Risk Premium Models**

72 Equity risk premium models are based on the assumption that equity securities are  
73 riskier than debt and, therefore, that equity investors require a higher rate of  
74 return. This basic premise is well supported by legal and economic distinctions  
75 between debt and equity securities, and it is widely accepted as a fundamental  
76 capital market principle. For example, debt holders' claims to the earnings and  
77 assets of the borrower have priority over all claims of equity investors. The  
78 contractual interest on mortgage debt must be paid in full before any dividends  
79 can be paid to shareholders, and secured mortgage claims must be fully satisfied  
80 before any assets can be distributed to shareholders in bankruptcy. Also, the  
81 fixed-income nature of interest payments makes year-to-year returns from bonds  
82 typically more stable than capital gains and dividend payments on stocks. All  
83 these factors demonstrate the more risky position of stockholders and support the  
84 equity risk premium concept.

85 The risk premium approach is useful because it is founded on current  
86 market interest rates, which are directly observable. This feature assures that risk  
87 premium estimates of the cost of equity begin with a sound basis, which is tied  
88 directly to current market interest rates. However, in regulatory practice there is  
89 often considerable debate about how risk premium data should be used and  
90 interpreted. Since the basic task is to gauge investors' required returns on long-  
91 term investments, some argue that the estimated equity risk premiums should

92 cover the longest possible time period. Others argue that market relationships  
93 between debt and equity from several decades ago are irrelevant and that only  
94 recent debt-equity return observations should be used in estimating investor  
95 requirements. There is no consensus on this issue. Since analysts cannot observe  
96 or measure investors' expectations directly, it is not possible to know exactly how  
97 such expectations are formed or, therefore, to know exactly what time period is  
98 most appropriate in a risk premium analysis.

99 The important point in the equity risk premium analysis is to answer the  
100 following question: "What rate of return should equity investors reasonably  
101 expect relative to returns that are currently available from long-term bonds?"

#### 102 **Summary of DCF and Equity Risk Premium Approaches**

103 The DCF and equity risk premium models have become the most widely accepted  
104 in regulatory practice. The DCF model and a review of equity risk premium data  
105 generally provide a reasonable estimate of the cost of equity. While estimating the  
106 DCF growth rate is controversial, the dividend yield is straightforward, and the  
107 model's results generally comport with capital market behavior. The equity risk  
108 premium approach provides further confirmation. While its inputs and the  
109 interpretation of its results require informed judgment, under normal market  
110 conditions the risk premium approach is a useful addition to the overall analysis.

Rocky Mountain Power  
Exhibit RMP\_\_(SCH-1)  
Docket No. 13-035-184  
Witness: Samuel C. Hadaway

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

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Exhibit Accompanying Direct Testimony of Samuel C. Hadaway  
Comparable Company Fundamental Characteristics

January 2014

## Rocky Mountain Power Comparable Company Fundamental Characteristics

No.	Company	(1)	(2)	(3)		(4)		
		% Regulated	S&P Issuer	Credit Rating		Capital Structure (2012)		
		Revenue	Bond Rating	S&P	Moody's	Common Eq	L-T Debt	Pfd Stock
		Ratio			Ratio	Ratio	Ratio	
1	ALLETE	91.0%	BBB+	A-	A2	56.3%	43.7%	0.0%
2	Alliant Energy Co.	96.5%	A-	A-	A3	48.4%	48.4%	3.2%
3	Avista Corp.	93.2%	BBB	A-	A3	49.2%	50.8%	0.0%
4	DTE Energy Co.	75.2%	BBB+	A-/BBB+	A2/A3	51.2%	48.8%	0.0%
5	IDACORP	86.8%	BBB	A-	A2	54.5%	45.5%	0.0%
6	Integrus Energy	70.3%	A-	A-	A2/A3	60.4%	38.6%	1.0%
7	Nextera Energy	70.9%	A-	A-/BBB+	Aa3	40.9%	59.1%	0.0%
8	Portland General	100.0%	BBB	A-	A2	52.9%	47.1%	0.0%
9	Sempra Energy	72.3%	BBB+	A/A-	A2	46.7%	52.8%	0.5%
10	Southern Co.	99.6%	A	A	A3/Baa1	47.3%	49.9%	2.8%
11	Westar Energy	100.0%	BBB	A-	A3	48.8%	51.2%	0.0%
12	Wisconsin Energy	97.9%	A-	A-/BBB+	A2/A3	48.0%	51.7%	0.3%
13	Xcel Energy Inc.	99.3%	A-	A-	Baa1	46.7%	53.3%	0.0%
	Average	88.7%	BBB+	A-	A2/A3	50.1%	49.3%	0.6%

Column Sources:

- (1) Most recent company 10-Ks.
- (2) [www.standardandpoors.com](http://www.standardandpoors.com).
- (3) AUS Utility Reports, December 2013. Generally, most secure bond ratings for each company.
- (4) Value Line Investment Survey, Electric Utility (East), Nov 22, 2013; (Central), Sep 20, 2013; (West), Nov 1, 2013.



## Rocky Mountain Power Authorized Electric Utility Equity Returns

Average Authorized ROE	2009	No.	2010	No.	2011	No.	2012	No.	2013 (1)	No.
All Electric Utilities	10.48%	39	10.34%	59	10.29%	42	10.17%	58	10.09%	30
Vertically-Integrated Utilities	10.63%	27	10.38%	42	10.24%	27	10.10%	39	9.90%	17
Delivery-Only Utilities	10.15%	10	9.98%	15	9.85%	12	9.73%	13	9.54%	8
Power Plant Only Cases	10.18%	2	12.30%	2	12.49%	3	11.54%	6	11.60%	5

Data Source:

*Regulatory Focus*, "Major Rate Case Decisions," Regulatory Research Associates, Oct 8, 2013; Jan 17, 2013; Jan 10, 2012  
January 7, 2011; January 8, 2010.

Note (1): Data for 2013 through the 3rd quarter.

Rocky Mountain Power  
Exhibit RMP\_\_(SCH-2)  
Docket No. 13-035-184  
Witness: Samuel C. Hadaway

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

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Exhibit Accompanying Direct Testimony of Samuel C. Hadaway

Historical Capital Market Costs, Trends and Projections

January 2014

**Rocky Mountain Power  
 Historical Capital Market Costs**

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Prime Rate</b>	4.1%	4.3%	6.2%	8.0%	8.1%	5.1%	3.3%	3.3%	3.3%	3.3%
<b>Consumer Price Index</b>	2.0%	3.3%	3.3%	2.5%	4.1%	0.0%	2.8%	1.4%	3.0%	1.7%
<b>Long-Term Treasuries</b>	5.0%	5.1%	4.7%	4.9%	4.8%	4.3%	4.1%	4.3%	3.9%	2.9%
<b>Moody's Avg Utility Debt</b>	6.6%	6.2%	5.7%	6.1%	6.1%	6.7%	6.3%	5.6%	5.1%	4.3%
<b>Moody's A Utility Debt</b>	6.6%	6.2%	5.7%	6.1%	6.1%	6.5%	6.0%	5.5%	5.0%	4.1%

**SOURCES:**

Prime Interest Rate - Federal Reserve Bank of St. Louis website.  
 Consumer Price Index - For All Urban Consumers: All Items (Seasonally Adjusted, December to December) - Federal Reserve Bank of St. Louis website.  
 Long-Term Treasuries - Federal Reserve Bank of St. Louis website; 30-year Treasury bonds 2001 and 2007-2012; 20-year Treasury bonds 2002-2006.  
 Moody's Average Utility Debt - Moody's (Mergent) Bond Record.  
 Moody's A Utility Debt - Moody's (Mergent) Bond Record.

## Rocky Mountain Power Long-Term Interest Rate Trends

Month	Single-A Utility Rate	30-Year Treasury Rate	Single-A Utility Spread
Dec-10	5.56	4.42	1.14
Jan-11	5.57	4.52	1.05
Feb-11	5.68	4.65	1.03
Mar-11	5.56	4.51	1.05
Apr-11	5.55	4.50	1.05
May-11	5.32	4.29	1.03
Jun-11	5.26	4.23	1.03
Jul-11	5.27	4.27	1.00
Aug-11	4.69	3.65	1.04
Sep-11	4.48	3.18	1.30
Oct-11	4.52	3.13	1.39
Nov-11	4.25	3.02	1.23
Dec-11	4.33	2.98	1.35
Jan-12	4.34	3.03	1.31
Feb-12	4.36	3.11	1.25
Mar-12	4.48	3.28	1.20
Apr-12	4.40	3.18	1.22
May-12	4.20	2.93	1.27
Jun-12	4.08	2.70	1.38
Jul-12	3.93	2.59	1.34
Aug-12	4.00	2.77	1.23
Sep-12	4.02	2.88	1.14
Oct-12	3.91	2.90	1.01
Nov-12	3.84	2.80	1.04
Dec-12	4.00	2.88	1.12
Jan-13	4.15	3.08	1.07
Feb-13	4.18	3.17	1.01
Mar-13	4.20	3.16	1.04
Apr-13	4.00	2.93	1.07
May-13	4.17	3.11	1.06
Jun-13	4.53	3.40	1.13
Jul-13	4.68	3.61	1.07
Aug-13	4.73	3.76	0.97
Sep-13	4.80	3.79	1.01
Oct-13	4.70	3.68	1.02
Nov-13	4.77	3.80	0.97
3-Mo Avg	<b>4.76</b>	<b>3.76</b>	<b>1.00</b>
12-Mo Avg	<b>4.41</b>	<b>3.36</b>	<b>1.05</b>

Sources: Mergent Bond Record (Utility Rates); [www.federalreserve.gov](http://www.federalreserve.gov) (Treasury Rates).  
 Monthly averages are for the respective periods ending November 2013.

## Rocky Mountain Power Interest Rate Forecast from Forward Price Curves

Tenor	Spot	US Treasury Actives Curve			
		12/31/2012 (A)	12/31/2013 (P)	12/31/2014 (P)	12/31/2015 (P)
1 Yr	0.1301	0.1403	0.1434	0.5337	1.3751
10 Yr	2.8658	1.7803	2.8845	3.2541	3.6110
20 Yr	3.3735	2.3615	3.3875	3.6644	3.9376
30 Yr	3.8813	2.9427	3.8921	4.1073	4.3174

Source:  
Bloomberg, "US Treasury Actives Curve," December 11, 2013.

Rocky Mountain Power  
Exhibit RMP\_\_(SCH-3)  
Docket No. 13-035-184  
Witness: Samuel C. Hadaway

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

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Exhibit Accompanying Direct Testimony of Samuel C. Hadaway

Electric Utility ROE Cases

January 2014

**Rocky Mountain Power**  
**Electric Utility ROE Cases (through 3Q, 2013)**

**Panel 1**

T&D Utilities and Vertically-Integrated Utilities

T&D Utilities					
No	Date	Company	State	ROE	
1	1/16/2013	Cross Texas Transmission	TX	9.60%	
2	1/16/2013	Wind Energy Transmission Texas	TX	9.60%	
3	2/22/2013	Baltimore Gas & Electric	MD	9.75%	
4	3/14/2013	Niagara Mohawk Power	NY	9.30%	
5	5/1/2013	Duke Energy Ohio	OH	9.84%	
6	6/21/2013	Atlantic City Electric	NJ	9.75%	
7	7/12/2013	Potomac Electric Power	MD	9.36%	
8	8/14/2013	United Illuminating	CT	9.15%	
<b>Average T&amp;D</b>				<b>9.54%</b>	
				<b>Min 9.15%</b>	
				<b>Max 9.84%</b>	

**Vertically-Integrated Utilities**

No	Date	Company	State	ROE	
1	1/9/2013	Kansas City Power & Light	MO	9.70%	
2	1/9/2013	KCP&L Greater Missouri Op (L&P)	MO	9.70%	
3	1/9/2013	KCP&L Greater Missouri Op (MPS)	MI	9.70%	
4	2/13/2013	Indiana Michigan Power	IN	10.20%	
5	2/27/2013	Southwestern Electric Power	LA	10.00%	
6	3/5/2013	Mississippi Power	MS	9.70%	
7	3/27/2013	Avista Corp	ID	9.80%	
8	5/15/2013	Consumers Energy	MI	10.30%	
9	5/30/2013	Duke Energy Progress	NC	10.20%	
10	5/31/2013	Maui Electric	HI	9.00%	
11	6/11/2013	Tucson Electric Power	AZ	10.00%	
12	6/25/2013	Puget Sound Energy	WA	9.80%	
13	8/8/2013	Northern States Power	MN	9.83%	
14	9/11/2013	Tampa Electric	FL	10.25%	
15	9/11/2013	Duke Energy Carolinas	SC	10.20%	
16	9/12/2013	Southwestern Electric Power	TX	9.65%	
17	9/24/2013	Duke Energy Carolinas	NC	10.20%	
<b>Average Vertically-Integrated</b>				<b>9.90%</b>	
				<b>Min 9.00%</b>	
				<b>Max 10.30%</b>	

**Other Cases**

No	Date	Company	State	ROE	Comment
1	2/19/2013	Virginia Electric and Power	VA	11.40%	Generation rider
2	2/19/2013	Virginia Electric and Power	VA	11.40%	Generation rider
3	3/12/2013	Virginia Electric and Power	VA	11.40%	Generation rider
4	3/22/2013	Virginia Electric and Power	VA	12.40%	Generation rider
5	8/2/2013	Virginia Electric and Power	VA	11.40%	Generation rider

**Average Other** **11.60%**

**Average All Utilities for 2013** **10.09%**

**Panel 2**

Summary of Results by Quarter

T&D Utilities					
By Quarter	1Q	2Q	3Q	4Q	Total
Avg. ROE	9.56%	9.80%	9.26%		<b>9.54%</b>
No. Cases	4	2	2		<b>8</b>

**Vertically-Integrated Utilities**

By Quarter	1Q	2Q	3Q	4Q	Total
Avg. ROE	9.83%	9.86%	10.03%		<b>9.90%</b>
No. Cases	7	5	5		<b>17</b>

**Other Cases**

By Quarter	1Q	2Q	3Q	4Q	Total
ROE	11.65%		11.40%		<b>11.60%</b>
No. Cases	4		1		<b>5</b>

**All Utilities**

By Quarter	1Q	2Q	3Q	4Q	Total
ROE	10.24%	9.84%	10.01%		<b>10.09%</b>
No. Cases	15	7	8		<b>30</b>

**Rocky Mountain Power  
 Electric Utility ROE Cases (2012)**

**Panel 1**

T&D Utilities and Vertically-Integrated Utilities

T&D Utilities				
No	Date	Company	State	ROE
1	5/29/2012	Commonwealth Edison	IL	10.05%
2	6/14/2012	Orange and Rockland Utilities	NY	9.40%
3	7/20/2012	Delmarva Power & Light	MD	9.81%
4	7/20/2012	Potomac Electric Power	MD	9.31%
5	9/19/2012	Ameren Illinois	IL	10.05%
6	9/26/2012	Potomac Electric Power	DC	9.50%
7	10/12/2012	Lone Star Transmission	TX	9.60%
8	10/23/2012	Atlantic City Electric	NJ	9.75%
9	11/29/2012	Delmarva Power & Light	DE	9.75%
10	12/5/2012	Ameren Illinois	IL	9.71%
11	12/5/2012	PPL Electric Utilities	PA	10.40%
12	12/19/2012	Commonwealth Edison	IL	9.71%
13	12/20/2012	Narragansett Electric	RI	9.50%

<b>Average T&amp;D</b>	<b>9.73%</b>
<b>Min</b>	<b>9.31%</b>
<b>Max</b>	<b>10.40%</b>

**Vertically-Integrated Utilities**

No	Date	Company	State	ROE
1	1/25/2012	Duke Energy Carolinas	SC	10.50%
2	1/27/2012	Duke Energy Carolinas	NC	10.50%
3	2/15/2012	Indiana Michigan Power	MI	10.20%
4	2/23/2012	Idaho Power	OR	9.90%
5	2/27/2012	Gulf Power	FL	10.25%
6	2/29/2012	Northern States Power-Minnesota	ND	10.40%
7	3/29/2012	Northern States Power-Minnesota	MN	10.37%
8	4/4/2012	Hawaii Electric Light	HI	10.00%
9	4/26/2012	Public Service Co. of Colorado	CO	10.00%
10	5/2/2012	Maui Electric Company	HI	10.00%
11	5/7/2012	Puget Sound Energy	WA	9.80%
12	5/15/2012	Arizona Public Service	AZ	10.00%
13	6/7/2012	Consumers Energy	MI	10.30%
14	6/15/2012	Wisconsin Power and Light	WI	10.40%
15	6/18/2012	Cheyenne Light, Fuel and Power	WY	9.60%
16	6/19/2012	Northern States Power-Minnesota	SD	9.25%
17	6/26/2012	Wisconsin Electric Power	MI	10.10%
18	6/29/2012	Hawaiian Electric Company	HI	10.00%
19	7/9/2012	Oklahoma Gas & Electric	OK	10.20%
20	7/16/2012	PacifiCorp	WY	9.80%
21	9/13/2012	Entergy Texas	TX	9.80%
22	9/19/2012	PacifiCorp	UT	9.80%

**Other Cases**

No	Date	Company	State	ROE	Comment
1	1/3/2012	Appalachian Power	VA	11.40%	Generation rider
2	2/2/2012	Virginia Electric and Power	VA	11.40%	Generation rider
3	3/16/2012	Virginia Electric and Power	VA	12.40%	Generation rider
4	3/20/2012	Virginia Electric and Power	VA	11.40%	Generation rider
5	3/23/2012	Virginia Electric and Power	VA	11.40%	Generation rider

<b>Average Other</b>	<b>11.60%</b>
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<b>Average All Utilities for 2012</b>	<b>10.15%</b>
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Source: Regulatory Research Associates, "Major Rate Case Decisions" January 17, 2013.

**Panel 2**

Summary of Results by Quarter

T&D Utilities					
By Quarter	1Q	2Q	3Q	4Q	Total
Avg. ROE		9.73%	9.67%	9.77%	<b>9.73%</b>
No. Cases	0	2	4	7	<b>13</b>

Vertically-Integrated Utilities					
By Quarter	1Q	2Q	3Q	4Q	Total
Avg. ROE	10.30%	9.95%	9.90%	10.16%	<b>10.10%</b>
No. Cases	7	11	4	17	<b>39</b>

Other Cases					
By Quarter	1Q	2Q	3Q	4Q	Total
ROE	11.60%				<b>11.60%</b>
No. Cases	5				<b>5</b>

All Utilities					
By Quarter	1Q	2Q	3Q	4Q	Total
ROE	10.84%	9.92%	9.78%	10.05%	<b>10.15%</b>
No. Cases	12	13	8	24	<b>57</b>

**Vertically-Integrated Utilities (continued)**

No	Date	Company	State	ROE
23	10/24/2012	Wisconsin Public Service	WI	10.30%
24	11/9/2012	Madison Gas and Electric	WI	10.30%
25	11/28/2012	Wisconsin Electric Power	WI	10.40%
26	11/29/2012	California Pacific Electric	CA	9.88%
27	12/12/2012	Union Electric	MO	9.80%
28	12/13/2012	Florida Power & Light	FL	10.50%
29	12/13/2012	Kansas City Power & Light	KS	9.50%
30	12/14/2012	Northern States Power-WI	WI	10.40%
31	12/19/2012	South Carolina Electric & Gas	SC	10.25%
32	12/20/2012	Pacific Gas and Electric	CA	10.40%
33	12/20/2012	San Diego Gas & Electric	CA	10.30%
34	12/20/2012	Southern California Edison	CA	10.45%
35	12/20/2012	Kentucky Utilities	KY	10.25%
36	12/20/2012	Louisville Gas & Electric	KY	10.25%
37	12/20/2012	PacifiCorp	OR	9.80%
38	12/21/2012	Virginia Electric & Power	NC	10.20%
39	12/26/2012	Avista Corp.	WA	9.80%

<b>Average Vertically-Integrated</b>	<b>10.10%</b>
<b>Min</b>	<b>9.25%</b>
<b>Max</b>	<b>10.50%</b>



**Rocky Mountain Power  
 Electric Utility ROE Cases (2011)**

**Panel 1**

T&D Utilities and Vertically-Integrated Utilities

T&D Utilities				
No	Date	Company	State	ROE
1	1/18/2011	Delmarva Power & Light Co.	DE	10.00%
2	1/20/2011	Niagara Mohawk Power Corp.	NY	9.30%
3	1/20/2011	Texas-New Mexico Power Co.	TX	10.13%
4	1/31/2011	Western Massachusetts Electric	MA	9.60%
5	2/3/2011	CenterPoint Energy Houston	TX	10.00%
6	4/26/2011	Unitil Energy Systems	NH	9.67%
7	5/24/2011	Commonwealth Edison	IL	10.50%
8	6/16/2011	Orange and Rockland Utilities	NY	9.20%
9	8/1/2011	Fitchburg Gas & Electric	MA	9.20%
10	8/19/2011	Oncor Electric Delivery	TX	10.25%
11	12/14/2011	Columbus Southern Power	OH	10.00%
12	12/14/2011	Ohio Power	OH	10.30%

<b>Average T&amp;D</b>	<b>9.85%</b>
<b>Min</b>	<b>9.20%</b>
<b>Max</b>	<b>10.50%</b>

Vertically-Integrated Utilities

No	Date	Company	State	ROE
1	1/5/2011	Public Service Co. of OK	OK	10.15%
2	1/12/2011	Madison Gas and Electric Co.	WI	10.30%
3	1/13/2011	Wisconsin Public Service Corp.	WI	10.30%
4	2/25/2011	Hawaiian Electric Co.	HI	10.00%
5	3/25/2011	PacifiCorp	WA	9.80%
6	3/30/2011	Appalachian Pwr/Wheeling Pwr	WV	10.00%
7	4/12/2011	Kansas City Power & Light	MO	10.00%
8	4/25/2011	Otter Tail Power Co.	MN	10.74%
9	4/27/2011	Southern Indiana Gas & Electric	IN	10.40%
10	5/4/2011	KCP&L Greater Missouri Op. (MPS)	MO	10.00%
11	5/4/2011	KCP&L Greater Missouri Op. (L&P)	MO	10.00%
12	5/13/2011	Pacific Gas and Electric	CA	11.25%
13	6/8/2011	MDU Resources	ND	10.75%
14	6/17/2011	Oklahoma Gas & Electric	AR	9.95%
15	7/13/2011	Union Electric	MO	10.20%
16	8/8/2011	Public Service Co. of New Mexico	NM	10.00%
17	8/11/2011	PacifiCorp	UT	10.00%
18	8/12/2011	Interstate Power and Light	MN	10.35%
19	9/22/2011	PacifiCorp	WY	10.00%
20	10/12/2011	Kentucky Utilities	VA	10.30%
21	10/20/2011	Detroit Edison	MI	10.50%
22	11/30/2011	Appalachian Power	VA	10.90%
23	12/20/2011	Upper Peninsula Power	MI	10.20%
24	12/21/2011	Northern Indiana Public Service	IN	10.20%
25	12/22/2011	Black Hills Colorado Elec. Utility Co.	CO	9.90%
26	12/22/2011	Northern States Power-Wisconsin	WI	10.40%
27	12/23/2011	Nevada Power	NV	10.19%

<b>Average Vertically-Integrated</b>	<b>10.25%</b>
<b>Min</b>	<b>9.80%</b>
<b>Max</b>	<b>11.25%</b>

Other Cases

No	Date	Company	State	ROE	Comment
1	3/22/2011	Virginia Electric and Power	VA	12.30%	Power plant only
2	3/22/2011	Virginia Electric and Power	VA	12.30%	Power plant only
3	9/2/2011	Alaska Electric Light Power	AL	12.88%	Outlier

<b>Average Other</b>	<b>12.49%</b>
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<b>Average All Utilities for 2011</b>	<b>10.30%</b>
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**Panel 2**

Summary of Results by Quarter

T&D Utilities					
By Quarter	1Q	2Q	3Q	4Q	Total
Avg. ROE	9.81%	9.79%	9.73%	10.15%	<b>9.85%</b>
No. Cases	5	3	2	2	<b>12</b>

Vertically-Integrated Utilities					
By Quarter	1Q	2Q	3Q	4Q	Total
Avg. ROE	10.09%	10.39%	10.11%	10.32%	<b>10.25%</b>
No. Cases	6	8	5	8	<b>27</b>

Other Cases					
By Quarter	1Q	2Q	3Q	4Q	Total
ROE	12.30%		12.88%		<b>12.49%</b>
No. Cases	2		1		<b>3</b>

All Utilities					
By Quarter	1Q	2Q	3Q	4Q	Total
ROE	10.32%	10.22%	10.36%	10.29%	<b>10.30%</b>
No. Cases	13	11	8	10	<b>42</b>

**Rocky Mountain Power  
 Electric Utility ROE Cases (2010)**

**Panel 1**

T&D Utilities and Vertically-Integrated Utilities

T&D Utilities				
No	Date	Company	State	ROE
1	2/9/2010	Narragansett Electric	RI	9.80%
2	3/2/2010	Potomac Electric Power	DC	9.63%
3	3/26/2010	Consolidated Edison of NY	NY	10.15%
4	4/29/2010	Central Illinois Light	IL	9.90%
5	4/29/2010	Central Illinois Public Service	IL	10.06%
6	4/29/2010	Illinois Power	IL	10.26%
7	5/12/2010	Atlantic City Electric	NJ	10.30%
8	5/12/2010	Rockland Electric	NJ	10.30%
9	6/7/2010	Public Service Electric & Gas	NJ	10.30%
10	6/18/2010	Central Hudson Gas & Electric	NY	10.00%
11	6/28/2010	Public Service of New Hampshire	NH	9.67%
12	6/30/2010	Connecticut Light & Power	CT	9.40%
13	9/16/2010	New York State Electric & Gas	NY	10.00%
14	9/16/2010	Rochester Gas and Electric	NY	10.00%
15	12/9/2010	NorthWestern Corp.	MT	10.00%

<b>Average T&amp;D</b>	<b>9.98%</b>
<b>Min</b>	<b>9.40%</b>
<b>Max</b>	<b>10.30%</b>

**Vertically-Integrated Utilities**

No	Date	Company	State	ROE
1	1/11/2010	Detroit Edison	MI	11.00%
2	1/19/2010	Interstate Power & Light	IA	10.80%
3	1/26/2010	PacifiCorp	OR	10.13%
4	1/27/2010	Westar Energy	KS	10.40%
5	1/27/2010	Kansas Gas & Electric	KS	10.40%
6	1/27/2010	Duke Energy Carolines	SC	10.70%
7	2/18/2010	PacifiCorp	UT	10.60%
8	2/24/2010	Idaho Power	OR	10.18%
9	3/4/2010	Kentucky Utilities	VA	10.50%
10	3/5/2010	Florida Power	FL	10.50%
11	3/11/2010	Virginia Electric and Power	VA	11.90%
12	3/17/2010	Florida Power & Light	FL	10.00%
13	4/2/2010	Puget Sound Energy	WA	10.10%
14	5/26/2010	MDU Resources	WY	10.00%
15	5/28/2010	Union Electric	MO	10.10%
16	6/23/2010	Entergy Arkansas	AR	10.20%
17	6/28/2010	Kentucky Power	KY	10.50%
18	7/1/2010	Wisconsin Electric Power	MI	10.25%
19	7/15/2010	South Carolina Electric & Gas	SC	10.70%
20	7/15/2010	Appalachian Power	VA	10.53%
21	7/30/2010	Maui Electric	HI	10.70%
22	8/4/2010	Black Hills Colorado Electric	CO	10.50%
23	8/6/2010	Potomac Electric Power	MD	9.83%
24	8/25/2010	Northern Indiana Public Service	IN	9.90%
25	9/14/2010	Hawaiian Electric	HI	10.70%
26	9/30/2010	UNS Electric	AZ	9.75%
27	10/14/2010	Indiana Michigan Power	MI	10.35%
28	10/28/2010	Hawaii Electric Light	HI	10.70%
29	11/2/2010	Minnesota Power	MN	10.38%
30	11/4/2010	Consumers Energy	MI	10.70%
31	11/19/2010	Avista Corp.	WA	10.20%
32	11/22/2010	Kansas City Power & Light	KS	10.00%
33	12/1/2010	Entergy Texas	TX	10.13%
34	12/6/2010	Baltimore Gas & Electric	MD	9.86%
35	12/15/2010	Interstate Power & Light	IA	10.00%
36	12/13/2010	Dominion North Carolina Power	NC	10.70%
37	12/14/2010	PacifiCorp	OR	10.13%
38	12/17/2010	Portland General Electric	OR	10.00%
39	12/20/2010	Sierra Pacific Power	NV	10.60%
40	12/21/2010	Upper Peninsula Power	MI	10.30%
41	12/27/2010	PacifiCorp	ID	9.90%
42	12/29/2010	Georgia Power	GA	11.15%

<b>Average Vertically-Integrated</b>	<b>10.38%</b>
<b>Min</b>	<b>9.75%</b>
<b>Max</b>	<b>11.90%</b>

**Other Cases**

No	Date	Company	State	ROE	Comment
1	3/11/2010	Virginia Electric and Power	VA	12.30%	Power plant only
2	3/11/2010	Virginia Electric and Power	VA	12.30%	Power plant only

<b>Average Other</b>	<b>12.30%</b>
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<b>Average All Utilities for 2010</b>	<b>10.34%</b>
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**Panel 2**

Summary of Results by Quarter

T&D Utilities					
By Quarter	1Q	2Q	3Q	4Q	Total
Avg. ROE	9.86%	10.02%	10.00%	10.00%	<b>9.98%</b>
No. Cases	3	9	2	1	<b>15</b>

Vertically-Integrated Utilities					
By Quarter	1Q	2Q	3Q	4Q	Total
Avg. ROE	10.59%	10.18%	10.32%	10.32%	<b>10.38%</b>
No. Cases	12	5	9	16	<b>42</b>

Other Cases					
By Quarter	1Q	2Q	3Q	4Q	Total
ROE	12.30%				<b>12.30%</b>
No. Cases	2	0	0	0	<b>2</b>

All Utilities					
By Quarter	1Q	2Q	3Q	4Q	Total
ROE	10.66%	10.08%	10.26%	10.30%	<b>10.34%</b>
No. Cases	17	14	11	17	<b>59</b>

**Rocky Mountain Power  
 Electric Utility ROE Cases (2009)**

**Panel 1**

**T&D Utilities and Vertically-Integrated Utilities**

T&D Utilities					
No	Date	Company	State	ROE	Comment
1	1/21/2009	Cleveland Electric Illuminating	OH	10.50%	
2	1/21/2009	Ohio Edison	OH	10.50%	
3	1/21/2009	Toledo Edison	OH	10.50%	
4	2/4/2009	United Illuminating	CT	8.75%	
5	4/24/2009	Consolidated Edison of New York	NY	10.00%	
6	6/22/2009	Central Hudson Gas & Electric	NY	10.00%	
7	7/8/2009	Duke Energy Ohio	OH	10.63%	
8	8/31/2009	Oncor Electric Delivery	TX	10.25%	
9	11/30/2009	Mass El./Nantucket El.	MA	10.35%	
10	12/30/2009	Delmarva Power & Light	MD	10.00%	

**Average T&D** 10.15%  
**Min** 8.75%  
**Max** 10.63%

Vertically-Integrated Utilities					
No	Date	Company	State	ROE	
1	1/14/2009	Public Service Oklahoma	OK	10.50%	
2	1/30/2009	Idaho Power	ID	10.50%	
3	2/10/2009	Union Electric	MO	10.76%	
4	3/4/2009	Indiana Michigan Power	IN	10.50%	
5	4/2/2009	Entergy New Orleans	LA	11.10%	
6	4/21/2009	PacifiCorp	UT	10.61%	
7	4/30/2009	Tampa Electric	FL	11.25%	
8	5/4/2009	Minnesota Power	MN	10.74%	
9	5/20/2009	Oklahoma Gas & Electric	AR	10.25%	
10	5/28/2009	Public Service New Mexico	NM	10.50%	
11	6/24/2009	Nevada Power	NV	10.80%	
12	7/17/2009	Avista Corp.	ID	10.50%	
13	10/14/2009	Cleco Power	LA	10.70%	
14	10/23/2009	Northern States Power-Minn	MN	10.88%	
15	11/2/2009	Consumers Energy	MI	10.70%	
16	11/3/2009	Sierra Pacific Power	CA	10.70%	
17	11/24/2009	Southwestern Electric Power	AR	10.25%	
18	11/25/2009	Otter Tail Power	ND	10.75%	
19	12/7/2009	Duke Energy Carolinas	NC	10.70%	
20	12/16/2009	Arizona Public Service	AZ	11.00%	
21	12/16/2009	Upper Peninsula Power	MI	10.90%	
22	12/18/2009	Wisconsin Electric Power	WI	10.40%	
23	12/18/2009	Wisconsin Power and Light	WI	10.40%	
24	12/22/2009	Avista Corp.	WA	10.20%	
25	12/22/2009	Madison Gas and Electric	WI	10.40%	
26	12/22/2009	Northern States Power-Wisc	WI	10.40%	
27	12/24/2009	Public Service of Colorado	CO	10.50%	

**Average Vertically-Integrated** 10.63%  
**Min** 10.20%  
**Max** 11.25%

Other Cases					
No	Date	Company	State	ROE	Comment
1	2/4/2009	Interstate Power & Light	IA	10.10%	Power plant only
2	5/20/2009	NorthWestern Corp	MT	10.25%	Power plant only

**Average Other** 10.18%

**Average All Utilities for 2009** 10.48%

**Panel 2**

**Summary of Results by Quarter**

T&D Utilities					
By Quarter	1Q	2Q	3Q	4Q	Total
Avg. ROE	10.06%	10.00%	10.44%	10.18%	10.15%
No. Cases	4	2	2	2	10

Vertically-Integrated Utilities					
By Quarter	1Q	2Q	3Q	4Q	Total
Avg. ROE	10.57%	10.75%	10.50%	10.59%	10.63%
No. Cases	4	7	1	15	27

Other Cases					
By Quarter	1Q	2Q	3Q	4Q	Total
ROE	10.10%	10.25%			10.18%
No. Cases	1	1	0	0	2

All Utilities					
By Quarter	1Q	2Q	3Q	4Q	Total
ROE	10.29%	10.55%	10.46%	10.54%	10.48%
No. Cases	9	10	3	17	39

Rocky Mountain Power  
Exhibit RMP\_\_(SCH-4)  
Docket No. 13-035-184  
Witness: Samuel C. Hadaway

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

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Exhibit Accompanying Direct Testimony of Samuel C. Hadaway

GDP Growth Rate Forecast

January 2014

## Rocky Mountain Power GDP Growth Rate Forecast

	Nominal GDP	% Change	GDP Price Deflator	% Change	CPI	% Change
1952	371.4		16.1		26.7	
1953	375.9	1.2%	16.2	0.8%	26.9	0.6%
1954	389.4	3.6%	16.4	0.8%	26.8	-0.4%
1955	426.0	9.4%	16.8	2.6%	26.9	0.4%
1956	448.1	5.2%	17.4	3.3%	27.6	2.8%
1957	461.5	3.0%	17.8	2.7%	28.5	3.0%
1958	485.0	5.1%	18.3	2.5%	29.0	1.8%
1959	513.2	5.8%	18.4	0.9%	29.4	1.5%
1960	523.7	2.0%	18.7	1.4%	29.8	1.4%
1961	562.6	7.4%	18.9	1.1%	30.0	0.7%
1962	593.3	5.5%	19.2	1.3%	30.4	1.2%
1963	633.5	6.8%	19.4	1.4%	30.9	1.6%
1964	675.6	6.6%	19.7	1.5%	31.3	1.2%
1965	747.5	10.6%	20.1	2.0%	31.9	1.9%
1966	806.9	7.9%	20.8	3.5%	32.9	3.4%
1967	852.7	5.7%	21.4	3.1%	34.0	3.3%
1968	936.2	9.8%	22.4	4.6%	35.6	4.7%
1969	1004.5	7.3%	23.6	5.2%	37.7	5.9%
1970	1052.7	4.8%	24.8	5.0%	39.8	5.6%
1971	1151.4	9.4%	25.9	4.7%	41.1	3.3%
1972	1286.6	11.7%	27.1	4.5%	42.5	3.4%
1973	1431.8	11.3%	28.9	6.8%	46.3	8.9%
1974	1552.8	8.5%	32.0	10.7%	51.9	12.1%
1975	1713.9	10.4%	34.5	7.6%	55.6	7.1%
1976	1884.5	10.0%	36.3	5.4%	58.4	5.0%
1977	2110.8	12.0%	38.8	6.7%	62.3	6.7%
1978	2416.0	14.5%	41.6	7.3%	67.9	9.0%
1979	2659.4	10.1%	45.2	8.7%	76.9	13.3%
1980	2915.3	9.6%	49.6	9.7%	86.4	12.4%
1981	3194.7	9.6%	53.7	8.3%	94.1	8.9%
1982	3312.5	3.7%	56.5	5.2%	97.7	3.8%
1983	3688.1	11.3%	58.4	3.3%	101.4	3.8%
1984	4034.0	9.4%	60.5	3.6%	105.5	4.0%
1985	4318.7	7.1%	62.1	2.8%	109.5	3.8%
1986	4543.3	5.2%	63.6	2.3%	110.8	1.2%
1987	4883.1	7.5%	65.5	3.1%	115.6	4.3%
1988	5251.0	7.5%	68.0	3.7%	120.7	4.4%
1989	5581.7	6.3%	70.3	3.5%	126.3	4.6%
1990	5846.0	4.7%	73.2	4.2%	134.2	6.3%
1991	6092.5	4.2%	75.6	3.2%	138.2	3.0%
1992	6493.6	6.6%	77.2	2.2%	142.3	3.0%
1993	6813.8	4.9%	78.9	2.2%	146.3	2.8%
1994	7248.2	6.4%	80.6	2.1%	150.1	2.6%
1995	7542.5	4.1%	82.2	2.0%	153.9	2.5%
1996	8023.0	6.4%	83.7	1.8%	159.1	3.4%
1997	8505.7	6.0%	85.1	1.6%	161.8	1.7%
1998	9027.5	6.1%	86.0	1.1%	164.4	1.6%
1999	9607.7	6.4%	87.3	1.5%	168.8	2.7%
2000	10129.8	5.4%	89.4	2.5%	174.6	3.4%
2001	10373.1	2.4%	91.2	2.0%	177.4	1.6%
2002	10766.9	3.8%	92.9	1.8%	181.8	2.5%
2003	11414.8	6.0%	94.8	2.1%	185.5	2.0%
2004	12123.9	6.2%	97.9	3.2%	191.7	3.3%
2005	12901.4	6.4%	101.3	3.5%	198.1	3.3%
2006	13584.2	5.3%	104.2	2.8%	203.1	2.5%
2007	14253.2	4.9%	107.0	2.7%	211.4	4.1%
2008	14081.7	-1.2%	109.3	2.2%	211.4	0.0%
2009	14133.6	0.4%	109.8	0.5%	217.3	2.8%
2010	14735.9	4.3%	111.8	1.8%	220.4	1.4%
2011	15321.0	4.0%	114.0	2.0%	227.0	3.0%
2012	15829.0	3.3%	116.0	1.8%	231.0	1.7%
10-Year Average		4.0%		2.2%		2.4%
20-Year Average		4.6%		2.1%		2.5%
30-Year Average		5.4%		2.4%		2.9%
40-Year Average		6.5%		3.7%		4.4%
50-Year Average		6.8%		3.7%		4.2%
60-Year Average		6.5%		3.4%		3.7%
Average of Periods		5.6%		2.9%		3.3%

**Table 2-1.**

**CBO's Economic Projections for Calendar Years 2012 to 2023**

	Estimated, 2012	Forecast		Projected Annual Average	
		2013	2014	2015–2018	2019–2023
<b>Fourth Quarter to Fourth Quarter (Percentage change)</b>					
Gross Domestic Product					
Real	1.9	1.4	3.4	3.6	2.2
Nominal	3.7	2.9	5.3	5.7	4.3
Inflation					
PCE price index	1.5	1.3	1.8	1.9	2.0
Core PCE price index <sup>a</sup>	1.5	1.5	1.9	2.0	2.0
Consumer price index <sup>b</sup>	1.9 <sup>c</sup>	1.5	2.0	2.2	2.3
Core consumer price index <sup>a</sup>	1.9 <sup>c</sup>	1.8	2.0	2.2	2.3
GDP price index	1.8	1.5	1.9	2.1	2.0
Employment Cost Index <sup>d</sup>	1.9	2.2	3.3	4.0	3.6
<b>Fourth Quarter Level (Percent)</b>					
Unemployment Rate	7.8 <sup>c</sup>	8.0	7.6	5.5 <sup>e</sup>	5.2 <sup>f</sup>
<b>Year to Year (Percentage change)</b>					
Gross Domestic Product					
Real	2.3	1.4	2.6	3.7	2.3
Nominal	4.1	2.9	4.4	5.9	4.3
Inflation					
PCE price index	1.7	1.3	1.7	1.9	2.0
Core PCE price index <sup>a</sup>	1.7	1.3	1.8	2.0	2.0
Consumer price index <sup>b</sup>	2.1 <sup>c</sup>	1.6	1.9	2.2	2.3
Core consumer price index <sup>a</sup>	2.1 <sup>c</sup>	1.7	2.0	2.2	2.3
GDP price index	1.8	1.5	1.8	2.1	2.0
Employment Cost Index <sup>d</sup>	1.8	2.1	2.9	4.0	3.6
<b>Calendar Year Average</b>					
Unemployment Rate (Percent)	8.1 <sup>c</sup>	7.9	7.8	6.1	5.4
Payroll Employment (Monthly change, in thousands)	157 <sup>c</sup>	105	182	171	75
Interest Rates (Percent)					
Three-month Treasury bills	0.1 <sup>c</sup>	0.1	0.2	2.2	4.0
Ten-year Treasury notes	1.8 <sup>c</sup>	2.1	2.7	4.5	5.2
Tax Bases (Percentage of GDP)					
Wages and salaries	44.1	43.5	43.9	44.2	44.9
Domestic economic profits	9.6	9.3	9.7	9.7	7.7

Source: Congressional Budget Office. (Actual values for 2012 are from Department of Labor, Bureau of Labor Statistics; Federal Reserve.)

Notes: Economic projections for each year from 2012 to 2023 appear in Appendix B.

The numbers shown here do not reflect the values for GDP and related series released by the Commerce Department's Bureau of Economic Analysis on January 30 and the values released by the Labor Department's Bureau of Labor Statistics for the employment cost index on January 31 and for payroll employment on February 1.

PCE = personal consumption expenditures; GDP = gross domestic product.

- a. Excludes prices for food and energy.
- b. The consumer price index for all urban consumers.
- c. Actual value for 2012.
- d. The employment cost index for wages and salaries of workers in private industry.
- e. Value for 2018.
- f. Value for 2023.

Rocky Mountain Power  
Exhibit RMP\_\_(SCH-5)  
Docket No. 13-035-184  
Witness: Samuel C. Hadaway

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

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Exhibit Accompanying Direct Testimony of Samuel C. Hadaway  
Discounted Cash Flow Analysis – Summary of DCF Model Results

January 2014

**Rocky Mountain Power  
 Discounted Cash Flow Analysis  
 Summary Of DCF Model Results**

Company	Constant Growth DCF Model Analysts' Growth Rates	Constant Growth DCF Model Long-Term GDP Growth	Low Near-Term Growth Two-Stage Growth DCF Model
1 ALLETE	10.3%	9.6%	9.4%
2 Alliant Energy Co.	9.2%	9.5%	9.3%
3 Avista Corp.	9.4%	10.4%	10.0%
4 DTE Energy Co.	8.8%	9.7%	9.6%
5 IDACORP	<del>6.8%</del>	9.1%	8.9%
6 Integrys Energy	9.8%	10.5%	10.0%
7 Nextera Energy	9.5%	9.1%	9.2%
8 Portland General	9.0%	9.5%	9.3%
9 Sempra Energy	8.3%	8.6%	8.5%
10 Southern Co.	8.6%	10.6%	10.3%
11 Westar Energy	8.0%	10.1%	9.8%
12 Wisconsin Energy	9.1%	9.3%	9.7%
13 Xcel Energy Inc.	8.7%	9.7%	9.7%
GROUP AVERAGE	9.1%	9.7%	9.5%
GROUP MEDIAN	9.1%	9.6%	9.6%

Sources: Value Line Investment Survey, Electric Utility (East), Nov 22, 2013; (Central), Sep 20, 2013; (West), Nov 1, 2013.

Note: The Constant Growth result for IDACORP at 6.8% is considered an outlier and eliminated.

NOTE: SEE PAGE 5 OF THIS EXHIBIT FOR FURTHER EXPLANATION OF EACH COLUMN.



**Rocky Mountain Power  
 Constant Growth DCF Model  
 Analysts' Growth Rates**

Company	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Recent Price(P0)	Next Year's Div(D1)	Dividend Yield	Value Line	Analysts' Estimated Growth	Thomson	Average Growth (Cols 4-6)	ROE K=Div Yld+G (Cols 3+7)
1 ALLETE	48.98	1.96	4.00%	7.00%	6.00%	6.00%	6.33%	10.3%
2 Alliant Energy Co.	50.89	1.96	3.85%	6.00%	5.30%	4.80%	5.37%	9.2%
3 Avista Corp.	27.06	1.28	4.73%	4.00%	5.00%	5.00%	4.67%	9.4%
4 DTE Energy Co.	67.61	2.73	4.04%	4.00%	5.40%	4.78%	4.73%	8.8%
5 IDACORP	<del>49.50</del>	<del>4.72</del>	<del>3.48%</del>	<del>2.00%</del>	<del>4.00%</del>	<del>4.00%</del>	<del>3.33%</del>	<del>6.8%</del>
6 Integrys Energy	56.30	2.72	4.83%	4.50%	5.20%	5.25%	4.98%	9.8%
7 Nextera Energy	83.76	2.88	3.44%	5.50%	6.20%	6.62%	6.11%	9.5%
8 Portland General	28.72	1.12	3.90%	3.50%	5.50%	6.45%	5.15%	9.0%
9 Sempra Energy	88.25	2.64	2.99%	4.50%	6.00%	5.45%	5.32%	8.3%
10 Southern Co.	41.64	2.08	5.00%	3.00%	4.10%	3.69%	3.60%	8.6%
11 Westar Energy	31.14	1.40	4.50%	6.00%	3.70%	0.95%	3.55%	8.0%
12 Wisconsin Energy	41.16	1.53	3.72%	5.50%	5.40%	5.37%	5.42%	9.1%
13 Xcel Energy Inc.	28.14	1.15	4.09%	4.50%	4.30%	4.90%	4.57%	8.7%
GROUP AVERAGE	49.47	1.95	4.09%	4.83%	5.18%	4.94%	4.98%	9.1%
GROUP MEDIAN			4.02%					9.1%

Sources: Value Line Investment Survey, Electric Utility (East), Nov 22, 2013; (Central), Sep 20, 2013; (West), Nov 1, 2013.

Note: The result for IDACORP at 6.8% is considered an outlier and eliminated.

NOTE: SEE PAGE 5 OF THIS EXHIBIT FOR FURTHER EXPLANATION OF EACH COLUMN.

**Rocky Mountain Power  
 Constant Growth DCF Model  
 Long-Term GDP Growth**

	(9)	(10)	(11)	(12)	(13)
Company	Recent Price(P0)	Next Year's Div(D1)	Dividend Yield	GDP Growth	ROE K=Div Yld+G (Cols 11+12)
1 ALLETE	48.98	1.96	4.00%	5.63%	9.6%
2 Alliant Energy Co.	50.89	1.96	3.85%	5.63%	9.5%
3 Avista Corp.	27.06	1.28	4.73%	5.63%	10.4%
4 DTE Energy Co.	67.61	2.73	4.04%	5.63%	9.7%
5 IDACORP	49.50	1.72	3.48%	5.63%	9.1%
6 Integrys Energy	56.30	2.72	4.83%	5.63%	10.5%
7 Nextera Energy	83.76	2.88	3.44%	5.63%	9.1%
8 Portland General	28.72	1.12	3.90%	5.63%	9.5%
9 Sempra Energy	88.25	2.64	2.99%	5.63%	8.6%
10 Southern Co.	41.64	2.08	5.00%	5.63%	10.6%
11 Westar Energy	31.14	1.40	4.50%	5.63%	10.1%
12 Wisconsin Energy	41.16	1.53	3.72%	5.63%	9.3%
13 Xcel Energy Inc.	28.14	1.15	4.09%	5.63%	9.7%
<b>GROUP AVERAGE</b>	<b>49.47</b>	<b>1.94</b>	<b>4.04%</b>	<b>5.63%</b>	<b>9.7%</b>
<b>GROUP MEDIAN</b>			<b>4.00%</b>		<b>9.6%</b>

Sources: Value Line Investment Survey, Electric Utility (East), Nov 22, 2013; (Central), Sep 20, 2013; (West), Nov 1, 2013.

NOTE: SEE PAGE 5 OF THIS EXHIBIT FOR FURTHER EXPLANATION OF EACH COLUMN.

**Rocky Mountain Power**  
**Low Near-Term Growth**  
**Two-Stage Growth DCF Model**

Company	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
	2014	2017	Annual Change to 2017	Recent Price	Year 1 Div	Year 2 Div	Year 3 Div	Year 4 Div	Year 5 Div	Year 5-150 Div Growth	ROE=Internal Rate of Return (Yrs 0-150)
	Div	Div			Year 1 Div	Year 2 Div	Year 3 Div	Year 4 Div	Year 5 Div	Year 5-150 Div Growth	
1 ALLETE	1.96	2.20	0.08	-48.98	1.96	2.04	2.12	2.20	2.32	5.63%	9.4%
2 Alliant Energy Co.	1.96	2.20	0.08	-50.89	1.96	2.04	2.12	2.20	2.32	5.63%	9.3%
3 Avista Corp.	1.28	1.40	0.04	-27.06	1.28	1.32	1.36	1.40	1.48	5.63%	10.0%
4 DTE Energy Co.	2.73	3.15	0.14	-67.61	2.73	2.87	3.01	3.15	3.33	5.63%	9.6%
5 IDACORP	1.72	1.90	0.06	-49.50	1.72	1.78	1.84	1.90	2.01	5.63%	8.9%
6 Integrys Energy	2.72	2.90	0.06	-56.30	2.72	2.78	2.84	2.90	3.06	5.63%	10.0%
7 Nextera Energy	2.88	3.60	0.24	-83.76	2.88	3.12	3.36	3.60	3.80	5.63%	9.2%
8 Portland General	1.12	1.25	0.04	-28.72	1.12	1.16	1.21	1.25	1.32	5.63%	9.3%
9 Sempra Energy	2.64	3.00	0.12	-88.25	2.64	2.76	2.88	3.00	3.17	5.63%	8.5%
10 Southern Co.	2.08	2.30	0.07	-41.64	2.08	2.15	2.23	2.30	2.43	5.63%	10.3%
11 Westar Energy	1.40	1.52	0.04	-31.14	1.40	1.44	1.48	1.52	1.61	5.63%	9.8%
12 Wisconsin Energy	1.53	2.00	0.16	-41.16	1.53	1.69	1.84	2.00	2.11	5.63%	9.7%
13 Xcel Energy Inc.	1.15	1.35	0.07	-28.14	1.15	1.22	1.28	1.35	1.43	5.63%	9.7%
GROUP AVERAGE											9.5%
GROUP MEDIAN											9.6%

Sources: Value Line Investment Survey, Electric Utility (East), Nov 22, 2013; (Central), Sep 20, 2013; (West), Nov 1, 2013.

NOTE: SEE PAGE 5 OF THIS EXHIBIT FOR FURTHER EXPLANATION OF EACH COLUMN.

**Rocky Mountain Power**  
**Discounted Cash Flow Analysis**  
**Column Descriptions**

Column 1: Three-month Average Price per Share (Sep 2013-Nov 2013)	Column 13: Column 11 Plus Column 12
Column 2: Estimated 2014 Div per Share from Value Line	Column 14: Estimated 2014 Div per Share from Value Line
Column 3: Column 2 Divided by Column 1	Column 15: Estimated 2017 Div per Share from Value Line
Column 4: "Est'd '10-'12 to '16-'18" Earnings Growth Reported by Value Line	Column 16: (Column 15 Minus Column 14) Divided by Three
Column 5: "Next 5 Years" Company Growth Estimate as Reported by Zacks.com	Column 17: See Column 1
Column 6: "Next 5 Years (per annum) Growth Estimate Reported by Thomson Financial Network (at Yahoo Finance)	Column 18: See Column 14
Column 7: Average of Columns 4-6	Column 19: Column 18 Plus Column 16
Column 8: Column 3 Plus Column 7	Column 20: Column 19 Plus Column 16
Column 9: See Column 1	Column 21: Column 20 Plus Column 16
Column 10: See Column 2	Column 22: Column 21 Increased by the Growth Rate Shown in Column 23
Column 11: Column 10 Divided by Column 9	Column 23: See Column 12
Column 12: Average of GDP Growth During the Last 10 year, 20 year, 30 year, 40 year, 50 year, and 60 year growth periods. See Exhibit RMP____(SCH-4).	Column 24: The Internal Rate of Return of the Cash Flows in Columns 17-22 along with the Dividends for the Years 6-150 Implied by the Growth Rates shown in Column 23.

Rocky Mountain Power  
Exhibit RMP\_\_(SCH-6)  
Docket No. 13-035-184  
Witness: Samuel C. Hadaway

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF UTAH

ROCKY MOUNTAIN POWER

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Exhibit Accompanying Direct Testimony of Samuel C. Hadaway

Risk Premium Analysis

January 2014

**Rocky Mountain Power**  
 Risk Premium Analysis-Electric  
 (Based on Projected Interest Rates)

	MOODY'S AVERAGE PUBLIC UTILITY BOND YIELD (1)	AUTHORIZED ELECTRIC RETURNS (2)	INDICATED RISK PREMIUM
1980	13.15%	14.23%	1.08%
1981	15.62%	15.22%	-0.40%
1982	15.33%	15.78%	0.45%
1983	13.31%	15.36%	2.05%
1984	14.03%	15.32%	1.29%
1985	12.29%	15.20%	2.91%
1986	9.46%	13.93%	4.47%
1987	9.98%	12.99%	3.01%
1988	10.45%	12.79%	2.34%
1989	9.66%	12.97%	3.31%
1990	9.76%	12.70%	2.94%
1991	9.21%	12.55%	3.34%
1992	8.57%	12.09%	3.52%
1993	7.56%	11.41%	3.85%
1994	8.30%	11.34%	3.04%
1995	7.91%	11.55%	3.64%
1996	7.74%	11.39%	3.65%
1997	7.63%	11.40%	3.77%
1998	7.00%	11.66%	4.66%
1999	7.55%	10.77%	3.22%
2000	8.14%	11.43%	3.29%
2001	7.72%	11.09%	3.37%
2002	7.53%	11.16%	3.63%
2003	6.61%	10.97%	4.36%
2004	6.20%	10.75%	4.55%
2005	5.67%	10.54%	4.87%
2006	6.08%	10.36%	4.28%
2007	6.11%	10.36%	4.25%
2008	6.65%	10.46%	3.81%
2009	6.28%	10.48%	4.20%
2010	5.55%	10.34%	4.79%
2011	5.13%	10.29%	5.16%
2012	4.27%	10.17%	5.90%
AVERAGE	8.68%	12.09%	3.41%

**INDICATED COST OF EQUITY**

PROJECTED SINGLE-A UTILITY BOND YIELD*	5.11%
MOODY'S AVG ANNUAL YIELD DURING STUDY	8.68%
INTEREST RATE DIFFERENCE	-3.57%
INTEREST RATE CHANGE COEFFICIENT	-42.81%
ADJUSTMENT TO AVG RISK PREMIUM	1.53%
BASIC RISK PREMIUM	3.41%
INTEREST RATE ADJUSTMENT	1.53%
EQUITY RISK PREMIUM	4.94%
PROJECTED SINGLE-A UTILITY BOND YIELD*	5.11%
<b>INDICATED EQUITY RETURN</b>	<b>10.05%</b>

(1) Moody's Investors Service.

(2) Regulatory Focus, Regulatory Research Associates, Inc.

\*Projected single-A bond yield is 100 basis points over projected long-term Treasury bond rate of 4.11%.

The single-A spread is for 3 months ended November 2013 from Exhibit RMP\_\_\_\_(SCH-2), p. 2.

The projected Treasury bond rate is the 30 year rate at 12/31/2014 from Exhibit RMP\_\_\_\_(SCH-2), p. 3.

**Rocky Mountain Power**  
**Risk Premium Analysis-Electric**

(Based on Current 3-Month Average Interest Rates)

	MOODY'S AVERAGE PUBLIC UTILITY BOND YIELD (1)	AUTHORIZED ELECTRIC RETURNS (2)	INDICATED RISK PREMIUM
1980	13.15%	14.23%	1.08%
1981	15.62%	15.22%	-0.40%
1982	15.33%	15.78%	0.45%
1983	13.31%	15.36%	2.05%
1984	14.03%	15.32%	1.29%
1985	12.29%	15.20%	2.91%
1986	9.46%	13.93%	4.47%
1987	9.98%	12.99%	3.01%
1988	10.45%	12.79%	2.34%
1989	9.66%	12.97%	3.31%
1990	9.76%	12.70%	2.94%
1991	9.21%	12.55%	3.34%
1992	8.57%	12.09%	3.52%
1993	7.56%	11.41%	3.85%
1994	8.30%	11.34%	3.04%
1995	7.91%	11.55%	3.64%
1996	7.74%	11.39%	3.65%
1997	7.63%	11.40%	3.77%
1998	7.00%	11.66%	4.66%
1999	7.55%	10.77%	3.22%
2000	8.14%	11.43%	3.29%
2001	7.72%	11.09%	3.37%
2002	7.53%	11.16%	3.63%
2003	6.61%	10.97%	4.36%
2004	6.20%	10.75%	4.55%
2005	5.67%	10.54%	4.87%
2006	6.08%	10.36%	4.28%
2007	6.11%	10.36%	4.25%
2008	6.65%	10.46%	3.81%
2009	6.28%	10.48%	4.20%
2010	5.55%	10.34%	4.79%
2011	5.13%	10.29%	5.16%
2012	4.27%	10.17%	5.90%
AVERAGE	8.68%	12.09%	3.41%

**INDICATED COST OF EQUITY**

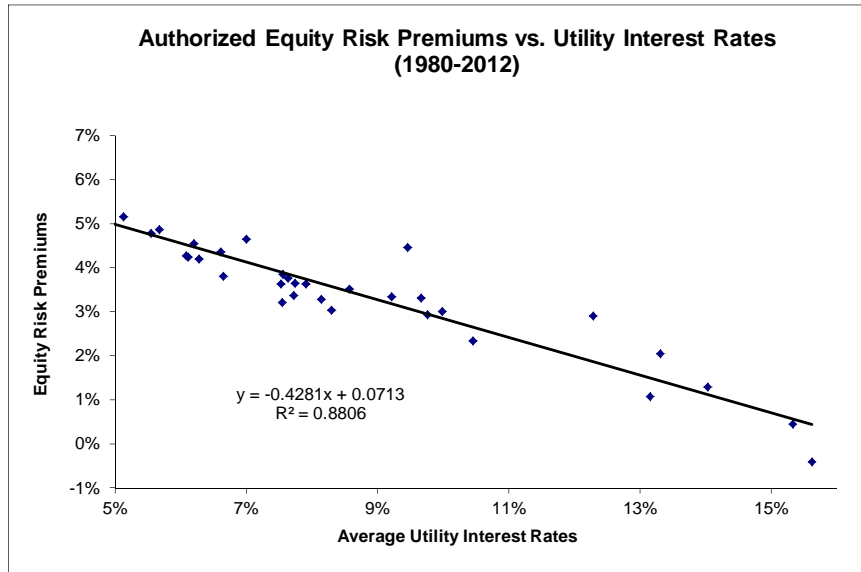
CURRENT SINGLE-A UTILITY BOND YIELD*	4.76%
MOODY'S AVG ANNUAL YIELD DURING STUDY	8.68%
INTEREST RATE DIFFERENCE	-3.92%
INTEREST RATE CHANGE COEFFICIENT	-42.81%
ADJUSTMENT TO AVG RISK PREMIUM	1.68%
BASIC RISK PREMIUM	3.41%
INTEREST RATE ADJUSTMENT	1.68%
EQUITY RISK PREMIUM	5.09%
CURRENT SINGLE-A UTILITY BOND YIELD*	4.76%
<b>INDICATED EQUITY RETURN</b>	<b>9.85%</b>

(1) Moody's Investors Service.

(2) Regulatory Focus, Regulatory Research Associates, Inc.

\*Current single-A utility bond yield is three month average of Moody's Single-A Public Utility Bond Yield Average through November 2013 from Exhibit RMP\_\_\_\_(SCH-2), p. 2.

**Rocky Mountain Power**  
 Risk Premium Analysis-Electric  
 Regression Analysis & Interest Rate Change Coefficient



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.938398087
R Square	0.88059097
Adjusted R Square	0.876739066
Standard Error	0.00472491
Observations	33

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	0.005103707	0.005103707	228.6118562	7.45897E-16
Residual	31	0.000692068	2.23248E-05		
Total	32	0.005795775			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.07127957	0.002591562	27.50448302	2.42768E-23	0.065994045	0.076565095	0.065994045	0.076565095
X Variable 1	-0.428076736	0.028312111	-15.11991588	7.45897E-16	-0.485819666	-0.370333805	-0.485819666	-0.370333805

- (1) Moody's Investors Service.
- (2) Regulatory Focus, Regulatory Research Associates, Inc.