

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 educational background and professional experience.**

8 A. A summary of my educational background and professional experience is  
9 contained in my 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 estimate RMP's cost of equity capital.

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

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

18 **Summary of Recommendations**

19 **Q. Have you determined the COE for utilities comparable to the Company?**

20 A. Yes. I have applied the discounted cash flow (“DCF”) model to estimate the COE  
21 for utilities comparable to RMP. The results of that analysis indicate that the  
22 comparable group's COE is in the range of 9.6 percent to 10.2 percent. I have also  
23 performed an equity risk premium analysis. That analysis indicates a COE in the

24 range of 9.55 percent to 9.70 percent. As I will explain later in this testimony, I  
25 discount the current equity risk premium results because they are unduly affected  
26 by the artificially low interest rates caused by the federal government's ongoing  
27 expansionary monetary policy. Based on these quantitative results and my further  
28 review of the other economic data discussed in this testimony, I recommend that  
29 the appropriate allowed return on equity (“ROE”) for RMP be set at 10.2 percent.  
30 This is a reasonable ROE for establishing the Company’s rates at this time and  
31 should be authorized by the Commission.

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

33 A. In my DCF analysis, I apply a comparable company approach. RMP's COE  
34 cannot be estimated directly from its own market data because the Company is a  
35 wholly-owned subsidiary of MidAmerican Energy Holdings Company. As such,  
36 RMP does not have publicly traded common stock or other independent market  
37 data that would be required to estimate its DCF cost directly. Therefore, I begin  
38 my comparable company review with all the vertically-integrated electric utilities  
39 that are included in the *Value Line Investment Survey* (“Value Line”). Value Line  
40 is a widely-followed, reputable source of financial data that is often used by  
41 professional regulatory economists. To improve the group's comparability with  
42 RMP, which has a senior secured bond rating of A from Standard & Poor’s  
43 (“S&P”) and A2 from Moody’s Investors Service (“Moody’s”), I restricted the  
44 group to integrated electric utilities with senior secured bond ratings of at least A-  
45 by S&P or A3 by Moody's. I also required the companies to derive at least 70  
46 percent of their revenues from regulated utility sales, to have consistent financial

47 records not affected by recent mergers or restructuring, and to have a consistent  
48 dividend record with no dividend cuts or resumptions during the past two years. I  
49 also excluded delivery-only companies from the group. The fundamental  
50 characteristics and bond ratings of the 14 companies in my comparable group are  
51 presented in Exhibit RMP\_\_\_\_(SCH-1), page 1.

52 In my risk premium analysis, I present estimates from both current and  
53 projected single-A utility bond yields for 2012. These rates are consistent with the  
54 Company's single-A bond ratings and reflect both the current government  
55 influenced interest rate environment and the rate levels that are expected during  
56 the coming year. As I will discuss later in this testimony, these risk premium  
57 estimates continue to be depressed by the federal government's stated intentions to  
58 keep interest rates artificially low. For these reasons, the risk premium results are  
59 not reasonable estimates of the Company's market required COE. The data  
60 sources and the details of my COE studies are contained in Exhibits  
61 RMP\_\_\_\_(SCH-1) through RMP\_\_\_\_(SCH-5).

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

63 A. My testimony is divided into three additional sections. Following this  
64 introduction, I review general capital market costs and conditions and discuss  
65 recent developments in the electric utility industry that may affect the cost of  
66 capital. In the following section, I review various methods for estimating the  
67 COE. In that section, I discuss comparable earnings methods, equity risk premium  
68 methods, and the discounted cash flow model. In the final section, I apply the

69 DCF and risk premium models to estimate RMP's COE, I discuss the details of  
70 my COE studies, and I summarize my ROE recommendations.

71 **Fundamental Factors That Affect the Cost of Equity**

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

73 A. Growth for the U.S. economy is expected to remain slow in the near term. While  
74 most economists expect real growth to remain positive, in the 1.5 percent range,  
75 unemployment is also expected to remain stubbornly high in the 8 percent to 9  
76 percent range. Forecasts for 2012 indicate continuing, but slow recovery with new  
77 job creation a fundamental concern. Based on these conditions, the Federal  
78 Reserve System has announced its intention to keep interest rates at their current,  
79 historically low levels through 2014.<sup>1</sup> However, equity markets have continued to  
80 be extremely volatile and only recently have utility stocks had favorable  
81 performance relative to the general market recovery. As I will explain later in this  
82 testimony, the recent positive utility stock performance is not necessarily a  
83 reflection of improving economic conditions. Rather it very likely reflects a  
84 search for yield by investors discouraged by the persistent intervention in the  
85 fixed income market and the federal government's stated intention of maintaining  
86 low bond yields. On top of these market dislocations, investors are also concerned

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<sup>1</sup> In the policy statement following its January 24-25, 2012 meeting, the Federal Reserve System Board of Governors provided the following comments: "To support a stronger economic recovery and to help ensure that inflation, over time, is at levels consistent with the dual mandate [of maximum employment and stable inflation], the Committee expects to maintain a highly accommodative stance for monetary policy. In particular, the Committee decided today to keep the target range for the federal funds rate at 0 to 1/4 percent and currently anticipates that economic conditions--including low rates of resource utilization and a subdued outlook for inflation over the medium run--are likely to warrant exceptionally low levels for the federal funds rate at least through late 2014."

87 about the European sovereign debt crisis. All of these factors point to elevated  
88 risk aversion, a fundamental lack of equilibrium conditions in the financial  
89 markets, and a continuing relatively high cost for equity capital.

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

92 A. In Exhibit RMP\_\_\_(SCH-2), page 1, I provide a 10-year review of annual interest  
93 rates and rates of inflation. During this time period, interest rates and inflation  
94 generally have been lower than in the previous decade. Inflation in this period, as  
95 measured by the Consumer Price Index (“CPI”), fluctuated between a low of zero  
96 percent (in 2008) and 4.1 percent (caused by the spike in energy costs that  
97 occurred in 2007). The decade's average annual inflation rate (2.4 percent) was  
98 approximately 100 basis points lower than the longer-term average rate of the past  
99 60 years (see Exhibit RMP\_\_\_(SCH-3). Interest rates declined steadily over most  
100 of the period, with the 2010 average utility rate at its lowest level in more than 30  
101 years (see Exhibit RMP\_\_\_(SCH-5), page 1).

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

103 A. The month-by-month interest rate data for the period since January 2009 are  
104 presented in Exhibit RMP\_\_\_(SCH-2), page 2, and summarized 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 Utility Spread</b>
Jan-09	6.39	3.13	3.26
Feb-09	6.30	3.59	2.71
Mar-09	6.42	3.64	2.78
Apr-09	6.48	3.76	2.72
May-09	6.49	4.23	2.26
Jun-09	6.20	4.52	1.68
Jul-09	5.97	4.41	1.56
Aug-09	5.71	4.37	1.34
Sep-09	5.53	4.19	1.34
Oct-09	5.55	4.19	1.36
Nov-09	5.64	4.31	1.33
Dec-09	5.79	4.49	1.30
Jan-10	5.77	4.60	1.17
Feb-10	5.87	4.62	1.25
Mar-10	5.84	4.64	1.20
Apr-10	5.81	4.69	1.12
May-10	5.50	4.29	1.21
Jun-10	5.46	4.13	1.33
Jul-10	5.26	3.99	1.27
Aug-10	5.01	3.80	1.21
Sep-10	5.01	3.77	1.24
Oct-10	5.10	3.87	1.23
Nov-10	5.37	4.19	1.18
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
3-Mo Avg	<b>4.37</b>	<b>3.04</b>	<b>1.32</b>
12-Mo Avg	<b>5.04</b>	<b>3.91</b>	<b>1.13</b>

Sources: Mergent Bond Record (Utility Rates); www.federalreserve.gov (Treasury rates). Three month average is for October 2011-December 2011. Twelve month average is for January 2011-December 2011.

105 The data in Table 1 track the steady decline in corporate interest rates that has  
106 occurred since early 2009 and the market turmoil that has existed during this time  
107 period. The Federal Reserve's continuing intervention in the financial markets  
108 and its efforts to keep short-term rates near zero and rates on longer-term U.S.  
109 Treasury bonds at historically low levels are affecting yields on high quality  
110 corporate debt as well. While the effects of these monetary policy efforts are not  
111 easily captured in financial models for estimating COE (models that assume  
112 market equilibrium exists), equity market turbulence and the resulting elevated  
113 level of risk aversion indicate that any decline in COE has not been nearly as  
114 large as the decline in borrowing costs.

115 **Q. Has PacifiCorp recently issued low cost debt?**

116 A. Yes. Earlier this year, the Company issued \$350 million of debt with a 10-year  
117 maturity and a coupon interest rate of 2.95 percent, and \$300 million with a 30-  
118 year maturity and a coupon rate of 4.10 percent. As discussed in the testimony of  
119 Company Vice President and Treasurer Mr. Bruce N. Williams, these rates are  
120 among the lowest ever achieved by borrowers. The coupon rate on the 10-year  
121 maturity is tied for the lowest utility rate on record (for any ratings level) and the  
122 sixth lowest coupon rate for any industry and any credit rating. The 30-year  
123 coupon rate of 4.10 percent is the third lowest coupon achieved by any issuer in  
124 any industry and credit rating. While the beneficial effects of these low cost bonds  
125 are flowed directly to Utah customers in the present case, the historically low debt  
126 costs are a concrete example of the government's monetary policy impact.

127 **Q. Do the smaller spreads between yields on single-A utility bonds and U.S.**  
128 **Treasury bonds mean that the markets have fully recovered from the**  
129 **economic turmoil that resulted from the financial crisis?**

130 A. No. While markets have stabilized considerably from the conditions that existed  
131 in early 2009, investors remain concerned about high unemployment, large  
132 federal deficits, the Mideast turmoil, and European as well as domestic economic  
133 issues. These factors combined with sluggish growth in gross domestic product  
134 (“GDP”) continue to raise substantial equity market concerns and contribute to  
135 heightened investor risk aversion.

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

138 A. Interest rates are expected to rise somewhat from currently low levels. In Exhibit  
139 RMP\_\_\_(SCH-2), page 3, I provide Standard and Poor’s (“S&P”) most recent  
140 interest rate forecast from its *Trends & Projections* publication for November  
141 2011. Table 2 below summarizes the interest rate forecasts:

**Table 2**  
**Interest Rate Forecasts**

	Dec. 2011 Average	Average 2011 Est.	Average 2012 Est.
Treasury Bills	0.1%	0.1%	0.0%
10-Yr. T-Bonds	2.0%	2.8%	2.3%
30-Yr. T-Bonds	3.0%	3.9%	3.3%
Aaa Corporate Bonds	3.9%	4.6%	4.2%

Sources: [www.federalreserve.gov](http://www.federalreserve.gov), (Current Rates). Standard & Poor’s *Trends & Projections*, November 2011, page 8 (Projected Rates).

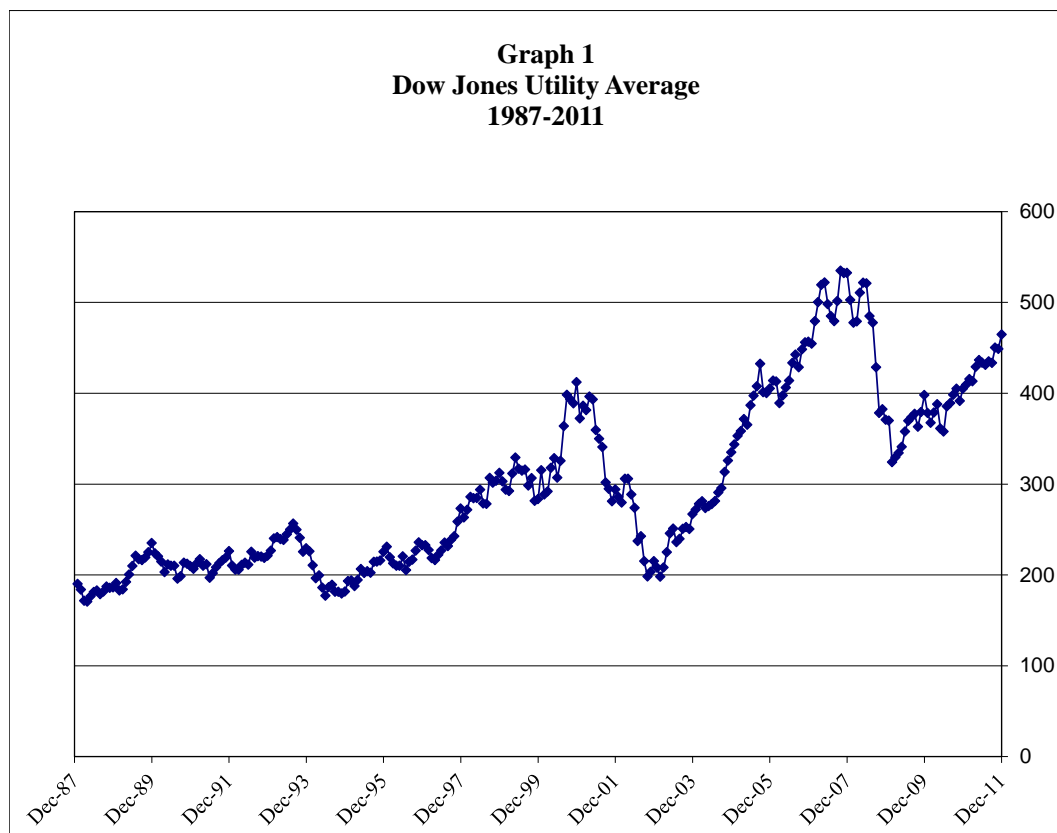
142 These data show that, during 2012, average long-term Treasury interest rates are  
143 expected to increase by 30 basis points relative to the low levels in the December-



144 2011. Yields on the other bonds shown in the table are also expected to increase  
145 slightly. The small interest rate increases projected by S&P are consistent with a  
146 sluggishly improving economy and the government's announced intention to  
147 maintain low interest rates.

148 **Q. How have utility stocks performed during the past several years?**

149 A. Utility stock prices have been more volatile in recent years as compared to their  
150 traditional performance. The wider fluctuations in more recent years are vividly  
151 illustrated in the following Graph 1, which depicts Dow Jones Utility Average  
152 (“DJUA”) prices over the past 25 years.



153 Until the late 1990s, utility stocks were viewed as relatively stable investments.  
154 Over the past decade, however, utility stock prices have fluctuated much more  
155 widely. In this environment, investors’ return expectations and requirements for

156 providing capital to the utility industry remain high relative to the longer-term,  
157 traditional view of the utility industry.

158 **Q. How have utility stocks performed since the market low point reached in**  
159 **March 2009?**

160 A. Prior to the last several months (since May 2011), utility stock prices had lagged  
161 well behind the general market recovery. Since May, however, fears of potential  
162 sovereign defaults as well as domestic financial problems have increased equity  
163 market risk aversion. This situation has made dividend oriented stocks, like  
164 utilities, relatively more attractive for all income-oriented investors. For the May-  
165 December time period, the DJUA rose over 6 percent (6.5%), while the S&P 500  
166 dropped by over 7 percent (-7.5%). The relatively better performance for utilities  
167 has produced lower dividend yields in the DCF model; *i.e.*, the DCF model  
168 results, with respect to dividend yields, do not reflect the overall market's  
169 volatility and heightened risk aversion. This anomaly makes it more difficult to  
170 interpret current DCF cost of equity estimates for utility companies.

171 Furthermore, as noted previously, any decline in the COE has not been  
172 nearly as large as the recent decline in borrowing costs. By the same token, any  
173 rise in the COE would not be as large as an increase in borrowing costs. From a  
174 regulatory policy point of view, incremental changes in the embedded cost of debt  
175 are gradually applied to the rate base as new debt issues are added to the balance  
176 sheet and retiring debt issues are removed from the balance sheet. However,  
177 incremental changes in common equity costs, either up or down, are applied to the  
178 rate base without moderation. This could have a material effect on the utility's

179 funds from operations. Thus tempering incremental changes in common equity  
180 costs, either up or down, would be consistent with the way incremental debt cost  
181 changes are handled and would be consistent with maintaining the utility's credit  
182 quality, financial integrity and access to capital markets.

183 **Q. How has the "flight to quality" in the traditional fixed income markets (bond**  
184 **markets) affected dividend oriented stocks?**

185 A. As bond yields have fallen (as a result of the government's ongoing policies in the  
186 financial markets), investors have looked for income from dividend paying stocks.  
187 Consequently, utility stocks have experienced some price support as investors in  
188 search of yield have substituted utility common stocks for low-yielding fixed  
189 income securities.

190 **Q. Does this imply that the cost of equity capital for utilities has declined as**  
191 **much as the drop in interest rates?**

192 A. No. Equity market risk aversion has increased, not decreased. The domestic  
193 economy faces severe challenges--growth in GDP has slowed; unemployment  
194 remains stubbornly high; job creation is weak. The federal government is  
195 responding to this economic distress by artificially depressing interest rates  
196 through its ongoing purchases of Treasury bonds and other securities. While this  
197 government policy pumps liquidity into the financial markets, it also removes  
198 yield opportunities for investors in traditionally lower risk fixed income  
199 investments. Thus, investors are trying to react rationally to a market environment  
200 that has many risks but few income opportunities. Such circumstances raise

201 significant questions about the ability of traditional rate of return estimation  
202 methods to function reasonably.

203 **Q. Has equity market volatility been recognized as a cause for reduced equity**  
204 **capital availability in the U.S.?**

205 A. Yes. Many Wall Street analysts have commented on the recent equity market  
206 volatility and its effects:

207 In market-speak, it's called volatility: Large jumps followed by  
208 deep dives, within the course of a week or sometimes the same  
209 day. The surge in volatility since early August has been blamed for  
210 preventing companies from going public and scaring people out of  
211 stocks. Some think that even if Europe resolves its debt crisis,  
212 large price swings are here to stay.

213 The long-term trend is toward more volatility. Judging by the  
214 number of times in a year the S&P 500 swung 2 percent or more in  
215 a single day, markets are much more likely to have large leaps up  
216 or dives down, according to S&P's equity research group. Swings  
217 of 2 percent occurred an average of five times a year from 1950 to  
218 1999. It's already happened 20 times this year, with three months  
219 left to go. (Matthew Craft, Associated Press/Yahoo Finance,  
220 October 2, 2011).

221 **Q. What is the industry's current fundamental position?**

222 A. The industry has seen significant volatility both in terms of fundamental operating  
223 characteristics and the effects of the economy. Slow economic growth has  
224 reduced sales volumes and uncertain environmental rules have both increased the  
225 difficulty of planning for future load requirements. In the equity markets, ongoing  
226 turmoil has increased investors' preferences for safer, dividend paying companies.  
227 Value Line discusses this phenomenon and provides a warning of possible  
228 overvaluation in its recent Electric Utility update.

229 **Value Line Investor Survey**  
230 With most of 2011 completed, it seems almost certain that electric  
231 utility stocks will have outperformed the broader market averages  
232 when the year is over. As of mid-December, the Value Line Utility  
233 Average is up slightly, while the Value Line Geometric Average is  
234 down about 14%. Electric utility stocks have long been viewed as a  
235 safe haven in volatile markets, due in large part to their generous  
236 dividend yields. However, many of these issues are now trading  
237 within their 2014-2016 Target Price Ranges. This is often an  
238 indication that they have become expensively priced. (*Value Line*  
239 *Investor Survey*, December 23, 2011, p. 901).

240 In the summary in its recent assessment of the Electric Utility Industry,  
241 Standard & Poor's provides perspective for investors' concerns for 2012:

242 **Standard & Poor's**  
243 Regulated U.S. electric utility companies will begin implementing  
244 Environmental Protection Agency (EPA) rules concerning carbon  
245 and other pollutants in 2012. Other challenges included the  
246 continued need for substantial capital spending, the potential for  
247 rate pressure in a slow growth period, and the changing global  
248 capital markets. ("The Top 10 Investor Questions For U.S.  
249 Regulated Electric Utilities In 2012," Standard & Poor's Ratings  
250 Direct, January 3, 2012, p. 2).

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

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

256 A. As I discussed previously, equity investors respond to changing assessments of  
257 risk and financial prospects by changing the price they are willing to pay for a  
258 given security. When the risk perceptions increase or financial prospects decline,  
259 investors refuse to pay the previously existing market price for a company's  
260 securities and market supply and demand forces then establish a new lower price.

261 The lower market price typically translates into a higher cost of capital through a  
262 higher dividend yield requirement as well as the potential for increased capital  
263 gains if prospects improve. In addition to market losses for prior shareholders, the  
264 higher cost of capital is transmitted directly to the company by the need to earn a  
265 higher cost of capital on existing and new investments just to maintain the stock's  
266 new lower price level and the reality that the firm must issue more shares to raise  
267 any given amount of capital for future investment. The additional shares also  
268 impose additional future dividend requirements and may reduce future earnings  
269 per share growth prospects if the proceeds of the share issuance are unable to earn  
270 their expected rate of return.

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

273 A. Over the past five years, quarterly allowed ROEs for all types of electric utilities  
274 have averaged about 10.4 percent. For integrated electrics, like RMP, the average  
275 allowed rate for 2010 was 10.38 percent and for 2011, it was 10.24 percent.<sup>2</sup>  
276 Table 3 below summarizes the data for all types of electric utilities:

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<sup>2</sup> See Exhibit RMP\_\_\_\_(SCH-1), page 2.

**Table 3**  
**Authorized Electric Utility Equity Returns**

	2007	2008	2009	2010	2011
1 <sup>st</sup> Quarter	10.27%	10.45%	10.29%	10.66%	10.32%
2 <sup>nd</sup> Quarter	10.27%	10.57%	10.55%	10.08%	10.12%
3 <sup>rd</sup> Quarter	10.02%	10.47%	10.46%	10.27%	10.00%
4 <sup>th</sup> Quarter	10.56%	10.33%	10.54%	10.30%	10.34%
Full Year Average	10.36%	10.46%	10.48%	10.34%	10.22%
Average Utility					
Debt Cost	6.11%	6.65%	6.28%	5.55%	5.17%
Indicated Average					
Risk Premium	4.25%	3.81%	4.20%	4.79%	5.05%

Source: Regulatory Focus, Regulatory Research Associates, Inc., Major Rate Case Decisions, January 10, 2012. Utility debt costs are the "average" public utility bond yields as reported by Moody's.

277 Based on these data, over the past five years, the allowed equity risk premium for  
 278 electric utilities has ranged between 3.81 percent and 5.05 percent. In most utility  
 279 jurisdictions, allowed ROEs for vertically integrated utilities have remained above  
 280 10 percent.

281 **Estimating the Cost of Equity Capital**

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

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

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

291 A. The regulatory process is guided by fair rate of return principles established in the

292 U.S. Supreme Court cases, *Bluefield Water Works* and *Hope Natural Gas*:

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

303 From the investor or company point of view, it is important that  
304 there be enough revenue not only for operating expenses, but also  
305 for the capital costs of the business. These include service on the  
306 debt and dividends on the stock. By that standard the return to the  
307 equity owner should be commensurate with returns on investments  
308 in other enterprises having corresponding risks. That return,  
309 moreover, should be sufficient to assure confidence in the financial  
310 integrity of the enterprise, so as to maintain its credit and to attract  
311 capital. (*Federal Power Commission v. Hope Natural Gas Co.*, 320  
312 U.S. 591, 603 (1944)).

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

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

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

322 An example helps to illustrate the COE concept. Assume that an investor  
323 buys a share of common stock for \$20 per share. If the stock's expected dividend



324 is \$1.00, the expected dividend yield is 5.0 percent ( $\$1.00 / \$20 = 5.0$  percent). If  
325 the stock price is also expected to increase to \$21.20 after one year, this one dollar  
326 and 20 cent expected gain adds an additional 6.0 percent to the expected total rate  
327 of return ( $\$1.20 / \$20 = 6.0$  percent). Therefore, buying the stock at \$20 per share,  
328 the investor expects a total return of 11.0 percent: 5.0 percent dividend yield, plus  
329 6.0 percent price appreciation. In this example, the total expected rate of return of  
330 11.0 percent is the appropriate measure of the cost of equity capital, because it is  
331 this rate of return that caused the investor to commit the \$20 of equity capital in  
332 the first place. If the stock were riskier, or if expected returns from other  
333 investments were higher, investors would have required a higher rate of return  
334 from the stock, which would have resulted in a lower initial purchase price in  
335 market trading.

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

346 company in question as well as knowledge about the risk and expected rate of  
347 return characteristics of other available investments.

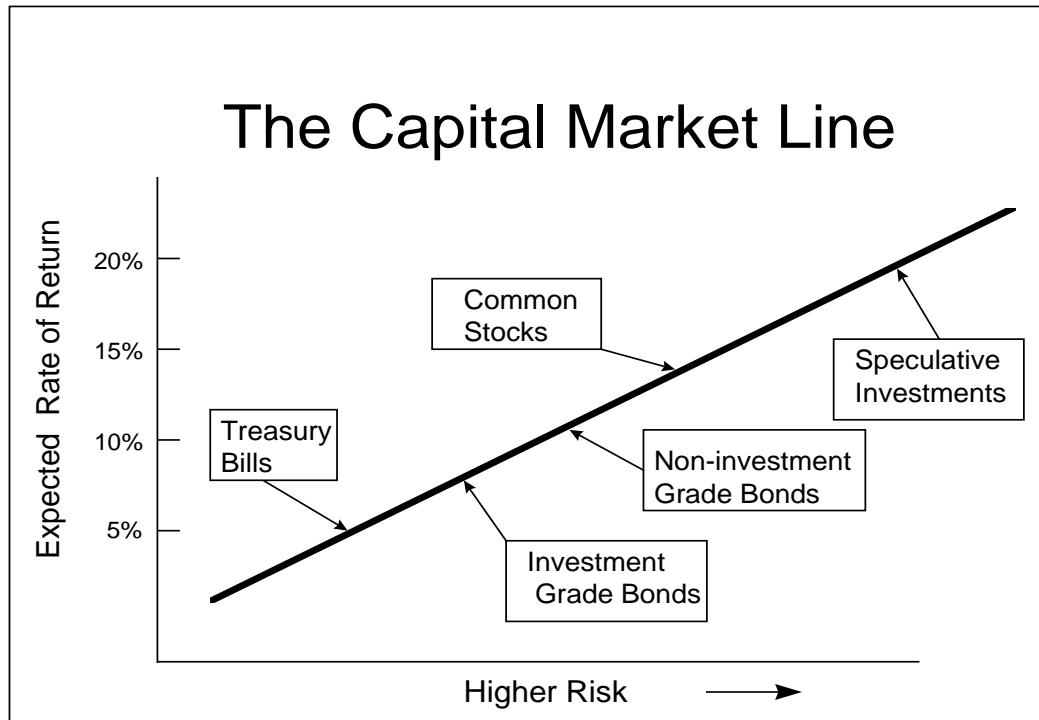
348 **Q. How does the market account for risk differences among the various**  
349 **investments?**

350 A. Risk-return tradeoffs among capital market investments have been the subject of  
351 extensive financial research. Literally dozens of textbooks and hundreds of  
352 academic articles have addressed the issue. Generally, such research confirms the  
353 common sense conclusion that investors will take additional risks only if they  
354 expect to receive a higher rate of return. Empirical tests consistently show that  
355 returns from low risk securities, such as U.S. Treasury bills, are the lowest; that  
356 returns from longer-term Treasury bonds and corporate bonds are increasingly  
357 higher as risks increase; and generally, returns from common stocks and other  
358 more risky investments are even higher. These observations provide a sound  
359 theoretical foundation for both the DCF and risk premium methods for estimating  
360 the cost of equity capital. These methods attempt to capture the well founded risk-  
361 return principle and explicitly measure investors' rate of return requirements.

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

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

# Risk-Return Tradeoffs



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

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

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

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

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

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

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

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

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

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

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

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

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

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

449 basic risk premium methods provide a good parallel approach to the DCF model  
450 and further ensure that current market conditions are accurately reflected in the  
451 COE estimate. However, due to ongoing market turmoil and current government  
452 monetary policy, which I previously discussed in this testimony, ROE estimates  
453 obtained from all of these methods, especially the equity risk premium  
454 methodology, should be discounted.

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

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

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

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

460 A. In the first part of my analysis, I apply three versions of the DCF model to a 14-  
461 company group of electric utilities based on the selection criteria discussed  
462 previously. In the second part of my analysis, I apply basic equity risk premium  
463 models and review projected economic conditions and projected capital costs for  
464 the coming year.

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

472 I use only the long-term estimated GDP growth rate. Finally, in the third version  
473 of the DCF model, I use a two-stage growth approach, with stage one growth  
474 based on Value Line's three-to-five-year dividend projections and stage two  
475 growth based on long-term projected GDP growth. The dividend yields in all  
476 three of the models are from Value Line's projections of dividends for the coming  
477 year and stock prices are from the three-month average for the months that  
478 correspond to the Value Line editions from which the underlying financial data  
479 are taken.

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

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

488 Expected growth rates vary somewhat among companies, but  
489 dividends for mature firms are often expected to grow in the future  
490 at about the same rate as nominal gross domestic product (real  
491 GDP plus inflation). On this basis, one might expect the dividend  
492 of an average, or "normal," company to grow at a rate of 5 to 8  
493 percent a year. (Eugene F. Brigham and Joel F. Houston,  
494 *Fundamentals of Financial Management*, 11th Ed. 2007, page  
495 298).



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

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

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

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

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

526 A. I developed my long-term GDP growth forecast from nominal GDP data  
527 contained in the St. Louis Federal Reserve Bank data base. That data for the

528 period 1950 through 2010 are summarized in my Exhibit RMP\_\_\_\_(SCH-3). As  
529 shown at the bottom of that exhibit, the overall average for the period was 6.7  
530 percent. The data also show, however, that after the early 1980s, lower inflation  
531 has resulted in lower nominal GDP growth. For this reason I gave more weight to  
532 the more recent years in my GDP forecast. Based on this approach, my overall  
533 forecast for long-term GDP growth at 5.8 percent is almost 100 basis points lower  
534 than the long-term average GDP growth rate.

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

537 A. There are at least three reasons. First, most econometric forecasts are derived  
538 from the trending of historical data or the use of weighted averages. This is the  
539 approach I have taken in Exhibit RMP\_\_\_\_(SCH-3). The long-run historical  
540 average GDP growth rate is 6.7 percent, but my estimate of long-term expected  
541 growth is lower, at 5.8 percent. My forecast is lower because my forecasting  
542 method gives much more weight to the more recent 10- and 20-year periods.

543 Second, some currently lower GDP growth forecasts likely understate very  
544 long growth rate expectations that are required in the DCF model. Many of those  
545 forecasts are currently low because they are based on the assumption of  
546 permanently low inflation rates, in the range of two percent. As shown in my  
547 Exhibit RMP\_\_\_\_(SCH-3), the average long-term inflation rate measured by CPI  
548 has been over three percent in all but the most recent 10- and 20- year periods.  
549 Also, as shown in Exhibit RMP\_\_\_\_(SCH-2), page 1, from December 2008 to  
550 December 2009, even with the continuing effects of the economic recession, the

551 CPI increased by 2.8 percent and in 2007 the CPI increased by over four percent.  
552 Use of long-term inflation rates of two percent or less to estimate long-term  
553 nominal growth in the DCF model is not consistent with reasonable long-term  
554 expectations for the U.S. economy or investors' long-term experience.

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

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

565 A. The DCF results for my comparable company group are presented in Exhibit  
566 RMP\_\_\_(SCH-4). As shown in the first column of page 1 of that exhibit, the  
567 traditional constant growth model indicates a COE range of 9.6 percent to 10.0  
568 percent. In the second column of page 1, I recalculate the constant growth results  
569 with the growth rate based on long-term forecasted growth in GDP. With the GDP  
570 growth rate, the constant growth model indicates a cost of common equity range  
571 of 10.1 percent to 10.2 percent. Finally, in the third column of page 1, I present  
572 the results from the multistage DCF model. The multistage model indicates a cost  
573 of common equity of 9.9 percent to 10.0 percent. The results from the DCF

574 model, therefore, indicate a cost of common equity range of 9.6 percent to 10.2  
575 percent.

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

577 A. The details and results of my basic equity risk premium studies are shown in my  
578 Exhibit RMP\_\_\_\_(SCH-5). These studies indicate a cost of common equity range  
579 of 9.55 percent to 9.70 percent. As noted previously, I discount these risk  
580 premium estimates because they are directly affected by the government's  
581 ongoing efforts to keep interest rates artificially low.

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

583 A. My basic equity risk premium studies are divided into two parts. First, I compare  
584 electric utility authorized ROEs for the period 1980-2011 to contemporaneous  
585 long-term utility interest rates. The differences between the average authorized  
586 ROEs and the average interest rate for each year is the indicated equity risk  
587 premium. I then add the indicated equity risk premium to the forecasted and  
588 current single-A utility bond interest rate to estimate the cost of common equity.  
589 Because there is a strong inverse relationship between equity risk premiums and  
590 interest rates (when interest rates are high, risk premiums are low and vice versa),  
591 further analysis is required to estimate the current equity risk premium level.

592 The inverse relationship between equity risk premiums and interest rate  
593 levels is well documented in numerous, well-respected academic studies. These  
594 studies typically use regression analysis or other statistical methods to predict or  
595 measure the equity risk premium relationship under varying interest rate  
596 conditions. On page 3 of Exhibit RMP\_\_\_\_(SCH-5), I provide a regression

597 analysis of the allowed annual equity risk premiums relative to interest rate levels.  
598 The negative and statistically significant regression coefficients confirm the  
599 inverse relationship between equity risk premiums and interest rates. This means  
600 that when interest rates rise by one percentage point, the COE increases, but by a  
601 smaller amount. Similarly, when interest rates decline by one percentage point,  
602 the COE will also decline but by less than one percentage point. I use this  
603 negative interest rate change coefficient in conjunction with current and  
604 forecasted interest rates to estimate the appropriate cost of common equity.

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

607 A. Yes. Statistical analysis is often used, especially in academic research, to  
608 substantiate certain economic and financial relationships. For equity risk premium  
609 analysis, however, the fundamental issue can be observed by simply averaging the  
610 data for various time periods without further statistical analysis. The data in Table  
611 4 below show average utility bond yields and equity risk premiums for each non-  
612 overlapping, five-year period between 1980 and 2011.

**Table 4**  
**Average Five-Year Utility Bond Yields and Equity Risk**  
**Premiums**  
**(1980-2011)**

Period	Average Utility Bond Interest Rate	Average Equity Risk Premium
1980-1986	13.31%	1.69%
1987-1991	9.81%	2.99%
1992-1996	8.02%	3.54%
1997-2001	7.61%	3.66%
2002-2006	6.42%	4.34%
2007-2011	5.95%	4.42%

Source: Exhibit RMP\_\_\_(SCH-5), page 1.

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

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

624 A. Table 5 below summarizes my results:

**Table 5**  
**Summary of Cost of Equity Estimates**

DCF Analysis	Indicated Cost
Constant Growth (Analysts' Growth)	9.6%-10.0%
Constant Growth (GDP Growth)	10.1%-10.2%
Multistage Growth Model	9.9%-10.0%
Indicated DCF Range	9.6%-10.2%
Equity Risk Premium Analysis	Indicated Cost
Forecast Utility Debt Yield+ Equity Risk Premium	
Equity Risk Premium ROE (4.62% + 5.08%)	9.70%
Current Utility Debt + Equity Risk Premium	
Equity Risk Premium ROE (4.37% + 5.08%)	9.55%
RMP Cost of Equity	10.20%

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

627 A. The fair and reasonable ROE for RMP is 10.2 percent. This requested ROE, at the  
628 top of my DCF range, is appropriate given the ongoing effects of U.S. and global  
629 economic turmoil on the equity market for utility shares. Recent market turmoil  
630 and the continuing effects on capital markets make it difficult to strictly interpret  
631 quantitative model estimates for the cost of equity. While corporate interest rates  
632 have dropped to record low levels and the DCF results have declined as utility  
633 dividend yields have dropped, equity market volatility remains high. Under these  
634 conditions, use of a lower DCF range or equity risk premium estimates based  
635 strictly on historical risk premium relationships will understate the market cost of  
636 equity. Based on all these factors, an ROE of 10.2 percent is a reasonable rate of  
637 return to be used for setting rates in this case.

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

639 A. Yes, it does.