

Rocky Mountain Power  
Docket No. 10-035-124  
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 2011

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

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

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

5 A. I am testifying on behalf of Rocky Mountain Power (hereinafter the Company).

6 **Q. Briefly describe your educational and professional background.**

7 A. A summary of my educational background and professional experience is  
8 contained in Appendices A and B.

9 **Purpose and Summary of Testimony**

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

11 A. The purpose of my testimony is to estimate Rocky Mountain Power's cost of  
12 equity capital.

13 **Q. Please define the term "cost of equity capital."**

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

19 **Q. Have you determined the cost of common equity capital for utilities  
20 comparable to the Company?**

21 A. Yes. I estimate the cost of equity capital for a utility comparable to the Company  
22 to be in the range of 10.1 percent to 10.7 percent based upon a discounted cash  
23 flow (DCF) analysis. I also perform an equity risk premium analysis. However,

24 under present market conditions, I discount the results of that analysis because the  
25 analysis is negatively affected by artificially low interest rates that have resulted  
26 from the government's expansionary monetary policy. I will discuss these factors  
27 in more detail later in this testimony. Based upon my analyses, I conclude that a  
28 return on common equity (ROE) of 10.5 percent is reasonable for establishing the  
29 Company's rates at this time and should be authorized by the Commission.

30 **Q. Didn't the Idaho Public Utilities Commission recently conclude that 9.9**  
31 **percent was a reasonable ROE for the Company's rates?**

32 A. Yes. On December 27, 2010, the Idaho Commission issued an interim decision  
33 regarding revenue requirement that was based on a 9.9 percent ROE. I was a  
34 witness in that proceeding. The interim decision does not explain the Idaho  
35 Commission's rationale for selecting 9.9 percent ROE, so the basis for its decision  
36 is unknown at the time that I am preparing this testimony. What I do know is that  
37 the Commission made its decision based upon evidence that reflected a trough in  
38 single-A utility bond interest rates. As shown in Table 1 on page 8 of this  
39 testimony, between the time that I prepared direct testimony in the Idaho case  
40 (April 2010) and the data that I had available when I prepared rebuttal testimony  
41 in that case (October 2010), single-A utility bond rates fell 71 basis points (0.71  
42 percent). Since the time that I filed rebuttal testimony in that case, single-A utility  
43 bond rates have risen 46 basis points (as of December 2010). The Idaho record  
44 reflected a sharp drop in interest rates that has now been substantially reversed.

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

46 A. In my DCF analysis, I apply a comparable company approach. Rocky Mountain

47 Power's cost of equity cannot be estimated directly from its own market data  
48 because the Company is wholly-owned subsidiary of MidAmerican Energy  
49 Holdings Company. As such, Rocky Mountain Power does not have publicly  
50 traded common stock or other independent market data that would be required to  
51 estimate its cost of equity directly. I begin my comparable company review with  
52 all the electric utilities that are included in the *Value Line Investment Survey*  
53 (Value Line). Value Line is a widely-followed, reputable source of financial data  
54 that is often used by professional regulatory economists. To improve the group's  
55 comparability with Rocky Mountain Power, which has a senior secured bond  
56 rating of A from Standard & Poor's (S&P) and A2 from Moody's Investors  
57 Service (Moody's), I restricted the group to companies with senior secured bond  
58 ratings of at least A- by S&P or A3 by Moody's. I also required the comparable  
59 companies to derive at least 70 percent of their revenues from regulated utility  
60 sales, to have consistent financial records not affected by recent mergers or  
61 restructuring, and to have a consistent dividend record with no dividend cuts or  
62 resumptions during the past two years. The fundamental characteristics and bond  
63 ratings of the 20 companies in my comparable group are presented in Exhibit  
64 RMP\_\_\_(SCH-1), page 1.

65 In my risk premium analysis, I present estimates from both current and  
66 projected single-A utility bond interest rates. These rates are consistent with  
67 Rocky Mountain Power's bond ratings. As stated above, however, under current  
68 market conditions, I discount the risk premium results and rely on the DCF model  
69 for estimating the cost of equity. The data sources and the details of my cost of

70 equity studies are contained in Exhibits RMP\_\_\_\_(SCH-1) through RMP\_\_\_\_(SCH-  
71 5).

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

73 A. My testimony is divided into three additional sections. Following this  
74 introduction, I review general capital market costs and conditions and discuss  
75 recent developments in the electric utility industry that may affect the cost of  
76 capital. In the following section, I review various methods for estimating the cost  
77 of equity. In this section, I discuss comparable earnings methods, equity risk  
78 premium methods, and the discounted cash flow model. In the final section, I  
79 apply the DCF and risk premium models to estimate RMP's cost of equity, I  
80 discuss the details of my cost of equity studies, and I summarize my ROE  
81 recommendations.

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

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

84 A. Signs of improvement are beginning to appear. While unemployment remains  
85 stubbornly high at near 10 percent, manufacturing output has increased and in  
86 some areas new hiring has begun. Most forecasts for 2011 indicate continuing,  
87 but slow recovery through the end of the year. Even with the government's  
88 continuing expansionary monetary policy, since the low levels reached in  
89 September, both Treasury bond and corporate bond interest rates have increased  
90 by more than 50 basis points. Although caution remains, and utility stocks remain  
91 relatively depressed, the overall stock market has recovered significantly from its  
92 March 2009 low levels. All these factors point to gradually improving conditions

93 this year and into the next.

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

96 A. In Exhibit RMP\_\_\_\_(SCH-2), page 1, I provide a 10-year review of annual interest  
97 rates and rates of inflation in the U.S. economy. During that time inflation and  
98 fixed income market costs declined and, generally, have been lower than rates that  
99 prevailed in the previous decade. Inflation, as measured by the Consumer Price  
100 Index (CPI), until 2003 had remained at historically low levels not seen  
101 consistently since the early 1960s. Since 2003, however, inflation rates have  
102 fluctuated with the average CPI increase for 2004 through 2006 similar to the  
103 longer-term historical average above three percent. The inflation rate for 2007  
104 was even higher at 4.1 percent. Following the economic slowdown, however, on  
105 a December to December basis the CPI was unchanged in 2008, and in 2009 it  
106 increased by 2.8 percent.

107 **Q. How has recent market turbulence affected the cost of equity for utilities?**

108 A. During the past two years, capital markets in the U.S. have been more volatile  
109 than at any time since the 1930s. Extremely large daily swings in the stock  
110 market and unprecedented corporate interest rate spreads in the debt markets  
111 during late 2008 and early 2009 resulted in near chaos. The S&P 500 and the  
112 Dow Jones Industrial Average declined by over 50 percent from their November  
113 2007 highs to the low point in March 2009. In this environment, many large  
114 financial institutions such as Countrywide Financial, Washington Mutual, the  
115 Federal Home Loan Mortgage Association, the Federal National Mortgage

116 Association, Wachovia, Bear Sterns, and Merrill Lynch were unable to survive as  
117 independent institutions. Lehman Brothers was forced to file for bankruptcy.  
118 Other surviving institutions such as Citigroup, Goldman Sachs, American  
119 International Group, Morgan Stanley and others have required multibillion dollar  
120 capital infusions.

121 The Federal government enacted emergency legislation (the \$700 billion  
122 Troubled Asset Relief Program) in October 2008, in an attempt to stabilize the  
123 economy. As part of that effort, federal deposit insurance was increased, billions  
124 of dollars were lent to financial institutions, hundreds of billions of dollars in  
125 illiquid securities were purchased. In November 2008, the Federal Reserve  
126 System (Fed) pledged to pump an additional \$800 billion into ailing credit  
127 markets - \$600 billion to purchase federal government agency mortgage securities  
128 and, with support from the U.S. Treasury, up to \$200 billion in financing to  
129 investors buying securities tied to student loans, car loans, credit card debt and  
130 small business loans was provided. President Obama also signed an additional  
131 \$789 billion economic package in early 2009 in hopes of providing further  
132 economic stimulus. These efforts all reflect the heightened economic and financial  
133 uncertainties that were generated by the financial crisis.

134 **Q. Is the government continuing in its efforts to stimulate the economy?**

135 A. Yes. After the Fed reduced the overnight Federal Funds rate for banks to virtually  
136 zero in late 2008, its traditional monetary policy options became limited. Using  
137 less traditional tools, however, beginning in November 2008, the Fed announced  
138 the \$600 billion purchase of mortgage backed securities and government bonds.

139 In early 2009, that program was expanded to \$1.8 trillion. On November 3, 2010,  
140 the Fed extended these activities further with its additional Quantitative Easing  
141 plan (dubbed QE2) for repurchases of an additional \$600 billion of long-term  
142 government bonds – a direct attempt to lower longer term interest rates, which  
143 may distort the results produced by equity risk premium models.

144 The government's unprecedented monetary expansion efforts have  
145 stabilized the economy and they have resulted in record low interest rates.  
146 However, the economic recovery is slow and unemployment remains high. The  
147 increase in unemployment to 9.8 percent in November 2010 (relative to a 10.1  
148 percent peak in November 2009) simply confirmed the Fed's concerns about slow  
149 economic growth and the potential for deflation. On December 14, the Fed  
150 reconfirmed its QE2 bond-purchase program, stating that the program will  
151 continue through June 2011. Low inflation along with the government's  
152 aggressive monetary policies have produced the desired low level of interest rates,  
153 but continuing economic uncertainties have caused the more risky equity markets  
154 to remain volatile.

155 **Q. What has been the trend in long-term interest rates during the past two**  
156 **years?**

157 A. The month-by-month interest rate data for the past two years are presented in  
158 Exhibit RMP\_\_\_\_(SCH-2), page 2. Those data are summarized below in Table 1.

Table 1  
Long-Term Interest Rate Trends

Month	Single-A Utility Rate	30-Year Treasury Rate	Single-A Utility Spread
Jan-08	6.02	4.33	1.69
Feb-08	6.21	4.52	1.69
Mar-08	6.21	4.39	1.82
Apr-08	6.29	4.44	1.85
May-08	6.28	4.60	1.68
Jun-08	6.38	4.69	1.69
Jul-08	6.40	4.57	1.83
Aug-08	6.37	4.50	1.87
Sep-08	6.49	4.27	2.22
Oct-08	7.56	4.17	3.39
Nov-08	7.60	4.00	3.60
Dec-08	6.52	2.87	3.65
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
3-Mo Avg	<b>5.34</b>	<b>4.16</b>	<b>1.18</b>
12-Mo Avg	<b>5.46</b>	<b>4.25</b>	<b>1.21</b>

Sources: Mergent Bond Record (Utility Rates); [www.federalreserve.gov](http://www.federalreserve.gov) (Treasury Rates).

Three month average is for October 2010 - December 2010.

Twelve month average is for January 2010 - December 2010.

159 The data in Table 1 vividly illustrate the market turmoil that occurred. In 2008  
160 and early 2009, government intervention and investors' "flight to safety" pushed  
161 Treasury bond rates down to record low levels. However, corporate interest rates  
162 increased so that the rate spreads between corporate and U.S. Treasury bonds  
163 reached unprecedented levels. Lower quality borrowers, for a period of time,  
164 were entirely excluded from traditional funding sources. While these crisis  
165 conditions have abated, the ongoing effects of the market's turbulence and the  
166 elevated risk aversion that continues in the equities markets must be considered in  
167 estimating the cost of equity capital.

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

171 A. No. While the credit markets have stabilized from the near-chaotic conditions  
172 that existed in late 2008, investors remain concerned about high unemployment,  
173 large federal deficits, and the potential for further fallout from foreclosures and  
174 other effects of the financial crisis. I will demonstrate below that the equity  
175 markets, particularly for utility shares, have not recovered to their prior levels.  
176 Lower utility prices reflect the heightened risk aversion that remains and show that  
177 the cost of equity for utilities has not declined as much as interest rates.

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

180 A. In Exhibit RMP\_\_\_\_(SCH-2), page 3, I provide S&P's most recent economic  
181 forecast from its *Trends & Projections* publication for December 2010. The S&P

182 data reflects the significant economic contraction that occurred in 2009, with 2.6  
 183 percent drop in real GDP. For all of 2010 and 2011, S&P forecasts that real GDP  
 184 will increase by 2.8 percent and 2.6 percent, respectively. While this forecast  
 185 does not reflect a full "double-dip" recession into 2011, the lack of further  
 186 expansion in 2011 is a more pessimistic outlook than S&P has previously  
 187 provided. The S&P forecast now delays the resumption of more robust real GDP  
 188 growth (above 3.0 percent) until beyond the 4<sup>th</sup> Quarter of 2011.

189 Consistent with S&P's tepid outlook for the economy, its long-term  
 190 interest rate forecasts also remain relatively low. Table 2 below summarizes the  
 191 interest rate forecasts:

192 Table 2  
 193 Standard & Poor's Interest Rate Forecast

	Dec. 2010 Average	Average 2010 Est.	Average 2011 Est.
196 Treasury Bills	0.1%	0.1%	0.3%
197 10-Yr. T-Bonds	3.3%	3.2%	3.2%
198 30-Yr. T-Bonds	4.4%	4.3%	4.4%
199 Aaa Corporate Bonds	5.0%	5.0%	5.1%

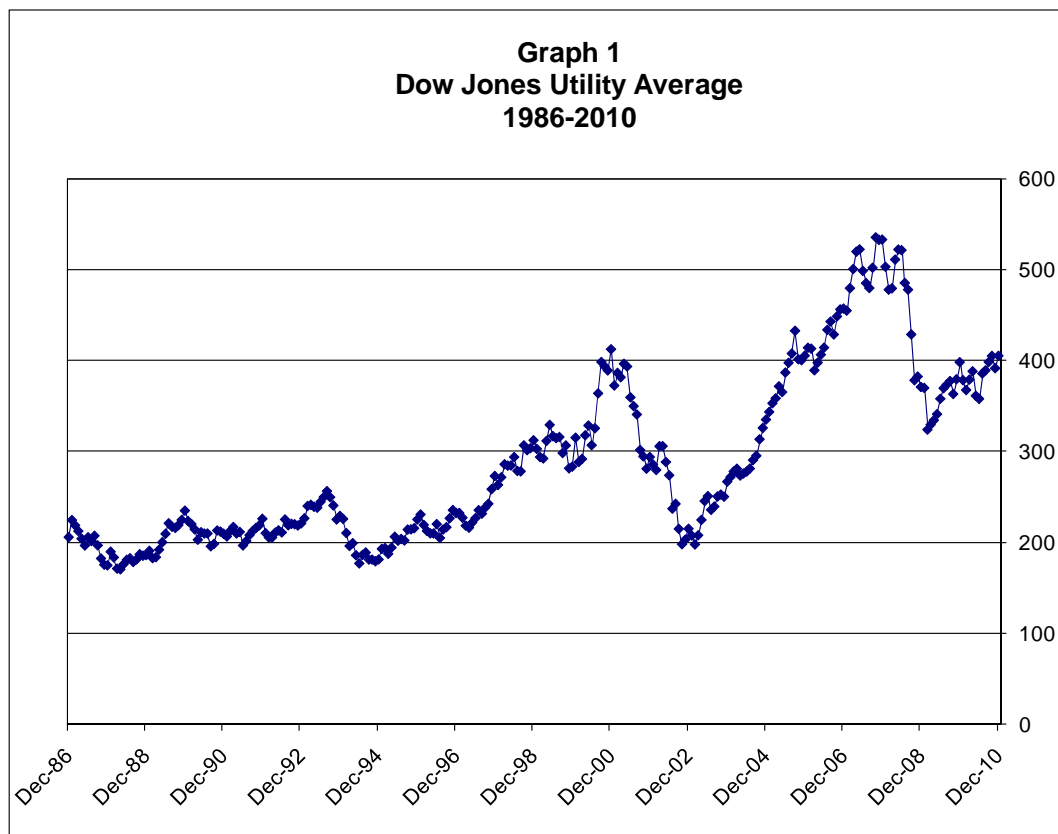
200 Sources: [www.federalreserve.gov](http://www.federalreserve.gov), (Current Rates). Standard & Poor's  
 201 *Trends & Projections*, December 2010, page 8 (Projected Rates).

202 The data in Table 2 show that S&P expects, during 2011, that long-term Treasury  
 203 interest rates remain at current (December 2010) levels. Although in the turbulent  
 204 market environment it is difficult to project interest rates, continuing government  
 205 expansionary policies are reflected in the S&P projections.

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

207 A. Utility stock prices have fluctuated widely. After reaching a level of over 400 in  
 208 2000, the Dow Jones Utility Average (DJUA) dropped to about 200 by October  
 209 2002. From late 2002 until late 2007, the DJUA trended upward. However,

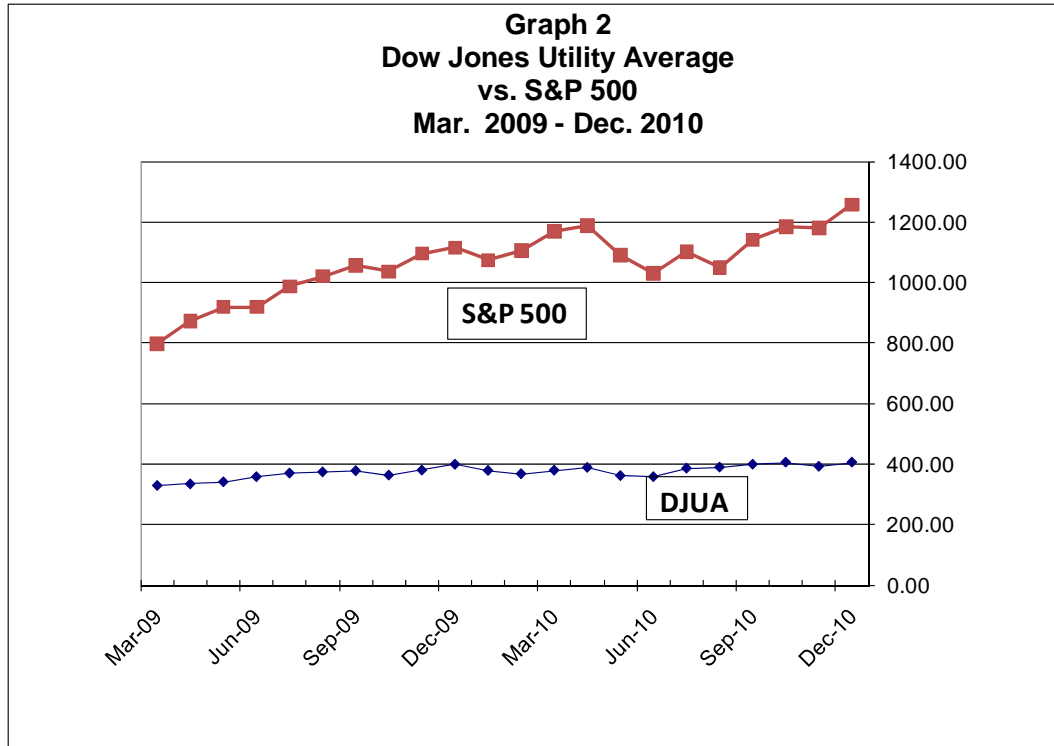
210 utility stock prices dropped materially with the overall market decline in 2008 and  
211 early 2009. The current level for the DJUA remains 27 percent below the highest  
212 levels attained in October 2007. The wider utility stock price fluctuations in the  
213 more recent years are vividly illustrated in the Graph 1 below, which depicts the  
214 DJUA over the past 25 years.



215 In this environment, investors' return expectations and requirements for providing  
216 capital to the utility industry remain high relative to the longer-term, traditional  
217 view of the utility industry.

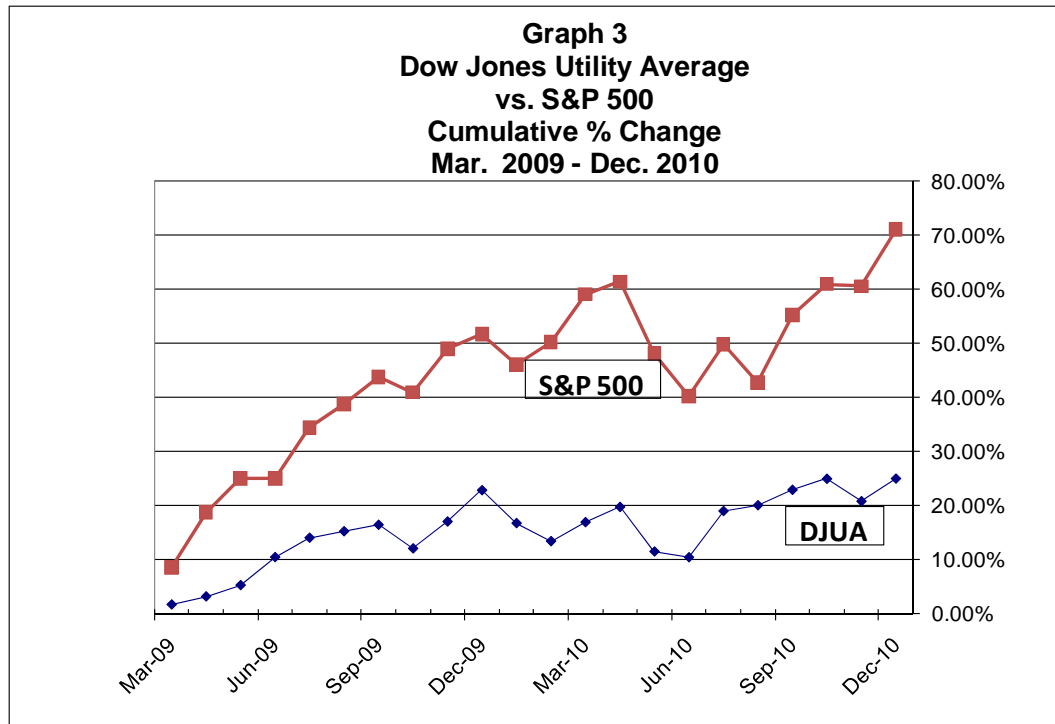
218 **Q. How have utility stocks performed relative to the overall market recovery**  
219 **since March 2009?**

220 A. Utility stock prices have lagged well behind the overall market. Graph 2 shows  
221 the monthly levels for the DJUA versus the broader market S&P 500 index since  
222 the market lows that occurred in February and March of 2009.



223 While the S&P 500 has increased significantly since its lowest levels, utility  
224 prices have recovered by only about one-third as much. This result is a further  
225 indication that the cost of equity for utility companies has not declined to the  
226 same extent that interest rates have fallen or to the same extent that the cost of  
227 equity may have come down for the broader equity market. The relatively lower  
228 prices for utility shares indicate that the cost of capital for utilities remains high.

229 Graph 3 further illustrates this result by showing the cumulative  
230 percentage change in the two equity indexes since the March 2009 lows.



231 While the S&P 500 has recovered over 70 percent (71.09%) from its March 2009  
 232 lows, utility stock prices have increased by 25 percent (25.01%). This result  
 233 again points out the market difficulties that utilities face and the continuing  
 234 relatively higher cost of equity for utility companies.

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

236 A. The industry has seen significant volatility both in terms of fundamental operating  
 237 characteristics and the effects of the economy. While many companies have  
 238 refocused their businesses on more traditional utility service, the effects of  
 239 deregulation of the wholesale power markets and continuing fuel price  
 240 uncertainties remain prominent. The economic crisis has also reduced sales  
 241 volumes and increased the difficulty of planning for future load requirements.

242 Value Line reflects its views in its recent review of electric utility prospects:

243

### **Value Line Investor Survey**

244

Through mid-December, the Value Line Utility Average had risen

245

10% in 2010. That's a strong showing, but it fell short of the 19%

246

rise in the Value Line Composite Average over that time period.

247

The average yield on electric utility stocks is now 4.45%, which is

248

more than twice the 1.9% median for dividend-paying issues under

249

our coverage. Despite the relative underperformance, some of

250

these stocks are getting pricey. Several are trading well within

251

their 2013-2015 Target Price Range.... In general, we advise

252

taking a cautious stance toward such utility equities. (Value Line

253

Investor Survey, December 24, 2010, page 901).

254

Credit market gyrations and the volatility of utility shares demonstrate the

255

increased uncertainties that utility investors face. These uncertainties translate

256

into a higher cost of capital.

257

**Q. Do utilities continue to face the operating and financial risks that existed**

258

**prior to the financial crisis?**

259

A. Yes. Prior to the recent financial crisis, the greatest consideration for utility

260

investors was the industry's continuing transition to more open market conditions

261

and competition. With the passage of the Energy Policy Act (EPACT) in 1992

262

and the Federal Energy Regulatory Commission's (FERC) Order 888 in 1996, the

263

stage was set for vastly increased competition in the electric utility industry.

264

EPACT's mandate for open access to the transmission grid and FERC's

265

implementation through Order 888 effectively opened the market for wholesale

266

electricity to competition. Previously protected utility service territory and lack of

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transmission access in some parts of the country had limited the availability of

268

competitive bulk power prices. EPACT and Order 888 have essentially

269

eliminated such constraints for incremental power needs.

270                   Concerns also exist about the potential costs of new climate change  
271 legislation, including the House of Representatives' passage of H.R. 2454 – the  
272 American Clean Energy and Security Act of 2009, also referred to as the  
273 Waxman-Markey bill. While the bill has not been passed by the Senate, it  
274 remains likely that in the foreseeable future climate change initiatives will require  
275 utilities to balance a diverse set of supply-side and demand-side resources in order  
276 to respond. In particular, utilities with significant coal-fired generation would  
277 have the added risk of addressing a reduction in greenhouse gas emissions by  
278 needing to make costly changes to existing generation fleets such as retiring  
279 existing coal plants in favor of lower-emission alternatives, operating higher cost  
280 supply options, purchasing domestic and/or foreign carbon offsets, or purchasing  
281 more expensive low-or-zero emission power. In addition, climate change  
282 legislation would likely place added pressure on utilities to offer demand-side  
283 alternatives, including energy efficiency programs, that will reduce customers'  
284 demand for power.

285                   As expected, the opening of previously protected utility markets to  
286 competition, the uncertainty created by the removal of regulatory protection,  
287 continuing fuel price volatility and concerns about the impact of climate change  
288 legislation have raised the level of uncertainty about investment returns across the  
289 entire industry.

290 **Q. Is Rocky Mountain Power affected by these same uncertainties and**  
291 **increasing utility capital costs?**

292 A. Yes. To some extent all electric utilities are being affected by the industry's

293 transition to competition. Although retail deregulation has not occurred in the  
294 state of Utah, Rocky Mountain Power's power costs and other operating activities  
295 have been significantly affected by transition and restructuring events around the  
296 country. In fact, the uncertainty associated with the changes that are transforming  
297 the utility industry as a whole, as viewed from the perspective of the investor,  
298 remain a factor in assessing any utility's cost of common equity and required  
299 ROE, including the ROE from Rocky Mountain Power's operations in Utah.

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

302 A. As I discussed previously, equity investors respond to changing assessments of  
303 risk and financial prospects by changing the price they are willing to pay for a  
304 given security. When the risk perceptions increase or financial prospects decline,  
305 investors refuse to pay the previously existing market price for a company's  
306 securities and market supply and demand forces then establish a new lower price.  
307 The lower market price typically translates into a higher cost of capital through a  
308 higher dividend yield requirement as well as the potential for increased capital  
309 gains if prospects improve. In addition to market losses for prior shareholders,  
310 the higher cost of capital is transmitted directly to the company by the need to  
311 earn a higher cost of capital on existing and new investment just to maintain the  
312 stock's new lower price level and the reality that the firm must issue more shares  
313 to raise any given amount of capital for future investment. The additional shares  
314 also impose additional future dividend requirements and may reduce future  
315 earnings per share growth prospects if the proceeds of the share issuance are

316 unable to earn their expected rate of return.

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

319 A. Over the past five years, the quarterly averages of allowed ROEs have generally  
320 been in the 10.4 percent to 10.5 percent range. During 2009 and 2010, the  
321 average allowed returns increased slightly, with average rates in integrated  
322 electric utility cases at approximately 10.4 percent to 10.6 percent.<sup>1</sup> Table 3  
323 below summarizes the ROE data for the past five years:

324 Table 3  
325 Authorized Electric Utility Equity Returns

	2006	2007	2008	2009	2010
326 1 <sup>st</sup> Quarter	10.38%	10.27%	10.45%	10.29%	10.66%
327 2 <sup>nd</sup> Quarter	10.68%	10.27%	10.57%	10.55%	10.08%
328 3 <sup>rd</sup> Quarter	10.06%	10.02%	10.47%	10.46%	10.26%
329 4 <sup>th</sup> Quarter	10.39%	10.56%	10.33%	10.54%	10.30%
330 Full Year Average	10.36%	10.36%	10.46%	10.48%	10.34%
331 Average Utility					
332 Debt Cost	6.08%	6.11%	6.65%	6.28%	5.55%
333 Indicated Average					
334 Risk Premium	4.28%	4.25%	3.81%	4.20%	4.79%

336  
337 Source: Regulatory Focus, Regulatory Research Associates, Inc., Major Rate  
338 Case Decisions, January 7, 2010. Utility debt costs are the "average" public  
339 utility bond yields as reported by Moody's.

340 Since 2006, equity risk premiums (the difference between allowed equity returns  
341 and utility interest rates) have ranged from 3.81 percent to 4.79 percent.

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

342 **Estimating the Cost of Equity Capital**

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

344 A. The purpose of this section is to compare the strengths and weaknesses of several  
345 of the most widely used methods for estimating the cost of equity. Estimating the  
346 cost of equity is fundamentally a matter of informed judgment. The various  
347 models provide a concrete link to actual capital market data and assist with  
348 defining the various relationships that underlie the ROE estimation process.  
349 (Please Appendix C for further technical discussion of the DCF and risk premium  
350 models.)

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

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

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

365 From the investor or company point of view, it is important that  
366 there be enough revenue not only for operating expenses, but also  
367 for the capital costs of the business. These include service on the  
368 debt and dividends on the stock. By that standard the return to the  
369 equity owner should be commensurate with returns on investments  
370 in other enterprises having corresponding risks. That return,  
371 moreover, should be sufficient to assure confidence in the financial  
372 integrity of the enterprise, so as to maintain its credit and to attract

373 capital. *Federal Power Commission v. Hope Natural Gas Co.*, 320  
374 U.S. 591, 603 (1944).

375 Based on these principles, the fair rate of return should closely parallel investor  
376 opportunity costs as discussed above. If a utility earns its market cost of equity,  
377 neither its stockholders nor its customers should be disadvantaged.

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

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

384 An example helps to illustrate the cost of equity concept. Assume that an  
385 investor buys a share of common stock for \$20 per share. If the stock's expected  
386 dividend is \$1.00, the expected dividend yield is 5.0 percent ( $\$1.00 / \$20 = 5.0$   
387 percent). If the stock price is also expected to increase to \$21.20 after one year,  
388 this one dollar and 20 cent expected gain adds an additional 6.0 percent to the  
389 expected total rate of return ( $\$1.20 / \$20 = 6.0$  percent). Therefore, buying the  
390 stock at \$20 per share, the investor expects a total return of 11.0 percent: 5.0  
391 percent dividend yield, plus 6.0 percent price appreciation. In this example, the  
392 total expected rate of return of 11.0 percent is the appropriate measure of the cost  
393 of equity capital, because it is this rate of return that caused the investor to  
394 commit the \$20 of equity capital in the first place. If the stock were riskier, or if  
395 expected returns from other investments were higher, investors would have

396 required a higher rate of return from the stock, which would have resulted in a  
397 lower initial purchase price in market trading.

398 Each day market rates of return and prices change to reflect new investor  
399 expectations and requirements. For example, when interest rates on bonds and  
400 savings accounts rise, utility stock prices usually fall. This is true, at least in part,  
401 because higher interest rates on these alternative investments make utility stocks  
402 relatively less attractive, which causes utility stock prices to decline in market  
403 trading. This competitive market adjustment process is quick and continuous, so  
404 that market prices generally reflect investor expectations and the relative  
405 attractiveness of one investment versus another. In this context, to estimate the  
406 cost of equity one must apply informed judgment about the relative risk of the  
407 company in question and knowledge about the risk and expected rate of return  
408 characteristics of other available investments as well.

409 **Q. How does the market account for risk differences among the various**  
410 **investments?**

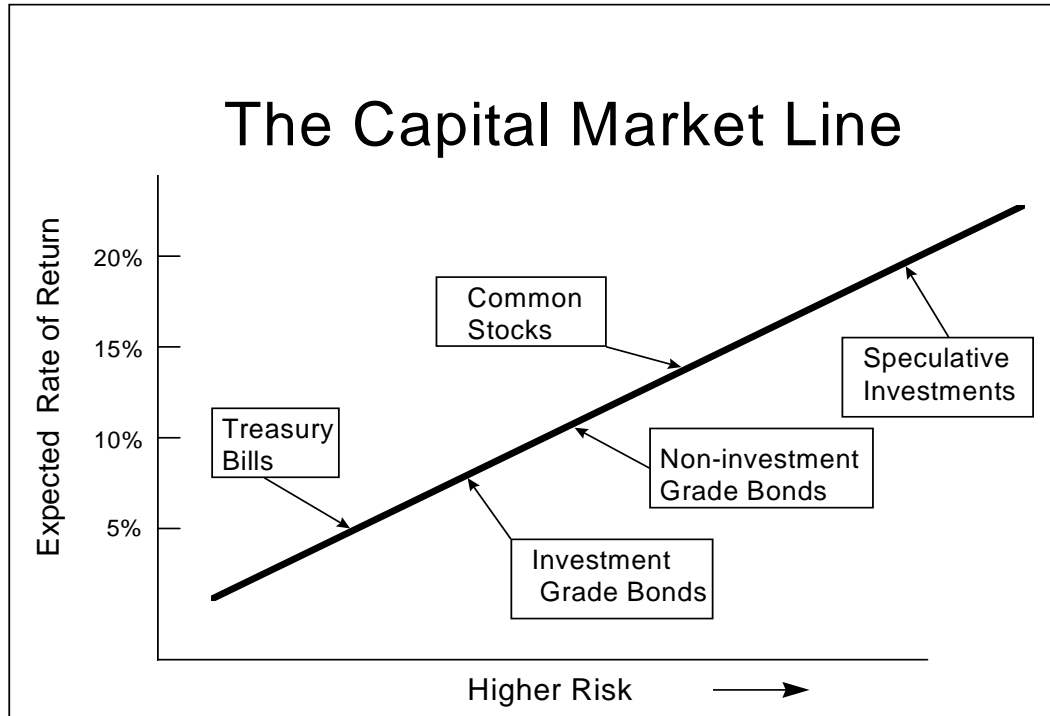
411 A. Risk-return tradeoffs among capital market investments have been the subject of  
412 extensive financial research. Literally dozens of textbooks and hundreds of  
413 academic articles have addressed the issue. Generally, such research confirms the  
414 common sense conclusion that investors will take additional risks only if they  
415 expect to receive a higher rate of return. Empirical tests consistently show that  
416 returns from low risk securities, such as U.S. Treasury bills, are the lowest; that  
417 returns from longer-term Treasury bonds and corporate bonds are increasingly  
418 higher as risks increase; and generally, returns from common stocks and other

419 more risky investments are even higher. These observations provide a sound  
420 theoretical foundation for both the DCF and risk premium methods for estimating  
421 the cost of equity capital. These methods attempt to capture the well founded  
422 risk-return principle and explicitly measure investors' rate of return requirements.

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

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

# Risk-Return Tradeoffs



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

437 Investment risks increase as one moves up and to the right along the CML.  
438 A higher degree of uncertainty exists about the level of investment value at any  
439 point in time and about the level of income payments that may be received.

440 Among these investments, long-term bonds and preferred stocks, which offer  
441 priority claims to assets and income payments, are relatively low risk, but they are  
442 not risk-free. The market value of long-term bonds, even those issued by the U.S.  
443 Treasury, often fluctuates widely when government policies or other factors cause  
444 interest rates to change.

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

457 **Q. What specific methods and capital market data are used to evaluate the cost**  
458 **of equity?**

459 A. Techniques for estimating the cost of equity normally fall into three groups:  
460 comparable earnings methods, risk premium methods, and DCF methods. The  
461 first set of estimation techniques, the comparable earnings methods, has evolved  
462 over time. The original comparable earnings methods were based on book

463 accounting returns. This approach developed ROE estimates by reviewing  
464 accounting returns for unregulated companies thought to have risks similar to  
465 those of the regulated company in question. These methods have generally been  
466 rejected because they assume that the unregulated group is earning its actual cost  
467 of capital, and that its equity book value is the same as its market value. In most  
468 situations these assumptions are not valid, and, therefore, accounting-based  
469 methods do not generally provide reliable cost of equity estimates.

470 More recent comparable earnings methods are based on historical stock  
471 market returns rather than book accounting returns. While this approach has  
472 some merit, it too has been criticized because there can be no assurance that  
473 historical returns actually reflect current or future market requirements. Also, in  
474 practical application, earned market returns tend to fluctuate widely from year to  
475 year. For these reasons, a current cost of equity estimate (based on the DCF  
476 model or a risk premium analysis) is usually required.

477 The second set of estimation techniques is grouped under the heading of  
478 risk premium methods. These methods begin with currently observable market  
479 returns, such as yields on government or corporate bonds, and add an increment to  
480 account for the additional equity risk. The capital asset pricing model (CAPM)  
481 and arbitrage pricing theory (APT) model are more sophisticated risk premium  
482 approaches. The CAPM and APT methods estimate the cost of equity directly by  
483 combining the "risk-free" government bond rate with explicit risk measures to  
484 determine the risk premium required by the market. Although these methods are  
485 widely used in academic cost of capital research, their additional data

486 requirements and their potentially questionable underlying assumptions have  
487 detracted from their use in most regulatory jurisdictions. The basic risk premium  
488 methods generally provide a useful parallel approach with the DCF model and  
489 assure consistency with other capital market data in the equity cost estimation  
490 process.

491 The third set of estimation techniques, based on the DCF model, is the  
492 most widely used regulatory cost of equity estimation method. Like the risk  
493 premium approach, the DCF model has a sound basis in theory, and many argue  
494 that it has the additional advantage of simplicity. I will describe the DCF model  
495 in detail below, but in essence its estimate of ROE is simply the sum of the  
496 expected dividend yield and the expected long-term dividend, earnings, or price  
497 growth rate (all of which are assumed to grow at the same rate). While dividend  
498 yields are easy to obtain, estimating long-term growth is more difficult. Because  
499 the constant growth DCF model also requires very long-term growth estimates  
500 (technically to infinity), some argue that its application is too speculative to  
501 provide reliable results, resulting in the preference for the multistage growth DCF  
502 analysis.

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

505 A. From my experience, a combination of DCF and risk premium methods usually  
506 provides the most reliable approach. While the caveat about estimating long-term  
507 growth must be observed, the DCF model's other inputs are readily obtainable,  
508 and the model's results typically are consistent with capital market behavior. The

509 risk premium methods provide a good parallel approach to the DCF model and  
510 further ensure that current market conditions are accurately reflected in the cost of  
511 equity estimate. However, due to ongoing market turmoil and current  
512 government monetary policy, which I will discuss later in this testimony, ROE  
513 estimates obtained from the risk premium methodology should be discounted.

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

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

516 A. The purpose of this section is to present my quantitative studies of the cost of  
517 equity capital for Rocky Mountain Power and to discuss the details and results of  
518 my analysis.

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

520 A. In the first part of my analysis, I apply three versions of the DCF model to a 20-  
521 company group of electric utilities based on the selection criteria discussed  
522 previously. In the second part of my analysis, I apply various equity risk  
523 premium models and review projected economic conditions and projected capital  
524 costs for the coming year.

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

532 rate, I use only the long-term estimated GDP growth rate. In the third version of  
533 the DCF model, I use a two-stage growth approach, with stage one based on  
534 Value Line's three-to-five-year dividend projections and stage two based on long-  
535 term projected growth in GDP. The dividend yields in all three of the models are  
536 from Value Line's projections of dividends for the coming year and stock prices  
537 are from the three-month average for the months that correspond to the Value  
538 Line editions from which the underlying financial data are taken.

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

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

547 Expected growth rates vary somewhat among companies, but  
548 dividends for mature firms are often expected to grow in the future  
549 at about the same rate as nominal gross domestic product (real  
550 GDP plus inflation). On this basis, one might expect the dividend  
551 of an average, or "normal," company to grow at a rate of 5 to 8  
552 percent a year. (Eugene F. Brigham and Joel F. Houston,  
553 *Fundamentals of Financial Management*, 11th Ed. 2007, page  
554 298).

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

558 Our estimated median growth rate is reasonable when compared to  
559 the overall economy's growth rate. On average over the sample  
560 period, the median growth rate over 10 years for income before  
561 extraordinary items is about 10 percent for all firms. ... After  
562 deducting the dividend yield (the median yield is 2.5 percent per  
563 year), as well as inflation (which averages 4 percent per year over  
564 the sample period), the growth in real income before extraordinary  
565 items is roughly 3.5 percent per year. This is consistent with the  
566 historical growth rate in real gross domestic product, which has  
567 averaged about 3.4 percent per year over the period 1950-1998.  
568 (Louis K. C. Chan, Jason Karceski, and Josef Lakonishok, "The  
569 Level and Persistence of Growth Rates," The Journal of Finance,  
570 April 2003, p. 649) .

571 IBES long-term growth estimates are associated with realized  
572 growth in the immediate short-term future. Over long horizons,  
573 however, there is little forecastability in earnings, and analysts'  
574 estimates tend to be overly optimistic. ... On the whole, the  
575 absence of predictability in growth fits in with the economic  
576 intuition that competitive pressures ultimately work to correct  
577 excessively high or excessively low profitability growth. (Ibid,  
578 page 683).

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

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

585 A. I developed my long-term GDP growth forecast from nominal GDP data  
586 contained in the St. Louis Federal Reserve Bank data base. That data for the  
587 period 1949 through 2009 are summarized in my Exhibit RMP\_\_(SCH-3). As  
588 shown at the bottom of that exhibit, the overall average for the period was 6.9  
589 percent. The data also show, however, that in the more recent years since 1980,  
590 lower inflation has resulted in lower overall GDP growth. For this reason I gave

591 more weight to the more recent years in my GDP forecast. Based on this  
592 approach, my overall forecast for long-term GDP growth is 90 basis points lower  
593 than the long-term average, at a level of 6.0 percent.

594 **Q. The DCF model requires an estimate of investors' long-term growth rate**  
595 **expectations. Why do you believe your forecast of GDP growth based on**  
596 **long-term historical data is appropriate?**

597 A. There are at least three reasons. First, most econometric forecasts are derived  
598 from the trending of historical data or the use of weighted averages. This is the  
599 approach I have taken Exhibit RMP\_\_\_\_(SCH-3). The long-run historical average  
600 GDP growth rate is 6.9 percent, but my estimate of long-term expected growth is  
601 only 6.0 percent. My forecast is lower because my forecasting method gives  
602 much more weight to the more recent 10- and 20-year periods.

603 Second, some currently lower GDP growth forecasts likely understate very  
604 long growth rate expectations that are required in the DCF model. Many of those  
605 forecasts are currently low because they are based on the assumption of  
606 permanently low inflation rates, in the range of two percent. As shown in my  
607 Exhibit RMP\_\_\_\_(SCH-3), the average long-term inflation rate has been over three  
608 percent in all but the most recent 10- and 20- year periods. Also, as shown in  
609 Exhibit RMP\_\_\_\_(SCH-2), page 1, from December 2008 to December 2009, even  
610 with the continuing effects of the economic recession, the CPI increased by 2.8  
611 percent. Use of long-term inflation rates of two percent or less to estimate long-  
612 term nominal growth in the DCF model is not consistent with reasonable long-  
613 term expectations for the U.S. economy.

614                   Finally, the current economic turmoil makes it even more important to  
615 consider longer-term economic data in the growth rate estimate. As discussed in  
616 the previous section, current near-term forecasts for both real GDP and inflation  
617 are severely depressed. To the extent that even the longer-term outlooks of  
618 professional economists are also depressed, their forecasts will be low. Under  
619 these circumstances, a longer-term balance is even more important. For all these  
620 reasons, while I am also presenting other growth rate approaches based on  
621 analysts' estimates in this testimony, I believe it is appropriate also to consider  
622 long-term GDP growth in estimating the DCF growth rate.

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

624 A. The DCF results for my comparable company group are presented in Exhibit  
625 RMP\_\_\_(SCH-4). As shown in the first column of page 1 of that exhibit, the  
626 traditional constant growth model indicates a cost of common equity of 10.1  
627 percent. In the second column of page 1, I recalculate the constant growth results  
628 with the growth rate based on long-term forecasted growth in GDP. With the  
629 GDP growth rate, the constant growth model indicates a cost of common equity  
630 range of 10.6 percent to 10.7 percent. Finally, in the third column of page 1, I  
631 present the results from the multistage DCF model. The multistage model  
632 indicates a cost of common equity of 10.3 percent. The results from the DCF  
633 model, therefore, indicate a reasonable a cost of common equity range of 10.1  
634 percent to 10.7 percent.

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

636 A. The details and results of my equity risk premium studies are shown in my

637 Exhibit RMP\_\_\_\_(SCH-5). These studies indicate a cost of common equity range  
638 of 10.10 percent to 10.24 percent. As noted previously, under current market  
639 conditions, I discount these results because current utility bond yields are  
640 artificially depressed by the government's expansionary monetary policy. Hence,  
641 when the equity risk premiums that have traditionally been allowed by regulators  
642 are added to artificially depressed public utility bond yields, the result is an  
643 artificially lower a cost of common equity estimate. The reverse would be true if  
644 interest rates were artificially high.

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

646 A. My equity risk premium studies are divided into two parts. First, I compare  
647 electric utility authorized ROEs for the period 1980-2010 to contemporaneous  
648 long-term utility interest rates. The differences between the average authorized  
649 ROEs and the average interest rate for the year is the indicated equity risk  
650 premium. I then add the indicated equity risk premium to the forecasted and  
651 current single-A utility bond interest rate to estimate the cost of common equity.  
652 Because there is a strong inverse relationship between equity risk premiums and  
653 interest rates (when interest rates are high, risk premiums are low and vice versa),  
654 further analysis is required to estimate the current equity risk premium level.

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

660 of the allowed annual equity risk premiums relative to interest rate levels. The  
 661 negative and statistically significant regression coefficients confirm the inverse  
 662 relationship between equity risk premiums and interest rates. This means that  
 663 when interest rates rise by one percentage point, the cost of equity increases, but  
 664 by a smaller amount. Similarly, when interest rates decline by one percentage  
 665 point, the cost of equity declines by less than one percentage point. I use this  
 666 negative interest rate change coefficient in conjunction with current and  
 667 forecasted interest rates to estimate the appropriate cost of common equity.

668 **Q. Please summarize the results of your cost of equity analysis.**

669 A. Table 4 below summarizes my results:

<u>Table 4</u>	
<u>Summary of Cost of Equity Estimates</u>	
<u>DCF Analysis</u>	<u>Indicated Cost</u>
Constant Growth (Analysts' Growth)	10.1%
Constant Growth (GDP Growth)	10.6%-10.7%
Multistage Growth Model	10.3%
Reasonable DCF Range	<u>10.1%-10.7%</u>
<u>Equity Risk Premium Analysis</u>	<u>Indicated Cost</u>
Forecast Utility Debt Yield+ Equity Risk Premium	
Equity Risk Premium ROE (5.58% + 4.66%)	10.24%
Current Utility Debt + Equity Risk Premium	
Equity Risk Premium ROE (5.34% + 4.76%)	10.10%

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

672 A. I conclude that an ROE of 10.5 percent is reasonable for setting rates. This ROE  
 673 is well within my DCF range. Under current market conditions, I discount the  
 674 bond-yield plus risk-premium results because interest rates on high quality debt  
 675 are currently artificially depressed by government monetary policy and the

676 continuing turbulence of the equity capital markets. While these conditions make  
677 it difficult to strictly interpret quantitative estimates of the cost of equity, my  
678 estimates reflect current market conditions, including the government's efforts to  
679 stimulate the economy. The relatively poor performance of utility stocks, as  
680 compared to the broader market averages, shows that the cost of equity for  
681 utilities has not declined in lockstep with interest rates. Based on all these factors,  
682 I conclude that 10.5 percent is a reasonable ROE for the Company and should be  
683 authorized by the Commission.

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

685 A. Yes, it does.