

1 **Introduction and Purpose of Testimony**

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

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

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

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

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

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

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

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

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

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

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

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

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

27 **Summary of Recommendations**

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

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

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

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

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

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

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

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

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

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

Fundamental Factors That Affect the Cost of Equity

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

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

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

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

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

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

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

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

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

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

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

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

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

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

173 A. The month-by-month interest rate data for the period since December 2010 are

174 presented in Exhibit RMP____(SCH-2), page 2, with the most recent two years

175 summarized in Table 1 below:

Table 1

Long-Term Interest Rate Trends

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

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

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

176 The data in Table 1 track the steady decline in interest rates that occurred until

177 May 2013. The Federal Reserve's continuing intervention in the financial markets

178 and its efforts to keep short-term rates near zero and rates on longer-term U.S.

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

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

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

Table 2
Interest Rate Forecast

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

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

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

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

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

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

205 **Value Line Investor Survey**

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

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

222 **S&P Industry Survey**

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

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

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

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

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

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

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

Table 3
Authorized Equity Returns for Vertically-Integrated Electric Utilities

	2009	2010	2011	2012	2013*
1 st Quarter	10.57%	10.59%	10.09%	10.30%	9.83%
2 nd Quarter	10.75%	10.18%	10.39%	9.95%	9.86%
3 rd Quarter	10.50%	10.32%	10.11%	9.90%	10.03%
4 th Quarter	10.59%	10.32%	10.32%	10.16%	
Full Year Average	10.63%	10.38%	10.25%	10.10%	9.90%

Source: Regulatory Focus, SNL Regulatory Research Associates, Major Rate Case Decisions, October 8, 2013; Exhibit RMP____(SCH-3).

*2013 average is for first three quarters only.

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

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

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

277 **Estimating the Cost of Equity Capital**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

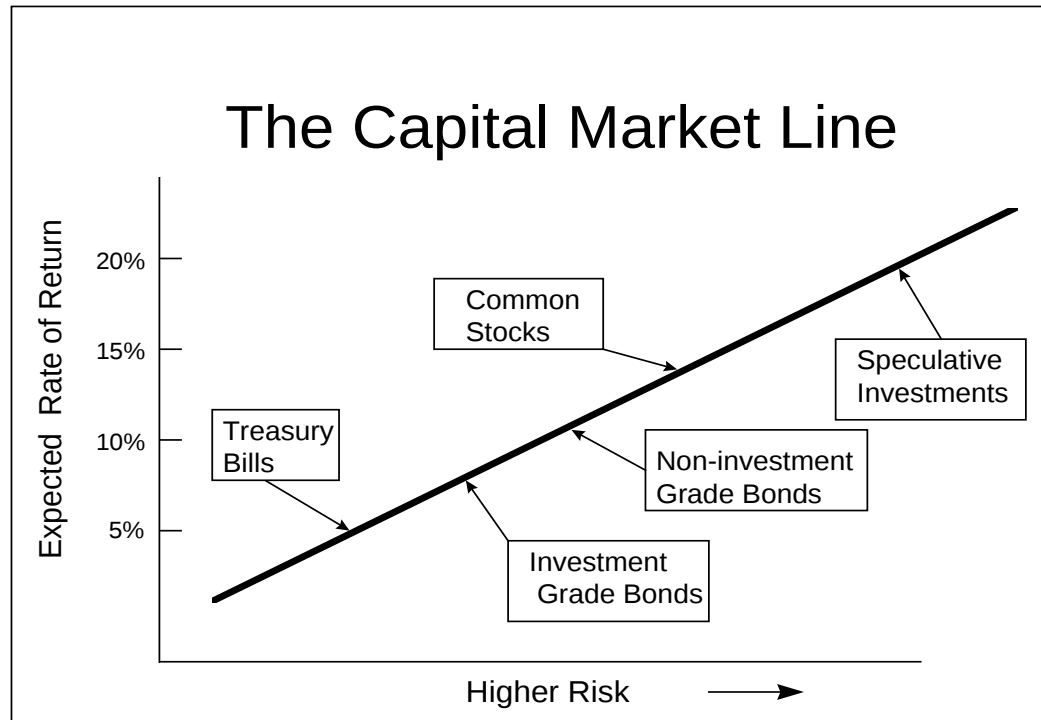
346 A. Risk-return tradeoffs among capital market investments have been the subject of
347 extensive financial research. Literally dozens of textbooks and hundreds of
348 academic articles have addressed the issue. Generally, such research confirms the
349 common sense conclusion that investors will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

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

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

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

Risk-Return Tradeoffs



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

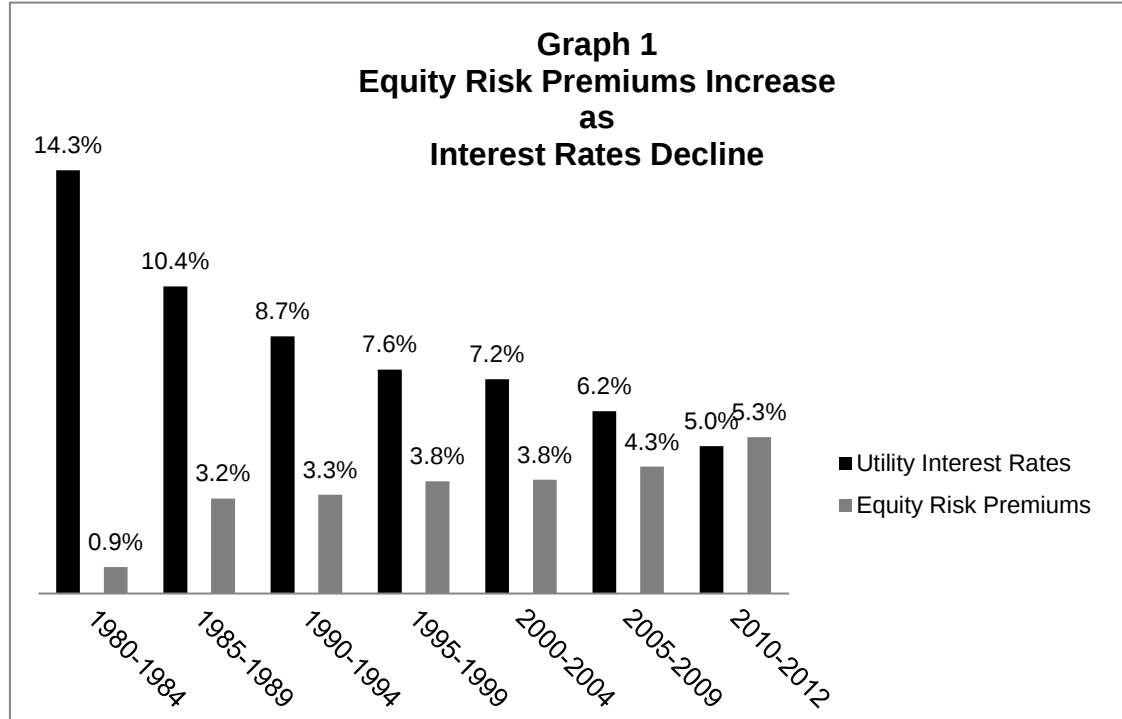
577 A. My basic equity risk premium studies are divided into two parts. First, I compare
578 electric utility authorized ROEs for the period 1980-2012 to contemporaneous
579 long-term utility interest rates. The differences between the average authorized
580 ROEs and the average interest rate for each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

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

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

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

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



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

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

618 **A.** My results are summarized in Table 4:

Table 4
Summary of Cost of Equity Estimates

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

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

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

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

633 A. Yes, it does.