Introduction and Qualifications

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

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

Q. On whose behalf are you testifying?

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

Q. Please state your educational background and describe your professional training and experience.

A. I have a Bachelor's degree in economics from Southern Methodist University, as well as MBA and Ph.D. degrees with concentrations in finance and economics from the University of Texas at Austin (UT Austin). For almost 25 years, I have been an owner and full-time employee of FINANCO, Inc. FINANCO provides financial research concerning the cost of capital and financial condition for regulated companies as well as financial modeling and other economic studies in litigation support. In addition to my work at FINANCO, I have served as an adjunct professor in the McCombs School of Business at UT Austin and in what is now the McCoy College of Business at Texas State University. In my prior academic work, I taught economics and finance courses and I conducted research and directed graduate students in the areas of investments and capital market research. I was previously Director of the Economic Research Division at the Public Utility Commission (Commission) of Texas where I supervised the Commission's finance, economics, and accounting staff, and served as the Commission's chief financial witness in electric and telephone rate cases. I have taught courses at various utility conferences

on cost of capital, capital structure, utility financial condition, and cost allocation and rate design issues. I have made presentations before the New York Society of Security Analysts, the National Rate of Return Analysts Forum, and various other professional and legislative groups. I have served as a vice president and on the board of directors of the Financial Management Association.

A list of my publications and testimony I have given before various regulatory bodies and in state and federal courts is contained in my resume, which is included as Appendix A.

Purpose and Summary of Testimony

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to estimate the market required rate of return on equity capital (ROE) for Rocky Mountain Power.

Q. Please state your ROE recommendation and summarize the results of your cost of equity studies.

A. I estimate the cost of equity for Rocky Mountain Power to be 10.75 percent. My discounted cash flow (DCF) analysis indicates an ROE range of 10.6 percent to 11.1 percent. The capital asset pricing model (CAPM) and other risk premium methods indicate a range of 10.2 percent to 10.9 percent. Based on these quantitative results and my further review of other economic data, I recommend a point ROE estimate of 10.75 percent.

Q. How is your analysis structured?

A. In my DCF and CAPM analyses, I apply a comparable company approach. Rocky Mountain Power's cost of equity cannot be estimated directly from its own market

data because Rocky Mountain Power is a division of PacifiCorp, which is a wholly-owned subsidiary of MidAmerican Energy Holdings Company. As such, Rocky Mountain Power does not have publicly traded common stock or other independent market data that would be required to estimate its cost of equity directly. I begin my comparable company review with all the electric utilities that are included in the Value Line Investors Service (Value Line). Value Line is a widely-followed, reputable source of financial data. To improve the group's comparability with Rocky Mountain Power, which has a senior secured bond rating of A- from Standard & Poor's (S&P) and A3 from Moody's, I restricted the group to companies with senior secured bond ratings of at least single-A by either S&P or by Moody's. I also required the comparable companies to derive at least 65 percent of revenues from regulated utility sales,[1] to have consistent financial records not affected by recent mergers or restructuring, and to have a consistent dividend record as required by the DCF model.

In my risk premium analysis, I used Moody's average public utility bond yields and projected single-A utility bond interest rates. These rates are consistent with Rocky Mountain Power's single-A bond rating. Under current market conditions, I believe this combination of DCF, CAPM, and other risk premium approaches is the most reliable method for estimating the cost of equity. The data

[1] In prior cases, a 70 percent regulated revenue filter was applied. In the updated comparable company 10-Ks for 2006, the percentage of regulated revenues for four companies dropped to between 65 percent and 70 percent of total revenues. To retain these companies, so as to maintain a large, statistically reliable sample, the regulated revenues filter was reduced to 65 percent.

sources and the details of my cost of equity studies are contained in Exhibits RMP___(SCH-1) through RMP___(SCH-7).

Q. In Rocky Mountain Power's prior cases in your direct testimony you have not relied on the CAPM. Why are you now presenting CAPM results??

A. I am presenting CAPM estimates of ROE, along with alternative DCF and other risk premium results, because the utility industry has changed in ways that challenge the assumptions of the traditional DCF model. For electric utilities in particular the traditional assumption of *constant* dividend growth simply is not met. The electric utility industry has become increasingly volatile and this has led to wide fluctuations in earnings and earnings growth rates for many companies. Additionally, changes in dividend policies and currently low dividend yields raise further issues about the model's applicability. As I will demonstrate later in this testimony, electric utility growth rate estimates, in contrast to the DCF model's requirement for a constant growth rate, have not been constant at all. In this setting, an expanded approach to estimating ROE is required.

Q. Do you also present DCF estimates of ROE that are based on alternative growth rate estimates from security analysts?

A. Yes. While I continue to endorse longer-term growth rates based on forecasted growth in nominal gross domestic product (GDP), this approach has been criticized in some cases and considered to inflate my estimates of ROE (see, for example, the Direct Testimony of Artie Powell, Docket No. 04-035-42, December 3, 2004, pp. 7-16). For this reason, I continue to present alternative DCF approaches but also

include estimates based on the traditional constant growth model with analysts' growth rate estimates used as the "g" term in that model.

Q. How is the remainder of your testimony organized.

A. My testimony is divided into three additional sections. Following this introduction, I review various methods for estimating the cost of equity. In this section, I discuss comparable earnings methods, risk premium methods, and the discounted cash flow model. In the following section, 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 final section, I discuss the details of my cost of equity studies and summarize my ROE recommendations.

Estimating the Cost of Equity Capital

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

A. The purpose of this section is to present a general definition of the cost of equity capital and to compare the strengths and weaknesses of several of the most widely used methods for estimating the cost of equity. Estimating the cost of equity is fundamentally a matter of informed judgment. The various models provide a concrete link to actual capital market data and assist with defining the various relationships that underlie the ROE estimation process.

Q. Please define the term "cost of equity capital" and provide an overview of the cost estimation process.

A. The cost of equity capital is the rate of return that equity investors expect to receive. In concept it is no different than the cost of debt or the cost of preferred stock. The cost of equity 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. Equity investors expect a return on their capital commensurate with the risks they take and consistent with returns that might be available from other similar investments. 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 cost of equity 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 at 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 from the stock, which would have resulted in a lower initial purchase price in market trading.

Each day market rates of return and prices change to reflect new investor expectations and requirements. For example, when interest rates on bonds and savings accounts rise, utility stock prices usually fall. This is true, at least in part, because higher interest rates on these alternative investments make utility stocks

relatively less attractive, which causes utility stock prices to decline in market trading. This competitive market adjustment process is quick and continuous, so that market prices generally reflect investor expectations and the relative attractiveness of one investment versus another. In this context, to estimate the cost of equity one must apply informed judgment about the relative risk of the company in question and knowledge about the risk and expected rate of return characteristics of other available investments as well.

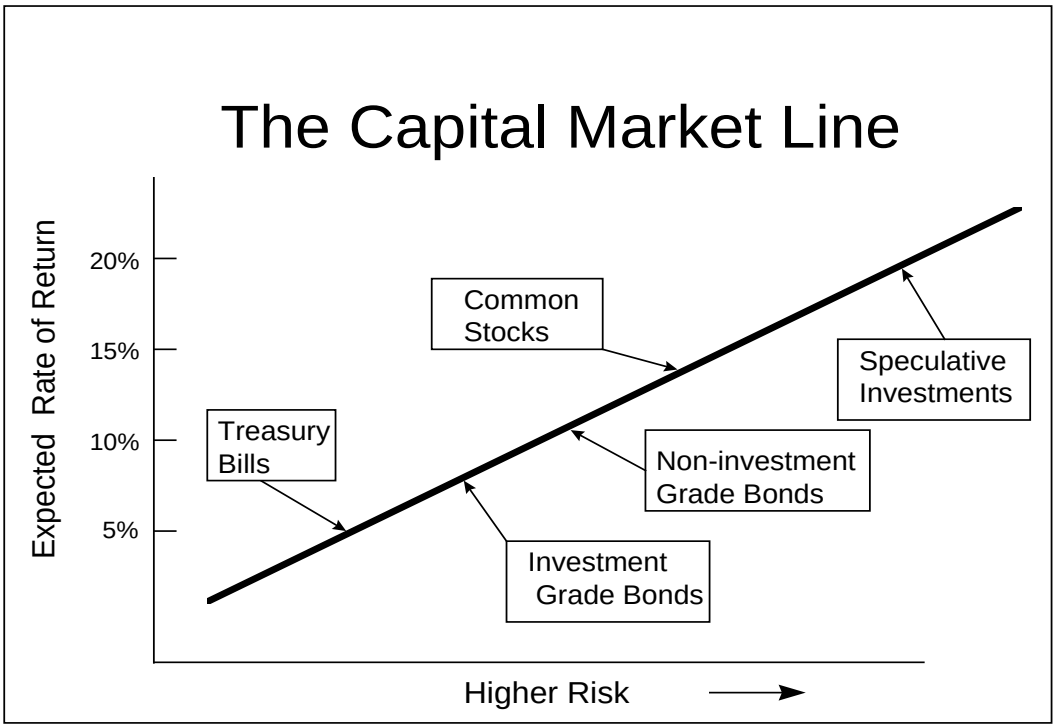
Q. How does the market account for risk differences among the various investments?

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

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

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

Risk-Return Tradeoffs



As a continuum, the CML can be viewed as an available opportunity set for investors. Those investors with low risk tolerance or investment objectives that mandate a low risk profile should invest in assets depicted in the lower left-hand portion of the

graph. Investments in this area, such as Treasury bills and short-maturity, high quality corporate commercial paper, offer a high degree of investor certainty. In nominal terms (before considering the potential effects of inflation), such assets are virtually risk-free.

Investment risks increase as one moves up and to the right along the CML. A higher degree of uncertainty exists about the level of investment value at any point in time and about the level of income payments that may be received. Among these investments, long-term bonds and preferred stocks, which offer priority claims to assets and income payments, are relatively low risk, but they are not risk-free. The market value of long-term bonds, even those issued by the U.S. Treasury, often fluctuates widely when government policies or other factors cause interest rates to change.

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

investors' required rates of return.

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

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

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

> From the investor or company point of view, it is important that there be enough revenue not only for operating expenses, but also for the capital costs of the business. These include service on the debt and dividends on the stock. By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, 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 cost of equity, neither its stockholders nor its customers should be disadvantaged.

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

A. Techniques for estimating the cost of equity normally fall into three groups: comparable earnings methods, risk premium methods, and DCF methods. The first set of estimation techniques, the comparable earnings methods, has evolved over

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

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

The second set of estimation techniques is grouped under the heading of risk premium methods. These methods begin with currently observable market returns, such as yields on government or corporate bonds, and add an increment to account for the additional equity risk. The capital asset pricing model (CAPM) and arbitrage pricing theory (APT) model are more sophisticated risk premium approaches. The CAPM and APT methods estimate the cost of equity directly by combining the "risk-free" government bond rate with explicit risk measures to determine the risk premium required by the market. The basic risk premium methods provide a useful parallel

approach with the DCF model and assures consistency with other capital market data in the cost of equity estimation process.

The third set of estimation techniques, based on the DCF model, is the most widely used regulatory cost of equity 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 (or price) growth 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, a combination of discounted cash flow and risk premium methods provides 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 capital market behavior. The risk premium methods provide a good parallel approach to the DCF model and further ensure that current market conditions are accurately reflected in the cost of equity estimate.

Q. Please explain the DCF model.

A. The DCF model is predicated on the concept that stock prices represent the present

value or discounted value of all future dividends that investors expect to receive. In the most general form, the DCF model is expressed in the following formula:

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

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

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

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

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

Under circumstances when growth rates are expected to fluctuate or when future growth rates are highly uncertain, the constant growth model may not give reliable results. Although the DCF model itself is still valid [equation (1) is mathematically correct], under such circumstances the simplified form of the model must be modified to capture market expectations accurately.

Recent events and current market conditions in the electric utility industry as discussed later appear to challenge the constant growth assumption of the traditional DCF model. Since the mid-1980s, dividend growth expectations for many electric utilities have fluctuated widely. In fact, over one-third of the electric utilities in the

U.S. have reduced or eliminated their common dividends over this time period. Some of these companies have reestablished their dividends, producing exceptionally high growth rates. Under these circumstances, long-term growth rate estimates may be highly uncertain, and estimating a reliable "constant" growth rate for many companies is often difficult.

Q. Can the DCF model be applied when the constant growth assumption is violated?

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

Under the "terminal price" nonconstant growth approach, equation (1) is written in a slightly different form:

$$P_0 = D_1/(1+k) + D_2/(1+k)^2 + ... + P_T/(1+k)^T \qquad (3)$$

where the variables are the same as in equation (1) except that P_T is the estimated stock price at the end of the transition period T. Under the assumption that normal growth resumes after the transition period, the price P_T is then expected to be based on constant growth assumptions. With the terminal price approach, the estimated cost of equity, k, is just the rate of return that investors would expect to earn if they bought the stock at today's market price, held it and received dividends through the transition period (until period T), and then sold it for price P_T. In this approach, the analyst's

task is to estimate the rate of return that investors expect to receive given the current level of market prices they are willing to pay.

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

$$P_0 = D_0(1+g_1)/(1+k) + ... + D_0(1+g_2)^n/(1+k)^n +$$

$$... + D_0(1+g_T)^{(T+1)}/(k-g_T) \qquad (4)$$

where the variables are the same as in equation (1), but g_1 represents the growth rate for the first period, g_2 for a second period, and g_T for the period from year T (the end of the transition period) to infinity. The first two growth rates are simply estimates for fluctuating growth over "n" years (typically 5 or 10 years) and g_T is a constant growth rate assumed to prevail forever after year T. The difficult task for analysts in the multistage approach is determining the various growth rates for each period.

Although less convenient for exposition purposes, the nonconstant growth models are based on the same valid capital market assumptions as the constant growth version. The nonconstant growth approach simply requires more explicit data inputs and more work to solve for the discount rate, k. Fortunately, the required data are available from investment and economic forecasting services, and computer algorithms can easily produce the required solutions. Both constant and nonconstant growth DCF analyses are presented in the following section.

Q. Please explain the risk premium methodology.

A. Risk premium methods are based on the assumption that equity securities are riskier than debt and, therefore, that equity investors require a higher rate of return. This

basic premise is well supported by legal and economic distinctions between debt and equity securities, and it is widely accepted as a fundamental capital market principle. For example, debt holders' claims to the earnings and assets of the borrower have priority over all claims of equity investors. The contractual interest on mortgage debt must be paid in full before any dividends can be paid to shareholders, and secured mortgage claims must be fully satisfied before any assets can be distributed to shareholders in bankruptcy. Also, the guaranteed, fixed-income nature of interest payments makes year-to-year returns from bonds typically more stable than capital gains and dividend payments on stocks. All these factors demonstrate the more risky position of stockholders and support the equity risk premium concept.

Q. Are risk premium estimates of the cost of equity consistent with other current capital market costs?

A. Yes. The risk premium approach is especially useful because it is founded on current market interest rates, which are directly observable. This feature assures that risk premium estimates of the cost of equity begin with a sound basis, which is tied directly to current capital market costs.

Q. Is there similar consensus about how risk premium data should be employed?

A. No. In regulatory practice, there is often considerable debate about how risk premium data should be interpreted and used. Since the analyst's basic task is to gauge investors' required returns on long-term investments, some argue that the estimated equity spread should be based on the longest possible time period. Others argue that market relationships between debt and equity from several decades ago are irrelevant and that only recent debt-equity observations should be given any weight in

estimating investor requirements. There is no consensus on this issue. Since analysts cannot observe or measure investors' expectations directly, it is not possible to know exactly how such expectations are formed or, therefore, to know exactly what time period is most appropriate in a risk premium analysis.

The important point is to answer the following question: "What rate of return should equity investors reasonably expect relative to returns that are currently available from long-term bonds?" The risk premium studies and analyses I discuss later address this question. My risk premium recommendation is based on an intermediate position that avoids some of the problems and concerns that have been expressed about both very long and very short periods of analysis with the risk premium model.

Q. Please summarize your discussion of cost of equity estimation techniques.

A. Estimating the cost of equity is one of the most controversial issues in utility ratemaking. Because actual investor requirements are not directly observable, several methods have been developed to assist in the estimation process. The comparable earnings method is the oldest but perhaps least reliable. Its use of accounting rates of return, or even historical market returns, may or may not reflect current investor requirements. Differences in accounting methods among companies and issues of comparability also detract from this approach.

The DCF and risk premium methods have become the most widely accepted in regulatory practice. A combination of the DCF model and a review of risk premium data provides the most reliable cost of equity estimate. While the DCF model does require judgment about future growth rates, the dividend yield is

straightforward, and the model's results are generally consistent with actual capital market behavior. For these reasons, I will rely on a combination of the DCF model and a risk premium analysis in the cost of equity studies that follow.

Fundamental Factors That Affect the Cost of Equity

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

A. In this section, I review recent capital market conditions and industry and company-specific factors that should be reflected in the cost of capital estimate.

Q. What has been the recent experience in the U.S. capital markets?

A. Exhibit RMP___(SCH 2), page 1, provides a review of annual interest rates and rates of inflation in the U.S. economy over the past ten years. During that time, inflation and capital market costs have declined and, generally, have been lower than rates that prevailed in the previous decade. Inflation, as measured by the Consumer Price Index, until 2005 had remained at historically low levels not seen consistently since the early 1960s. Inflation rates for 2005 and 2006 were similar to longer-term historical averages in excess of 3 percent. With improving economic conditions, since mid-2004, the Federal Reserve System increased the short-term Federal Funds interest rate 17 times between June 30, 2004 and June 29, 2006, raising it from 1 percent to 5.25 percent. At its most recent meetings on September 18, 2007 and October 31, 2007, in response to the extreme turbulence in the sub-prime lending markets, the Federal Reserve Open Market Committee reduced the Federal Funds rate, dropping the rate to a current level of 4.5 percent. However, long-term interest rates, which are not directly affected by the Federal Reserve's short-term rate policies, have not declined significantly and remain well above the lowest levels they reached

in mid-2005. Estimates for the coming year are also for continued economic growth and for further increases in long-term interest rates.

Q. How have long-term interest rates changed since their lowest levels in 2005?

A. The following table provides the month-by-month interest rates paid by utilities and the U.S. Treasury:

Table 1
Long-Term Interest Rate Trends

Month	Single-A Utility Rates	Average Utility Rates	Long-Term Treasury Rates	10-Year Treasury Rates
Jun-05	5.40%	5.39%	4.35%	4.00%
Jul-05	5.51%	5.50%	4.48%	4.18%
Aug-05	5.50%	5.51%	4.53%	4.26%
Sep-05	5.52%	5.54%	4.51%	4.20%
Oct-05	5.79%	5.79%	4.74%	4.46%
Nov-05	5.88%	5.88%	4.83%	4.54%
Dec-05	5.80%	5.83%	4.73%	4.47%
Jan-06	5.75%	5.77%	4.65%	4.42%
Feb-06	5.82%	5.83%	4.73%	4.57%
Mar-06	5.98%	5.98%	4.91%	4.72%
Apr-06	6.29%	6.28%	5.22%	4.99%
May-06	6.42%	6.39%	5.35%	5.11%
Jun-06	6.43%	6.41%	5.29%	5.11%
Jul-06	6.39%	6.39%	5.25%	5.09%
Aug-06	6.20%	6.20%	5.08%	4.88%
Sep-06	6.00%	6.02%	4.93%	4.72%
Oct-06	5.98%	6.01%	4.94%	4.73%
Nov-06	5.80%	5.82%	4.78%	4.60%
Dec-06	5.81%	5.83%	4.78%	4.56%
Jan-07	5.96%	5.97%	4.95%	4.76%
Feb-07	5.90%	5.91%	4.93%	4.72%
Mar-07	5.85%	5.87%	4.81%	4.56%
Apr-07	5.97%	6.01%	4.95%	4.69%
May-07	5.99%	6.03%	4.98%	4.75%
Jun-07	6.30%	6.34%	5.29%	5.10%
Jul-07	6.25%	6.28%	5.19%	5.00%
Aug-07	6.24%	6.29%	5.00%	4.67%
Sep-07	6.18%	6.24%	4.84%	4.52%
Oct-07	6.11%	6.17%	4.79%	4.48%

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

410 The data in Table 1 show that long-term utility interest rates are 40 to almost 80 basis
411 points higher than they were in mid-2005. Borrowing costs for single-A rated utilities

like Rocky Mountain Power increased from 5.40 percent to 6.11 percent during this period. These higher long-term borrowing costs should not be ignored and should be considered explicitly in estimates of the on-going cost of equity capital for Rocky Mountain Power.

Q. What levels of interest rates are forecast for the coming year?

A. Both corporate and government interest rates are expected to rise further from present levels. Exhibit RMP___(SCH-2), page 3, provides Standard & Poor's most recent economic forecast from its *Trends & Projections* publication for October 18, 2007. S&P forecasts continuing, albeit slower, economic growth for 2007 and 2008. For 2007, growth in real Gross Domestic Product (GDP) is projected at 2.0 percent with nominal GDP (real GDP plus inflation) at 4.6 percent. For 2008, real GDP growth is projected at 2.1 percent and nominal growth at 3.8 percent. These projected growth rates compare to a real rate for 2006 of 2.9 percent and a nominal rate of 6.1 percent. S&P also forecasts that interest rates will rise from current levels. The summary interest rate data are presented in the following table:

Table 2
Standard & Poor's Interest Rate Forecast

	Nov. 2007 Average	Average 2007 Est.	Average 2008 Est.
Treasury Bills	3.4%	4.4%	4.0%
10-Yr. T-Bonds	4.2%	4.7%	5.1%
30-Yr. T-Bonds	4.6%	4.9%	5.3%
Aaa Corporate Bonds	5.5%	5.6%	6.2%

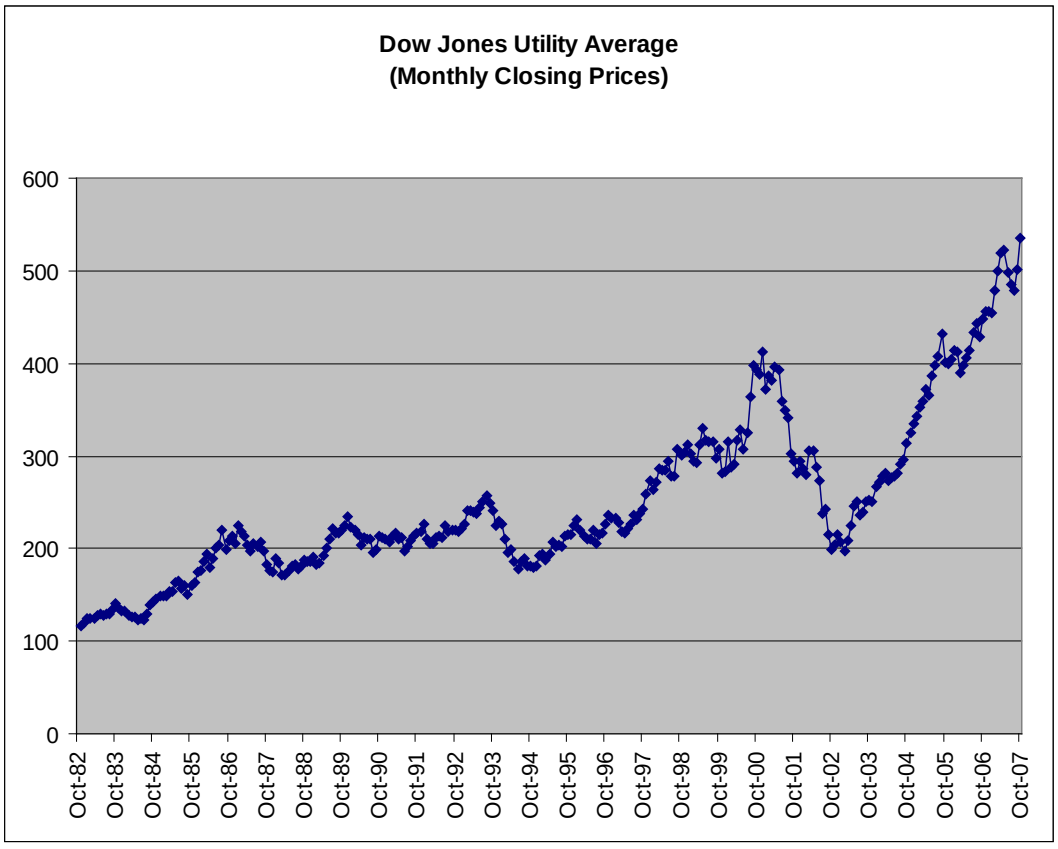
Sources: www.federalreserve.gov, daily average through Nov. 27, 2007; Standard & Poor's *Trends & Projections*, October 18, 2007, page 8 (Projected Rates).

The data in Table 2 show that average interest rates are projected to increase further during the coming year. The long-term Treasury bond rate for 2008 is projected by

S&P to average 5.3 percent. Relative to the current level (4.6 percent), the Treasury bond rate is projected to increase by 70 basis points. Similarly, the rate on corporate bonds is expected to increase from 5.5 percent to 6.2 percent, for a rise of 70 basis points. These increasing interest rate trends offer important perspective for judging the cost of capital in the present case.

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

A. Utility stock prices have fluctuated widely. After reaching a level of over 400 in 2000, the Dow Jones Utility Average (DJUA) dropped to about 200 by October 2002. Since late 2002, the Average has trended upward. Its current level at over 500 is near a record high level. The wider fluctuations in more recent years are vividly illustrated in the following graph of DJUA prices over the past 25 years.



These factors, and continuing concerns regarding the more competitive markets for utility services, will likely create further uncertainties and market volatility for utility shares. In this environment, investors' return expectations and requirements in order to provide capital to the utility industry remain high relative to the longer-term traditional view of the industry.

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

A. Many electric utilities are attempting to return to their core businesses and hope to see more stable results over the next several years. S&P reflects this sentiment in its most recent *Electric Utility Industry Survey*:

> **Standard & Poor's Industry Surveys**
>
> Although we expect the performance of both the electric utility sector and the individual companies within the sector to remain volatile over the next several years, we expect the stocks to become less volatile than they have been in the past few years. (Standard & Poor's *Industry Surveys*, Electric Utilities, August 9, 2007, p. 5)

Value Line also reflects concerns about volatility and credit market responses:

> **Value Line Investors' Service**
>
> Only three of the 21 utilities in the [Eastern] group boast share-price gains in the three months since our last review. What's more, a good majority of the losers have posted sharper declines than the 5% selloff in the benchmark S&P 500 index.
> In June, we saw some "frothiness" in terms of the valuation with which the group was being accorded. As such, the pullback isn't so surprising, especially against a backdrop of rising (read: competitive) yields and a credit-driven flight to quality. (*Value Line Investment Survey*, Electric Utility (East) Industry, August 31, 2007, p. 154.)

Price volatility for utility shares and credit market gyrations make it all the more difficult to estimate the fair, on-going cost of capital. Analysts' near-term growth estimates for utilities reflect the issues described by Value Line and Value Line's

current three-to-five-year projections are lower than they have been in previous years. As I will discuss in more detail later, the volatility in analysts' growth forecasts continues to raise questions about using analysts' projections as proxies for long-term growth in the DCF model.

Over the past several years, the greatest consideration for utility investors has been the industry's transition to competition. With the passage of the National Energy Policy Act (NEPA) in 1992 and the Federal Energy Regulatory Commission's (FERC) Order 888 in 1996, the stage was set for vastly increased competition in the electric utility industry. NEPA's mandate for open access to the transmission grid and FERC's implementation through Order 888 effectively opened the market for wholesale electricity to competition. Previously protected utility service territory and lack of transmission access in some parts of the country had limited the availability of competitive bulk power prices. NEPA and Order 888 have essentially eliminated such constraints for incremental power needs.

In addition to wholesale issues at the federal level, many states implemented retail access and have opened their retail markets to competition. Prior to the Western energy crisis, investors' concerns had focused principally on appropriate transition mechanisms and the recovery of stranded costs. More recently, however, provisions for dealing with power cost adjustments have become a larger concern. The Western energy crisis refocused market concerns and contributed significantly to increased market risk perceptions for companies without power cost recovery provisions. As expected, the opening of previously protected utility markets to competition, and the uncertainty created by the removal of regulatory protection, has

raised the level of uncertainty about investment returns across the entire industry.

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

A. Yes. To some extent all electric utilities are being affected by the industry's transition to competition. Although deregulation has not occurred in Utah, Rocky Mountain Power's power costs and other operating activities have been significantly affected by transition and restructuring events around the country. In fact, the uncertainty associated with the changes that are transforming the utility industry as a whole, as viewed from the perspective of the investor, remain a factor in assessing any utility's required ROE, including the ROE from Rocky Mountain Power's operations in Utah. For Rocky Mountain Power specifically, its use of long-term purchased power agreements can significantly impact the Company's credit quality and perceived financial risk because credit rating agencies view such contracts as debt equivalents. The Company's equity infusions and its efforts to strengthen the equity component of its capital structure are constructive efforts to mitigate this debt equivalent risk caused by its long-term power contracts.

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

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

price typically translates into a higher cost of capital through a higher dividend yield requirement as well as the potential for increased capital gains if prospects improve. In addition to market losses for prior shareholders, the higher cost of capital is transmitted directly to the company by the need to issue more shares to raise any given amount of capital for future investment. The additional shares also impose additional future dividend requirements and reduce future earnings per share growth prospects.

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

A. On balance, allowed rates of return have changed less than interest rates over the past five years. The following table summarizes the overall average ROEs allowed for electric utilities since 2003:

Authorized Electric Utility Equity Returns

	2003	2004	2005	2006	2007
1st Quarter	11.47%	11.00%	10.51%	10.38%	10.27%
2nd Quarter	11.16%	10.54%	10.05%	10.69%	10.27%
3rd Quarter	9.95%	10.33%	10.84%	10.06%	10.02%
4th Quarter	11.09%	10.91%	10.75%	10.39%	
Full Year Average	10.97%	10.75%	10.54%	10.36%	10.22%
Average Utility Debt Cost	6.61%	6.20%	5.67%	6.08%	6.10%
Indicated Average Risk Premium	4.36%	4.55%	4.87%	4.28%	4.12%

Source: *Regulatory Focus*, Regulatory Research Associates, Inc., Major Rate Case Decisions, October 3, 2007.

Over the past five years, as interest rates have declined, allowed equity returns have followed the interest rate decline, but declined by a smaller amount.

Since 2003, equity risk premiums (the difference between allowed equity returns and utility interest rates) have ranged from 4.12 percent to 4.87 percent. At

the low end of this risk premium range, with an allowed equity risk premium of about 4.1 percent, the indicated cost of equity is 10.5 percent (6.4 percent projected single-A interest rate + 4.1 percent risk premium = 10.5 percent). At the upper end of this risk premium range, with an allowed equity risk premium of about 4.9 percent, the indicated cost of equity is 11.3 percent (6.4 percent projected single-A interest rate + 4.9 percent risk premium = 11.3 percent).

Cost of Equity Capital for Rocky Mountain Power

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

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

Q. How are your studies organized?

A. In the first part of my analysis, I apply three versions of the DCF model to a 15-company group of electric utilities based on the selection criteria discussed previously. In the second part of my analysis, I apply various risk premium models and review projected economic conditions and projected capital costs for the coming year.

My DCF analysis is based on three versions of the DCF model. In the first version of the DCF model, I use the constant growth format with long-term expected growth based on analysts' estimates of five-year utility earnings growth. While I continue to endorse a longer-term growth estimation approach based on growth in overall gross domestic product, I show the traditional DCF results because this is the approach that has traditionally been used by many regulators. As I will explain,

however, changes in the nature of the utility industry and wide fluctuations in analysts' growth projections for electric utilities call into question this approach. In the second version of the DCF model, for the estimated growth rate, I use only the long-term estimated GDP growth rate. In the third version of the DCF model, I use a two-stage growth approach, with stage one based on Value Line's three-to-five-year dividend projections and stage two based on long-term projected growth in GDP. The dividend yields in all three of the annual models are from Value Line's projections of dividends for the coming year and stock prices are from the three-month average for the months that correspond to the Value Line editions from which the underlying financial data are taken.

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

A. Growth in nominal GDP (real GDP plus inflation) is the most general measure of economic growth in the U.S. economy. For long time periods, such as those used in the Ibbotson Associates rate of return data, GDP growth has averaged between 5 percent and 8 percent per year. From this observation, Professors Brigham and Houston offer the following observation concerning the appropriate long-term growth rate in the DCF Model:

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

Other academic research on corporate growth rates offers similar conclusions about GDP growth as well as concerns about the long-term adequacy of analysts' 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. For Utah specifically, the economy is expected to grow more rapidly than the national average.

Q. Are there other fundamental indications that electricity utility growth rates closely follow GDP growth?

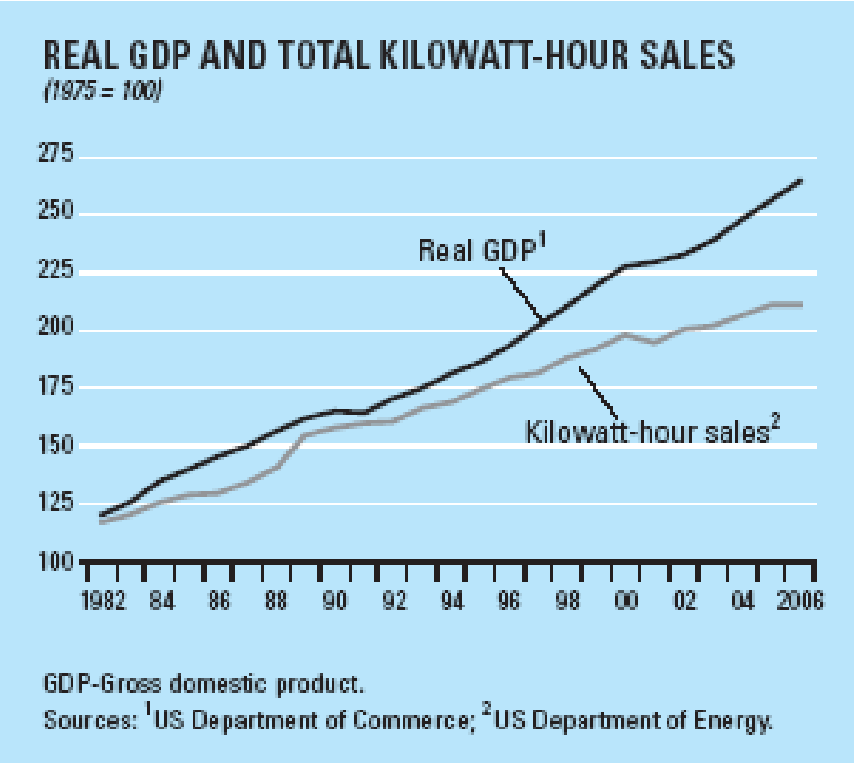
A. Yes. The chart below from S&P's *Electric Utility Industry Survey* shows that electric utility kilowatt hour sales closely track GDP growth. S&P offers the following discussion of the close relationship:

> Reported quarterly by the US Department of Commerce, GDP is a broad measure of aggregate economic activity. It is the market value of goods and services produced by labor and capital in the United

States. Growth in the economy is measured by changes in inflation adjusted (or real) GDP.

Changes in demand for electricity closely mirror the rate of economic growth. However, weather patterns can cause swings in electric consumption. In addition, demand growth for an individual utility company depends heavily on economic trends with its geographic region.

Real GDP grew 3.3% in 2006, following a 3.5% increase in 2005. (Standard & Poor's Industry Survey, August 8, 2007, p. 23.)



Q. How have analysts' three-to-five year growth projections changed over the past five years?

A. Analysts' forecasted growth rates for electric utilities declined precipitously following the Western energy crisis and industry turmoil. While analysts' growth projections have increased somewhat during the past year, they are still significantly lower than they were in 2002. In Exhibit RMP___SCH-3), I compare current forecasts from Value Line for my comparable group companies to those that existed in 2002.

During 2002, Value Line's projected three-to-five year earnings growth rate was 6.21 percent per year. In the most recent Value Line editions, the average projected earnings growth rate is 5.27 percent. The "b times r" sustainable growth rate based on Value Line's projected retention rates and earned ROEs shows an even larger decline. During 2002, for the comparable electric group the average "b times r" growth rate was 5.52 percent per year. Currently, the "b times r" growth rate from the three most recent Value Line editions is only 4.32 percent. These comparisons further illustrate that analysts' growth rate projections are more volatile than one would expect for perpetual growth rate expectations, and that current projections are very low as compared to those used just five years ago. These results strongly support using more general long-term economic growth rates, such as GDP, in the DCF model.

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 1947 through 2006 is summarized in my Exhibit RMP___(SCH-4). As shown at the bottom of that exhibit, the overall average for the period was 7.0 percent. The data also show, however, that in the more recent years since 1980, lower inflation has resulted in lower overall GDP growth. For this reason I gave more weight to the more recent years in my GDP forecast. This approach is consistent with the concept that more recent data should have a greater effect on expectations and with generally lower near- and intermediate-term growth rate forecasts that presently exist. Based on this approach, my overall forecast for long-term GDP growth is 40 basis points lower than

the long-term average, at a level of 6.6 percent.

Q. Please summarize the results of your electric utility DCF analyses.

A. The DCF results for my comparable company group are presented in Exhibit RMP___(SCH-5). As shown in the first column of page 1 of that exhibit, the traditional constant growth model indicates an ROE of only 9.6 percent to 9.9 percent. Because this result is well below my risk premium checks of reasonableness, it is excluded from my recommended DCF range. In the second column of page 1, I recalculate the constant growth results with the growth rate based on long-term forecasted growth in GDP. With the higher GDP growth rate, the constant growth model indicates an ROE range of 11.0 percent to 11.1 percent. Finally, in the third column of page 1, I present the results from the multistage DCF model. The multistage model indicates an ROE range of 10.6 percent to 10.9 percent. The results from the DCF model, therefore, indicate a reasonable ROE range of 10.6 percent to 11.1 percent for the comparable company group.

Q. Did you also apply the CAPM to estimate Rocky Mountain Power's cost of equity?

A. Yes. I applied the CAPM to my comparable group companies using two approaches. In both approaches, I used Value Line's betas. In the first approach, I used the recent average 30-year Treasury bond as the risk-free asset and an average of Morningstar's[2] (Morningstar, Inc., Stocks, Bonds, Bills and Inflation 2007 Yearbook) arithmetic and geometric mean equity risk premiums relative to Treasury bonds as the market risk premium. The results of that analysis are shown in the upper panel of Exhibit

[2] Formerly Ibbotson Associates.

RMP___(SCH-7). The CAPM estimate of ROE based on Treasury bonds is 9.83 percent. In the second part of my analysis, I used the recent average 90-day Treasury bill rate as the risk-free rate and an average of Morningstar's arithmetic and geometric mean equity risk premiums relative to Treasury bills as the market risk premium. The results of that analysis are shown in the lower panel of Exhibit RMP___(SCH-7). The CAPM estimated ROE based on Treasury bills is 10.61 percent. The midpoint of my two CAPM estimates is 10.22 percent.

Q. What are the results of your other risk premium studies?

A. The details and results of my risk premium studies are shown in my Exhibit RMP___(SCH-6). These studies and other risk premium data indicate an ROE range of 10.8 percent to 11.5 percent.

Q. How are your risk premium studies structured?

A. My risk premium studies are divided into two parts. First, I compare electric utility authorized ROEs for the period 1980-2006 to contemporaneous long-term utility interest rates. The differences between the average authorized ROEs and the average interest rate for the year is the indicated equity risk premium. I then add the indicated equity risk premium to the forecasted single-A utility bond interest rate to estimate ROE. Because there is a strong inverse relationship between risk premiums and interest rates (when interest rates are high, risk premiums are low and vice versa), further analysis is required to estimate the current risk premium level.

The inverse relationship between risk premiums and interest rate levels is well documented in numerous, well-respected academic studies. These studies typically use regression analysis or other statistical methods to predict or measure the risk

premium relationship under varying interest rate conditions. On page 2 of Exhibit RMP___(SCH-6), I provide regression analyses of the allowed annual equity risk premiums relative to interest rate levels. The negative and statistically significant regression coefficients confirm the inverse relationship between risk premiums and interest rates. This means that when interest rates rise by one percentage point, the cost of equity increases, but by a smaller amount. Similarly, when interest rates decline by one percentage point, the cost of equity declines by less than one percentage point. I use this negative interest rate change coefficient in conjunction with current interest rates to establish the appropriate current equity risk premium.

Q. How do the results of your risk premium study compare to levels found in other published risk premium studies?

A. Based on my risk premium studies, I am conservatively recommending a lower risk premium than is often found in other published risk premium studies. For example, the most widely followed risk premium data are provided in studies published annually by Morningstar. These data, for the period 1926-2006, indicate an arithmetic mean risk premium of 6.1 percent for common stocks versus long-term corporate bonds. Under the assumption of geometric mean compounding, the Morningstar risk premium for common stocks versus corporate bonds is 4.5 percent. Based on the more conservative geometric mean risk premium, the Morningstar data indicate a cost of equity of 10.9 percent (6.4 percent forecasted debt cost + 4.5 percent risk premium = 10.9 percent). Based on the arithmetic risk premium, the Morningstar data indicate a cost of equity of 12.5 percent (6.4 percent forecasted debt cost + 6.1 percent risk premium = 12.5 percent).

Harris and Marston (H&M) also provide specific equity risk premium estimates.[3] Using analysts' growth estimates to estimate equity returns, H&M found equity risk premiums of 6.47 percent relative to U.S. Government bonds and 5.13 percent relative to yields on corporate debt. H&M's equity risk premium relative to corporate debt also indicates a current cost of equity of 11.5 percent (6.4 percent debt cost + 5.13 percent risk premium = 11.53 percent). Although the Morningstar and Harris and Marston results should not be extrapolated directly as stand-alone estimates of the cost of equity for regulated utilities, their results provide a reasonable long-term perspective on capital market expectations for debt and equity rates of return.

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

A. The following table summarizes my results:

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[3] Robert S. Harris and Felicia C. Marston, "Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts," *Financial Management*, Summer 1992.

Summary of Cost of Equity Estimates

DCF Analysis	Indicated Cost
Constant Growth (Analysts' Growth)	9.6%-9.9%
Constant Growth (GDP Growth)	11.0%-11.1%
Multistage Growth Model	10.6%-10.9%
Reasonable DCF Range	10.6%-11.1%
CAPM Analysis	**Indicated Cost**
Long-term Risk-Free Rate	9.83%
Short-term Risk Free Rate	10.61%
Risk Premium Analysis	**Indicated Cost**
Utility Debt + Risk Premium	
Risk Premium (6.4% + 4.4%)	10.8%
Morningstar Risk Premium Analysis	
Risk Premium (6.4% + 4.5%)	10.9%
Harris-Marston Risk Premium	
Risk Premium (6.4% + 5.1%)	11.5%
Rocky Mountain Power Estimated ROE	10.75%

Q. How should these results be interpreted to determine the fair cost of equity for Rocky Mountain Power?

A. Caution should be exercised in interpreting the basic quantitative DCF and risk premium results, because they are based on recent historically low points in the economic cycle. Under such conditions, economic projections should also be considered. Continuing economic growth and higher expected interest rates show that less weight should be given to recent economic history. Additionally, use of a lower DCF range would fail to recognize the ongoing risks and uncertainties that continue to exist in the electric utility industry business as well as the uncertainties Rocky Mountain Power is currently facing. From this perspective, and with consideration of the Company's large on-going capital requirements, the fair and reasonable cost of equity capital for Rocky Mountain Power is 10.75 percent.

Q. Does this conclude your testimony?

A. Yes, it does.