STATE OF MICHIGAN

BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

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In the matter of the application of **UPPER PENINSULA POWER COMPANY** for authority to increase retail electric rates.	))))	Case No. U-16417

DIRECT TESTIMONY AND EXHIBITS OF

PAUL R. MOUL

FOR

UPPER PENINSULA POWER COMPANY

June 30, 2011

Upper Peninsula Power Company
Direct Testimony of Paul R. Moul
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GLOSSARY OF ACRONYMS AND DEFINED TERMS	
ACRONYM	**DEFINED TERM**
AFUDC	Allowance for Funds Used During Construction
β	Beta
ßl	the leveraged beta,
ßu	the unleveraged beta
b	represents the retention rate that consists of the fraction of earnings that are not paid out as dividends
b x r	Represents internal growth
CAA	Clean Air Act
CAPM	Capital Asset Pricing Model
CCR	Corporate Credit Rating
CE	Comparable Earnings
DCF	Discounted Cash Flow
FERC	Federal Energy Regulatory Commission
g	Growth rate
IGF	Internally Generated Funds
Lev	Leverage modification
LT	Long Term
MPSC	Michigan Public Service Commission
P	Price
P-E	price-earnings
r	represents the expected rate of return on common equity
Rf	Risk-free rate of return
RP	Risk Premium
Rm	Market risk premium
ROE	Return on Common Equity
s	Represents the new common shares expected to be issued by a firm
s x v	Represents external growth
S&P	Standard & Poor’s
UPPCO	Upper Peninsula Power Company

GLOSSARY OF ACRONYMS AND DEFINED TERMS	
ACRONYM	**DEFINED TERM**
v	Represents the value that accrues to existing shareholders from selling stock at a price different from book value
WPSR	WPS Resources Corporation

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QUALIFICATIONS
OF
PAUL R. MOUL
PART I

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

A. My name is Paul Ronald Moul. My business address is 251 Hopkins Road, Haddonfield, New Jersey 08033-3062. I am Managing Consultant at the firm P. Moul & Associates, an independent financial and regulatory consulting firm. My educational background, business experience and qualifications are provided in Appendix A, which follows my direct testimony.

Q. For whom are you providing testimony?

A. I am providing testimony on behalf of Upper Peninsula Power Company ("UPPCO").

PAUL R. MOUL
DIRECT TESTIMONY
PART II

Q. What is the purpose of your pre-filed direct testimony?

A. My pre-filed direct testimony presents evidence, analysis, and a recommendation concerning the appropriate rate of Return on Common Equity ("ROE") that the Michigan Public Service Commission ("MPSC") should recognize in the determination of the revenues that UPPCO should realize as a result of this proceeding. My analysis and recommendation are supported by the detailed financial data contained in Exhibit A-4 (PRM-1), which is divided into ten (10) schedules, identified as Schedule D9 through Schedule D18. Additional evidence, in the form of appendices, follows my direct testimony. The items covered in these appendices provide additional detailed information concerning the explanation and application of the various financial models upon which I rely.

Q. Were the ten schedules that you reference in Exhibit A-4 (PRM-1) prepared by you or under your direction and supervision?

A. Yes.

Q. Based upon your analysis, what is your conclusion concerning the appropriate ROE for UPPCO in this case?

A. My conclusion is that the minimum ROE for UPPCO in this case is at least 10.75%. The resulting overall cost of capital that includes my 10.75% ROE is the product of weighting the individual capital costs by the proportion of each respective type of capital. That cost of capital should establish a just and reasonable level of return for the use of capital and provide UPPCO with the ability to attract capital on reasonable terms. Details of UPPCO's proposed cost of debt capital and weighted average cost

of capital are contained in the testimony of Ms. Lisa J. Gast, Integrys' Manager of Financial Planning & Analysis.

Q. What background information have you considered in reaching a conclusion concerning UPPCO's cost of capital?

A. UPPCO is a wholly-owned subsidiary of Integrys Energy Group, Inc. ("Integrys"). Integrys was formerly named WPS Resources Corporation ("WPSR") prior to its merger with Peoples Energy Corporation on February 21, 2007. Integrys is a holding company and owns, in addition to UPPCO, The Peoples Gas Light and Coke Company, North Shore Gas Company, Michigan Gas Utilities Corporation, Minnesota Energy Resources Corporation, Wisconsin Public Service Corporation, and other energy investments.

UPPCO generates, purchases, and sells electricity to approximately 52,000 customers located in the Upper Peninsula of Michigan. Electric sales by customer class were approximately 25% to residential customers, 22% to commercial customers, 26% industrial customers, and 27% to resale and other customers. UPPCO obtains its energy from its own hydro-generation resources (about 7%) and from purchases (about 93%). UPPCO's sales are dominated by riskier industrial sales, and it is dependent upon wholesale prices for purchased power. In addition, UPPCO will lose all of its sales for resale customers who will be obtaining their energy requirements from other purveyors by the end of 2011, when the existing contracts with these customers expire.

Q. How have you determined UPPCO's cost of common equity in this case?

A. A firm's cost of common equity is established using capital market and financial data relied upon by investors to assess the firm's relative risk. In this regard, I have considered three (3) well-recognized measures of the cost of equity: the Discounted

Cash Flow ("DCF") model, the Risk Premium ("RP") analysis, and the Capital Asset Pricing Model ("CAPM"). As a check on the results of these models, I also considered the Comparable Earnings ("CE") approach.

Q. In your opinion, what factors should the Commission consider when determining UPPCO's cost of capital in this proceeding?

A. The Commission should consider the ratesetting principles that I have set forth in Appendix B. In this regard, the Commission's rate of return allowance must be set to cover UPPCO's interest and dividend payments, provide a reasonable level of earnings retention, produce an adequate level of internally generated funds to meet capital requirements, be commensurate with the risk to which UPPCO's capital is exposed, support reasonable credit quality, and allow UPPCO to raise capital on reasonable terms.

Q. How did you determine the cost of equity for UPPCO, the stock of which is not publicly traded?

A. The models that I used to measure the cost of common equity for UPPCO were applied with market and financial data developed from the Combination Group of nine utility companies that I selected as a proxy for UPPCO. The Combination Group consists of regulated companies that: (i) have publicly traded common stock, (ii) are included in The Value Line Investment Survey, (iii) are engaged in the electric and natural gas utility business, (iv) operate in the North Central Region of the U.S., (v) have not recently reduced or are expected to reduce their common dividend, (vi) do not have major interstate pipeline operations, and (vii) are not currently the target of a merger or acquisition. The companies in the Combination Group are identified on page 2 of Exhibit A-4 (PRM-1), Schedule D10. I will refer to these companies as the "Combination Group" throughout my testimony.

Q. How have you performed your cost of equity analysis with the market data for the Combination Group?

A. I have applied the models/methods for estimating the cost of equity using the average data for the Combination Group. I have not measured the cost of equity for each of the individual companies within the Combination Group, because the determination of the cost of equity for an individual company is problematic. The use of a group average (or portfolio) of combination utilities reduces the effect that anomalous results for an individual company may have on the rate of return determination. This is to say, by employing group average data, rather than individual companies' analysis; I have helped to minimize the effect of extraneous influences on the market data for an individual company, such as the effects of program trading, high frequency trading, "dividend spread" trading, or significant "short" selling of a security.

Q. Please summarize your cost of equity analysis.

A. My cost of equity determination was derived from the results of the methods/models identified above. In general, the use of more than one method provides a superior foundation to arrive at the cost of equity. At any point in time, any single method can provide an incomplete measure of the cost of equity for reasons noted above. The following table provides a summary of the indicated costs of equity using each of these approaches.

	Combination Group
DCF	10.98%
RP	11.50%
CAPM	11.65%
Average	11.38%
Median	11.50%
Mid-point	11.32%

From these measures, I recommend that the Commission set UPPCO's rate of return on common equity no lower than 10.75%. As I indicated previously, I have used the Comparable Earnings approach to confirm the results of the market-based models. Indeed, the Comparable Earnings result of 11.85% shows the conservative nature of the market-based results. The result of the DCF, Risk Premium and CAPM are all above the 10.75% minimum rate of return on common equity that I propose. The Company has taken a conservative approach in selecting the rate of return on common equity in order to minimize the rate impact on customer bills as a result of this rate case.

ELECTRIC UTILITY RISK FACTORS

Q. What evolving risk issues for electric utilities affect their cost of equity?

A. Aside from their traditional responsibility to supply adequate capacity to meet forecast loads that are increasingly uncertain due to economic conditions and conservation efforts by customers, electric utilities face substantial increases in operating and capital costs to comply with increasingly stringent emission controls under the Clean Air Act ("CAA"). For UPPCO, there is risk involved with compliance with mandates for its hydro facilities required by the FERC and/or EPA. Investments to comply with various regulatory mandates usually involve cost increases that can negatively impact the competitive position of the utility thereby creating added risk. Investors will

continue monitoring the regulatory support provided for the large capital requirements necessary to comply with regulatory compliance.

Q. Are there other specific risk issues facing UPPCO?

A. Yes, there are. Its risk profile is strongly influenced by electricity sold to industrial and resale customers. Sales to industrial customers and sales for resale represent approximately 53% of UPPCO's total kilowatt sales. Sales to high volume customers are generally higher in risk than sales to other classes of customers. Success in this segment of UPPCO's market is subject to (i) the business cycle, (ii) the price of alternative energy sources, and (iii) pressures from alternative providers. Moreover, external factors influence UPPCO's sales to these customers which face competitive pressures on their own operations from other facilities outside UPPCO's service territories. Indeed, paper production and forest products represent a significant portion of UPPCO's industrial customer base, and these industries remain under heavy economic pressure. Indeed, UPPCO has recently experienced the closure of its largest paper production customer. Further, as noted previously, UPPCO will lose all of its sales for resale customers by the end of 2011. The rate consequences of this loss will adversely impact the Company's competitive position.

Q. How is UPPCO's risk profile affected by its construction program?

A. As a public utility, UPPCO is required to undertake investment to maintain and upgrade existing facilities in its service territory, regardless of conditions in the financial markets. In this respect, public utilities have risk that is different than non-utilities, which can choose to postpone investment during times of increased capital costs. Over the period 2011-2015, UPPCO's capital expenditures are expected to total approximately $81 million. These expenditures will represent 54% ($81 million ÷ $149 million) of UPPCO's net utility plant at December 31, 2010. A fair rate of return is a

critical component of a financial profile that will provide UPPCO with the ability to raise the capital necessary to meet its capital needs at reasonable cost on an ongoing basis.

Q. How would you rate the overall business risk profile of UPPCO?

A. The Company's business risk profile is high. In addition to its small size, its reliance on purchased power for most of its customers' energy needs, the loss of its sales for resale customers by the end of 2011, its sales to forest products customers, and its substantial construction expenditures all point to well above average risk for UPPCO.

FUNDAMENTAL RISK ANALYSIS

Q. Is it necessary to conduct a fundamental risk analysis to provide a framework for a determination of a utility's cost of equity?

A. Yes, it is. It is necessary to establish a company's relative risk position within its industry through a fundamental analysis of various quantitative and qualitative factors that bear upon investors' assessment of overall risk. The qualitative factors that bear upon UPPCO's risk have already been discussed. The quantitative risk analysis follows. The items that influence investors' evaluation of risk and their required returns are described in Appendix C. For this purpose, I compared UPPCO to the S&P Public Utilities, an industry-wide proxy consisting of various regulated businesses, and to the Combination Group.

Q. What are the components of the S&P Public Utilities?

A. The S&P Public Utilities is a widely recognized index that is comprised of electric power and natural gas companies. These companies are identified on page 3 of Exhibit A-4 (PRM-1), Schedule D11.

Q. Is knowledge of a utility's bond rating an important factor in assessing its risk

and cost of capital?

A. Yes, it is. Knowledge of a company's credit quality rating is important because the cost of each type of capital is directly related to the associated risk of the firm. So while a company's credit quality risk is shown directly by the rating and yield on its bonds, these relative risk assessments also bear upon the cost of equity. This is because a firm's cost of equity is represented by its borrowing cost plus compensation to recognize the higher risk of an equity investment compared to debt.

Q. How do the bond ratings compare for UPPCO, the Combination Group, and the S&P Public Utilities?

A. Presently, the corporate credit rating ("CCR") for UPPCO's parent, Integrys is "BBB+" from S&P and the Long Term ("LT") issuer rating is "Baa1" from Moody's Investors Services ("Moody's"). The CCR designation by S&P and LT issuer rating by Moody's focuses upon the credit quality of the issuer of the debt, rather than upon the debt obligation itself. The average credit quality of the Combination Group is a "BBB+" from S&P and "A3" from Moody's. For the S&P Public Utilities, the average composite rating is "BBB+" by S&P and "Baa1" by Moody's.

Q. How do the financial data compare for UPPCO, the Combination Group, and the S&P Public Utilities?

A. The broad categories of financial data that I will discuss are shown on Exhibit A-4 (PRM-1), Schedules D9, D10, and D11. The data cover the five-year period 2006-2010. For UPPCO, I have removed its investment in American Transmission Company LLC from its financial statements for the purpose of my analysis. The important categories of relative risk may be summarized as follows:

Size. In terms of capitalization, UPPCO is very much smaller than the average size of the Combination Group, and also much smaller than the average size of the

S&P Public Utilities. All other things being equal, a smaller company is riskier than a larger company because a given change in revenue and expense has a proportionately greater impact on a small firm.

Market Ratios. Market-based financial ratios, such as earnings/price ratios and dividend yields, provide a partial measure of the investor-required cost of equity. If all other factors are equal, investors will require a higher rate of return for companies that exhibit greater risk, in order to compensate for that risk. That is to say, a firm that investors perceive to have higher risks will experience a lower price per share in relation to expected earnings.[1]

There are no market ratios available for UPPCO because Integrys owns its stock. The five-year average price-earnings multiple for the Combination Group was fairly similar to that of the S&P Public Utilities. The five-year average dividend yield was slightly higher for the Combination Group as compared to the S&P Public Utilities. The average market-to-book ratio was lower for the Combination Group compared to the S&P Public Utilities.

Common Equity Ratio. The level of financial risk is measured by the proportion of long-term debt and other senior capital that is contained in a company's capitalization. Financial risk is also analyzed by comparing common equity ratios (the complement of the ratio of debt and other senior capital). That is to say, a firm with a high common equity ratio has lower financial risk, while a firm with a low common equity ratio has higher financial risk. The five-year average common equity ratios, based on total capital, were 54.4% for UPPCO, 44.5% for the Combination Group, and 43.2% for the S&P Public Utilities. The Company's higher common equity ratio provides a partial offset to the other high risk factors that I have discussed.

[1]For example, two otherwise similarly situated firms each reporting $1.00 in earnings per share would have different market prices at varying levels of risk (i.e., the firm with a higher level of risk will have a lower share value, while the firm with a lower risk profile will have a higher share value).

Return on Book Equity. Greater variability (i.e., uncertainty) of a firm's earned returns signifies relatively greater levels of risk, as shown by the coefficient of variation (standard deviation ÷ mean) of the rate of return on book common equity. The higher the coefficients of variation, the greater degree of variability. For the five-year period, the coefficients of variation were 1.082 (5.3% ÷ 4.9%) for UPPCO, 0.078 (0.7% ÷ 9.0%) for the Combination Group, and 0.096 (1.1% ÷ 11.5%) for the S&P Public Utilities.

Operating Ratios. I have also compared operating ratios (the percentage of revenues consumed by operating expense, depreciation, and taxes other than income).[2] The five-year average operating ratios were 92.1% for UPPCO, 86.2% for the Combination Group, and 84.1% for the S&P Public Utilities.

Coverage. The level of fixed charge coverage (i.e., the multiple by which available earnings cover fixed charges, such as interest expense) provides an indication of the earnings protection for creditors. Higher levels of coverage, and hence earnings protection for fixed charges, are usually associated with superior grades of creditworthiness. The five-year average interest coverage (excluding Allowance for Funds Used During Construction ("AFUDC")) was 2.65 times for UPPCO, 3.05 times for the Combination Group, and 3.23 times for the S&P Public Utilities.

Quality of Earnings. Measures of earnings quality usually are revealed by the percentage of AFUDC related to income available for common equity, the effective income tax rate, and other cost deferrals. These measures of earnings quality usually influence a firm's internally generated funds because poor quality of earnings would not generate high levels of cash flow. Quality of earnings has not been a significant concern for the Combination Group and the S&P Public Utilities. The Company's

[2]The complement of the operating ratio is the operating margin which provides a measure of profitability. The higher the operating ratio, the lower the operating margin.

AFUDC percentage has moved up during the past two years due to a meaningful increase in the construction expenditures.

Internally Generated Funds. Internally generated funds ("IGF") provide an important source of new investment capital for a utility and represent a key measure of credit strength. Historically, the five-year average percentage of IGF to capital expenditures was 84.1% for UPPCO, 85.3% for the Combination Group, and 93.7% for the S&P Public Utilities.

Betas. The financial data that I have been discussing relate primarily to company-specific risks. Market risk for firms with publicly-traded stock is measured by beta coefficients. Beta coefficients attempt to identify systematic risk, i.e., the risk associated with changes in the overall market for common equities.[3] Value Line publishes such a statistical measure of a stock's relative historical volatility to the rest of the market. A comparison of market risk is shown by the Value Line beta of .70 as the average for the Combination Group (see page 2 of Exhibit A-4 (PRM-1), Schedule D10), and .76 as the average for the S&P Public Utilities (see page 3 of Exhibit A-4 (PRM-1), Schedule D11).

Q. Please summarize your risk evaluation.

A. On many counts UPPCO's risk is higher than the Combination Group. Those higher risk factors include UPPCO's smaller size, its much higher earnings variability, its higher operating ratio, and its lower coverage. For other measures, UPPCO's risk is somewhat lower, such as its higher common equity ratio, which helps offset some of the higher risk factors. Indicators of equivalent risk would be the IGF percentage and quality of earnings, although increased construction expenditures have tilted these

[3]The procedure used to calculate the beta coefficient published by Value Line is described in Appendix H. A common stock that has a beta less than 1.0 is considered to have less systematic risk than the market as a whole and would be expected to rise and fall more slowly than the rest of the market. A stock with a beta above 1.0 would have more systematic risk.

measures toward more risk for the Company. On balance, the Combination Group provides a conservative basis for measuring UPPCO's cost of equity for this case.

COST OF EQUITY – GENERAL APPROACH

Q. Please describe the process you employed to determine the cost of equity for UPPCO.

A. Although my fundamental financial analysis provides the required framework to establish the risk relationships between UPPCO, the Combination Group and the S&P Public Utilities, the cost of equity must be measured by standard financial models that I describe in Appendix D. Differences in risk traits, such as size, business diversification, geographical diversity, regulatory policy, financial leverage, and bond ratings must then be considered when analyzing the cost of equity indicated by the models.

It also is important to reiterate that no one method or model of the cost of equity can be applied in an isolated manner. As I noted previously, each of the methods used to measure the cost of equity has its own limitations that can cause the model to generate unrealistic results under certain circumstances. Therefore, I favor considering the results from a variety of methods. In this regard, I applied each of the methods with data taken from the Combination Group and, considering those results along with the other factors I have identified, I have arrived at a cost of equity of no less than 10.75% for UPPCO.

DISCOUNTED CASH FLOW ANALYSIS

Q. Please describe your use of the Discounted Cash Flow approach to determine the cost of equity.

A. The details of my use of the DCF approach and the calculations and evidence in support of my conclusions are set forth in Appendix E. I will summarize them here.

The DCF model seeks to explain the value of an asset as the present value of future expected cash flows discounted at the appropriate risk-adjusted rate of return. In its simplest form, the DCF return on common stock consists of a current cash (dividend) yield and future price appreciation (growth) of the investment.

Among other limitations of the model, there is a certain element of circularity in the DCF method when applied in rate cases. This is because investors' expectations for the future depend upon regulatory decisions. In turn, when regulators depend upon the DCF model to set the cost of equity, they rely upon investor expectations that include an assessment of how regulators will decide rate cases. Due to this circularity, the DCF model may not fully reflect the true risk of a utility.

The DCF approach has other limitations that diminish its usefulness in the ratesetting process where, as in this case, the firm's market capitalization diverges from the book value capitalization. When this situation exists, the DCF method will lead to a misspecified cost of equity when it is applied to a book value capital structure.

Q. Please explain the dividend yield component of a DCF analysis.

A. The DCF methodology requires the use of an expected dividend yield to establish the investor-required cost of equity. For the twelve months ended April 2011, the monthly dividend yields of the Combination Group are shown graphically on Exhibit A-4 (PRM-1), Schedule D12. These monthly dividend yields reflect an adjustment to the month-end prices to reflect the buildup of the dividend in the price that has occurred since the last ex-dividend date (i.e., the date by which a shareholder must own the shares to be entitled to the dividend payment – usually about two to three weeks prior to the actual payment). An explanation of this adjustment is provided Appendix E.

For the twelve months ending April 2011, the average dividend yield was 4.57% for the Combination Group based upon a calculation using annualized dividend payments and adjusted month-end stock prices. The dividend yields for the more

recent six- and three- month periods were 4.50% and 4.46%, respectively. I have used, for the purpose of my direct testimony, a dividend yield of 4.50% for the Combination Group, which is equal to the six-month average yield. The use of this dividend yield will reflect current capital costs, while avoiding spot yields.

For the purpose of a DCF calculation, the average dividend yield must be adjusted to reflect the prospective nature of the dividend payments i.e., the higher expected dividends for the future. Recall that the DCF is an expectational model that must reflect investor anticipated cash flows for the Combination Group. I have adjusted the six-month average dividend yield in three different, but generally accepted manners, and used the average of the three adjusted values as calculated in Appendix E. That adjusted dividend yield is 4.64% for the Combination Group.

Q. Please explain the underlying factors that influence investor's growth expectations.

A. As noted previously, investors are interested principally in the future growth of their investment (i.e., the price per share of the stock). As I explain in Appendix E, future earnings per share growth represent the DCF model's primary focus because under the constant price-earnings multiple assumption of the model, the price per share of stock will grow at the same rate as earnings per share. In conducting a growth rate analysis, a wide variety of variables can be considered when reaching a consensus of prospective growth, including: earnings, dividends, book value, and cash flow stated on a per share basis. Historical values for these variables can be considered, as well as analysts' forecasts that are widely available to investors. A fundamental growth rate analysis also can be formulated, which consists of internal growth ("b x r"), where "r" represents the expected rate of return on common equity and "b" is the retention rate that consists of the fraction of earnings that are not paid out as dividends. The internal growth rate can be modified to account for sales of new common stock -- this

is called external growth ("s x v"), where "s" represents the new common shares expected to be issued by a firm and "v" represents the value that accrues to existing shareholders from selling stock at a price different from book value. Fundamental growth, which combines internal and external growth, provides an explanation of the factors that cause book value per share to grow over time.

Growth also can be expressed in multiple stages. This expression of growth consists of an initial "growth" stage where a firm enjoys rapidly expanding markets, high profit margins, and abnormally high growth in earnings per share. Thereafter, a firm enters a "transition" stage where fewer technological advances and increased product saturation begin to reduce the growth rate and profit margins come under pressure. During the "transition" phase, investment opportunities begin to mature, capital requirements decline, and a firm begins to pay out a larger percentage of earnings to shareholders. Finally, the mature or "steady-state" stage is reached when a firm's earnings growth, payout ratio, and return on equity stabilizes at levels where they remain for the life of a firm. The three stages of growth assume a step-down of high initial growth to lower sustainable growth. Even if these three stages of growth can be envisioned for a firm, the third "steady-state" growth stage, which is assumed to remain fixed in perpetuity, represents an unrealistic expectation because the three stages of growth can be repeated. That is to say, the stages can be repeated where growth for a firm ramps-up and ramps-down in cycles over time.

My use of the constant growth DCF model to measure UPPCO's cost of equity is compatible with the methodology adopted by the Federal Energy Regulatory Commission ("FERC") for electric utilities in *Southern California Edison Co.,* 92 FERC ¶ 61,070 (2000). In that case, FERC decided that the non-constant growth DCF model that it has historically applied to natural gas pipeline companies was not appropriate for electric utilities due to significant differences between them. In particular, FERC found that the long-term growth of the United States economy as a whole is not a

reasonable proxy for the long-term growth rate of electric utilities because the electric industry is undergoing restructuring, electric utility growth rates are different, and electric utilities typically have much higher dividend payout ratios resulting in "significantly lower expected dividend growth rates than most other industrial companies." Thus, FERC applies the constant growth DCF model to determine ROEs for electric utilities and relies on company-specific long-term growth rates in applying that model. FERC has since extended its application of the constant growth DCF model to regional transmission organizations. *Bangor Hydro-Electric Co.,* 117 FERC ¶ 61,129 (2006).

Q. What investor-expected growth rate is appropriate in a DCF calculation?

A. Investors consider both company-specific variables and overall market sentiment (i.e., level of inflation rates, interest rates, economic conditions, etc.) when balancing their capital gains expectations with their dividend yield requirements. I follow an approach that is not rigidly formatted because investors are not influenced by a single set of company-specific variables weighted in a formulaic manner. Therefore, in my opinion, all relevant growth rate indicators using a variety of techniques must be evaluated when formulating a judgment of investor expected growth.

Q. What data for the proxy group have you considered in your growth rate analysis?

A. I have considered the growth in the financial variables shown on Schedules D13 and D14 of Exhibit A-4 (PRM-1). The bar graph provided on Exhibit A-4 (PRM-1), Schedule D13 shows the historical growth rates in earnings per share, dividends per share, book value per share, and cash flow per share for the Combination Group. The historical growth rates were taken from the Value Line publication that provides these data. In the instances that no values are shown on Exhibit A-4 (PRM-1), Schedule

D13, the group average growth rates were negative. Negative growth rates, which significantly influence the historical data, provide no reliable guide to gauge investor expected growth for the future. Investor expectations encompass long-term positive growth rates and, as such, could not be represented by sustainable negative rates of change. Therefore, statistics that include negative growth rates should not be given any weight when formulating a composite growth rate expectation. The prospect of rate increases granted by regulators, the continuing obligation to provide safe and reliable service to customers, increasing renewable and energy efficiency requirements, the compliance with which requires capital investments, mandate investor expectations of positive future growth rates. Stated simply, there is no reason for investors to expect that a utility will wind up its business and distribute net assets to shareholders, which would be symptomatic of a long-term permanent earnings decline. Although investors have knowledge that negative growth and losses can occur, their expectations include positive growth. Indeed, rational investors expect positive returns; otherwise they would hold cash rather than invest with the expectation of a loss. Hence, negative historic values will not provide a reasonable representation of future growth expectations because, in the long run, investors will always expect positive growth. As shown on Exhibit A-4 (PRM-1), Schedule D13, the historical growth of earnings per share was in the range of 0.44% to 4.72% for the Combination Group.

Exhibit A-4 (PRM-1), Schedule D14 provides projected earnings per share growth rates taken from analysts' forecasts compiled by IBES/First Call, Zacks, Morningstar, and from the Value Line publication. IBES/First Call, Zacks and Morningstar represent reliable authorities of projected growth upon which investors rely. The IBES/First Call, Zacks and Morningstar forecasts are limited to earnings per share growth, while Value Line makes projections of other financial variables. The Value Line forecasts of dividends per share, book value per share, and cash flow per

share have also been included on Exhibit A-4 (PRM-1), Schedule D14 for the Combination Group.

Although five-year forecasts usually receive the most attention in the growth analysis for DCF purposes, current market performance is strongly influenced by short-term earnings forecasts. Each of the major publications provides earnings forecasts for the current and subsequent year. These short-term earnings forecasts receive prominent coverage, and indeed they dominate these publications.

Q. Is a five-year investment horizon associated with the analysts' forecasts consistent with the DCF model?

A. Yes, it is. Rather than viewing the DCF in the context of an endless stream of growing dividends (e.g., a century of cash flows), the growth in the share value (i.e., capital appreciation, or capital gains yield) is most relevant to investors' total return expectations. Hence, the sale price of a stock can be viewed as a liquidating dividend that can be discounted along with the annual dividend receipts during the investment-holding period to arrive at the investor expected return. The growth in the price per share will equal the growth in earnings per share absent any change in price-earnings ("P-E") multiple -- a necessary assumption of the DCF. As such, my company-specific growth analysis, which focuses principally upon five-year forecasts of earnings per share growth, is consistent with the type of analysis that influences the total return expectation of investors. Moreover, academic research focuses on five-year growth rates as they influence stock prices. Indeed, if investors really required forecasts which extended beyond five years in order to properly value common stocks, then I am sure that some investment advisory service would begin publishing that information for individual stocks in order to meet the demands of investors. The absence of such a publication signals that investors do not require infinite forecasts in order to purchase and sell stocks in the marketplace.

Q. What specific evidence have you considered in the DCF growth analysis?

A. As to the five-year forecast growth rates, Exhibit A-4 (PRM-1), Schedule D14 indicates that the projected earnings per share growth rates for the Combination Group are 6.03% by IBES/First Call, 5.55% by Zacks, 5.49% by Morningstar and 6.56% by Value Line. The Value Line projections indicate that earnings per share for the Combination Group will grow prospectively at a more rapid rate (i.e., 6.56%) than the dividends per share (i.e., 5.06%), which indicates a declining dividend payout ratio for the future. As I indicated earlier, with the constant price-earnings multiple assumption of the DCF model, growth for these companies will occur at the higher earnings per share growth rate, thus producing the capital gains yield expected by investors.

Q. What conclusion have you drawn from these data regarding the applicable growth rate to be used in the DCF model?

A. A variety of factors should be examined to reach a conclusion on the DCF growth rate. However, certain growth rate variables should be emphasized when reaching a conclusion on an appropriate growth rate. First, historical and projected earnings per share, dividends per share, book value per share, cash flow per share, and retention growth represent indicators that could be used to provide an assessment of investor growth expectations for a firm. However, when an analyst develops a forecast of future earnings growth, he/she first considers a company's historical performance. Hence, there is no need to count historical growth rates separately, because historical performance is already reflected in analysts' forecasts.

Second, from the various alternative measures of growth identified above, earnings per share should receive the greatest emphasis. Earnings per share growth are the primary determinant of investor expectations concerning their total returns in the stock market. This is because the capital gains yield (i.e., price appreciation) will

track earnings growth with a constant price earnings multiple (a key assumption of the DCF model). Moreover, earnings per share (derived from net income) are the source of dividend payments, and are the primary driver of retention growth and its surrogate, i.e. book value per share growth. As such, under these circumstances, greater emphasis must be placed upon projected earnings per share growth. In this regard, it is worthwhile to note that Professor Myron Gordon, the foremost proponent of the DCF model in rate cases, concluded that the best measure of growth in the DCF model is a forecast of earnings per share growth.[4] Accordingly, projections of earnings per share growth, such as those published by IBES/First Call, Zacks, Morningstar and Value Line, represent a reasonable assessment of investor expectations.

It is appropriate to consider all forecasts of earnings growth rates that are available to investors. In this regard, I have considered the forecasts from IBES/First Call, Zacks, Morningstar and Value Line. The IBES/First Call, Zacks and Morningstar growth rates are consensus forecasts taken from a survey of analysts that make projections of growth for these companies. The IBES/First Call, Zacks and Morningstar estimates are obtained from the Internet and are widely available to investors free-of-charge. First Call is probably quoted most frequently in the financial press when reporting on earnings forecasts. The Value Line forecasts are also widely available to investors and can be obtained by subscription or free-of-charge at most public and collegiate libraries.

The forecasts of earnings per share growth, as shown on Exhibit A-4 (PRM-1), Schedule D14 provide a range of growth rates of 5.49% to 6.56%. In my opinion, an investor-expected growth rate of 5.75% is reasonable considering the array of analyst earnings per share growth forecasts. The Value Line forecast of dividend per share growth is inadequate in this regard due to the forecasted decline in the dividend

[4] "Choice Among Methods of Estimating Share Yield," The Journal of Portfolio Management, spring 1989 by Gordon, Gordon & Gould.

payout. In my opinion, a 5.75% growth rate will accommodate all these factors.

Q. Are the dividend yield and growth components of the DCF adequate to explain the rate of return on common equity when it is used in the calculation of the weighted average cost of capital?

A. Only if the capital structure ratios are measured with the market value of debt and equity. If book values are used to compute the capital structure ratios, then an adjustment is required.

Q. Please explain why.

A. If regulators use the results of the DCF (which are based on the market price of the stock of the companies analyzed) to compute the weighted average cost of capital based on a book value capital structure used for ratesetting purposes, the utility will not, by definition, recover its risk-adjusted capital cost. This is because market valuations of equity are based on market value capital structures, which in general have more equity and less debt and therefore reflect less risk than book value capital structures. The utility's risk-adjusted cost of equity will necessarily be lower with the market value capital structure than it is relative to the book value capital structure. The difference represents that portion of the utility's cost of equity that it will not recover unless either the market value cost of equity is applied to the utility's market value capital structure or it is adjusted to reflect the higher risk associated with the book value capital structure. By the same token, if the utility's market value capital structure is less than its book value structure, then the utility's market cost of equity should be adjusted downward to reflect the lower risk associated with the book value capital structure, or else the utility will over-recover its total cost of equity.

This shortcoming of the DCF has persuaded the Pennsylvania Public Utility Commission to adjust the DCF determined cost of equity upward to make the return

consistent with the book value capital structure. Specific adjustments to recognize this risk difference were made in the following cases:

- January 10, 2002 for Pennsylvania-American Water Company in Docket No. R-00016339 -- 60 basis points adjustment.
- August 1, 2002 for Philadelphia Suburban Water Company in Docket No. R-00016750 -- 80 basis points adjustment.
- January 29, 2004 for Pennsylvania-American Water Company in Docket No. R-00038304 (affirmed by the Commonwealth Court on November 8, 2004) -- 60 basis points adjustment.
- August 5, 2004 for Aqua Pennsylvania, Inc. in Docket No. R-00038805 -- 60 basis points adjustment.
- December 22, 2004 for PPL Electric Utilities Corporation in Docket No. R-00049255 -- 45 basis points adjustment.
- February 8, 2007 for PPL Gas Utilities Corporation in Docket No. R-00061398 -- 70 basis points adjustment.

In order to make the DCF results relevant to the capitalization measured at book value (as is done for rate setting purposes), the market-derived cost rate cannot be used without modification.

Q. Is your leverage adjustment dependent upon the market valuation or book valuation from an investor's perspective?

A. The only perspective that is important to investors is the return that they can realize on the market value of their investment. As I have measured the DCF, the simple yield (D/P) plus growth (g) provides a return applicable strictly to the price (P) that an investor is willing to pay for a share of stock. The DCF formula is derived from the standard valuation model: $P = D/(k-g)$, where P = price, D = dividend, k = the cost of equity, and g = growth in cash flows. By rearranging the terms, we obtain the familiar DCF equation: $k = D/P + g$. All of the terms in the DCF equation represent investors' assessment of expected future cash flows that they will receive in relation to the value that they set for a share of stock (P). The need for the leverage adjustment arises when the results of the DCF model (k) are to be applied to a capital structure that is different than that which underlies the market price (P). From the market perspective, the financial risk of the Combination Group is accurately measured by the capital

structure ratios calculated from the firms' market capitalizations. If the ratesetting process utilized the market capitalization ratios, then no additional analysis or adjustment would be required, and the simple yield (D/P) plus growth (g) components of the DCF would satisfy the financial risk associated with the market value of the equity capitalization. Since the ratesetting process uses a different set of ratios calculated from the book value capitalization, then further analysis is required to synchronize the financial risk of the book capitalization with the required return on the book value of the equity.

Q. How is the DCF-determined cost of equity adjusted for the financial risk associated with the book value of the capitalization?

A. In pioneering work, Nobel laureates Modigliani and Miller developed several theories about the role of leverage in a firm's capital structure. As part of that work, Modigliani and Miller established that, as the borrowing of a firm increases, the expected return on stockholders' equity also increases.[5] This principle is incorporated into my leverage adjustment which recognizes that the expected return on equity increases to reflect the increased risk associated with the higher financial leverage shown by the book value capital structure, as compared to the market value capital structure that contains lower financial risk. Modigliani and Miller proposed several approaches to quantify the equity return associated with various degrees of debt leverage in a firm's capital structure. These formulas point toward an increase in the equity return associated with the higher financial risk of the book value capital structure. The leverage adjustment expresses the cost of equity as the unleveraged return plus compensation for the additional risk of introducing debt and/or preferred stock into the capital structure.

[5] Modigliani, F. and Miller, M.H. "The Cost of Capital, Corporation Finance, and the Theory of Investments." American Economic Review, June 1958, 261-297.

Modigliani, F. and Miller, M. H. "Taxes and the Cost of Capital: A Correction." American Economic Review, June 1963, 433-443.

There can be no dispute that a firm's financial risk varies with the relative amount of leverage contained in its capital structure. As detailed in Appendix E, the Modigliani and Miller theory when applied to the Combination Group shows that the cost of equity increases by 0.59% (10.98% - 10.39%) when the book value of equity, rather than the market value of equity, is used for ratesetting purposes.

Q. Please provide the DCF return based upon your preceding discussion of dividend yield, growth, and leverage.

A. As explained previously, I have utilized a six-month average dividend yield ("D_1 / P_0") adjusted in a forward-looking manner for my DCF calculation. This dividend yield is used in conjunction with the growth rate ("g ") previously developed. The DCF also includes the leverage modification ("lev.") required when the book value equity ratio is used in determining the weighted average cost of capital in the ratesetting process rather than the market value equity ratio related to the price of stock.

	D_1/P_0	+	g	+	*lev.*	=	k
Combination Group	4.64%	+	5.75%	+	0.59%	=	10.98%

The DCF result shown above represents the simplified (i.e., Gordon) form of the model that contains a constant growth assumption. I should reiterate, however, that the DCF indicated cost rate provides an explanation of the rate of return on common stock market prices without regard to the prospect of a change in the price-earnings multiple. An assumption that there will be no change in the price-earnings multiple is not supported by the realities of the equity market, because price-earnings multiples do not remain constant. This is one of the constraints of this model that makes it important to consider other model results when determining a company's cost of equity.

Q. Is your leverage adjustment designed to transform the market return into one that is designed to produce a particular market-to-book ratio?

A. No, it is not. The adjustment that I label as a "leverage adjustment" is merely a convenient way of showing the amount that must be added to (or subtracted from) the result of the simple DCF model (i.e., D/P + g), in the context of a return that applies to the capital structure used in ratemaking, which is computed with book value weights rather than market value weights, in order to arrive at the utility's total cost of equity. I specify a separate factor, which I call the leverage adjustment, but there is no need to do so other than providing identification for this factor. If I expressed my return solely in the context of the book value weights that we use to calculate the weighted average cost of capital, and ignore the familiar D/P + g expression entirely, then there would be no separate element to reflect the financial leverage change from market value to book value capitalization. To begin the process, it is first necessary to calculate the return on equity as if there were no debt in the capital structure. This step is necessary because all companies in the Combination Group carry some amount of borrowed capital in their capital structure. With the 8.66% return for a company with all equity in its capital structure (i.e., the cost of capital is equal to the cost of equity with a 100% equity ratio), I have added 2.29% as compensation for having a 52.81% debt ratio and 0.03% for having a 0.57% preferred stock ratio (see pages E-11 and E-12 of Appendix E). The sum of the parts is 10.98% (8.66% + 2.29% + 0.03%) and there is no need to even address the cost of equity in terms of D/P + g. To express this same return in the context of the familiar DCF model, I summed the 4.64% dividend yield, the 5.75% growth rate, and the 0.59% for the leverage adjustment in order to arrive at the same 10.98% (4.64% + 5.75% + 0.59%) return. I know of no means to mathematically solve for the 0.59% leverage adjustment by expressing it in the terms of any particular relationship of market price to book value. The 0.59% adjustment is merely a convenient way to compare the 10.98% return computed directly with the Modigliani &

Miller formulas to the 10.39% return generated by the DCF model based on a market value capital structure. My point is that when we use a market-determined cost of equity developed from the DCF model, it reflects a level of financial risk that is different (in this case, lower) from the capital structure stated at book value. This process has nothing to do with targeting any particular market-to-book ratio.

RISK PREMIUM ANALYSIS

Q. Please describe your use of the risk premium approach to determine the cost of equity.

A. The details of my use of the Risk Premium approach and the evidence in support of my conclusions are set forth in Appendix G. I will summarize them here. With this method, the cost of equity capital is determined by corporate bond yields plus a premium to account for the fact that common equity is exposed to greater investment risk than debt capital. As with other models of the cost of equity, the Risk Premium approach has its limitations, including potential imprecision in the assessment of the future cost of corporate debt and the measurement of the risk-adjusted common equity premium. Therefore, the results of the Risk Premium approach should be used in conjunction with the results of other methods.

Q. What long-term public utility debt cost rate did you use in your risk premium analysis?

A. In my opinion, a 6.00% yield represents a reasonable estimate of the prospective yield on long-term A-rated public utility bonds. As I will subsequently show, the Moody's index and the Blue Chip forecasts support this figure.

Q. What historical data is shown by the Moody's data?

A. The historical yields for long-term public utility debt are shown graphically on page 1 of

Schedule D15. For the twelve months ended April 2011, the average monthly yield on Moody's A-rated index of public utility bonds was 5.39%. For the six and three-month periods ended April 2011, the yields were 5.55% and 5.60%, respectively. During the twelve-months ended April 2011, the range of the yields on A-rated public utility bonds was 5.01% to 5.68%.

Q. What forecasts of interest rates have you considered in your analysis?

A. I have determined the prospective yield on A-rated public utility debt by using the Blue Chip Financial Forecasts ("Blue Chip") along with the spread in the yields that I describe above and in Appendix F. The Blue Chip is a reliable authority and contains consensus forecasts of a variety of interest rates compiled from a panel of banking, brokerage, and investment advisory services. In early 1999, Blue Chip stopped publishing forecasts of yields on A-rated public utility bonds because the Federal Reserve deleted these yields from its Statistical Release H.15. To independently project a forecast of the yields on A-rated public utility bonds, I have combined the forecast yields on long-term Treasury bonds published on May 1, 2011, and a yield spread of 1.25%. As shown on page 5 of Schedule D15 of Exhibit A-4 (PRM-1), A-rated public utility bonds have yielded more than Treasury bonds by 1.42% as the twelve-month average, 1.34% as the six-month average, and 1.27% as the three-month average. From these averages, 1.25% represents a reasonable spread for the yield on A-rated public utility bonds over Treasury bonds. For comparative purposes, I also have shown the Blue Chip forecasts of Aaa-rated and Baa-rated corporate bonds. These forecasts are:

		Blue Chip Financial Forecasts				
		Corporate		30-Year	A-rated Public Utility	
Year	Quarter	Aaa-rated	Baa-rated	Treasury	Spread	Yield
2011	2nd	5.2%	6.1%	4.6%	1.25%	5.85%
2011	3rd	5.3%	6.3%	4.7%	1.25%	5.95%
2011	4th	5.5%	6.4%	4.8%	1.25%	6.05%
2012	1st	5.6%	6.6%	4.9%	1.25%	6.15%
2012	2nd	5.8%	6.8%	5.1%	1.25%	6.35%
2012	3rd	5.9%	6.9%	5.2%	1.25%	6.45%

Q. Are there additional forecasts of interest rates that extend beyond those shown above?

A. Yes, there are. Twice yearly, Blue Chip provides long-term forecasts of interest rates. In its December 1, 2010 publication, Blue Chip published forecasts of interest rates as follows:

	Blue Chip Financial Forecasts		
	Corporate		30-Year
Averages	Aaa-rated	Baa-rated	Treasury
2012-16	6.0%	7.0%	5.3%
2017-21	6.3%	7.2%	5.6%

Given these forecasted interest rates, a 6.00% yield on A-rated public utility bonds represents a conservative expectation.

Q. What equity risk premium have you determined for public utilities?

A. Appendix G provides a discussion of the financial returns that I relied upon to develop the appropriate equity risk premium for the S&P Public Utilities. I have calculated the equity risk premium by comparing the market returns on utility stocks and the market returns on utility bonds. I chose the S&P Public Utility index for the purpose of measuring the market returns for utility stocks. The S&P Public Utility index is reflective of the risk associated with regulated utilities, rather than the broader market indexes, such as the S&P 500 Composite index, of which the S&P Public Utility index

is a subset. Use of the S&P Public Utility index reduces the role of judgment in establishing the risk premium for public utilities. With the equity risk premiums developed for the S&P Public Utilities as a base, I derived the equity risk premium for the Combination Group.

Q. What equity risk premium for the S&P Public Utilities have you determined for this case?

A. To develop an appropriate risk premium, I analyzed the results for the S&P Public Utilities by averaging (i) the midpoint of the range shown by the geometric mean and median and (ii) the arithmetic mean. This procedure has been employed to provide a comprehensive way of measuring the central tendency of the historical returns. As shown by the values set forth on page 2 of Schedule D16 of Exhibit A-4 (PRM-1), the indicated risk premiums for the various time periods analyzed are 5.51% (1928-2007), 6.58% (1952-2007), 6.08% (1974-2007), and 6.37% (1979-2007). The selection of the shorter periods taken from the entire historical series is designed to provide a risk premium that conforms more nearly to present investment fundamentals, and removes some of the more distant data from the analysis.

Q. Do you have further support for the selection of the time periods used in your equity risk premium determination?

A. Yes, I do. First, the terminal year of my analysis presented in Exhibit A-4 (PRM-1), Schedule D16 represents the returns realized through 2007. An update beyond 2007 has not been prepared because of the difficulty obtaining the return on public utility bonds from Lehman Brothers, which is in bankruptcy. Second, the selection of the initial year of each period was based upon the financial market defining events that I note here and describe in Appendix G. These events were fixed in history and cannot be manipulated as later financial data becomes available. That is to say, using the

Treasury-Federal Reserve Accord as a defining event, the year 1952 is fixed as the beginning point for the measurement period regardless of the financial results that subsequently occurred. Likewise, 1974 represented a benchmark year because it followed the 1973 Arab Oil embargo. Also, the year 1979 was chosen because it began the deregulation of the financial markets. I consistently use these periods in my work, and additional data are merely added to the earlier results when they become available. The periods chosen are therefore not driven by the desired results of the study.

Q. What conclusions have you drawn from these data?

A. Using the summary values provided on page 2 of Schedule D16 of Exhibit A-4 (PRM-1), the 1928-2007 period provides the lowest indicated risk premium, while the 1952-2007 period provides the highest risk premium for the S&P Public Utilities. Within these bounds, a common equity risk premium of 6.23% (6.08% + 6.37% = 12.45% ÷ 2) is derived by averaging data covering the periods 1974-2007 and 1979-2007. With this approach, the common equity risk premium that I established is below the results for the 1952-2007 period while above the results for the 1928-2007 period. Therefore, 6.23% represents a reasonable risk premium for the S&P Public Utilities in this case.

As noted earlier in my fundamental risk analysis, differences in risk characteristics must be taken into account when applying the results for the S&P Public Utilities to the Combination Group. I recognized these differences in the development of the equity risk premium in this case. I previously enumerated various differences in fundamentals between the Combination Group and the S&P Public Utilities, including size, market ratios, common equity ratio, return on book equity, operating ratios, coverage, quality of earnings, internally generated funds, and betas. In my opinion, these differences indicate that 5.50% represents a reasonable common equity risk premium in this case. This represents approximately 88% (5.50% ÷ 6.23%

= 0.88) of the risk premium of the S&P Public Utilities and is reflective of the risk of the Combination Group compared to the S&P Public Utilities.

Q. What common equity cost rate did you determine based on your risk premium analysis?

A. The cost of equity (i.e., "k") is represented by the sum of the prospective yield for long-term public utility debt (i.e., "i") that I established on pages 27-29 of my direct testimony, and the equity risk premium (i.e., "RP"). The Risk Premium approach provides a cost of equity of:

	i	+	*RP*	=	*k*
Combination Group	6.00%	+	5.50%	=	11.50%

<u>CAPITAL ASSET PRICING MODEL</u>

Q. Have you used the Capital Asset Pricing Model to measure the cost of equity in this case?

A. Yes. As with other models of the cost of equity, the CAPM contains a variety of assumptions and shortcomings that I discuss in Appendix H. Therefore, this method should be used in conjunction with other methods to measure the cost of equity, as each will complement the other and will provide a result that will help reduce the unavoidable defects found in each method.

Q. What are the features of the CAPM as you have used it?

A. The CAPM uses the yield on a risk-free interest bearing obligation plus a rate of return premium that is proportional to the systematic risk of an investment. The details of my use of the CAPM and evidence in support of my conclusions are set forth in Appendix H. To compute the cost of equity with the CAPM, three components are necessary: a risk-free rate of return ("Rf"), the beta measure of systematic risk ("β"), and the market

risk premium ("Rm-Rf") derived from the total return on the market of equities reduced by the risk-free rate of return. The CAPM specifically accounts for differences in systematic risk (i.e., market risk as measured by the beta) between an individual firm or group of firms and the entire market of equities. As such, to calculate the CAPM it is necessary to employ firms with traded stocks. In this regard, I performed a CAPM calculation for the Combination Group. In contrast, my Risk Premium approach also considers industry- and company-specific factors because it is not limited to measuring only systematic risk. As a consequence, the Risk Premium approach is more comprehensive than the CAPM. In addition, the Risk Premium approach provides a better measure of the cost of equity because it is founded upon the yields on corporate bonds rather than Treasury bonds.

Q. What betas have you considered in the CAPM?

A. For my CAPM analysis, I initially considered the Value Line betas. As shown on page 1 of Exhibit A-4 (PRM-1), Schedule D17, the average beta is 0.70 for the Combination Group.

Q. What betas have you used in the CAPM determined cost of equity?

A. The betas must be reflective of the financial risk associated with the ratesetting capital structure that is measured at book value. Therefore, Value Line betas cannot be used directly in the CAPM, unless those betas are applied to a capital structure measured with market values. To develop a CAPM cost rate applicable to a book value capital structure, the Value Line (market value) betas have been unleveraged and releveraged for the book value common equity ratios using the Hamada formula,[6] as

[6] Robert S. Hamada, "The Effects of the Firm's Capital Structure on the Systematic Risk of Common Stocks" *The Journal of Finance* Vol. 27, No. 2, Papers and Proceedings of the Thirtieth Annual Meeting of the American Finance Association, New Orleans, Louisiana, December 27-29, 1971. (May 1972), pp.435-452

follows:

$$\beta l = \beta u\,[1 + (1 - t)\,D/E + P/E]$$

where ßl = the leveraged beta, ßu = the unleveraged beta, t = income tax rate, D = debt ratio, P = preferred stock ratio, and E = common equity ratio. The betas published by Value Line have been calculated with the market price of stock and therefore are related to the market value capitalization. By using the formula shown above and the capital structure ratios measured at market value, the beta would become 0.45 for the Combination Group if it employed no leverage and was 100% equity financed. With the unleveraged beta as a base, I calculated the leveraged beta of 0.79 for the book value capital structure of the Combination Group. The betas and corresponding common equity ratios are:

Market Values		Book Values	
Beta	Common Equity Ratio	Beta	Common Equity Ratio
0.70	53.88%	0.79	46.62%

The book value leveraged beta that I will employ in the CAPM cost of equity is 0.79 for the Combination Group.

Q. What risk-free rate have you used in the CAPM?

A. For reasons explained in Appendix F, I have considered the yields on 20-year Treasury bonds using historical data. I have also considered forecasts of the yields on 30-year Treasury bonds that are published by Blue Chip. The reason that I used the 20-year Treasury yield in my historical analysis relates to the interruption in the 30-year series, which had no data reported for the 47-months of March 2002 to January 2006. As shown on pages 2 and 3 of Exhibit A-4 (PRM-1), Schedule D17, I provided the historical yields on Treasury notes and bonds. For the twelve months ended April 2011, the average yield was 3.97%, as shown on page 3 of that schedule. For the six- and three-months ended April 2011, the yields on 20-year Treasury bonds were 4.21%

and 4.32%, respectively. During the twelve-months ended April 2011, the range of the yields on 20-year Treasury bonds was 3.47% to 4.42%. As shown on page 4 of Exhibit A-4 (PRM-1), Schedule D17, forecasts published by Blue Chip on May 1, 2011 indicate that the yields on long-term Treasury bonds are expected to be in the range of 4.6% to 5.2% during the next six quarters. The longer term forecasts described previously (see Blue Chip Financial Forecast presented earlier) show that the yields on Treasury bonds will average 5.3% from 2012 through 2016 and 5.6% from 2017 to 2021. For reasons explained previously, forecasts of interest rates should be emphasized at this time in selecting the risk-free rate of return in CAPM. Hence, I have used a 4.75% risk-free rate of return for CAPM purposes, which considers not only the Blue Chip forecasts, but also the recent trend in the yields on long-term Treasury bonds.

Q. What market premium have you used in the CAPM?

A. As shown in Appendix H, the market premium is derived from the SBBI Classic Yearbook (i.e., 6.35%) and the Value Line and S&P 500 returns (i.e., 8.09%). For the historically based market premium, I have used the arithmetic mean. The market premium as averaged from these sources equals 7.22% (6.35% + 8.09% = 14.44% ÷ 2).

Q. Are there adjustments to the CAPM results that are necessary to fully reflect the rate of return on common equity?

A. Yes, there are. The technical literature supports an adjustment relating to the size of a company or portfolio for which the CAPM calculation is performed. Generally, the smaller the firm the higher its risk and, therefore, its required return increases. Moreover, in his discussion of the cost of capital, Professor Brigham has indicated that smaller firms have higher capital costs than otherwise similar larger firms (see

Fundamentals of Financial Management, fifth edition, page 623). Also, the Fama/French study (see "The Cross-Section of Expected Stock Returns"; The Journal of Finance, June 1992) established that the size of a firm helps explain stock returns. In an October 15, 1995 article in Public Utility Fortnightly, entitled “Equity and the Small-Stock Effect,” it was demonstrated that the CAPM can significantly understate a smaller firm’s cost of equity. Indeed, it was demonstrated in the SBBI Yearbook that the returns for stocks in lower deciles (i.e., smaller stocks) had returns in excess of those shown by the simple CAPM. In this regard, the Combination Group has a market-based average equity capitalization of $4.4 billion. For my CAPM analysis, I have adopted a mid-cap adjustment of 1.20%.

Q. What CAPM result have you determined?

A. Using the 4.75% risk-free rate of return, the leverage adjusted beta of 0.79 for the Combination Group, the 7.22% market premium, and the 1.20% size adjustment, I derived the following CAPM-indicated cost of equity:

	Rf	+ (	ß	x (	*Rm-Rf*	)) +	*size*	=	*k*
Combination Group	4.75%	+ (	0.79	x (	7.22%	)) +	1.20%	=	11.65%

<u>COMPARABLE EARNINGS APPROACH</u>

Q. How have you applied the Comparable Earnings approach in this case?

A. The technical aspects of the Comparable Earnings approach are set forth in Appendix I. Because regulation is a substitute for competitively-determined prices, the returns realized by non-regulated firms with comparable risks to a public utility provide useful insight into a fair rate of return. In order to identify the appropriate return, it is necessary to analyze returns earned (or realized) by other firms within the context of the Comparable Earnings standard. The firms selected for the Comparable Earnings approach should be companies whose prices are not subject to cost-based price

ceilings (i.e., non-regulated firms) so that circularity is avoided. There are two avenues available to implement the Comparable Earnings approach. One method would involve the selection of another industry (or industries) with comparable risks to the public utility in question, and the results for all companies within that industry would serve as a benchmark. The second approach requires the selection of parameters that represent similar risk traits for the public utility and the comparable risk companies. Using this approach, the business lines of the comparable companies become unimportant. The latter approach is preferable with the further qualification that the comparable risk companies exclude regulated firms in order to avoid the circular reasoning implicit in the use of the achieved earnings/book ratios of other regulated firms. The United States Supreme Court has held that:

> 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…. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. Bluefield Water Works vs. Public Service Commission, 262 U.S. 668 (1923).

Therefore, it is important to identify the returns earned by firms that compete for capital with a public utility. This can be accomplished by analyzing the returns of non-regulated firms that are subject to the competitive forces of the marketplace.

Q. How have you implemented the Comparable Earnings approach?

A. I selected non-regulated companies from the Value Line Investment Survey for Windows that have six categories (see Appendix I for definitions) of comparability of risk to the Combination Group. These screening criteria were based upon the range

as defined by the rankings of the companies in the Combination Group. The items considered were: Timeliness Rank, Safety Rank, Financial Strength, Price Stability, Value Line betas, and Technical Rank. The identities of the companies comprising the Comparable Earnings group and their associated rankings within the ranges are identified on page 1 of Exhibit A-4 (PRM-1), Schedule D18.

Value Line data was relied upon because it provides a comprehensive basis for evaluating the risks of the comparable firms. As to the returns calculated by Value Line for these companies, there is some downward bias in the figures shown on page 2 of Exhibit A-4 (PRM-1), Schedule D18, because Value Line computes the returns on year-end rather than average book value. If average book values had been employed, the rates of return would have been slightly higher. Nevertheless, these are the returns considered by investors when taking positions in these stocks. Because many of the comparability factors, as well as the published returns, are used by investors in selecting stocks, and to the extent that investors rely on the Value Line service to gauge returns, it is, therefore, an appropriate database for measuring comparable return opportunities.

Q. What data have you used in your Comparable Earnings analysis?

A. I have used both historical realized returns and forecasted returns for non-utility companies. As noted previously, I have not used returns for utility companies in order to avoid the circularity that arises from using regulatory-influenced returns to determine a regulated return. It is appropriate to consider a relatively long measurement period in the Comparable Earnings approach in order to cover conditions over an entire business cycle. A ten-year period (5 historical years and 5 projected years) is sufficient to cover an average business cycle. Unlike the DCF and CAPM, the results of the Comparable Earnings method can be applied directly to the book value capitalization. In other words, the Comparable Earnings approach does not contain

the potential misspecification contained in market models when the market capitalization and book value capitalization diverge significantly. The historical rate of return on book common equity was 11.7% as shown on page 2 of Exhibit A-4 (PRM-1), Schedule D18. The forecast rate of return, as published by Value Line, approximates 12.0%, as indicated on page 2 of Exhibit A-4 (PRM-1), Schedule D18.

Q. What rate of return on common equity have you determined in this case using the Comparable Earnings approach?

A. The average of the historical and forecast median rates of return is:

	Historical	*Forecast*	*Average*
Comparable Earnings Group	11.7%	12.0%	11.85%

As noted previously, I have used the results from the Comparable Earnings method to confirm the results of the market-based models.

CONCLUSION ON COST OF EQUITY

Q. What is your conclusion concerning UPPCO's cost of common equity?

A. Based upon the application of the variety of methods and models described previously, I recommend that the Commission set UPPCO's rate of return on common equity no less than 10.75%.

Q. Does this conclude your direct testimony at this time?

A. Yes, it does.