IV. FUNDAMENTAL RISK ANALYSIS

Q. IS IT NECESSARY TO CONDUCT A FUNDAMENTAL RISK ANALYSIS TO PROVIDE A FRAMEWORK FOR DETERMINING A UTILITY'S COST OF EQUITY?

A. Yes. 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 Monarch's risk have already been discussed. The quantitative risk analysis follows. For this purpose, I have compared Monarch to the Standard & Poor's ("S&P") Public Utilities, an industry-wide proxy consisting of various public utility endeavors, and to the Water 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 companies and natural gas companies. These companies are identified on page 3 of Schedule PRM-4. I have used this group as a broad-based measure of public utility endeavors.

Q. IS KNOWLEDGE OF A UTILITY'S BOND RATING AN IMPORTANT FACTOR IN ASSESSING ITS RISK AND COST OF CAPITAL?

A. Yes. 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

company'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 CREDIT QUALITY RATINGS COMPARE FOR MONARCH, THE WATER GROUP, AND THE S&P PUBLIC UTILITIES?

A. Monarch does not have a credit quality rating because it obtains its long-term debt from CoBank. The credit quality rating for Water Group is A from S&P, and A3 from Moody's. For the S&P Public Utilities, the average composite rating is BBB+ by S&P and A3 by Moody's, respectively. Many of the financial indicators that I will subsequently discuss are considered during the rating process.

Q. HOW DO THE FINANCIAL DATA COMPARE FOR MONARCH, WATER GROUP, AND THE S&P PUBLIC UTILITIES?

A. The broad categories of financial data that I will discuss are shown on Schedules PRM-2, 3, and 4. This analysis covers the years 2010 through 2014. The important categories of relative risk may be summarized as follows:

Size. In terms of capitalization, Monarch is very much smaller than the average size of the Water Group. The average size of the S&P Public Utilities is many times larger than Monarch and the members of the Water Group. 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. As I will demonstrate later, the size of a firm can impact its cost of equity.

Market Ratios. Market-based financial ratios, such as dividend yields, provide a partial measure of the investor-required cost of equity. If all other factors are equal, investors will require a higher return on equity for companies that exhibit

greater risk as compensation 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 and hence, a lower price-earnings ratio.[2]

The five-year average price-earnings multiple was somewhat higher for the Water Group as compared to the S&P Public Utilities. The five-year average dividend yield was lower for the Water Group than for the S&P Public Utilities. On average, the historical market-to-book ratios were higher for the Water Group than for 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 a lower financial risk, while a firm with a low common equity ratio has a higher financial risk. The five-year average common equity ratios, based on permanent capital, were 60.5% for Monarch, 51.3% for the Water Group, and 45.3% for the S&P Public Utilities. I have focused on the common equity ratios calculated from permanent capital because short-term debt is used first to finance construction work in progress. From a financial risk perspective, Monarch has displayed less financial risk than the Water Group. For reasons explained below, hypothetical capital structure ratios will be used in this case for ratesetting purposes. This will align the financial risk of Monarch to the Water Group.

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[2] For example, two otherwise similarly situated firms each reporting $1.00 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 relative 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 coefficient of variation, the greater degree of variability. For the five-year period, the coefficients of variation were -1.541 (5.7% ÷ -3.7%) for Monarch, 0.083 (0.8% ÷ 9.6%) for the Water Group and 0.102 (1.0% ÷ 9.8%) for the S&P Public Utilities. Monarch has experienced very much more variable earned returns than the Water Group. In addition, Monarch has experienced losses during four of the last five years. No similar situation exists for the Water Group, thereby making Monarch much more risky than the Water Group.

Operating Ratios. I have also compared operating ratios (the percentage of revenues consumed by operating expense, depreciation, and taxes other than income).[3] The five-year average operating ratios were 98.2% for Monarch, 70.0% for the Water Group, and 81.3% for the S&P Public Utilities. The high operating ratio for Monarch can be traced to very low, or in some years negative operating margins.

Coverage. The level of fixed charge coverage (i.e., the multiple by which available earnings cover fixed charges, such as interest expense and preferred stock dividends) 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 pre-tax interest coverage (excluding AFUDC) was 0.44 times for Monarch, 3.72 times for the

[3] 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.

Water Group, and 3.19 times for the S&P Public Utilities. Monarch's very low interest coverages signifies, with the exception of 2014, that it was not able to cover its interest expense from operations.

Quality of Earnings. Measures of earnings quality are usually revealed by the percentage of Allowance for Funds Used During Construction ("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 Water Group and the S&P Utilities in recent years. Monarch books negligible income taxes because it is a partnership.

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 109.7% for Monarch, 81.6% for the Water Group, and 87.5% for the S&P Public Utilities. Historically, Monarch's IGF percentage has been extremely variable due to annual construction expenditures that have ranged from $1.7 million to $8.8 million. In the two most recent years, cash flow from depreciation expense has been adequate to finance construction expenditures.

Betas. The financial data I have been discussing relate primarily to company-specific risks. Market risk for firms with 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.[4] 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 average betas of .71 for the Water Group (see page 2 of Schedule PRM-3), and .77 for the S&P Public Utilities (see page 3 of Schedule PRM-4).

Q. PLEASE SUMMARIZE YOUR RISK EVALUATION OF MONARCH AND THE WATER GROUP.

A. The risk of Monarch is vastly greater than that of the Water Group. In almost all respects, historical financial metrics point to much higher risk for Monarch. In the area of financial risk, I have levelized differences in common equity ratios through the use of hypothetical capital structure ratios obtained from the Water Group. As to the cost of equity, the Water Group provides a very conservative basis for measuring Monarch's cost of equity because in most respects Monarch's risk is much higher.

V. CAPITAL STRUCTURE RATIOS

Q. PLEASE EXPLAIN THE SELECTION OF CAPITAL STRUCTURE RATIOS FOR MONARCH.

A. Usually, the capital structure ratios of the utility are employed for rate of return purposes. In the situation when the operating public utility raises its own debt directly in the capital markets, which is the case for Monarch, it is proper to employ the capital structure ratios and senior capital cost rates of the regulated public utility

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[4] The procedure used to calculate the beta coefficient published by Value Line is described on page 3 of Schedule PRM-13. 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.

for rate of return purposes. Furthermore, consistency requires that the embedded cost rate of Monarch's senior securities also be employed. However, in this case, an alternative is required due to the unusual capital structure ratios for Monarch. At year-end 2014, Monarch's capital structure ratios were 33.8% long-term debt and 66.2% partnership equity.

Q. WHAT DO YOU PROPOSE FOR CAPITAL STRUCTURE RATIOS IN THIS CASE?

A. I propose to use 46% long-term debt and 54% common equity. These are the capital structure ratios for the Water Group at year-end 2014, as shown on page 1 of Schedule PRM-3. With these ratios, Monarch's financial risk is equal to that of the Water Group and synchronizes the cost of equity determination for the Water Group with the capital structure ratios that I propose in this case.

VI. COST OF DEBT

Q. WHAT COST RATE HAVE YOU ASSIGNED TO THE LONG-TERM DEBT IN THE CAPITAL STRUCTURE?

A. On page 1 of Schedule PRM-5, I have calculated the 6.45% embedded cost of debt at June 2015. The determination of the cost of debt is essentially an arithmetic exercise. This is due to the fact that Monarch has contracted for the use of this capital for a specific period of time at a specified cost rate. The details leading to the development of the individual effective cost rates for each series of long-term debt, using the yield to maturity ("ytm") technique, are shown on the top panel of data on page 1 of Schedule PRM-5. The ytm is the rate of discount that equates the present value of all future interest and principal payments with the net proceeds of the bond after

recognizing issuance costs. As shown on the bottom panel of data provided on page 1 of Schedule PRM-5, the embedded cost rate of long-term debt is 6.45%.

VII. COST OF EQUITY – GENERAL APPROACH

Q. PLEASE DESCRIBE THE PROCESS YOU EMPLOYED TO DETERMINE THE COST OF EQUITY FOR MONARCH.

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

It is also important to reiterate that no one method or model of the cost of equity can be applied in an isolated manner. Rather, informed judgment must be used to take into consideration the relative risk traits of the firm. It is for this reason that I have used more than one method to measure Monarch's cost of equity. As I describe below, each of the methods used to measure the cost of equity contain certain incomplete and/or overly restrictive assumptions and constraints that are not optimal. 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 Water Group and arrived at a cost of equity of 10.75% for Monarch.

VIII. DISCOUNTED CASH FLOW ANALYSIS

Q. PLEASE DESCRIBE YOUR USE OF THE DISCOUNTED CASH FLOW ("DCF") APPROACH TO DETERMINE THE COST OF EQUITY.

A. 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. The dividend discount equation is the familiar DCF valuation model and assumes future dividends are systematically related to one another by a constant growth rate. 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 DCF equation is sometimes referred to as the "Gordon" model.[5] My DCF results are provided on page 2 of Schedule PRM-1 for the Water Group. The DCF return is 9.89%.

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

[5] Although the popular application of the DCF model is often attributed to the work of Myron J. Gordon in the mid-1950's, J. B. Williams exposited the DCF model in its present form nearly two decades earlier.

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.

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 October 2015, the monthly dividend yields are shown on Schedule PRM-6 and 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).

For the twelve months ended October 2015, the average dividend yield was 2.85% for the Water 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 2.91% and 2.87%, respectively. I have used, for the purpose of the DCF model, the six-month average dividend yield of 2.91% for the Water Group. 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 Water 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 the lower panel of data presented on Schedule PRM-6. This adjustment adds nine basis points to the six-month average historical yield, thus producing the 3.00% adjusted dividend yield for the Water 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). 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 is sometimes represented by the 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. To be complete, the internal growth rate should 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.

Q. DID YOU ASSUME A NON-CONSTANT GROWTH RATE IN YOUR ANALYSIS?

A. No. I acknowledge that growth can also be expressed in multiple stages. When non-constant growth is considered, it usually 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 stabilize 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.

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. 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 COMPANY-SPECIFIC DATA HAVE YOU CONSIDERED IN YOUR GROWTH RATE ANALYSIS?

A. As presented on Schedules PRM-7 and 8, I have considered both historical and projected growth rates in earnings per share, dividends per share, book value per share, and cash flow per share for the Water Group. While analysts will review all measures of growth as I have done, it is earnings per share growth that influences directly the expectations of investors for utility stocks.[6] Forecasts of earnings growth are required within the context of the DCF because the model is a forward-looking concept, and with a constant price-earnings multiple and payout ratio, all other measures of growth will mirror earnings growth. So with the assumptions underlying the DCF, all forward-looking projections should be similar with a constant price-earnings multiple, earned return, and payout ratio.

As to the issue of historical data, investors cannot purchase past earnings of a utility, rather they are only entitled to future earnings. In addition, assigning significant weight to historical performance results in double counting of the historical data. While history cannot be ignored, it is already factored into the analysts' forecasts of earnings growth. In developing a forecast of future earnings growth, an analyst would first apprise himself/herself of the historical performance of a company. Hence, there is no need to count historical growth rates a second time, because historical performance is already reflected in analysts' forecasts which reflect an assessment of how the future will diverge from historical performance.

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[6] Gordon, Gordon & Gould, "Choice Among Methods of Estimating Share Yield," *The Journal of Portfolio Management* (Spring 1989).

Schedule PRM-7 shows the historical growth rates in earnings per share, dividends per share, book value per share, and cash flow per share for the Water Group. The historical growth rates were taken from the Value Line publication that provides these data. As shown on Schedule PRM-7, the historical growth of earnings per share was in the range of 6.36% to 8.00% for the Water Group.

Q. WHAT IS PRESENTED IN SCHEDULE PRM-8?

A. Schedule PRM-8 provides projected earnings per share growth rates taken from analysts' forecasts compiled by IBES/First Call, Zacks, Morningstar, and Value Line. IBES/First Call, Zacks, and Morningstar represent reliable authorities of projected growth upon which investors rely. The IBES/First Call and Zacks 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. First Call probably is quoted most frequently in the financial press when reporting on earnings forecasts. The Value Line forecasts also are widely available to investors and can be obtained by subscription or free-of-charge at most public and collegiate libraries. 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 Schedule PRM-8 for the Water Group.

Q. IS A FIVE-YEAR INVESTMENT HORIZON ASSOCIATED WITH THE ANALYSTS' FORECASTS CONSISTENT WITH THE TRADITIONAL DCF MODEL?

A. Yes. In fact, it illustrates that the infinite form of the DCF model contains an unrealistic assumption. 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, conforms with the type of analysis that influences the actual 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 that extended beyond five years to properly value common stocks, then I am sure that some investment advisory service would begin publishing that information for individual stocks to meet the demands of investors. The absence of such a publication is proof that investors do not require infinite forecasts to purchase and sell stocks in the marketplace.

Q. WHAT DOES SCHEDULE PRM-8 SHOW AS THE PROJECTED GROWTH RATES?

A. As to the five-year forecast growth rates, Schedule PRM-8 indicates that the projected earnings per share growth rates for the Water Group are 5.94% by IBES/First Call, 5.64% by Zacks, 6.46% by Morningstar, and 5.56% by Value Line. As noted 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. From the various alternative measures of growth identified above, earnings per share should receive greatest emphasis. Earnings per share growth are the primary determinant of investors' expectations regarding 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.[7] Hence, to follow Professor Gordon's findings, 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.

The forecasts of earnings per share growth, as shown on Schedule PRM-8, provide a range of average growth rates of 5.56% to 6.46%. Although the DCF growth rates cannot be established solely with a mathematical formulation, it is my opinion that an investor-expected growth rate of 6.00% is a reasonable estimate of investor expected growth within the array of earnings per share growth rates shown by the analysts' forecasts. This improving economic growth argues for a higher DCF growth rate.

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. In the case of the Water Group, those average capital structure ratios are 31.71% long-term debt, 0.07% preferred stock, and 68.22% common equity, as shown on Schedule PRM-9. If book values are used to compute the capital structure ratios, then an adjustment is required.

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7 Gordon, Gordon & Gould, "Choice Among Methods of Estimating Share Yield," *The Journal of Portfolio Management* (Spring 1989).

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 with a book value capital structure used for rate setting purposes, those results will not reflect the higher level of financial risk associated with the book value capital structure. Where, as here, a stock's market price diverges from a utility's book value, the potential exists for a financial risk difference, because the capitalization of a utility measured at its market value contains more equity, less debt and therefore less risk than the capitalization measured at its book value.

This shortcoming of the DCF has persuaded the Pennsylvania Public Utility Commission to adjust the cost of equity upward to make the return consistent with the book value capital structure. Provisions for this risk difference were made by the Pennsylvania Public Utility Commission in the following cases:

Date	Company	Docket Number	Basis Points
January 10, 2002	Pennsylvania-American Water Co.	Docket No. R-00016339	60 basis points
August 1, 2002	Philadelphia-Suburban Water Co.	Docket No. R-00016750	80 basis points
January 29, 2004	Pennsylvania-American Water Co.	Docket No. R-00038304 (affirmed by the Commonwealth Court on November 8, 2004)	60 basis points
August 5, 2004	Aqua Pennsylvania, Inc.	Docket No. R-00061398	60 basis points
December 22, 2004	PPL Electric Utilities Corp.	Docket No. R-000	45 basis points
February 8, 2007	PPL Gas Utilities Corp.	Docket No. R-000	70 basis points

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. PLEASE CONTINUE WITH YOUR DISCUSSION OF THE CALCULATION OF THE LEVERAGE ADJUSTMENT.

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 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 indicated by the market price (P). From the market perspective, the financial risk of the Water Group is accurately measured by the capital structure ratios calculated from the market capitalization of a firm. If the rate setting 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. Because the rate setting 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. This adjustment is developed through precise mathematical calculations, using well recognized analytical procedures that are widely accepted in the financial literature. To arrive at that return, the rate of return on common equity is the unleveraged cost of capital (or equity return at 100% equity) plus one or more terms reflecting the increase in financial risk resulting from the use of leverage in the capital structure. The calculations presented in the lower panel of data shown on Schedule PRM-9, under the heading "M&M," provides a return of 7.92% when applicable to a capital structure with 100% common equity.

Q. ARE THERE SPECIFIC FACTORS THAT INFLUENCE MARKET-TO-BOOK RATIOS THAT DETERMINE WHETHER THE LEVERAGE ADJUSTMENT SHOULD BE MADE?

A. No. The leverage adjustment is not intended, nor was it designed, to address the reasons that stock prices vary from book value. Hence, any observations concerning market prices relative to book are not on point. The leverage adjustment deals with the issue of financial risk and does not transform the DCF result to a book value return through a market-to-book adjustment. Again, the leverage adjustment that I propose is based on the fundamental financial precept that the cost of equity is equal to the rate of return for an unleveraged firm (i.e., where the overall rate of return equates to the cost of equity with a capital structure that contains 100% equity) plus the additional return required for introducing debt and/or preferred stock leverage into the capital structure.

Further, as noted previously, the relatively high market prices of utility stocks cannot be attributed solely to the notion that these companies are expected to earn a return on equity that differs from their cost of equity. Stock prices above book value are common for utility stocks, and indeed the stock prices of non-regulated companies exceed book values by even greater margins. In this regard, according to the Barron's issue of November 23, 2015, the major market indices' market-to-book ratios are well above unity. The Dow Jones Utility index traded at a multiple of 1.74 times book value, which is below the market multiple of other indices. For example, the S&P Industrial index was at 3.75 times book value, and the Dow Jones Industrial index was at 3.26 times book value. It is difficult to accept that the vast majority of

all firms operating in our economy are generating returns far in excess of their cost of capital. Certainly, in our free-market economy, competition should contain such "excesses" if they indeed exist.

Finally, the leverage adjustment adds stability to the final DCF cost rate. That is to say, as the market capitalization increases relative to its book value, the leverage adjustment increases while the simple yield (D/P) plus growth (g) result declines. The reverse is also true that when the market capitalization declines, the leverage adjustment also declines as the simple yield (D/P) plus growth (g) result increases.

Q. IS THE LEVERAGE ADJUSTMENT THAT YOU PROPOSE 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. As shown in the bottom panel of data on Schedule PRM-9, the equity return applicable to the book value common equity ratio

is equal to 7.92%, which is the return for the Water Group applicable to its equity with no debt in its capital structure (i.e., the cost of capital is equal to the cost of equity with a 100% equity ratio) plus 1.97% compensation for having a 45.65% debt ratio, plus 0.00% for having a 0.12% preferred stock ratio. The sum of the parts is 9.89% (7.92% + 1.97% + 0.00%), 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 3.00% dividend yield, the 6.00% growth rate, and the 0.89% for the leverage adjustment to arrive at the same 9.89% (3.00% + 6.00% + 0.89%) return. I know of no means to mathematically solve for the 0.89% leverage adjustment by expressing it in the terms of any particular relationship of market price to book value. The 0.89% adjustment is merely a convenient way to compare the 9.89% return computed directly with the Modigliani & Miller formulas to the 9.00% return generated by the DCF model (i.e., $D_1/P_0 + g$, or the traditional form of the DCF—see page 1 of Schedule PRM-6) based on a market value capital structure. A 9.00% return assigned to anything other than the market value of equity cannot equate to a reasonable return on book value that has higher financial risk. 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.

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 rate setting process rather than the market value equity ratio related to the price of stock. The resulting DCF cost rate is:

	D_1/P_0	+	g	+	*lev.*	=	k
Water Group	3.00%	+	6.00%	+	0.89%	=	9.89%

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.

IX. RISK PREMIUM ANALYSIS

Q. PLEASE DESCRIBE YOUR USE OF THE RISK PREMIUM APPROACH TO DETERMINE THE COST OF EQUITY.

A. With the Risk Premium approach, 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. The result of my Risk Premium study is shown on page 2 of Schedule PRM-1. That result is 11.25%. As with other models used to determine 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.

Q. WHAT LONG-TERM PUBLIC UTILITY DEBT COST RATE DID YOU USE IN YOUR RISK PREMIUM ANALYSIS?

A. In my opinion, a 4.75% yield represents a reasonable estimate of the prospective yield on long-term A-rated public utility bonds.

Q. WHAT HISTORICAL DATA IS SHOWN BY THE MOODY'S DATA?

A. I have analyzed the historical yields on the Moody's index of long-term public utility debt as shown on page 1 of Schedule PRM-10. For the twelve months ended October 2015, the average monthly yield on Moody's index of A-rated public utility bonds was 4.06%. For the six and three-month periods ended October 2014, the yields were 4.32% and 4.31%, respectively. During the twelve-months ended October 2015, the range of the yields on A-rated public utility bonds was 3.58% to 4.40%. Page 2 of Schedule PRM-10 shows the long-run spread in yields between A-rated public utility bonds and long-term Treasury bonds. As shown on page 3 of Schedule PRM-10, the

yields on A-rated public utility bonds have exceeded those on Treasury bonds by 1.23% on a twelve-month average basis, 1.34% on a six-month average basis, and 1.27% on a the three-month average basis. From these averages, 1.00% represents a conservative spread for the yield on A-rated public utility bonds over Treasury bonds.

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 below. 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 November 1, 2015, and a yield spread of 1.00%, derived from historical data.

Q. HOW HAVE YOU USED THESE DATA TO PROJECT THE YIELD ON A-RATED PUBLIC UTILITY BONDS FOR THE PURPOSE OF YOUR RISK PREMIUM ANALYSES?

A. Shown below is my calculation of the prospective yield on A-rated public utility bonds using the building blocks discussed above, i.e., the Blue Chip forecast of Treasury bond yields and the public utility bond yield spread. 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 Forecast				
		Corporate		30-Year	A-rated Public Utility	
Year	Quarter	Aaa-rated	Baa-rated	Treasury	Spread	Yield
2015	Fourth	4.0%	5.2%	2.9%	1.00%	3.90%
2016	First	4.2%	5.3%	3.1%	1.00%	4.10%
2016	Second	4.4%	5.4%	3.3%	1.00%	4.30%
2016	Third	4.6%	5.6%	3.5%	1.00%	4.50%
2016	Fourth	4.7%	5.7%	3.6%	1.00%	4.60%
2017	First	4.9%	5.8%	3.8%	1.00%	4.80%

Q. ARE THERE ADDITIONAL FORECASTS OF INTEREST RATES THAT EXTEND BEYOND THOSE SHOWN ABOVE?

A. Yes. Twice yearly, Blue Chip provides long-term forecasts of interest rates. In its June 1, 2014 publication, Blue Chip published longer-term forecasts of interest rates, which were reported to be:

	Blue Chip Financial Forecasts		
	Corporate		30-Year
Averages	Aaa-rated	Baa-rated	Treasury
2017-2021	5.9%	6.7%	4.8%
2022-2026	6.1%	6.9%	5.0%

The longer term forecasts by Blue Chip suggest that interest rates will move up from the levels revealed by the near term forecasts. By focusing more on the near term forecasts, a 4.75% yield on A-rated public utility bonds represents a conservative benchmark for measuring the cost of equity in this case.

Q. WHAT EQUITY RISK PREMIUM HAVE YOU DETERMINED FOR PUBLIC UTILITIES?

A. To develop an appropriate equity risk premium, I analyzed the results from Stocks, Bonds, Bills and Inflation ("SBBI") 2015 Classic Yearbook published by Ibbotson Associates that is part of Morningstar. My investigation reveals that the equity risk premium varies according to the level of interest rates. That is to say, the equity risk

premium increases as interest rates decline and it declines as interest rates increase. This inverse relationship is revealed by the summary data presented below and shown on page 1 of Schedule PRM-11.

Common Equity Risk Premiums	
Low Interest Rates	7.36%
Average Across All Interest Rates	5.69%
High Interest Rates	3.98%

Based on my analysis of the historical data, the equity risk premium was 7.36% when the marginal cost of long-term government bonds was low (i.e., 3.00%, which was the average yield during periods of low rates). Conversely, when the yield on long-term government bonds was high (i.e., 7.28% on average during periods of high interest rates) the spread narrowed to 3.98%. Over the entire spectrum of interest rates, the equity risk premium was 5.69% when the average government bond yield was 5.12%. With the forecast indicating an upward movement of interest rates that I described above from historically low levels, I have utilized a 6.50% equity risk premium. This equity risk premium is between the 7.36% premium related to periods of low interest rates and the 5.69% premium related to average interest rates across all levels.

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") and the equity risk premium (i.e., "RP"). The Risk Premium approach provides a cost of equity of:

	i	+	RP	=	k
Water Group	4.75%	+	6.50%	=	11.25%

X. CAPITAL ASSET PRICING MODEL

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. As shown on page 2 of Schedule PRM-1, the result of the CAPM is 10.93%. 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.

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 2 of Schedule PRM-3, the average beta is 0.71 for the Water 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 rate setting capital structure that is measured at book value. Therefore, Value Line betas cannot be used directly in the CAPM, unless the cost rate developed using those betas is 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,[8] as 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 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 0.54 for the Water Group if it employed no leverage and was 100% equity financed. Those calculations are shown on Schedule PRM-9 under the section labeled "Hamada" who is credited with developing those formulas. With the unleveraged beta as a base, I calculated the leveraged beta of 0.84 for the book value capital structure of the Water Group. The book value leveraged beta that I will employ in the CAPM cost of equity is 0.84 for the Water Group.

Q. WHAT RISK-FREE RATE HAVE YOU USED IN THE CAPM?

A. As shown on page 1 of Schedule PRM-12, I provided the historical yields on Treasury notes and bonds. For the twelve months ended October 2015, the average yield on 30-year Treasury bonds was 2.83%. For the six- and three-months ended October 2015, the yields on 30-year Treasury bonds were 2.97% and 2.90%, respectively. During the twelve-months ended October 2015, the range of the yields on 30-year Treasury bonds was 2.46% to 3.11%. The low yields that existed during

[8] 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.

recent periods can be traced to the financial crisis and its aftermath commonly referred to as the Great Recession. The resulting decline in the yields on Treasury obligations was attributed to a number of factors, including: the sovereign debt crisis in the euro zone, concern over a possible double dip recession, the potential for deflation, and the Federal Reserve's large balance sheet that was expanded through the purchase of Treasury obligations and mortgage-backed securities (also known as QEI, QEII, and QEIII), and the reinvestment of the proceeds from maturing obligations and the lengthening of the maturity of the Fed's bond portfolio through the sale of short-term Treasuries and the purchase of long-term Treasury obligations (also known as "operation twist"). Essentially, low interest rates were the product of the policy of the FOMC in its attempt to deal with stagnant job growth, which is part of its dual mandate. The FOMC has ended its bond purchasing program.

As shown on page 2 of Schedule PRM-12, forecasts published by Blue Chip on August 1, 2015 indicate that the yields on long-term Treasury bonds are expected to be in the range of 2.9% to 3.8% during the next six quarters. The longer term forecasts described previously show that the yields on 30-year Treasury bonds will average 4.8% from 2017 through 2021 and 5.0% from 2022 to 2026. For the 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 3.75% 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 the lower panel of data presented on page 2 of Schedule PRM-12, the market premium is derived from historical data and the Value Line and S&P 500 returns. For the historically based market premium, I have used the arithmetic mean obtained from the data presented on page 1 of Schedule PRM-11. On that schedule, the market return was 12.21% on large stocks during periods of low interest rates. During those periods, the yield on long-term government bonds was 3.00% when interest rates were low. As I describe above, interest rates are forecast to trend upward in the future. To recognize that trend, I have given weight to the average returns and yields that existed across all interest rate levels. As such, I carried over to page 2 of Schedule PRM-12 the average large common stock returns of 12.14% (12.21% + 12.07% = 24.28% ÷ 2) and the average yield on long-term government bonds of 4.06% (3.00% + 5.12% = 8.12% ÷ 2). These financial returns rest between those experienced during periods of low interest rates and those experienced across all levels of interest rates. The resulting market premium is 8.08% (12.14% - 4.06%) based on historical data, as shown on page 2 of Schedule PRM-12. For the forecast returns, I calculated a 12.03% total market return from the Value Line data and a DCF return of 8.24% for the S&P 500. With the average forecast return of 10.14% (12.03% + 8.24% = 20.27% ÷ 2), I calculated a market premium of 6.39% (10.14% - 3.75%) using forecast data. The market premium applicable to the CAPM derived from these sources equals 7.24% (6.39% + 8.08% = 14.47% ÷ 2).

Q. ARE THERE ADJUSTMENTS TO THE CAPM THAT ARE NECESSARY TO FULLY REFLECT THE RATE OF RETURN ON COMMON EQUITY?

A. Yes. The technical literature supports an adjustment relating to the size of the company or portfolio for which the calculation is performed. As the size of a firm decreases, its risk and 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.[9] 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 could understate the cost of equity significantly according to a company's size. Indeed, it was demonstrated in the SBBI Yearbook that the returns for stocks in lower deciles (i.e., smaller stocks) were in excess of those shown by the simple CAPM. In this regard, the Water Group has a market-based average equity capitalization of $2,085 million. The mid-cap adjustment of 1.10%, as revealed on page 3 of Schedule PRM-12, would be warranted at a minimum. As noted previously, Monarch is a small fraction of the size of the Water Group, which makes it much more risky.

Q. WHAT CAPM RESULT HAVE YOU DETERMINED?

A. Using the 3.75% risk-free rate of return, the leverage adjusted beta of 0.84 for the Water Group, the 7.24% market premium, and the 1.10% size adjustment, the following result is indicated.

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[9] See Fundamentals of Financial Management, Fifth Edition, at 623.

	Rf	+	*β*	*x (Rm-Rf)*	+	*size*	=	*k*
Water Group	3.75%	+	.84	x (7.24%)	+	1.10%	=	10.93%

XI. COMPARABLE EARNINGS APPROACH

Q. HOW HAVE YOU APPLIED THE COMPARABLE EARNINGS APPROACH IN THIS CASE?

A. The Comparable Earnings approach determines the equity return based upon results from non-regulated companies. It is the oldest of all rate of return methods, having been around for about one-century. 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 involves 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 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

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.[10]

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?

To implement the Comparable Earnings approach, non-regulated companies were selected from The Value Line Investment Survey for Windows that have six categories of comparability designed to reflect the risk of the Water Group. These screening criteria were based upon the range as defined by the rankings of the companies in the Water Group. The items considered were: Timeliness Rank, Safety Rank, Financial Strength, Price Stability, Value Line betas, and Technical Rank. The definition for these parameters is provided on page 3 of Schedule PRM-13. The identities of the companies comprising the Comparable Earnings group and their associated rankings within the ranges are identified on page 1 of Schedule PRM-13.

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[10] *Bluefield Water Works & Improvement Co. v. P.S.C. of W. Va.*, 262 U.S. 679, 692-3 (1923).

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 Schedule PRM-13, 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 the fact that investors rely on the Value Line service to gauge returns, it is 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 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 to cover conditions over an entire business cycle. A ten-year period (five historical years and five 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. A point of demarcation was chosen to

eliminate the results of highly profitable enterprises, which the *Bluefield* case stated were not the type of returns that a utility was entitled to earn. For this purpose, I used 20% as the point where those returns could be viewed as highly profitable and should be excluded from the Comparable Earnings approach. And to minimize the effect of a skewed distribution, I removed from the average the returns that were less than 8%. The average historical rate of return on book common equity was 12.3% using only the returns that were less than 20% and above 8%, as shown on page 2 of Schedule PRM-13. The average forecasted rate of return as published by Value Line is 13.8% also using values less than 20% and above 8%, as provided on page 2 of Schedule PRM-13. Using the average of these data my Comparable Earnings result is 13.05%, as shown on page 2 of Schedule PRM-1.

XII. CONCLUSION

Q. WHAT IS YOUR CONCLUSION REGARDING MONARCH'S COST OF COMMON EQUITY?

A. Based upon the application of a variety of methods and models described previously, it is my opinion that the rate of return on common equity is 10.75% for the Water Group. It is essential that the Commission employ a variety of techniques to measure Monarch's cost of equity because of the limitations/infirmities that are inherent in each method. To more closely align Monarch with the Water Group, I have proposed hypothetical capital structure ratios for this case. I view my proposed cost of equity, capital structure ratios, and overall rate of return to be very conservative in this case, because by most measures Monarch displays much higher risk. Therefore, my

proposed rate of return will undoubtedly understate a fair return for Monarch due to its much higher risk profile.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY AT THIS TIME?

A. Yes, it does.

EDUCATIONAL BACKGROUND, BUSINESS EXPERIENCE AND QUALIFICATIONS OF PAUL R. MOUL

I was awarded a degree of Bachelor of Science in Business Administration by Drexel University in 1971. While at Drexel, I participated in the Cooperative Education Program which included employment, for one year, with American Water Works Service Company, Inc., as an internal auditor, where I was involved in the audits of several operating water companies of the American Water Works System and participated in the preparation of annual reports to regulatory agencies and assisted in other general accounting matters.

Upon graduation from Drexel University, I was employed by American Water Works Service Company, Inc., in the Eastern Regional Treasury Department where my duties included preparation of rate case exhibits for submission to regulatory agencies, as well as responsibility for various treasury functions of the thirteen New England operating subsidiaries.

In 1973, I joined the Municipal Financial Services Department of Betz Environmental Engineers, a consulting engineering firm, where I specialized in financial studies for municipal water and wastewater systems.

In 1974, I joined Associated Utility Services, Inc., now known as AUS Consultants. I held various positions with the Utility Services Group of AUS Consultants, concluding my employment there as a Senior Vice President.

In 1994, I formed P. Moul & Associates, an independent financial and regulatory consulting firm. In my capacity as Managing Consultant and for the past forty-one years, I have continuously studied the rate of return requirements for cost of service-regulated firms. In this regard, I have supervised the preparation of rate of return studies, which were employed, in connection with my testimony and in the past for other individuals. I have presented direct

testimony on the subject of fair rate of return, evaluated rate of return testimony of other witnesses, and presented rebuttal testimony.

My studies and prepared direct testimony have been presented before thirty-seven (37) federal, state and municipal regulatory commissions, consisting of: the Federal Energy Regulatory Commission; state public utility commissions in Alabama, Alaska, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Virginia, West Virginia, Wisconsin, and the Philadelphia Gas Commission, and the Texas Commission on Environmental Quality. My testimony has been offered in over 300 rate cases involving electric power, natural gas distribution and transmission, resource recovery, solid waste collection and disposal, telephone, wastewater, and water service utility companies. While my testimony has involved principally fair rate of return and financial matters, I have also testified on capital allocations, capital recovery, cash working capital, income taxes, factoring of accounts receivable, and take-or-pay expense recovery. My testimony has been offered on behalf of municipal and investor-owned public utilities and for the staff of a regulatory commission. I have also testified at an Executive Session of the State of New Jersey Commission of Investigation concerning the BPU regulation of solid waste collection and disposal.

I was a co-author of a verified statement submitted to the Interstate Commerce Commission concerning the 1983 Railroad Cost of Capital (Ex Parte No. 452). I was also co-author of comments submitted to the Federal Energy Regulatory Commission regarding the Generic Determination of Rate of Return on Common Equity for Public Utilities in 1985, 1986

and 1987 (Docket Nos. RM85-19-000, RM86-12-000, RM87-35-000 and RM88-25-000). Further, I have been the consultant to the New York Chapter of the National Association of Water Companies, which represented the water utility group in the Proceeding on Motion of the Commission to Consider Financial Regulatory Policies for New York Utilities (Case 91-M-0509). I have also submitted comments to the Federal Energy Regulatory Commission in its Notice of Proposed Rulemaking (Docket No. RM99-2-000) concerning Regional Transmission Organizations and on behalf of the Edison Electric Institute in its intervention in the case of Southern California Edison Company (Docket No. ER97-2355-000). Also, I was a member of the panel of participants at the Technical Conference in Docket No. PL07-2 on the Composition of Proxy Groups for Determining Gas and Oil Pipeline Return on Equity.

In late 1978, I arranged for the private placement of bonds on behalf of an investor-owned public utility. I have assisted in the preparation of a report to the Delaware Public Service Commission relative to the operations of the Lincoln and Ellendale Electric Company. I was also engaged by the Delaware P.S.C. to review and report on the proposed financing and disposition of certain assets of Sussex Shores Water Company (P.S.C. Docket Nos. 24-79 and 47-79). I was a co-author of a Report on Proposed Mandatory Solid Waste Collection Ordinance prepared for the Board of County Commissioners of Collier County, Florida.

I have been a consultant to the Bucks County Water and Sewer Authority concerning rates and charges for wholesale contract service with the City of Philadelphia. My municipal consulting experience also included an assignment for Baltimore County, Maryland, regarding the City/County Water Agreement for Metropolitan District customers (Circuit Court for Baltimore County in Case 34/153/87-CSP-2636).

Schedules Sponsored

Schedule II-A-2.4 Rate of Return on Net Invested Capital

Schedule II-C-1(1) Rate of Return Method - Hypothetical Capital Structure

Schedule II-C-1(2) Rate of Return Method - Actual Capital Structure

Schedule II-C-2 Requested Weighted Average Cost of Capital

Schedule II-C-3 Preferred Stock

Schedule II-C-4 Long Term Debt

Schedule II-C-5 Weighted Average Cost of Short-Term Debt

Schedule II-C-6 Amortization Schedules for all Short and Long-Term Debt

Schedule II-C-7 Capital Requirements

Schedule II-C-8 Financial Tests and Ratios

Schedule II-C-9.1 Historical Growth In Earnings, Dividends and Book Value

Schedule II-C-9.2 Earnings per Share Calculations

Schedule II-C-10 Rating Agency Reports/Prospectus (Confidential)

Monarch Utilities I, LP
Summary Cost of Capital
As of June 30, 2015

Type of Capital	Ratios	Cost Rate	Weighted Cost Rate
Debt	46.00%	6.45%	2.97%
Equity	54.00%	10.75%	5.81%
Total	100.00%		8.77%

Indicated levels of fixed charge coverage assuming that the Company could actually achieve its overall cost of capital:

Pre-tax coverage of interest expense based upon a 35.000% income tax rate (11.90% ÷ 2.97%)	4.01 x
Post-tax coverage of interest expense (8.77% ÷ 2.97%)	2.96 x

Monarch Utilities I, LP
Cost of Equity
as of October 31, 2015

Market Models (DCF, RP & CAPM)

Discounted Cash Flow (DCF)			D_1/P_0 [1]	+	g [2]	+	*lev.* [3]	=	k	
Water Group			3.00%	+	6.00%	+	0.89%	=	9.89%	
Risk Premium (RP)					I [4]	+	RP [5]	=	k	
Water Group					Schedule PRI Page 1 of 2	+	6.50%	=	#VALUE!	
Capital Asset Pricing Model (CAPM)	Rf [6]	+	β [7]		$x\ (Rm-Rf$ [8]$)$	+	*size* [9]	=	k	
Water Group	3.75%	+	0.84		x (7.24%)	+	1.10%	=	10.93%	

Book Value Method

Comparable Earnings (CE) [10]	***Historical***	***Forecast***	***Average***
Comparable Earnings Group	12.3%	13.8%	13.05%

References
[1] Schedule 5, page 1
[2] Schedule 7, page 1
[3] Schedule 8, page 1
[4] A-rated public utility bond yield comprised of a 3.75% risk-free rate of return (Schedule 11, page 2) and a yield spread of 1.00% (Schedule 9, page 3)
[5] Schedule 10, page 1
[6] Schedule 11, page 2
[7] Schedule 8, page 1
[8] Schedule 11, page 2
[9] Schedule 11, page 3
[10] Schedule 12, page 2

Monarch Utilities I, LP
Capitalization and Financial Statistics
2010-2014, Inclusive

	2014	2013	2012	2011	2010	
			(Millions of Dollars)			
Amount of Capital Employed						
Permanent Capital	$ 79.0	$ 78.4	$ 79.8	$ 63.3	$ 64.2	
Short-Term Debt	$ -	$ -	$ -	$ -	$ -	
Total Capital	$ 79.0	$ 78.4	$ 79.8	$ 63.3	$ 64.2	
Capital Structure Ratios						
Based on Permanent Captial:						Average
Long-Term Debt	33.8%	35.2%	35.8%	46.2%	46.5%	39.5%
Common Equity [1]	66.2%	64.8%	64.2%	53.8%	53.5%	60.5%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Based on Total Capital:						
Total Debt incl. Short Term	33.8%	35.2%	35.8%	46.2%	46.5%	39.5%
Common Equity [1]	66.2%	64.8%	64.2%	53.8%	53.5%	60.5%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Rate of Return on Book Common Equity [1]	2.8%	-0.8%	-11.1%	-1.3%	-7.9%	-3.7%
Operating Ratio [2]	89.4%	97.5%	110.2%	91.9%	102.1%	98.2%
Coverage excl. AFUDC [3]						
Pre-tax: All Interest Charges	2.10 x	0.57 x	-1.11 x	0.87 x	-0.24 x	0.44 x
Post-tax: All Interest Charges	2.06 x	0.63 x	-1.13 x	0.81 x	-0.42 x	0.39 x
Quality of Earnings & Cash Flow						
Effective Income Tax Rate	3.9%	14.3%	-1.1%	-44.4%	-14.3%	-8.3%
Internal Cash Generation/Construction [4]	366.6%	163.3%	-36.1%	35.7%	18.8%	109.7%
Gross Cash Flow/ Avg. Total Debt [5]	22.6%	15.3%	-2.4%	10.6%	2.7%	9.8%
Gross Cash Flow Interest Coverage [6]	5.65 x	5.36 x	0.52 x	2.10 x	1.40 x	3.01 x

See Page 2 for Notes.

Monarch Utilities I, LP
Capitalization and Financial Statistics
2010-2014, Inclusive

Notes:

(1) Excluding Accumulated Other Comprehensive Income ("OCI") from the equity account..

(2) Total operating expenses, maintenance, depreciation and taxes other than income as a percentage of operating revenues.

(3) Coverage calculations represent the number of times available earnings, both including and excluding AFUDC (allowance for funds used during construction) as reported in its entirety, cover fixed charges.

(4) Internal cash generation/gross construction is the percentage of gross construction expenditures provided by internally-generated funds from operations after payment of all cash dividends divided by gross construction expenditures.

(5) Gross Cash Flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less AFUDC) as a percentage of average total debt.

(6) Gross Cash Flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less total AFUDC) plus interest charges, divided by interest charges.

Source of Information: Company's Audited Financial Statements
(Monarch Utilities, Inc. for 2010)

Water Group
Capitalization and Financial Statistics [1]
2010-2014, Inclusive

	2014	2013	2012	2011	2010	Average
			(Millions of Dollars)			
Amount of Capital Employed						
Permanent Capital	$ 1,951.4	$ 1,858.7	$ 1,813.9	$ 1,747.0	$ 1,720.0	
Short-Term Debt	$ 66.7	$ 86.2	$ 55.1	$ 81.1	$ 53.5	
Total Capital	$ 2,018.1	$ 1,944.9	$ 1,869.0	$ 1,828.1	$ 1,773.5	
Market-Based Financial Ratios						
Price-Earnings Multiple	19 x	21 x	19 x	20 x	20 x	20 x
Market/Book Ratio	206.6%	202.1%	184.6%	177.1%	175.9%	189.3%
Dividend Yield	2.9%	2.9%	3.3%	3.5%	3.5%	3.2%
Dividend Payout Ratio	56.0%	63.5%	60.4%	69.9%	67.2%	63.4%
Capital Structure Ratios						
Based on Permanent Capital:						
Long-Term Debt	45.7%	46.3%	49.1%	50.7%	51.0%	48.6%
Preferred Stock	0.1%	0.1%	0.1%	0.2%	0.2%	0.1%
Common Equity [2]	54.2%	53.6%	50.8%	49.2%	48.9%	51.3%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Based on Total Capital:						
Total Debt Incl. Short Term	47.3%	48.0%	50.8%	52.5%	53.5%	50.4%
Preferred Stock	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Common Equity [2]	52.6%	51.9%	49.1%	47.3%	46.3%	49.5%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Rate of Return on Book Common Equity [2]	10.8%	9.6%	9.9%	8.9%	8.9%	9.6%
Operating Ratio [3]	68.2%	70.2%	69.6%	70.4%	71.4%	70.0%
Coverage Incl. AFUDC [4]						
Pre-tax: All Interest Charges	4.43 x	3.95 x	3.66 x	3.41 x	3.39 x	3.77 x
Post-tax: All Interest Charges	3.39 x	3.00 x	2.71 x	2.50 x	2.46 x	2.81 x
Overall Coverage: All Int. & Pfd. Div.	3.37 x	2.99 x	2.70 x	2.49 x	2.45 x	2.80 x
Coverage excl. AFUDC [4]						
Pre-tax: All Interest Charges	4.38 x	3.90 x	3.61 x	3.36 x	3.34 x	3.72 x
Post-tax: All Interest Charges	3.33 x	2.96 x	2.66 x	2.45 x	2.42 x	2.76 x
Overall Coverage: All Int. & Pfd. Div.	3.32 x	2.94 x	2.65 x	2.44 x	2.41 x	2.75 x
Quality of Earnings & Cash Flow						
AFC/Income Avail. for Common Equity	2.2%	2.6%	3.3%	3.7%	3.2%	3.0%
Effective Income Tax Rate	30.6%	32.7%	36.2%	38.1%	38.9%	35.3%
Internal Cash Generation/Construction [5]	94.6%	82.9%	83.9%	78.9%	67.6%	81.6%
Gross Cash Flow/ Avg. Total Debt [6]	26.2%	21.9%	21.3%	19.0%	18.6%	21.4%
Gross Cash Flow Interest Coverage [7]	6.00 x	5.23 x	4.84 x	4.47 x	4.36 x	4.98 x
Common Dividend Coverage [8]	4.24 x	3.92 x	3.94 x	3.82 x	3.74 x	3.93 x

See Page 2 for Notes.

Water Group
Capitalization and Financial Statistics
2010-2014, Inclusive

Notes:

(1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group.
(2) Excluding Accumulated Other Comprehensive Income ("OCI") from the equity account.
(3) Total operating expenses, maintenance, depreciation and taxes other than income taxes as a percent of operating revenues.
(4) Coverage calculations represent the number of times available earnings, both including and excluding AFUDC (allowance for funds used during construction) as reported in its entirety, cover fixed charges.
(5) Internal cash generation/gross construction is the percentage of gross construction expenditures provided by internally-generated funds from operations after payment of all cash dividends divided by gross construction expenditures.
(6) Gross Cash Flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less total AFUDC) plus interest charges, divided by interest charges.
(7) Gross Cash Flow plus interest charges divided by interest charges.
(8) Common dividend coverage is the relationship of internally-generated funds from operations after payment of preferred stock dividends to common dividends paid.

Basis of Selection:
The Water Group companies have the following common characteristics: (i) they are listed in the "Water Utility Industry" section (basic and expanded editions) of The Value Line Investment Survey, (ii) their stock is publicly traded, and (iii) they are not currently the target of a publicly-announced merger or acquisition.

Ticker	Company	Corporate Credit Ratings		Stock	S&P Stock	Value Line
		Moody's	S&P	Traded	Ranking	Beta
AWR	American States Water	A2	A+	NYSE	B+	0.70
AWK	American Water Works Co.	Baa1	A-	NYSE	NR	0.70
WTR	Aqua America, Inc.	-	A+	NYSE	A	0.75
ARTNA	Artesian Resources Corp.	-	-	NASDAQ	NR	0.55
CWT	California Water Serv. Grp.	-	A+	NYSE	A-	0.75
CTWS	Connecticut Water Services	-	A	NASDAQ	A-	0.65
MSEX	Middlesex Water Company	-	A-	NASDAQ	A-	0.75
SJW	SJW Corporation	-	A	NYSE	A-	0.75
YORW	York Water Company	-	A-	NASDAQ	A	0.75
	Average	A3	A		A-	0.71

Note: Ratings are those of utility subsidiaries

Source of Information: Utility COMPUSTAT
Moody's Investors Service
Standard & Poor's Corporation
S&P Stock Guide

Standard & Poor's Public Utilities
Capitalization and Financial Statistics [1]
2010-2014, Inclusive

	2014	2013	2012	2011	2010	Average
			(Millions of Dollars)			
Amount of Capital Employed						
Permanent Capital	$ 23,785.1	$ 22,496.2	$ 21,620.0	$ 18,840.8	$ 17,587.3	
Short-Term Debt	$ 887.5	$ 703.8	$ 648.9	$ 531.4	$ 435.4	
Total Capital	$ 24,672.6	$ 23,200.0	$ 22,268.9	$ 19,372.2	$ 18,022.7	
Market-Based Financial Ratios						
Price-Earnings Multiple	21 x	21 x	18 x	15 x	15 x	18 x
Market/Book Ratio	201 5%	175.8%	164.0%	155.2%	142.8%	167.9%
Dividend Yield	3.6%	3.9%	4.1%	4.4%	4.8%	4.2%
Dividend Payout Ratio	74.3%	81.1%	72.9%	64.7%	72.0%	73.0%
Capital Structure Ratios						
Based on Permanent Captial:						
Long-Term Debt	52.8%	52.7%	52.9%	52.9%	53.4%	52.9%
Preferred Stock	2.7%	1.9%	1.6%	1.3%	1.3%	1.8%
Common Equity [2]	44.4%	45.4%	45.5%	45.8%	45.3%	45.3%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Based on Total Capital:						
Total Debt incl. Short Term	54.7%	54.3%	54.5%	54.5%	54.7%	54.5%
Preferred Stock	2.6%	1.9%	1.6%	1.3%	1.3%	1.7%
Common Equity [2]	42.7%	43.9%	44.0%	44.3%	44.0%	43.8%
	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Rate of Return on Book Common Equity [2]	9.9%	8.4%	9.2%	10.5%	10.8%	9.8%
Operating Ratio [3]	81.0%	81.3%	81.3%	81.4%	81.6%	81.3%
Coverage Incl. AFUDC [4]						
Pre-tax: All Interest Charges	3.57 x	3.24 x	2.94 x	3.35 x	3.34 x	3.29 x
Post-tax: All Interest Charges	2.70 x	2.46 x	2.35 x	2.59 x	2.52 x	2.52 x
Overall Coverage: All Int. & Pfd. Div.	2.67 x	2.43 x	2.32 x	2.57 x	2.50 x	2.50 x
Coverage excl. AFUDC [4]						
Pre-tax: All Interest Charges	3.47 x	3.15 x	2.85 x	3.25 x	3.25 x	3.19 x
Post-tax: All Interest Charges	2.60 x	2.36 x	2.25 x	2.49 x	2.43 x	2.43 x
Overall Coverage: All Int. & Pfd. Div.	2.57 x	2.34 x	2.22 x	2.47 x	2.41 x	2.40 x
Quality of Earnings & Cash Flow						
AFC/Income Avail. for Common Equity	7.6%	7.6%	7.1%	5.7%	6.7%	6.9%
Effective Income Tax Rate	30.2%	35.2%	31.8%	33.5%	34.3%	33.0%
Internal Cash Generation/Construction [5]	85.0%	80.3%	75.0%	89.4%	108.0%	87.5%
Gross Cash Flow/ Avg. Total Debt [6]	23.3%	22.7%	21.9%	23.2%	23.9%	23.0%
Gross Cash Flow Interest Coverage [7]	5.70 x	5.47 x	5.37 x	5.12 x	5.09 x	5.35 x
Common Dividend Coverage [8]	7.00 x	6.38 x	4.31 x	4.58 x	4.88 x	5.43 x

See Page 2 for Notes.

Standard & Poor's Public Utilities
Capitalization and Financial Statistics
2010-2014, Inclusive

Notes:

(1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group.
(2) Excluding Accumulated Other Comprehensive Income ("OCI") from the equity account
(3) Total operating expenses, maintenance, depreciation and taxes other than income taxes as a percent of operating revenues.
(4) Coverage calculations represent the number of times available earnings, both including and excluding AFUDC (allowance for funds used during construction) as reported in its entirety, cover fixed charges.
(5) Internal cash generation/gross construction is the percentage of gross construction expenditures provided by internally-generated funds from operations after payment of all cash dividends divided by gross construction expenditures.
(6) Gross Cash Flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less total AFUDC) as a percentage of average total debt.
(7) Gross Cash Flow (sum of net income, depreciation, amortization, net deferred income taxes and investment tax credits, less total AFUDC) plus interest charges, divided by interest charges.
(8) Common dividend coverage is the relationship of internally-generated funds from operations after payment of preferred stock dividends to common dividends paid.

Source of Information: Annual Reports to Shareholders
Utility COMPUSTAT