Q. PLEASE STATE YOUR FULL NAME, ADDRESS, AND OCCUPATION.

A. My name is J. Randall Woolridge. My business address is 120 Haymaker Circle, State College, PA 16801. I am a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed University Fellow in Business Administration at the University Park Campus of the Pennsylvania State University. I am also the Director of the Smeal College Trading Room and President of the Nittany Lion Fund, LLC. A summary of my educational background, research, and related business experience is provided in Appendix A.

I. SUBJECT OF TESTIMONY AND SUMMARY OF RECOMMENDATIONS

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. I have been asked by the Kentucky Office of Attorney General ("OAG") to provide an opinion as to the overall fair rate of return or cost of capital for Kentucky American Water Company ("KAWC" or "Company") and to evaluate KAWC's rate of return testimony in this proceeding.

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. First I will review my cost of capital recommendation for KAWC, and detail the

primary areas of contention between KAWC's rate of return position and the OAG's. Second, I provide an assessment of capital costs in today's capital markets. Third, I discuss my proxy groups of water utility and gas distribution companies for estimating the cost of capital for KAWC. Fourth, I present my recommendations for the Company's capital structure and debt cost rate. Fifth, I discuss the concept of the cost of equity capital and then estimate the equity cost rate for KAWC. Finally, I critique the Company's rate of return analysis and testimony. I have included a table of contents which provides a more detailed outline.

Q. PLEASE REVIEW YOUR RECOMMENDATIONS REGARDING THE APPROPRIATE RATE OF RETURN FOR KAWC.

A. I have employed the Company's proposed capital structure. I have adjusted the Company's short-term and long-term debt cost rates to reflect current market interest rates. I have applied the Discounted Cash Flow Model ("DCF") and the Capital Asset Pricing Model ("CAPM") to two proxy groups of publicly-held water utility ("Water Proxy Group") and gas distribution companies ("Gas Proxy Group"). My analysis indicates an equity cost rate in the range of 7.3% to 8.6%. Within this range, I have used 8.50% as my equity cost rate for KAWC. I provide evidence in my testimony that this recommendation is consistent with the authorized returns on equity ("ROEs") for water companies.

Using my capital structure and debt and equity cost rates, I am recommending an overall rate of return of 7.07% for KAWC. These findings are summarized in Exhibit JRW-1.

Q. PLEASE SUMMARIZE THE PRIMARY ISSUES REGARDING RATE OF RETURN IN THIS PROCEEDING.

A. The Company's rate of return testimony is offered by Mr. Scott W. Rungren and Dr. James H. Vander Weide. Mr. Rungren provides a recommended capital structure, senior capital cost rates, and overall rate of return. Dr. Vander Weide provides a recommended return on equity. The Company's proposed rate of return is inflated due to overstated debt and equity cost rates. Mr. Rungren short-term debt cost rate is excessive because he has used a projected LIBOR rate that is above current market rates. In his long-term debt cost rate, Mr. Rungen has employed interest rates on pro forma financings that are above current market interest rates.

Dr. James A. Vander Weide provides the Company's equity cost rate. Dr. Vander Weide's estimated common equity cost rate is in the range of 10.4% - 11.4%. Within this range, the Company has requested an equity cost rate of 10.9%. We have both used DCF and CAPM approaches in estimating an equity cost rate for the Company. Dr. Vander Weide has also used a Risk Premium ("RP") approach to estimate an equity cost rate for KAWC. Dr. Vander Weide has applied these approaches to proxy groups of water utility and gas distribution companies.

In terms of the DCF approach, the two major areas of disagreement are (1) the appropriate adjustment to the DCF dividend yield and (2) most significantly, the estimation of the expected growth rate. With respect to the dividend yield adjustment, Dr. Vander Weide has made an inappropriate adjustment to reflect the quarterly payment of dividends. For a DCF growth rate, Dr. Vander Weide has relied exclusively on the forecasted earnings per share ("EPS") growth rates of Wall Street analysts and *Value Line*. I provide empirical evidence from new studies that demonstrate the long-term earnings growth rates of Wall Street analysts are overly optimistic and upwardly-biased. I also show that the estimated long-term EPS growth rates of *Value Line* are overstated. Consequently, in developing a DCF growth rate, I have used both historic and projected growth rate measures and have evaluated growth in dividends, book value, and earnings per share.

The RP and CAPM approaches require an estimate of the base interest rate and the market or equity risk premium. In both approaches, Dr. Vander Weide's base interest rate is above current market rates. However, the major area of disagreement involves our significantly different views on the alternative approaches to measuring the market risk premium as well as the magnitude of equity risk premium. Dr. Vander Weide's market risk premiums are excessive and do not reflect current market fundamentals. As I highlight in my testimony, there are three procedures for estimating a market risk premium – historic returns, surveys, and expected return models. Dr. Vander Weide uses a historical market risk premium which is based on historic stock

and bond returns. He also calculates an expected market risk premium in which he applies the DCF approach to the S&P 500 and public utility stocks. I provide evidence that risk premiums based on historic stock and bond returns are subject to empirical errors which result in upwardly biased measures of expected market risk premiums. I also demonstrate that Dr. Vander Weide's projected market risk premium, which uses analysts' EPS growth rate projections, includes unrealistic assumptions regarding future economic and earnings growth and stock returns. In addition, Dr. Vander Weide makes an unwarranted adjustment to his equity cost rate estimates for flotation costs which inflate his equity cost rate estimates.

In the end, the most significant areas of disagreement in measuring KAWC's cost of capital are: (1) the appropriate short-term and long-term debt cost rates; (3) the use of the earnings per share growth rates of Wall Street analysts and *Value Line* to measure expected DCF growth; (4) the base interest rate in the CAPM and RP approaches; (5) the measurement and magnitude of the market risk premium used in CAPM and RP approaches; and (6) whether or not equity cost rate adjustments are needed to account for flotation costs.

II. CAPITAL COSTS IN TODAY'S MARKETS

Q. PLEASE DISCUSS CAPITAL COSTS IN U.S. MARKETS.

A. Long-term capital cost rates for U.S. corporations are a function of the required returns on risk-free securities plus a risk premium. The risk-free rate of interest is the yield on long-term U.S Treasury yields. The yields on ten-year U.S. Treasury bonds from 1953 to the present are provided on page 1 of Exhibit JRW-2. These yields peaked in the early 1980s and have generally declined since that time. These yields have fallen to historically low levels in recent years due to the financial crisis. In 2008 Treasury yields declined to below 3.0% as a result of the mortgage and subprime market credit crisis, the turmoil in the financial sector, the monetary stimulus provided by the Federal Reserve, and the slowdown in the economy. From 2008 until 2011, these rates fluctuated between 2.5% and 3.5%. Over the past year, the yields on ten-year Treasuries have declined from 2.5% to below 2.0% as the Federal Reserve has continued to support a low interest rate environment and economic uncertainties have persisted.

Panel B on Exhibit JRW-2 shows the differences in yields between ten-year Treasuries and Moody's Baa rated bonds since the year 2000. This differential primarily reflects the additional risk required by bond investors for the risk associated with investing in corporate bonds. The difference also reflects, to some degree, yield curve changes over time. The Baa rating is the lowest of the investment grade bond ratings for corporate bonds. The yield differential hovered in the 2.0% to 3.5% range until 2005, declined to 1.5% until late 2007, and then increased significantly in response to the financial crisis. This differential peaked at 6.0% at the height of the financial crisis in

early 2009, due to tightening in credit markets, which increased corporate bond yields and the "flight to quality," which decreased treasury yields. The differential subsequently declined and has been in the 2.5% to 3.5% range over the past three years.

As previously noted, the risk premium is the return premium required by investors to purchase riskier securities. The risk premium required by investors to buy corporate bonds is observable based on yield differentials in the markets. The market risk premium is the return premium required to purchase stocks as opposed to bonds. The market or equity risk premium is not readily observable in the markets (as are bond risk premiums) since expected stock market returns are not readily observable. As a result, equity risk premiums must be estimated using market data. There are alternative methodologies to estimate the equity risk premium, and these alternative approaches and equity risk premium results are subject to much debate. One way to estimate the equity risk premium is to compare the mean returns on bonds and stocks over long historical periods. Measured in this manner, the equity risk premium has been in the 5% to 7% range. However, studies by leading academics indicate the forward-looking equity risk premium is actually in the 4.0% to 5.0% range. These lower equity risk premium results are in line with the findings of equity risk premium surveys of CFOs, academics, analysts, companies, and financial forecasters.

Q. PLEASE DISCUSS INTEREST RATES AND THE FINANCIAL

CRISIS.

A. The yields on Treasury securities decreased significantly at the onset of the financial crisis and have remained at historically low levels. In fact, these yields have declined to levels not seen since the 1940s. The decline in interest rates reflects several factors, including: (1) the "flight to quality" in the credit markets as investors sought out low risk investments during the financial crisis; (2) the very aggressive monetary actions of the Federal Reserve, which have been aimed at restoring liquidity and faith in the financial system as well as maintaining low interest rates to boost economic growth; and (3) the continuing slow recovery from the recession.

The credit market for corporate and utility debt experienced higher rates due to the credit crisis. The long-term corporate credit markets tightened during the financial crisis, but have improved significantly since 2009. Interest rates on utility and corporate debt have declined to historically low levels. These low rates reflect the monetary policy actions of the Federal Reserve and the weak economy.

Panel A of page 1 of Exhibit JRW-3 provides the yields on 'A' rated public utility bonds. These yields peaked in November 2008 at 7.75% and have since declined to about 4.2% as of February 2013. Panel B of page 1 of Exhibit JRW-3 provides the yield spreads between long-term 'A' rated public utility bonds relative to the yields on 20-year Treasury bonds. These yield spreads increased dramatically in the third quarter of 2008 during the peak of the financial crisis and have decreased significantly since that time. For

example, the yield spreads between 20-year U.S. Treasury bonds and 'A' rated utility bonds peaked at 3.40% in November of 2008, declined to about 1.5% in the summer of 2012, and have since remained in that range.

In sum, while the economy continues to face significant problems, the actions of the government and Federal Reserve had a large effect on the credit markets. The capital costs for utilities, as measured by the yields on 30-year utility bonds, have declined to historically low levels.

Q. ARE INTEREST RATES LIKELY TO REMAIN LOW FOR SOME TIME?

A. Yes. On September 13, 2012, the Federal Reserve released its policy statement relating to Quantitative Easing III ("QE3"). In the statement, the Federal Reserve announced the following:[1]

> To support a stronger economic recovery and to help ensure that inflation, over time, is at the rate most consistent with its dual mandate, the Committee agreed today to increase policy accommodation by purchasing additional agency mortgage-backed securities at a pace of $40 billion per month. The Committee also will continue through the end of the year its program to extend the average maturity of its holdings of securities as announced in June, and it is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities. These actions, which together will increase the Committee's holdings of longer-term securities by about $85 billion each month through the end of the year, should put downward pressure on longer-term interest rates, support mortgage markets, and help to make broader financial conditions more accommodative.

[1] Board of Governors of the Federal Reserve System, "Statement Regarding Transactions in Agency Mortgage-Backed Securities and Treasury Securities," September 13, 2012.

The Federal Reserve also indicated that it intends to keep the target rate for the federal funds rate between 0 to ¼ percent through at least mid-2015. These monetary policy actions of the Federal Reserve, coupled with U.S. economic conditions of slow economic growth, high unemployment, and low inflation, should keep U.S. interest rates and capital costs low for several years. The likelihood that these conditions will keep interest rates and capital costs low for U.S. businesses is reinforced by the economic and political problems in Europe, as the U.S. is viewed as a safe haven for investment capital around the world.

Q. PLEASE ALSO DISCUSS THE FED'S DECEMBER 12, 2012 PRESS RELEASE REGARDING AN EXPANSION OF THE QE3 PROGRAM.

A. On December 12, 2012, the Federal Reserve expanded its bond buying program and tied future monetary policy moves to unemployment rates and the level of interest rates. In the release, the Federal Reserve Board indicated the following:[2]

> Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee remains concerned that, without sufficient policy accommodation, economic growth might not be strong enough to generate sustained improvement in labor market conditions. Furthermore, strains in global financial markets continue to pose significant downside risks to the economic outlook. The Committee also anticipates that inflation over the medium term likely will run at or below its 2 percent objective.
>
> To support a stronger economic recovery and to help ensure that inflation, over time, is at the rate most consistent with its dual mandate, the Committee will continue purchasing additional agency mortgage-backed securities at a pace of $40 billion per month. The Committee also will purchase longer-term Treasury securities after its program to extend the average maturity of its

[2] Board of Governors of the Federal Reserve System, FOMC Statement," December 12, 2012.

> holdings of Treasury securities is completed at the end of the year, initially at a pace of $45 billion per month. The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and, in January, will resume rolling over maturing Treasury securities at auction. Taken together, these actions should maintain downward pressure on longer-term interest rates, support mortgage markets, and help to make broader financial conditions more accommodative.

With respect to tying monetary policy to interest rates and unemployment, the Fed indicated the following:

> In particular, the Committee decided to keep the target range for the federal funds rate at 0 to 1/4 percent and currently anticipates that this exceptionally low range for the federal funds rate will be appropriate at least as long as the unemployment rate remains above 6-1/2 percent, inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal, and longer-term inflation expectations continue to be well anchored. The Committee views these thresholds as consistent with its earlier date-based guidance.

Q. HAS THE FEDERAL RESERVE BOARD RECENTLY UPDATED ITS STANCE ON MONETARY POLICY AND INTEREST RATES?

A. Yes. In the March 20, 2013 Federal Open Market Committee ("FOMC") meeting, the Federal Reserve voted to continue its bond buying program policy and stick with its plan to keep interest rates at historically low levels until unemployment falls to 6.5 percent. In its policy statement, the Federal Reserve acknowledged that the U.S. job market has improved, and that consumer spending and business investment have increased and the housing market has improved. However, the Fed also said it still did not expect unemployment to reach 6.5 percent until 2015.

Q. HOW DO THE CAPITAL COST INDICATORS COMPARE TODAY TO THOSE AT THE TIME OF KAWC'S LAST RATE CASE (CASE NO. 2010-00036)?

A. On page 2 of Exhibit JRW-3, I provide the yields on ten-year Treasury bonds and thirty-year, A-rated utility bonds for the six month periods – March, 2010 to August, 2010, and August 2012 to January 2013. Current interest rates and capital costs are below those at the time of Case No 2010-00036. Panel A of Exhibit JRW-3 shows the yields on ten-year Treasury bonds. The average ten-year Treasury yields for these two periods are 3.32% and 1.74%, respectively. Panel B of page 2 of Exhibit JRW-3 shows the yields on thirty-year, A-rated public utility bonds for the same six month periods. The average yields for these periods are 5.48% and 3.99%, respectively. These yields also indicate a decline in utility capital costs. In both cases, the decline in interest rates and capital costs is about 150 basis points.

Q. OVERALL, WHAT DOES YOUR REVIEW OF THE CAPITAL MARKET CONDITIONS INDICATE ABOUT THE EQUITY COST RATE FOR UTILITIES TODAY.

A. The market data suggests that capital costs for utilities are at historically low levels and are likely to stay low for some time. As shown on page 1 of Exhibit JRW-3, the yield on long-term 'A' rated utility bonds is about 4.2%. In addition, utility bond yields and capital costs are about 150 basis points below their levels at the time of KAWC's last rate case in 2010. As

demonstrated later in my testimony, these lower capital costs are also indicated by the DCF and CAPM data for water utility and gas distribution companies.

III. PROXY GROUP SELECTION

Q. PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING A FAIR RATE OF RETURN RECOMMENDATION FOR KAWC.

A. To develop a fair rate of return recommendation for KAWC, I have evaluated the return requirements of investors on the common stock of a proxy group of publicly-held water utility companies ("Water Proxy Group") and a proxy group of publicly-held gas distribution companies ("Gas Proxy Group").

Q. WHY HAVE YOU EMPLOYED THE RESULTS FOR A PROXY GROUP OF GAS DISTRIBUTION COMPANIES IN YOUR TESTIMONY?

A. I have included an analysis of the results for the Gas Proxy Group in my testimony. I have included these results for two reasons. First, the financial data needed to perform a DCF analysis for the Water Proxy Group is limited. Analysts' coverage of the water companies very is sparse. On the other hand, there is better data available for the Gas Proxy Group to perform a DCF equity cost rate study. Second, the return requirements of investors on gas companies should be similar to that of water companies. Both industries are capital intensive and heavily regulated and provide for the distribution and delivery of an essential commodity whose service rates and rates of return are set by state

regulatory commissions. It should be highlighted, however, that gas distribution companies do face the risk of substitution whereas water companies do not.

Q. PLEASE DESCRIBE YOUR TWO PROXY GROUPS.

A. My Water Proxy Group consists of nine water utility companies that are covered by the *Value Line Investment Survey* and *AUS Utility Reports*. These companies include American States Water Company, American Water Works Company, Aqua American, Inc., Artesian Resources Corporation, California Water Service Group, Connecticut Water Service, Inc., Middlesex Water Company, SJW Corporation, and York Water Company. A summary of financial statistics for the companies in this group are listed in Exhibit JRW-4. The median operating revenues and net plant for the Water Proxy Group are $261.4M and $870.5M, respectively.[3] The group receives 96% of revenues from regulated water operations, has an 'A' bond rating, a common equity ratio of 46.5%, and an earned return on common equity of 9.8%.

My Gas Proxy Group proxy group consists of eight natural gas distribution companies. These companies meet the following selection criteria: (1) listed as a Natural Gas Distribution, Transmission, and/or Integrated Gas Companies in *AUS Utility Reports*; (2) listed as a Natural Gas Utility in the Standard Edition of the *Value Line Investment Survey*; and (3) an investment grade bond rating by Moody's and Standard & Poor's. As shown on page 1 of Exhibit JRW-4, the companies meeting these criteria include AGL Resources,

[3] In my testimony, I present financial results using both mean and medians as measures of central tendency. However, due to outliers, I have used the median as a measure of central tendency.

Atmos Energy Corporation, Laclede Group, Northwest Natural Gas Company, Piedmont Natural Gas Company, South Jersey Industries, Southwest Gas, and WGL Holdings. The only companies that met these criteria and were not included in the group were New Jersey Resources and UGI. These companies were excluded due to their low percentage of revenues from regulated gas operations. Summary financial statistics for the proxy group are listed on page 1 of Exhibit JRW-4. The median operating revenues and net plant for the Gas Proxy Group are $1,545.2M and $2,802.0M, respectively. The group receives 69% of revenues from regulated gas operations, has an 'A2/A3' Moody's bond rating and an 'A/A-' bond rating from Standard & Poor's, a current common equity ratio of 47.7%, and an earned return on common equity of 10.5%.

On page 2 of Exhibit JRW-4, I have assessed the riskiness of the two groups using five different risk measures published by *Value Line*. These measures include Beta, Safety, Financial Strength, Earnings Predictability, and Stock Price Stability. All five of the risk measures suggest that the Gas Proxy Group is less risky than the Water Proxy Group. However, the magnitude of the differences in the risk metrics is not large. Nonetheless, these *Value Line* measures do suggest that that the Gas Proxy Group is a little less risky than the Water Proxy Group.

IV. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES

Q. WHAT CAPITAL STRUCTURE RATIOS HAVE BEEN PROPOSED BY THE COMPANY?

A. Mr. Rungren provides KAWC's proposed capital structure which is a 13-month average. As shown in Panel A of page 1 of Exhibit JRW-5, this capital structure consists of 2.041% short-term debt, 52.037% long-term debt, 1.1168% preferred stock, and 44.754% common equity. He employs short-term and long-term debt cost rates of 0.81% and 6.14% and a preferred stock cost rate of 8.52%.

Q. ARE YOU EMPLOYING KAWC'S PROPOSED CAPITAL STRUCTURE IN DETERMINING YOUR OVERALL RATE OF RETURN?

A. Yes.

Q. WHAT SENIOR CAPITAL COST RATES ARE YOU EMPLOYING?

A. The Company's proposed short-term debt cost rate is based on a projected 1-month LIBOR rate plus a 0.25% borrowing spread to LIBOR. As shown in Panel A of page 2 of Exhibit JRW-5, the current 1-month and 3-month LIBOR rates are 0.20% and 0.28%. Hence, I will use a current LIBOR rate 0.25% plus the borrowing spread to LIBOR of 0.25% for a short-term debt cost rate of 0.50%.

I have used a long-term debt cost rate of 6.05%. This is the long-term debt cost rate computed by the Company in response to Staff 2-45. The calculation is provided in Panel B of page 2 of Exhibit JRW-5. In its recommendation, KAWC had used a projected interest rate on 2013 and 2014 debt issuances of 5.20%. However, on December 17, 2012, American Water Works sold $300 million of senior unsecured notes with a yield of 4.30%. The 6.05% overall long-term debt cost rate uses this 4.30% rate on the 2013 and 2014 debt issuances.

I have employed the Company's recommended 8.52% for preferred stock.

V. THE COST OF COMMON EQUITY CAPITAL

A. Overview

Q. WHY MUST AN OVERALL COST OF CAPITAL OR FAIR RATE OF RETURN BE ESTABLISHED FOR A PUBLIC UTILITY?

A. In a competitive industry, the return on a firm's common equity capital is determined through the competitive market for its goods and services. Due to the capital requirements needed to provide utility services and to the economic benefit to society from avoiding duplication of these services, some public utilities are monopolies. It is not appropriate to permit monopoly utilities to set their own prices because of the lack of competition and the essential nature of the services. Thus, regulation seeks to establish prices that are fair to consumers and, at the same time, are sufficient to meet the operating and

capital costs of the utility (i.e., provide an adequate return on capital to attract investors).

Q. PLEASE PROVIDE AN OVERVIEW OF THE COST OF CAPITAL IN THE CONTEXT OF THE THEORY OF THE FIRM.

A. The total cost of operating a business includes the cost of capital. The cost of common equity capital is the expected return on a firm's common stock that the marginal investor would deem sufficient to compensate for risk and the time value of money. In equilibrium, the expected and required rates of return on a company's common stock are equal.

Normative economic models of the firm, developed under very restrictive assumptions, provide insight into the relationship between firm performance or profitability, capital costs, and the value of the firm. Under the economist's ideal model of perfect competition where entry and exit is costless, products are undifferentiated, and there are increasing marginal costs of production, firms produce up to the point where price equals marginal cost. Over time, a long-run equilibrium is established where price equals average cost, including the firm's capital costs. In equilibrium, total revenues equal total costs, and because capital costs represent investors' required return on the firm's capital, actual returns equal required returns, and the market value and the book value of the firm's securities must be equal.

In the real world, firms can achieve competitive advantage due to product market imperfections. Most notably, companies can gain competitive

advantage through product differentiation (adding real or perceived value to products) and by achieving economies of scale (decreasing marginal costs of production). Competitive advantage allows firms to price products above average cost and thereby earn accounting profits greater than those required to cover capital costs. When these profits are in excess of that required by investors, or when a firm earns a return on equity in excess of its cost of equity, investors respond by valuing the firm's equity in excess of its book value.

James M. McTaggart, founder of the international management consulting firm Marakon Associates, has described this essential relationship between the return on equity, the cost of equity, and the market-to-book ratio in the following manner:[4]

> Fundamentally, the value of a company is determined by the cash flow it generates over time for its owners, and the minimum acceptable rate of return required by capital investors. This "cost of equity capital" is used to discount the expected equity cash flow, converting it to a present value. The cash flow is, in turn, produced by the interaction of a company's return on equity and the annual rate of equity growth. High return on equity (ROE) companies in low-growth markets, such as Kellogg, are prodigious generators of cash flow, while low ROE companies in high-growth markets, such as Texas Instruments, barely generate enough cash flow to finance growth.
>
> A company's ROE over time, relative to its cost of equity, also determines whether it is worth more or less than its book value. If its ROE is consistently greater than the cost of equity capital (the investor's minimum acceptable return), the business is economically

[4] James M. McTaggart, "The Ultimate Poison Pill: Closing the Value Gap," *Commentary* (Spring 1988), p. 2.

> profitable and its market value will exceed book value. If, however, the business earns an ROE consistently less than its cost of equity, it is economically unprofitable and its market value will be less than book value.

As such, the relationship between a firm's return on equity, cost of equity, and market-to-book ratio is relatively straightforward. A firm that earns a return on equity above its cost of equity will see its common stock sell at a price above its book value. Conversely, a firm that earns a return on equity below its cost of equity will see its common stock sell at a price below its book value.

Q. PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE RELATIONSHIP BETWEEN RETURN ON EQUITY AND MARKET-TO-BOOK RATIOS.

A. This relationship is discussed in a classic Harvard Business School case study entitled "A Note on Value Drivers." On page 2 of that case study, the author describes the relationship very succinctly:[5]

> For a given industry, more profitable firms – those able to generate higher returns per dollar of equity – should have higher market-to-book ratios. Conversely, firms which are unable to generate returns in excess of their cost of equity should sell for less than book value.

Profitability	*Value*
If ROE > K	*then Market/Book > 1*
If ROE = K	*then Market/Book =1*
If ROE < K	*then Market/Book < 1*

[5] Benjamin Esty, "A Note on Value Drivers," Harvard Business School, Case No. 9-297-082, April 7, 1997.

To assess the relationship by industry, as suggested above, I have performed a regression study between estimated return on equity and market-to-book ratios using natural gas distribution, electric utility and water utility companies. I used all companies in these three industries that are covered by *Value Line* and have estimated return on equity and market-to-book ratio data. The results are presented in Panels A-C of Exhibit JRW-6. The average R-squares for the electric, gas, and water companies are 0.52, 0.71, and 0.77, respectively.[6] This demonstrates the strong positive relationship between ROEs and market-to-book ratios for public utilities.

Q. WHAT ECONOMIC FACTORS HAVE AFFECTED THE COST OF EQUITY CAPITAL FOR PUBLIC UTILITIES?

A. Exhibit JRW-7 provides indicators of public utility equity cost rates over the past decade.

Page 1 shows the yields on long-term A-rated rated public utility bonds. These yields decreased from 2000 until 2003, and then hovered in the 5.50%-6.50% range from mid-2003 until mid-2008. These yields spiked up to the 7.5% range with onset of the financial crisis, and remained high and volatile until early 2009. These yields have declined since that time from the 6.0% range to the 4.2% range as of February, 2013.

[6] R-square measures the percent of variation in one variable (e.g., market-to-book ratios) explained by another variable (e.g., expected return on equity). R-squares vary between zero and 1.0, with values closer to 1.0 indicating a higher relationship between two variables.

Page 2 provides the dividend yields for the Water and Gas Proxy Groups over the past decade. The dividend yields for both groups have declined slightly over the decade. The Water Proxy Group yields bottomed out at 2.75% in 2006, increased to 3.7% in 2009, and have since declined to 3.4%. The Gas Proxy Group yields bottomed out at 3.75% in 2007, increased to 4.2% in 2009, and have since declined to 3.8%.

Average earned returns on common equity and market-to-book ratios for the two groups are on page 3 of Exhibit JRW-7. For the Water Proxy Group, earned returns on common equity peaked early in the decade at almost 10.5%. Over the past five years, they have been in the 8.0% to 9.0% range. As of 2011, the average ROE for the group was just over 8.0%. The average market-to-book ratios for this group have ranged from 1.5X to 2.3X. As of 2011, the market-to-book average was about 1.75X. For the Gas Proxy Group, earned returns on common equity have been in the 10.0% to 12.0% range. The average ROE as of 2011 was 10.0%. Over the past decade, the average market-to-book ratios for this group have ranged from 1.50X to 1.80X.

Q. WHAT FACTORS DETERMINE INVESTORS' EXPECTED OR REQUIRED RATE OF RETURN ON EQUITY?

A. The expected or required rate of return on common stock is a function of market-wide as well as company-specific factors. The most important market factor is the time value of money as indicated by the level of interest rates in the economy. Common stock investor requirements generally increase and

decrease with like changes in interest rates. The perceived risk of a firm is the predominant factor that influences investor return requirements on a company-specific basis. A firm's investment risk is often separated into business and financial risk. Business risk encompasses all factors that affect a firm's operating revenues and expenses. Financial risk results from incurring fixed obligations in the form of debt in financing its assets.

Q. HOW DOES THE INVESTMENT RISK OF UTILITIES COMPARE WITH THAT OF OTHER INDUSTRIES?

A. Due to the essential nature of their service as well as their regulated status, public utilities are exposed to a lesser degree of business risk than other, non-regulated businesses. The relatively low level of business risk allows public utilities to meet much of their capital requirements through borrowing in the financial markets, thereby incurring greater than average financial risk. Nonetheless, the overall investment risk of public utilities is below most other industries.

Exhibit JRW-8 provides an assessment of investment risk for 100 industries as measured by beta, which according to modern capital market theory, is the only relevant measure of investment risk. These betas come from the *Value Line Investment Survey* and are compiled annually by Aswath Damodoran of New York University.[7] The study shows that the investment risk of utilities is very low. The average beta for electric, water, and gas

[7] *Available* at http://www.stern.nyu.edu/~adamodar.

utility companies are 0.73, 0.66, and 0.66, respectively. These are well below the *Value Line* average of 1.15. As such, the cost of equity for utilities is among the lowest of all industries in the U.S.

Q. HOW CAN THE EXPECTED OR REQUIRED RATE OF RETURN ON COMMON EQUITY CAPITAL BE DETERMINED?

A. The costs of debt and preferred stock are normally based on historical or book values and can be determined with a great degree of accuracy. The cost of common equity capital, however, cannot be determined precisely and must instead be estimated from market data and informed judgment. This return to the stockholder should be commensurate with returns on investments in other enterprises having comparable risks.

According to valuation principles, the present value of an asset equals the discounted value of its expected future cash flows. Investors discount these expected cash flows at their required rate of return that, as noted above, reflects the time value of money and the perceived riskiness of the expected future cash flows. As such, the cost of common equity is the rate at which investors discount expected cash flows associated with common stock ownership.

Models have been developed to ascertain the cost of common equity capital for a firm. Each model, however, has been developed using restrictive economic assumptions. Consequently, judgment is required in selecting appropriate financial valuation models to estimate a firm's cost of common

equity capital, in determining the data inputs for these models, and in interpreting the models' results. All of these decisions must take into consideration the firm involved as well as current conditions in the economy and the financial markets.

Q. HOW DO YOU PLAN TO ESTIMATE THE COST OF EQUITY CAPITAL FOR THE COMPANY?

A. I rely primarily on the DCF model to estimate the cost of equity capital. Given the investment valuation process and the relative stability of the utility business, I believe that the DCF model provides the best measure of equity cost rates for public utilities. It is my experience that this Commission has traditionally relied on the DCF method. I have also performed a CAPM study, but I give these results less weight because I believe that risk premium studies, of which the CAPM is one form, provide a less reliable indication of equity cost rates for public utilities.

B. Discounted Cash Flow Analysis

Q. DESCRIBE THE THEORY BEHIND THE TRADITIONAL DCF MODEL.

A. According to the DCF model, the current stock price is equal to the discounted value of all future dividends that investors expect to receive from investment in the firm. As such, stockholders' returns ultimately result from current as well as future dividends. As owners of a corporation, common stockholders

are entitled to a *pro rata* share of the firm's earnings. The DCF model presumes that earnings that are not paid out in the form of dividends are reinvested in the firm so as to provide for future growth in earnings and dividends. The rate at which investors discount future dividends, which reflects the timing and riskiness of the expected cash flows, is interpreted as the market's expected or required return on the common stock. Therefore, this discount rate represents the cost of common equity. Algebraically, the DCF model can be expressed as:

$$P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \ldots \frac{D_n}{(1+k)^n}$$

where P is the current stock price, D_n is the dividend in year n, and k is the cost of common equity.

Q. IS THE DCF MODEL CONSISTENT WITH VALUATION TECHNIQUES EMPLOYED BY INVESTMENT FIRMS?

A. Yes. Virtually all investment firms use some form of the DCF model as a valuation technique. One common application for investment firms is called the three-stage DCF or dividend discount model ("DDM"). The stages in a three-stage DCF model are presented in Exhibit JRW-9. This model presumes that a company's dividend payout progresses initially through a growth stage, then proceeds through a transition stage, and finally assumes a steady-state stage. The dividend-payment stage of a firm depends on the profitability of its

internal investments, which, in turn, is largely a function of the life cycle of the product or service.

1. Growth stage: Characterized by rapidly expanding sales, high profit margins, and abnormally high growth in earnings per share. Because of highly profitable expected investment opportunities, the payout ratio is low. Competitors are attracted by the unusually high earnings, leading to a decline in the growth rate.

2. Transition stage: In later years increased competition reduces profit margins and earnings growth slows. With fewer new investment opportunities, the company begins to pay out a larger percentage of earnings.

3. Maturity (steady-state) stage: Eventually the company reaches a position where its new investment opportunities offer, on average, only slightly attractive returns on equity. At that time its earnings growth rate, payout ratio, and return on equity stabilize for the remainder of its life. The constant-growth DCF model is appropriate when a firm is in the maturity stage of the life cycle.

In using this model to estimate a firm's cost of equity capital, dividends are projected into the future using the different growth rates in the alternative stages, and then the equity cost rate is the discount rate that equates the present value of the future dividends to the current stock price.

Q. HOW DO YOU ESTIMATE STOCKHOLDERS' EXPECTED OR REQUIRED RATE OF RETURN USING THE DCF MODEL?

A. Under certain assumptions, including a constant and infinite expected growth rate, and constant dividend/earnings and price/earnings ratios, the DCF model can be simplified to the following:

$$P = \frac{D_1}{k - g}$$

where D_1 represents the expected dividend over the coming year and g is the expected growth rate of dividends. This is known as the constant-growth version of the DCF model. To use the constant-growth DCF model to estimate a firm's cost of equity, one solves for k in the above expression to obtain the following:

$$k = \frac{D_1}{P} + g$$

Q. IN YOUR OPINION, IS THE CONSTANT-GROWTH DCF MODEL APPROPRIATE FOR PUBLIC UTILITIES?

A. Yes. The economics of the public utility business indicate that the industry is in the steady-state or constant-growth stage of a three-stage DCF. The economics include the relative stability of the utility business, the maturity of the demand for public utility services, and the regulated status of public utilities (especially the fact that their returns on investment are effectively set through the ratemaking process). The DCF valuation procedure for companies in this stage is the constant-growth DCF. In the constant-growth version of the DCF model, the current dividend payment and stock price are directly observable. However, the primary problem and controversy in applying the

DCF model to estimate equity cost rates entails estimating investors' expected dividend growth rate.

Q. WHAT FACTORS SHOULD ONE CONSIDER WHEN APPLYING THE DCF METHODOLOGY?

A. One should be sensitive to several factors when using the DCF model to estimate a firm's cost of equity capital. In general, one must recognize the assumptions under which the DCF model was developed in estimating its components (the dividend yield and expected growth rate). The dividend yield can be measured precisely at any point in time, but tends to vary somewhat over time. Estimation of expected growth is considerably more difficult. One must consider recent firm performance, in conjunction with current economic developments and other information available to investors, to accurately estimate investors' expectations.

Q. PLEASE DISCUSS EXHIBIT JRW-10.

A. My DCF analysis is provided in Exhibit JRW-10. The DCF summary is on page 1 of this Exhibit, and the supporting data and analysis for the dividend yield and expected growth rate are provided on the following pages of the Exhibit.

Q. WHAT DIVIDEND YIELDS ARE YOU EMPLOYING IN YOUR DCF ANALYSIS FOR THE PROXY GROUPS?

A. The dividend yields on the common stock for the companies in the proxy groups are provided on page 2 of Exhibit JRW-10 for the six-month period

ending March 2013. For the DCF dividend yields for the group, I am using the average of the median six month and March 2013 dividend yields. The table below shows these dividend yields.

	March 2013 Dividend Yield	6-Month Median Dividend Yield	DCF Dividend Yield
Water Proxy Group	**2.9%**	**3.1%**	**3.0%**
Gas Proxy Group	**3.8%**	**3.9%**	**3.9%**

Q. PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE SPOT DIVIDEND YIELD.

A. According to the traditional DCF model, the dividend yield term relates to the dividend yield over the coming period. As indicated by Professor Myron Gordon, who is commonly associated with the development of the DCF model for popular use, this is obtained by: (1) multiplying the expected dividend over the coming quarter by 4, and (2) dividing this dividend by the current stock price to determine the appropriate dividend yield for a firm that pays dividends on a quarterly basis.[8]

In applying the DCF model, some analysts adjust the current dividend for growth over the coming year as opposed to the coming quarter. This can be complicated because firms tend to announce changes in dividends at different times during the year. As such, the dividend yield computed based on presumed growth over the coming quarter as opposed to the coming year

[8] *Petition for Modification of Prescribed Rate of Return*, Federal Communications Commission, Docket No. 79-05, Direct Testimony of Myron J. Gordon and Lawrence I. Gould at 62 (April 1980).

can be quite different. Consequently, it is common for analysts to adjust the dividend yield by some fraction of the long-term expected growth rate.

Q. GIVEN THIS DISCUSSION, WHAT ADJUSTMENT FACTOR WILL YOU USE FOR YOUR DIVIDEND YIELD?

A. I will adjust the dividend yield by one-half (1/2) the expected growth so as to reflect growth over the coming year. This is the approach employed by the Federal Energy Regulatory Commission ("FERC").[9] The DCF equity cost rate ("K") is computed as:

$$K = [(D/P) * (1 + 0.5g)] + g$$

Q. PLEASE DISCUSS THE GROWTH RATE COMPONENT OF THE DCF MODEL.

A. There is much debate as to the proper methodology to employ in estimating the growth component of the DCF model. By definition, this component is investors' expectation of the long-term dividend growth rate. Presumably, investors use some combination of historical and/or projected growth rates for earnings and dividends per share and for internal or book value growth to assess long-term potential.

[9] Opinion No. 414-A, *Transcontinental Gas Pipe Line Corp.*, 84 FERC ¶61,084 (1998).

Q. WHAT GROWTH DATA HAVE YOU REVIEWED FOR THE PROXY GROUPS?

A. I have analyzed a number of measures of growth for companies in the proxy groups. I reviewed *Value Line's* historical and projected growth rate estimates for earnings per share ("EPS"), dividends per share ("DPS"), and book value per share ("BVPS"). In addition, I utilized the average EPS growth rate forecasts of Wall Street analysts as provided by Yahoo, Reuters and Zacks. These services solicit five-year earnings growth rate projections from securities analysts and compile and publish the means and medians of these forecasts. Finally, I also assessed prospective growth as measured by prospective earnings retention rates and earned returns on common equity.

Q. PLEASE DISCUSS HISTORICAL GROWTH IN EARNINGS AND DIVIDENDS AS WELL AS INTERNAL GROWTH.

A. Historical growth rates for EPS, DPS, and BVPS are readily available to investors and are presumably an important ingredient in forming expectations concerning future growth. However, one must use historical growth numbers as measures of investors' expectations with caution. In some cases, past growth may not reflect future growth potential. Also, employing a single growth rate number (for example, for five or ten years), is unlikely to accurately measure investors' expectations due to the sensitivity of a single growth rate figure to fluctuations in individual firm performance as well as overall economic fluctuations (i.e., business cycles). However, one must

appraise the context in which the growth rate is being employed. According to the conventional DCF model, the expected return on a security is equal to the sum of the dividend yield and the expected long-term growth in dividends. Therefore, to best estimate the cost of common equity capital using the conventional DCF model, one must look to long-term growth rate expectations.

Internally generated growth is a function of the percentage of earnings retained within the firm (the earnings retention rate) and the rate of return earned on those earnings (the return on equity). The internal growth rate is computed as the retention rate times the return on equity. Internal growth is significant in determining long-run earnings and, therefore, dividends. Investors recognize the importance of internally generated growth and pay premiums for stocks of companies that retain earnings and earn high returns on internal investments.

Q. PLEASE DISCUSS THE SERVICES THAT PROVDE ANALYSTS' EPS FORECASTS.

A. Analysts' EPS forecasts for companies are collected and published by a number of different investment information services, including Institutional Brokers Estimate System ("I/B/E/S"), Bloomberg, FactSet, Zacks, First Call and Reuters, among others. Thompson Reuters publishes analysts' EPS forecasts under different product names, including I/B/E/S, First Call, and Reuters. Bloomberg, FactSet, and Zacks publish their own set of analysts' EPS forecasts for

companies. These services do not reveal: (1) the analysts who are solicited for forecasts; or (2) the actual analysts who actually provide the EPS forecasts that are used in the compilations published by the services. I/B/E/S, Bloomberg, FactSet, and First Call are fee-based services. These services usually provide detailed reports and other data in addition to analysts' EPS forecasts. Thompson Reuters and Zacks do provide limited EPS forecasts data free-of-charge on the internet. Yahoo finance (http://finance.yahoo.com) lists Thompson Reuters as the source of its summary EPS forecasts. The Reuters website (www.reuters.com) also publishes EPS forecasts from Thompson Reuters, but with more detail. Zacks (www.zacks.com) publishes its summary forecasts on its website. Zack's estimates are also available on other websites, such as msn.money (http://money.msn.com).

Q. PLEASE PROVIDE AN EXAMPLE OF THESE EPS FORECASTS.

A. The following example provides the EPS forecasts compiled by Reuters for American States Water Co. (stock symbol "AWR").

Consensus Earnings Estimates
American States Water Co. **(AWR)**
www.reuters.com
March 7, 2012

	# of Estimates	Mean	High	Low
Earnings (per share)				
Quarter Ending Mar-13	5	0.54	0.59	0.49
Quarter Ending Jun-13	5	0.79	0.85	0.66
Year Ending Dec-13	6	2.68	2.80	2.55
Year Ending Dec-14	3	2.68	2.75	2.55
LT Growth Rate (%)	1	6.00	6.00	6.00

These figures can be interpreted as follows. The top line shows that five analysts have provided EPS estimates for the quarter ending March 31, 2013. The mean, high and low estimates are $0.54, $0.59, and $0.49, respectively. The second line shows the quarterly EPS estimates for the quarter ending June 30, 2013. Lines three and four show the annual EPS estimates for the fiscal years ending December 2013 and 2014. The quarterly and annual EPS forecasts in lines 1-4 are expressed in dollars and cents. As in the AWR case shown here, it is common for more analysts to provide estimates of annual EPS as opposed to quarterly EPS. The bottom line shows the projected long-term EPS growth rate which is expressed as a percentage. For AWR, one analyst has provided long-term EPS growth rate forecasts, with mean, high and low growth rates of 6.00%.

Q. WHICH OF THESE EPS FORECASTS IS USED IN DEVELOPING A DCF GROWTH RATE?

A. The DCF growth rate is the long-term projected growth rate in EPS, DPS, and BVPS. Therefore, in developing an equity cost rate using the DCF model, the projected long-term growth rate is the projection used in the DCF model.

Q. WHY ARE YOU NOT RELYING EXCLUSIVELY ON THE EPS FORECASTS OF WALL STREET ANALYSTS IN ARRIVING AT A DCF GROWTH RATE FOR THE PROXY GROUPS?

A. There are several issues with using the EPS growth rate forecasts of Wall Street analysts as DCF growth rates. First, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Nonetheless, over the very long-term, dividend and earnings will have to grow at a similar growth rate. Therefore, consideration must be given to other indicators of growth, including prospective dividend growth, internal growth, as well as projected earnings growth. Second, a recent study by Lacina, Lee, and Xu (2011) has shown that analysts' long-term earnings growth rate forecasts are not more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.[10] Employing data over a twenty year period, these authors demonstrate that using the most recent year's EPS figure to forecast EPS in the next 3-5 years proved to be just as accurate as using the EPS estimates from analysts' long-term earnings growth rate forecasts. In the authors' opinion, these results indicate that analysts' long-term earnings growth rate forecasts should be used with caution as inputs for valuation and cost of capital purposes. Finally, and most significantly, it is well-known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased. This has been demonstrated in a number of academic studies over the years. This issue is discussed at length in Appendix B of this testimony. Hence, using these growth rates as a DCF growth rate will provide an overstated equity cost rate.

[10] M. Lacina, B. Lee & Z. Xu, *Advances in Business and Management Forecasting (Vol. 8),* Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101.

On this issue, a study by Easton and Sommers (2007) found that optimism in analysts' growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.[11]

Q. IS IT YOUR OPINION THAT STOCK PRICES REFLECT THE UPWARD BIAS IN THE EPS GROWTH RATE FORECASTS?

A. Yes, I do believe that investors are well aware of the bias in analysts' EPS growth rate forecasts, and therefore, stock prices reflect the upward bias.

Q. HOW DOES THAT AFFECT THE USE OF THESE FORECASTS IN A DCF EQUITY COST RATE STUDY?

A. According to the DCF model, the equity cost rate is a function of the dividend yield and expected growth rate. Since stock prices reflect the bias, it would affect the dividend yield. In addition, the DCF growth rate needs to be adjusted downward from the projected EPS growth rate to reflect the upward bias.

Q. PLEASE DISCUSS THE HISTORICAL GROWTH OF THE COMPANIES IN THE PROXY GROUPS AS PROVIDED BY *VALUE LINE*.

A. Page 3 of Exhibit JRW-10 provides the 5- and 10- year historical growth rates for the companies in the groups, as published in the *Value Line Investment Survey*. The historical growth measures in EPS, DPS, and BVPS for the

[11] Peter D. Easton & Gregory A. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts*, 45 J. ACCT. RES. 983–1015 (2007).

Water Proxy Group, as measured by the medians, range from 2.0% to 5.3%, with an average of 3.9%. For the Gas Proxy Group, the historical growth measures in EPS, DPS, and BVPS, as measured by the medians, range from 2.5% to 5.5%, with an average of 4.3%.

Q. PLEASE SUMMARIZE *VALUE LINE'S* PROJECTED GROWTH RATES FOR THE COMPANIES IN THE PROXY GROUPS.

A. *Value Line's* projections of EPS, DPS and BVPS growth for the companies in the proxy groups are shown on page 4 of Exhibit JRW-10. As previous indicated, due to the presence of outliers, the medians are used in the analysis. For the Water Proxy Group, the medians range from 3.0% to 7.0%, with an average of 4.5%. For the Gas Proxy Group, the medians range from 2.8% to 5.5%, with an average of 4.4%.

Also provided on page 4 of Exhibit JRW-10 is prospective sustainable growth for the proxy groups as measured by *Value Line*'s average projected retention rate and return on shareholders' equity. As noted above, sustainable growth is significant and a primary driver of long-run earnings growth. For the Water Proxy Group, the median prospective sustainable growth rate is 4.4%. The median prospective sustainable growth rate for the Gas Proxy Group is 4.4%.

Q. PLEASE ASSESS GROWTH FOR THE PROXY GROUPS AS MEASURED BY ANALYSTS' FORECASTS OF EXPECTED 5-YEAR EPS GROWTH.

A. Yahoo, Zacks, and Reuters collect, summarize, and publish Wall Street analysts' long-term EPS growth rate forecasts for the companies in the proxy groups. These forecasts are provided for the companies in the proxy groups on page 5 of Exhibit JRW-10. The median of analysts' projected EPS growth rates for the Water Proxy Group is 6.0%.[12] The median of analysts' projected EPS growth rates for the Gas Proxy Group is 4.6%.

Q. PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL AND PROSPECTIVE GROWTH OF THE PROXY GROUPS.

A. Page 6 of Exhibit JRW-10 shows the summary DCF growth rate indicators for the proxy groups. The data for the Gas Proxy Group are more complete and provide a better indication of expected growth and the DCF equity cost rate. *Value Line* only has projections for seven of the companies in the Water Proxy Group, and analysts' EPS growth rate forecasts are limited and highly variable.

The historical growth rate indicators for the Water Proxy Group imply a baseline growth rate in the range of 3.9%. The high end of the range for the Water Proxy Group is 6.0% which is the projected EPS growth rates of Wall

[12] Since there is considerable overlap in analyst coverage between the three services, and not all of the companies have forecasts from the different services, I have averaged the expected five-year EPS growth rates from the three services for each company to arrive at an expected EPS growth rate by company.

Street analysts. However, the projected growth rate indicators for the Water Proxy Group are limited in number and variable. The average of the historic, sustainable, and projected growth rate indicators is 4.7%, and the average of the sustainable and projected EPS growth rates is 5.0%. As indicated, analysts' projected EPS growth for the companies in the Water Proxy Group is 6.0%. Focusing primarily on the sustainable and projected growth rate measures, I believe that an expected growth rate in the 5.0% to 6.0% range is appropriate for the Water Proxy Group. Given these figures, I will use the mid-point of this range, 5.5%, as the DCF growth rate for the Water Proxy Group.

The historical growth rate figures for the Gas Proxy Group suggest a baseline growth rate of 4.3% for these companies. The projected and sustainable growth rates from *Value Line* are 4.4% and 4.4% for the group. Analysts projected EPS growth is 4.6%. The average of sustainable and projected EPS growth rate indicators is 4.4%. Giving more weight to the projected growth rate figures, I will use the 4.5% as the DCF growth rate for the Water Proxy Group.

Q. BASED ON THE ABOVE ANALYSIS, WHAT ARE YOUR INDICATED COMMON EQUITY COST RATES FROM THE DCF MODEL FOR THE GROUPS?

A. My DCF-derived equity cost rates for the groups are summarized on page 1 of Exhibit JRW-10.

$$\text{DCF Equity Cost Rate (k)} = \frac{D}{P} + g$$

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Water Proxy Group	**3.0%**	**1.02750**	**5.50%**	**8.60%**
Gas Proxy Group	**3.9%**	**1.02250**	**4.50%**	**8.50%**

C. Capital Asset Pricing Model Results

Q. PLEASE DISCUSS THE CAPITAL ASSET PRICING MODEL ("CAPM").

A. The CAPM is a risk premium approach to gauging a firm's cost of equity capital. According to the risk premium approach, the cost of equity is the sum of the interest rate on a risk-free bond (R_f) and a risk premium (RP), as in the following:

$$k = R_f + RP$$

The yield on long-term Treasury securities is normally used as R_f. Risk premiums are measured in different ways. The CAPM is a theory of the risk and expected returns of common stocks. In the CAPM, two types of risk are associated with a stock: firm-specific risk or unsystematic risk, and market or systematic risk, which is measured by a firm's beta. The only risk that investors receive a return for bearing is systematic risk.

According to the CAPM, the expected return on a company's stock, which is also the equity cost rate (K), is equal to:

$$K = (R_f) + ß * [E(R_m) - (R_f)]$$

Where:

- *K* represents the estimated rate of return on the stock;
- $E(R_m)$ represents the expected return on the overall stock market. Frequently, the 'market' refers to the S&P 500;
- (R_f) represents the risk-free rate of interest;
- $[E(R_m) - (R_f)]$ represents the expected equity or market risk premium—the excess return that an investor expects to receive above the risk-free rate for investing in risky stocks; and
- *Beta*—(ß) is a measure of the systematic risk of an asset.

To estimate the required return or cost of equity using the CAPM requires three inputs: the risk-free rate of interest (R_f), the beta (ß), and the expected equity or market risk premium $[E(R_m) - (R_f)]$. R_f is the easiest of the inputs to measure – it is represented by the yield on long-term Treasury bonds. ß, the measure of systematic risk, is a little more difficult to measure because there are different opinions about what adjustments, if any, should be made to historical betas due to their tendency to regress to 1.0 over time. And finally, an even more difficult input to measure is the expected equity or market risk premium $(E(R_m) - (R_f))$. I will discuss each of these inputs below.

Q. PLEASE DISCUSS EXHIBIT JRW-11.

A. Exhibit JRW-11 provides the summary results for my CAPM study. Page 1 shows the results, and the following pages contain the supporting data.

Q. PLEASE DISCUSS THE RISK-FREE INTEREST RATE.

A. The yield on long-term U.S. Treasury bonds has usually been viewed as the risk-free rate of interest in the CAPM. The yield on long-term U.S. Treasury bonds, in turn, has been considered to be the yield on U.S. Treasury bonds with 30-year maturities.

Q. WHAT RISK-FREE INTEREST RATE ARE YOU USING IN YOUR CAPM?

A. The yield on 30-year Treasury bonds has been in the 2.5% to 4.0% range over 2011 – 2013 time period. These rates are currently in the middle of this range. Given the recent range of yields, and the prospect of higher rates in the future, I will use 4.0%, as the risk-free rate, or R_f, in my CAPM.

Q. WHAT BETAS ARE YOU EMPLOYING IN YOUR CAPM?

A. Beta (ß) is a measure of the systematic risk of a stock. The market, usually taken to be the S&P 500, has a beta of 1.0. The beta of a stock with the same price movement as the market also has a beta of 1.0. A stock whose price movement is greater than that of the market, such as a technology stock, is riskier than the market and has a beta greater than 1.0. A stock with below average price movement, such as that of a regulated public utility, is less risky than the market and has a beta less than 1.0. Estimating a stock's beta involves running a linear regression of a stock's return on the market return.

As shown on page 3 of Exhibit JRW-11, the slope of the regression line is the stock's ß. A steeper line indicates the stock is more sensitive to the return on the overall market. This means that the stock has a higher ß and greater than average market risk. A less steep line indicates a lower ß and less market risk.

Several online investment information services, such as Yahoo and Reuters, provide estimates of stock betas. Usually these services report different betas for the same stock. The differences are usually due to: (1) the time period over which the ß is measured; and (2) any adjustments that are made to reflect the fact that betas tend to regress to 1.0 over time. In estimating an equity cost rate for the proxy group, I am using the betas for the companies as provided in the *Value Line Investment Survey*. As shown on page 3 of Exhibit JRW-11, the median beta for the companies in the Water and Gas Proxy Groups are 0.70 and 0.65,respectively.

Q. PLEASE DISCUSS THE ALTERNATIVE VIEWS REGARDING THE EQUITY RISK PREMIUM.

A. The equity or market risk premium - $(E(R_m) - R_f)$ - is equal to the expected return on the stock market (e.g., the expected return on the S&P 500 ($E(R_m)$ minus the risk-free rate of interest (R_f). The equity premium is the difference in the expected total return between investing in equities and investing in "safe" fixed-income assets, such as long-term government bonds. However,

while the equity risk premium is easy to define conceptually, it is difficult to measure because it requires an estimate of the expected return on the market.

Q. PLEASE DISCUSS THE ALTERNATIVE APPROACHES TO ESTIMATING THE EQUITY RISK PREMIUM.

A. Page 4 of Exhibit JRW-11 highlights the primary approaches to, and issues in, estimating the expected equity risk premium. The traditional way to measure the equity risk premium was to use the difference between historical average stock and bond returns. In this case, historical stock and bond returns, also called ex post returns, were used as the measures of the market's expected return (known as the ex ante or forward-looking expected return). This type of historical evaluation of stock and bond returns is often called the "Ibbotson approach" after Professor Roger Ibbotson who popularized this method of using historical financial market returns as measures of expected returns. Most historical assessments of the equity risk premium suggest an equity risk premium of 5-7 percent above the rate on long-term U.S. Treasury bonds. However, this can be a problem because: (1) ex post returns are not the same as ex ante expectations, (2) market risk premiums can change over time, increasing when investors become more risk-averse and decreasing when investors become less risk-averse, and (3) market conditions can change such that ex post historical returns are poor estimates of ex ante expectations.

The use of historical returns as market expectations has been criticized in numerous academic studies.[13] The general theme of these studies is that the large equity risk premium discovered in historical stock and bond returns cannot be justified by the fundamental data. These studies, which fall under the category "Ex Ante Models and Market Data," compute ex ante expected returns using market data to arrive at an expected equity risk premium. These studies have also been called "Puzzle Research" after the famous study by Mehra and Prescott in which the authors first questioned the magnitude of historical equity risk premiums relative to fundamentals.[14]

In addition, there are a number of surveys of financial professionals regarding the equity risk premium. There have been several published surveys of academics on the equity risk premium. *CFO Magazine* conducts a quarterly survey of CFOs which includes questions regarding their views on the current expected returns on stocks and bonds. Usually over 500 CFOs participate in the survey.[15] Questions regarding expected stock and bond returns are also included in the Federal Reserve Bank of Philadelphia's annual survey of financial forecasters which is published as the *Survey of Professional Forecasters*.[16] This survey of professional economists has been

[13] The problems with using ex post historical returns as measures of ex ante expectations will be discussed at length later in my testimony.

[14] Rajnish Mehra & Edward C. Prescott, *The Equity Premium: A Puzzle*, J. MONETARY ECON. 145 (1985).

[15] *See*, www.cfosurvey.org.

[16] Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters*, (February 15, 2013). The *Survey of Professional Forecasters* was formerly conducted by the American Statistical Association ("ASA") and the National Bureau of Economic Research ("NBER") and was known as the ASA/NBER survey. The survey, which began in 1968, is conducted each quarter. The Federal Reserve Bank of Philadelphia, in cooperation

published for almost 50 years. In addition, Pablo Fernandez conducts occasional surveys of financial analysts and companies regarding the equity risk premiums they use in their investment and financial decision-making.[17]

Q. PLEASE PROVIDE A SUMMARY OF THE EQUITY RISK PREMIUM STUDIES.

A. Derrig and Orr (2003), Fernandez (2007), and Song (2007) have completed the most comprehensive reviews to date of the research on the equity risk premium.[18] Derrig and Orr's study evaluated the various approaches to estimating equity risk premiums as well as the issues with the alternative approaches and summarized the findings of the published research on the equity risk premium. Fernandez examined four alternative measures of the equity risk premium – historical, expected, required, and implied. He also reviewed the major studies of the equity risk premium and presented the summary equity risk premium results. Song provides an annotated bibliography and highlights the alternative approaches to estimating the equity risk summary.

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with the NBER, assumed responsibility for the survey in June 1990.

[17] Pablo Fernandez, Javier Auirreamalloa, and Javier Corres, "Market Risk Premium Used in 82 Countries in 2012: A survey with 7,192 Answers," June 19, 2012.

[18] *See* Richard Derrig & Elisha Orr, "Equity Risk Premium: Expectations Great and Small," Working Paper (version 3.0), Automobile Insurers Bureau of Massachusetts, (August 28, 2003); Pablo Fernandez, "Equity Premium: Historical, Expected, Required, and Implied," IESE Business School Working Paper, (2007); Zhiyi Song, "The Equity Risk Premium: An Annotated Bibliography," CFA Institute, (2007).

Page 5 of Exhibit JRW-11 provides a summary of the results of the primary risk premium studies reviewed by Derrig and Orr, Fernandez, and Song, as well as other more recent studies of the equity risk premium. In developing page 5 of Exhibit JRW-11, I have categorized the studies as discussed on page 4 of Exhibit JRW-11. I have also included the results of the "Building Blocks" approach to estimating the equity risk premium, including a study I performed, which is presented in Appendix C. The Building Blocks approach is a hybrid approach employing elements of both historical and *ex ante* models.

Q. PLEASE DISCUSS PAGE 5 OF EXHIBIT JRW-11.

A. Page 5 of JRW-11 provides a summary of the results of the equity risk premium studies that I have reviewed. These include the results of: (1) the various studies of the historical risk premium, (2) *ex ante* equity risk premium studies, (3) equity risk premium surveys of CFOs, Financial Forecasters, analysts, companies and academics, and (4) the Building Block approaches to the equity risk premium. There are results reported for over thirty studies and the median equity risk premium is 4.93%.

Q. PLEASE HIGHLIGHT THE RESULTS OF THE MORE RECENT RISK PREMIUM STUDIES AND SURVEYS?

A. The studies cited on page 5 of Exhibit JRW-11 include all equity risk premium studies and surveys I could identify that were published over the past

decade and that provided an equity risk premium estimate. Most of these studies were published prior to the financial crisis of the past two years. In addition, some of these studies were published in the early 2000s at the market peak. It should be noted that many of these studies (as indicated) used data over long periods of time (as long as fifty years of data) and so they were not estimating an equity risk premium as of a specific point in time (e.g., the year 2001). To assess the effect of the earlier studies on the equity risk premium, on page 6 of Exhibit JRW-11, I have reconstructed page 5 of Exhibit JRW-11, but I have eliminated all studies dated before January 2, 2010. The median for this subset of studies is 4.83%.

Q. GIVEN THESE RESULTS, WHAT MARKET OR EQUITY RISK PREMIUM ARE YOU USING IN YOUR CAPM?

A. Much of the data indicates that the market risk premium is in the 4.5% to 5.5% range. I use the midpoint of this range, 5.0%, as the market or equity risk premium.

Q. IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH THE EQUITY RISK PREMIUMS USED BY CFOS?

A. Yes. In the March 31, 2013 CFO survey conducted by *CFO Magazine* and Duke University, the expected 10-year equity risk premium was 4.5%.

Q. IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH THE EQUITY RISK PREMIUMS OF PROFESSIONAL FORECASTERS?

A. Yes. The financial forecasters in the previously referenced Federal Reserve Bank of Philadelphia survey project both stock and bond returns. As shown on Panels D and E of page 2 of Exhibit JRW-C1, the median long-term expected stock and bond returns were 6.13% and 3.83%, respectively. This provides an *ex ante* equity risk premium of 2.30% (6.13%-3.83%).

Q. IS YOUR *EX ANTE* EQUITY RISK PREMIUM CONSISTENT WITH THE EQUITY RISK PREMIUMS OF FINANCIAL ANALYSTS AND COMPANIES?

A. Yes. Pablo Fernandez recently published the results of a 2012 survey of financial analysts and companies.[19] This survey included over 7,000 responses. The median equity risk premium employed by U.S. analysts and companies was 5.0% and 5.5%, respectively.

Q. IS YOUR EX ANTE EQUITY RISK PREMIUM CONSISTENT WITH THE EQUITY RISK PREMIUMS USED BY THE LEADING CONSULTING FIRMS?

A. Yes. McKinsey & Co. is widely recognized as the leading management consulting firm in the world. It published a study entitled "The Real Cost of

[19] Pablo Fernandez, Javier Auirreamalloa, and Javier Corres, "Market Risk Premium Used in 82 Countries in 2012: A survey with 7,192 Answers," June 19, 2012.

Equity" in which the McKinsey authors developed an *ex ante* equity risk premium for the U.S. In reference to the decline in the equity risk premium, as well as what is the appropriate equity risk premium to employ for corporate valuation purposes, the McKinsey authors concluded the following:

> We attribute this decline not to equities becoming less risky (the inflation-adjusted cost of equity has not changed) but to investors demanding higher returns in real terms on government bonds after the inflation shocks of the late 1970s and early 1980s. We believe that using an equity risk premium of 3.5 to 4 percent in the current environment better reflects the true long-term opportunity cost of equity capital and hence will yield more accurate valuations for companies.[20]

Q. WHAT EQUITY COST RATE IS INDICATED BY YOUR CAPM ANALYSIS?

A. The results of my CAPM study for the proxy groups are provided below:

$$K = (R_f) + ß * [E(R_m) - (R_f)]$$

	Risk-Free Rate	Beta	Equity Risk Premium	Equity Cost Rate
Water Proxy Group	**4.00%**	**0.70**	**5.0%**	**7.5%**
Gas Proxy Group	**4.00%**	**0.65**	**5.0%**	**7.3%**

These results are summarized on page 1 of Exhibit JRW-11.

VI. EQUITY COST RATE SUMMARY

[20] Marc H. Goedhart, *et al.*, "The Real Cost of Equity," *McKinsey on Finance* (Autumn 2002), p. 15.

Q. PLEASE SUMMARIZE YOUR EQUITY COST RATE STUDY.

A. The results for my DCF and CAPM analyses for the proxy group of gas distribution are indicated below:

	DCF	CAPM
Water Proxy Group	**8.6%**	**7.5%**
Gas Proxy Group	**8.5%**	**7.3%**

Q. GIVEN THESE RESULTS, WHAT IS YOUR ESTIMATED EQUITY COST RATE FOR THE GROUPS?

A. Given these results, I conclude that the appropriate equity cost rate for the Water and Gas Proxy Groups is in the 7.3% to 8.6% range. However, since I given greater weight to the DCF model, I am using an equity cost rate in the upper end of this range. Therefore, I conclude that the appropriate equity cost rate is 8.5%.

Q. WHY DO YOU BELIEVE THAT THE DCF RESULTS FOR THE GAS PROXY GROUP PROVIDE A BENCHMARK AS TO THE TO THE EQUITY COST RATE FOR WATER COMPANIES?

A. I do believe that the equity cost rate results for the gas companies provide an indicator as to the appropriate equity cost rate for water companies. As noted above, the data for the Water Proxy Group are limited. In particular, there are very few analysts who cover the water companies. Also, the projected EPS growth rates for the companies in the Water Proxy Group are variable are questionable in some cases. In addition, as I highlight in my testimony, it is well known that the long-term projected EPS growth rates of Wall Street

analysts are overly optimistic and upwardly biased. As a result, the DCF equity cost rate for the Water Proxy Group is dependent on the projected EPS growth rates of a few Wall Street analysts who have a tendency to be optimistic in their forecasts.

Q. DO YOU HAVE ANY OTHER THOUGHTS ON WHY AN 8.50% RETURN ON EQUITY IS APPROPRIATE AT THIS TIME?

A. Yes. There are several reasons why an 8.50% return on equity is appropriate for KAWC in this case. First, as shown on in Exhibit JRW-8, the water utility is the lowest risk industry as ranked by Beta in *Value Line*. As such, water companies have the lowest cost of equity capital of any industry in the U.S. according to the CAPM. Second, as shown in Exhibit JRW-3, capital costs for utilities, as indicated by long-term bond yields, have declined to historically low levels. The current yield on 30-year, A rated utility bonds is about 4.0%. Finally, while the financial markets have recovered over the past four years, the economy has not. The economic times are viewed as being difficult, with almost eight percent unemployment. With the weak economy, interest rates and inflation are at low levels, and hence the expected returns on financial assets – from savings accounts to Treasury Bonds to common stocks – are low. Therefore, in my opinion, an 8.50% return is a very fair and reasonable for a regulated water utility company.

Q. DO YOU BELIEVE THAT YOUR 8.50% RECOMMENDATION IS CONSISTENT WITH THE AUTHORIZED RETURNS ON EQUITY FOR WATER COMPANIES?

A. Yes. Page 1 of Exhibit JRW-12 provides the most recent authorized ROEs for the publicly-traded water companies as reported by *AUS Utilities Reports*. The range of the authorized ROEs is 9.61% to 10.33%, and the average is 9.98%. Given that a number of these reported authorized ROEs are dated, and the lower capital costs indicated by the lower yields on utility bonds (see page 1 of Exhibit JRW-3, I believe that my 8.50% ROE recommendation is consistent with the reported authorized ROEs for water companies.

Q. PLEASE DISCUSS YOUR STUDY OF EARNED VERSUS AUTHORIZED ROES FOR WATER COMPANIES.

A. Page 2 of Exhibit JRW-12 provides the results of my study of the authorized and earned ROEs for publicly-traded water utility companies and their associated market-to-book ratios over the past decade. Panel A provides the annual data, and the data are presented graphically on Panel B. The average authorized ROE was 10.63% in 2002, and has consistently declined over the past ten years. As of 2011, this figure was 9.98%. Earned ROEs have also declined over the decade, and have been below authorized ROEs for nine of the past ten years. On average, earned ROEs have been about 100 basis points below authorized ROEs. As of 2011, the average earned ROE was 8.47%.

Q. HAVE THESE RETURNS BEEN ADEQUATE TO MEET INVESTOR RETURN REQUIREMENTS?

A. Yes. I have also provided the average annual market-to-book ratios for publicly-traded water utility companies as well as the authorized and earned ROEs on page 2 of Exhibit JRW-12. The annual market-to-book ratios have declined over the decade, but with considerable variability. The peak was 2.59X in 2006. In the past three years, the average annual market-to-book ratios for publicly-traded water utility companies have been in the 1.80X to 1.90X range. Overall, the market-to-book ratios for publicly-traded water utility companies data indicate that the earned ROEs have been more than adequate to meet investors' return requirements. It is also noteworthy that the market-to-book ratios for publicly-traded water utility companies have been above the market-to-book ratios for gas distribution and electric utility companies.

Q. PLEASE DISCUSS THE PERFORMANCE OF KAWC RELATIVE TO YOUR WATER PROXY GROUP.

A. On page 3 of Exhibit JRW-12, I have plotted the earned ROEs for KAWC and the average of the Water Proxy Group for the five years 2007-2011. These results suggest that KAWC have been earning higher ROEs than the average of the group in recent years.

Q. FINALLY, DOES THE SMALL SIZE OF KAWC SUGGEST THAT THE COMPANY IS RISKIER?

A. No, not necessarily. Standard & Poor's released a report and addressed the issue of water company size and risk. The Standard & Poor's publication indicated the following.[21]

> "Our criteria revision reflects our view that for general obligation ratings, a small and/or rural issuer does not necessarily have what we consider weaker credit quality than a larger or more-urban issuer. Although we assess these factors in our credit analysis for some revenue bond ratings, we believe many municipal systems still exhibit, in our view, strong and stable credit quality despite size or location constraints. While we believe that smaller or rural utility systems may not necessarily benefit from the economies of scale that can lead to more-efficient operations or lower costs, in our view, they can still have affordable rates, even in places with less-than-favorable household income and wealth levels."

VI. CRITIQUE OF KAWC'S RATE OF RETURN TESTIMONY

Q. PLEASE SUMMARIZE KAWC'S RATE OF RETURN REQUEST FOR KAWC.

A. KAWC's cost of capital recommendation is provided on page 1 of Exhibit JRW-13. The company is requesting a capital structure from investor sources consisting of 2.04% short-term debt, 52.04% long-term debt, 1.17% preferred stock, and 44.75% common equity. The Company uses short-term debt, long-term debt and preferred stock cost rates of 0.81%, 6.14%, and 8.52% and an equity cost rate of 10.90%.

[21] Standard & Poor's, "26 Weste Water and Sewer Issuers are Upgraded on Revised Criteria," January 12, 2009.

Q. WHAT ISSUES DO YOU HAVE WITH THE COMPANY'S COST OF CAPITAL POSITION?

A. I have issues with the Company's short-term and long-term debt cost rates, and most significantly, the equity cost rate. The debt cost rates were previously discussed. I will focus below on Dr. Vander Weide's equity cost rate of 10.9%.

A. <u>Equity Cost Rate</u>

Q. PLEASE REVIEW DR. VANDER WEIDE'S EQUITY COST RATE APPROACHES.

A. Dr. Vander Weide estimates an equity cost rate for KAWC using the results for two proxy groups and employs DCF, RP, and CAPM equity cost rate approaches.

Q. PLEASE SUMMARIZE DR. VANDER WEIDE'S EQUITY COST RATE RESULTS.

A. Dr. Vander Weide's equity cost rate estimates for KAWC are summarized in Panel A of page 2 of Exhibit JRW-13. Based on these figures, he concludes that the appropriate equity cost rate is in the range of 10.4% to 11.4%. The Company has used 10.9% as an equity cost rate in its rate filing.

Q. PLEASE DISCUSS YOUR ISSUES WITH DR. VANDER WEIDE'S REQUESTED EQUITY COST RATE.

A. Dr. Vander Weide's requested return on common equity is too high primarily due to: (1) the exclusion of some water companies in his water group, and the inclusion of one inappropriate company in his gas group; (2) an excessive adjustment to the dividend yield in his DCF approach; (3) an inflated growth rate in his DCF approach; (4) the use of market-value weights in his DCF equity cost rate analysis; (5) excessive base interest rates and market risk premiums in his RP and CAPM approaches; (6) he has ignored his CAPM equity cost rate results; and (7) unwarranted flotation cost adjustments to his equity cost rate results.

1. Proxy Groups

Q. PLEASE REVIEW DR. VANDER WEIDE'S WATER GROUP.

A. Dr. Vander Weide has used a group of six water companies and a proxy group of seven gas distribution companies. All of the companies in his water group are also in my Water Proxy Group. He has not included Artesian Resources Corp., Connecticut Water Service Group, or York Water Company.

Q. DO YOU BELIEVE THAT DR. VANDER WEIDE'S HAS ERRED IN EXCLUDING THOSE THREE WATER COMPANIES?

A. Yes, for two reasons. First, I believe that a proxy group of only six companies is on the small side to estimate an equity cost rate. Second, and more significantly, he has excluded the three smallest water companies. Given the small size of KAWC, I believe that these three companies should be included

in a proxy group of water companies.

Q. PLEASE EVALUATE DR. VANDER WEIDE'S GAS GROUP.

A. Dr. Vander Weide has also used a proxy group of seven gas distribution companies. Six of these companies are included in my Gas Proxy Group. However, I disagree with his inclusion of the other company in group, NiSource. NiSource ("NI") has a riskier operating and financial profile than gas distribution companies. NI receives 28% of revenues from electric utility operations, has a common equity ratio of 40% and an S&P bond rating of BBB-, and is listed as a combination electric and gas company by *AUS Utilities Report*.

2. DCF Approach

Q. PLEASE SUMMARIZE DR. VANDER WEIDE'S DCF ESTIMATES.

A. On pages 17-32 of his testimony and in Schedules 1 and 2 of Exhibit No. __(JVW-1), Dr. Vander Weide develops an equity cost rate by applying a DCF model to his groups of water and gas companies. In the traditional DCF approach, the equity cost rate is the sum of the dividend yield and expected growth. Dr. Vander Weide adjusts the spot dividend yield to reflect the quarterly payment of dividends. Dr. Vander Weide uses one measure of DCF expected growth - the projected EPS growth rate. He averages the EPS growth rate forecasts from (1) Wall Street analysts as provided by I/B/E/S and (2) *Value Line*. He also includes a flotation cost adjustment of five percent. Dr. Vander

Weide's DCF results are provided in Panel B of page 2 of Exhibit JRW-13. Based on these figures, Dr. Vander Weide claims that the DCF equity cost rate for the water and gas groups are 10.5% and 10.4%, respectively.

Q. WHAT ARE THE ERRORS IN DR. VANDER WEIDE'S DCF ANALYSES?

A. There are five errors: (1) the composition of the proxy companies, which was previously discussed; (2) the quarterly dividend yield adjustment is excessive; (3) the projected DCF growth rate is based entirely on overly optimistic and upwardly-biased EPS growth rate estimates of Wall Street analysts and *Value Line;* (4) the market-value weighting of the DCF equity cost rate results; and (5) the flotation cost adjustment is inappropriate. The proxy groups were addressed above. The other issues are discussed below.

DCF Dividend Yield Adjustment

Q. PLEASE DISCUSS THE ADJUSTMENT TO THE DIVIDEND YIELD TO REFLECT THE QUARTERLY PAYMENT OF DIVIDENDS.

A. Dr. Vander Weide uses DCF dividend yields of 3.25% for the water group and 4.8% for the gas group. In Appendix 2 of his testimony, Dr. Vander Weide discusses the adjustments he makes to his spot dividend yields to account for the quarterly payment of dividends. This includes an adjustment to reflect the time value of money. The quarterly timing adjustment is in error and results in an

overstated equity cost rate. First, as discussed above, the appropriate dividend yield adjustment for growth in the DCF model is the expected dividend for the next quarter multiplied by four. The quarterly adjustment procedure is inconsistent with this approach.

Second, Dr. Vander Weide's approach presumes that investors require additional compensation during the coming year because their dividends are paid out quarterly instead of being paid all in a lump sum. Therefore, he compounds each dividend to the end of the year using the long-term growth rate as the compounding factor. The error in this logic and approach is that the investor receives the money from each quarterly dividend and has the option to reinvest it as he or she chooses. This reinvestment generates its own compounding, but it is outside of the dividend payments of the issuing company. Dr. Vander Weide's approach serves to duplicate this compounding process, thereby inflating the return to the investor. Finally, the notion that an adjustment is required to reflect the quarterly timing issue is refuted in a study by Richard Bower of Dartmouth College.

Bower acknowledges the timing issue and downward bias addressed by Dr. Vander Weide. However, he demonstrates that this does not result in a biased required rate of return. He provides the following assessment:[22]

> ... authors are correct when they say that the conventional cost of equity calculation is a downward-biased estimate of the market discount rate. They are not correct, however, in concluding that it has

[22] See Richard Bower, The N-Stage Discount Model and Required Return: A Comment," *Financial Review* (February 1992), pp 141-9.

> a bias as a measure of required return. As a measure of required return, the conventional cost of equity calculation (K*), ignoring quarterly compounding and even without adjustment for fractional periods, serves very well.

He also makes the following observation on the issue:

> Too many rate cases have come and gone, and too many utilities have survived and sustained market prices above book, to make downward bias in the conventional calculation of required return a likely reality.

DCF Growth Rate

Q. PLEASE REVIEW DR. VANDER WEIDE'S DCF GROWTH RATE.

A. Dr. Vander Weide DCF growth rate is the average of the projected EPS growth rate forecasts: (1) Wall Street analysts as compiled by I/B/E/S; and (2) *Value Line*. Dr. Vander Weide employs DCF growth rates of 7.25% for the water group and 5.6% for the gas group.

Q. PLEASE DISCUSS THE ERROR IN DR. VANDER WEIDE'S DCF GROWTH RATE.

A. First, it should be noted that the projected growth rate data for the companies in the water group is limited and so you cannot give these results much weight in estimating a DCF equity cost rate for KAWC. In addition, as discussed below, the market-value weighting of the results gives excessive weight to several observations. However, the primary problem with the DCF growth rate is that Dr. Vander Weide has relied exclusively on the EPS growth rate forecasts of Wall Street analysts and *Value Line*.

Q. WHY IS IT ERRONEOUS TO RELY EXCLUSIVELY ON THE EPS FORECASTS OF WALL STREET ANALYSTS IN ARRIVING AT A DCF GROWTH RATE?

A. There are several issues with using the EPS growth rate forecasts of Wall Street analysts and *Value Line* as DCF growth rates. First, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Therefore, in my opinion, consideration must be given to other indicators of growth, including prospective dividend growth, internal growth, as well as projected earnings growth. Second, and most significantly, it is well-known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased. This has been demonstrated in a number of academic studies over the years. In addition, I demonstrate that *Value Line*'s EPS growth rate forecasts are consistently too high. Hence, using these growth rates as a DCF growth rate will provide an overstated equity cost rate.

Q. PLEASE DISCUSS DR. VANDER WEIDE'S RELIANCE ON THE PROJECTED GROWTH RATES OF WALL STREET ANALYSTS AND *VALUE LINE*.

A. It seems highly unlikely that investors today would rely excessively on the EPS growth rate forecasts of Wall Street analysts and ignore other growth rate measure in arriving at expected growth. As I previously indicated, the appropriate growth rate in the DCF model is the dividend growth rate, not the

earnings growth rate. Hence, consideration must be given to other indicators of growth, including historic growth prospective dividend growth, internal growth, as well as projected earnings growth. In addition, a recent study by Lacina, Lee, and Xu (2011) has shown that analysts' long-term earnings growth rate forecasts are not more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.[23] As such, the weight give to analysts' projected EPS growth rate should be limited. And finally, and most significantly, it is well-known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased. Hence, using these growth rates as a DCF growth rate produces an overstated equity cost rate. A recent study by Easton and Sommers (2007) found that optimism in analysts' growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.[24] These issues are addressed in more detail in Appendix B.

Q. DR. VANDER WEIDE HAS DEFENDED THE USE OF ANALYSTS' EPS FORECASTS IN HIS DCF MODEL BY CITING A STUDY HE PUBLISHED WITH DR. WILLARD CARLETON. PLEASE DISCUSS DR. VANDER WEIDE'S STUDY.

[23] M. Lacina, B. Lee and Z. Xu, *Advances in Business and Management Forecasting (Vol. 8)*, Kenneth D. Lawrence, Ronald K. Klimberg (ed.), Emerald Group Publishing Limited, pp.77-101.

[24] Easton, P., & Sommers, G. (2007). Effect of analysts' optimism on estimates of the expected rate of return implied by earnings forecasts. *Journal of Accounting Research*, 45(5), 983–1015.

A. Dr. Vander Weide cites the study on page 23 of his testimony. In the study, Dr. Vander Weide performs a linear regression of a company's stock price to earnings ratio (P/E) on the dividend yield payout ratio (D/E), alternative measures of growth (g), and four measures of risk (beta, covariance, r-squared, and the standard deviation of analysts' growth rate projections). He performed the study for three one-year periods – 1981-1982, and 1983 – and used a sample of approximately 65 companies. His results indicated that regressions measuring growth as analysts' forecasted EPS growth were more statistically significant that those using various historic measures of growth. Consequently, he concluded that analysts' growth rates are superior measures of expected growth.

Q. PLEASE CRITIQUE DR. VANDER WEIDE'S STUDY.

A. Before highlighting the errors in the study, it is important to note that the study was published more twenty years ago, used a sample of only sixty five companies, and evaluated a three-year time period (1981-83) that was over twenty-five years ago. Since that time, many more exhaustive studies have been performed using significantly larger data bases and, from these studies, much has been learned about Wall Street analysts and their stock recommendations and earnings forecasts. Nonetheless, there are several errors that invalidate the results of the study.

Q. PLEASE DESCRIBE THE ERRORS IN DR. VANDER WEIDE'S STUDY.

A. The primary error in the study is that his regression model is misspecified. As a result, he cannot conclude whether one growth rate measure is better than the other. The misspecification results from the fact that Dr. Vander Weide did not actually employ a modified version of the DCF model. Instead, he used a "linear approximation." He used the approximation so that he did not have to measure k, investors' required return, directly, but instead he used some proxy variables for risk. The error in this approach is there can be an interaction between growth (g) and investors' required return (k) which could lead him to conclude that one growth rate measure is superior to others. Furthermore, due to this problem, analysts' EPS forecasts could be upwardly biased and still appear to provide better measures of expected growth.

There are other errors in the study as well that further invalidate the results. Dr. Vander Weide does not use both historic and analysts' projections growth rate measures in the same regression to assess if both historic and forecasts should be used together to measure expected growth. In addition, he did not perform any tests to determine if the difference between historic and projected growth measures is statistically significant. Without such tests, he cannot make any conclusions about the superiority of one measure versus the other.

<u>Market-Value Weighting of DCF Results</u>

Q. PLEASE DISCUSS DR. VANDER WEIDE'S MARKET-VALUE WEIGHTING OF HIS DCF RESULTS.

A. In Schedules1 and 2 of Exhibit No. __(JVW-1), Dr. Vander Weide weights the DCF results for each of his water and gas proxy companies by the market capitalization of the companies in computing his average DCF result for each proxy group. This approach gives more weight to the equity cost rate results for the larger companies and less weight to the cost rate results for the smaller companies.

Q. WHAT ARE THE PROBLEMS WITH THIS APPROACH?

A. There are several issues. First, this gives more weight to the DCF results for the larger companies. KAWC is a relatively small water company with 2012 operating revenues of $86.0 million. But this approach gives very little weight to the DCF results for small companies. The lack of weight given to the DCF results for smaller companies is exacerbated by the fact that he has ignored the equity cost rate results for the three smallest publicly-traded water companies by excluding them from his water proxy group. For his water group, the market-value weighting gives much more weight to the DCF results for American Water Works, a company whose earnings are still recovering from its failed ownership by RWE. For his gas group, the market-value weighting gives much more weight to the 12.4% DCF equity cost rate result for NiSource. As previously discussed, NiSource has a higher financial risk

profile that the other gas companies and should be excluded from the gas proxy group.

Flotation Costs

Q. PLEASE DISCUSS DR. VANDER WEIDE'S ADJUSTMENT FOR FLOTATION COSTS.

A. Dr. Vander Weide claims that an upward adjustment to the equity cost rate is necessary for flotation costs. This adjustment factor is erroneous for several reasons. First, the Company has not identified any actual flotation costs for the Company. Therefore, the Company is requesting annual revenues in the form of a higher return on equity for flotation costs that have not been identified. Second, it is commonly argued that a flotation cost adjustment (such as that used by the Company) is necessary to prevent the dilution of the existing shareholders. In this case, a flotation cost adjustment is justified by reference to bonds and the manner in which issuance costs are recovered by including the amortization of bond flotation costs in annual financing costs. However, this is incorrect for several reasons:

(1) If an equity flotation cost adjustment is similar to a debt flotation cost adjustment, the fact that the market-to-book ratios for water utility companies are over 1.0X actually suggests that there should be a flotation cost reduction (and not increase) to the equity cost rate. This is because when (a) a bond is issued at a price in excess of face or book value, and (b) the difference

between market price and the book value is greater than the flotation or issuance costs, the cost of that debt is lower than the coupon rate of the debt. The amount by which market values of water utility companies are in excess of book values is much greater than flotation costs. Hence, if common stock flotation costs were exactly like bond flotation costs, and one was making an explicit flotation cost adjustment to the cost of common equity, the adjustment would be downward;

(2) If a flotation cost adjustment is needed to prevent dilution of existing stockholders' investment, then the reduction of the book value of stockholder investment associated with flotation costs can occur only when a company's stock is selling at a market price at/or below its book value. As noted above, water utility companies are selling at market prices well in excess of book value. Hence, when new shares are sold, existing shareholders realize an increase in the book value per share of their investment, not a decrease;

(3) Flotation costs consist primarily of the underwriting spread or fee and not out-of-pocket expenses. On a per share basis, the underwriting spread is the difference between the price the investment banker receives from investors and the price the investment banker pays to the company. Hence, these are not expenses that must be recovered through the regulatory process. Furthermore, the underwriting spread is known to the investors who are buying the new issue of stock, who are well aware of the difference between the price they are paying to buy the stock and the price that the Company is receiving. The offering price which they pay is what matters when investors

decide to buy a stock based on its expected return and risk prospects. Therefore, the company is not entitled to an adjustment to the allowed return to account for those costs; and

(4) Flotation costs, in the form of the underwriting spread, are a form of a transaction cost in the market. They represent the difference between the price paid by investors and the amount received by the issuing company. Whereas the Company believes that it should be compensated for these transactions costs, they have not accounted for other market transaction costs in determining a cost of equity for the Company. Most notably, brokerage fees that investors pay when they buy shares in the open market are another market transaction cost. Brokerage fees increase the effective stock price paid by investors to buy shares. If the Company had included these brokerage fees or transaction costs in their DCF analysis, the higher effective stock prices paid for stocks would lead to lower dividend yields and equity cost rates. This would result in a downward adjustment to their DCF equity cost rate.

3. Risk Premium ("RP") Approach

Q. PLEASE REVIEW DR. VANDER WEIDE'S RP ANALYSES.

A. In Schedules 3, 4, 5. and 7 of Exhibit No. __(JVW-1), Dr. Vander Weide develops an equity cost rate using expected (ex ante) and historical RP models. Dr. Vander Weide's RP results are provided in Panels C and D of page 2 of Exhibit JRW-13**.** He reports RP equity cost rates of 11.40% using the expected return approach and 10.82% using the historical RP approach.

In his expected RP approach, Dr. Vander Weide computes an expected stock return by applying the DCF model to the S&P utilities and the S&P 500 and uses the EPS growth rate forecasts of Wall Street analysts as his growth rate. He then subtracts the yield on 'A' rated utility bonds. In his historic RP model, Dr. Vander Weide's computes a historical risk premium as the difference in the arithmetic mean stock and bond returns. The stock returns are computed for different time periods for several different indexes, including S&P and Moody's electric utility indexes as well as the S&P 500.

Q. WHAT ARE THE ERRORS IN DR. VANDER WEIDE'S RP ANALYSES?

A. The errors in Dr. Vander Weide's RP equity cost rate approaches include: (1) an inflated base interest rate; (2) an excessive risk premium which is based on the historical relationship between stock and bond returns; and (3) the inclusion of a flotation cost adjustment of 0.17%. The flotation cost issue has already been addressed. The other two issues are discussed below.

Q. PLEASE DISCUSS THE BASE YIELD OF DR. VANDER WEIDE'S RISK PREMIUM ANALYSIS.

A. The base yield in Dr. Vander Weide's RP analysis is the projected yield on 'A' rated utility bonds. There are two issues with his projected 6.60% 'A' rated utility bond yield. First, the yield is above current market rates. As shown on Page 1 of Exhibit JRW-3, the current yield on long-term, 'A' rated public

utility bonds is about 4.0%. As such, his base interest rate is vastly overstated. Second, Vander Weide's base yield is erroneous and inflates the required return on equity in two ways. First, long-term bonds are subject to interest rate risk, a risk which does not affect common stockholders since dividend payments (unlike bond interest payments) are not fixed but tend to increase over time. Second, the base yield in Dr. Vander Weide's risk premium study is subject to credit risk since it is not default risk-free like an obligation of the U.S. Treasury. As a result, its yield-to-maturity includes a premium for default risk and therefore is above its expected return. Hence using such a bond's yield-to-maturity as a base yield results in an overstatement of investors' return expectations.

Q. DR. VANDER WEIDE EMPLOYS A DCF-BASED EX ANTE RISK PREMIUM APPROACH. PLEASE DISCUSS THE ERRORS IN THIS APPROACH.

A. Dr. Vander Weide computes a DCF-based equity risk premium. Dr. Vander Weide estimates an expected return using the DCF model and subtracts a concurrent measure of interest rates. He computes the expected return in this RP approach by applying the DCF model to a group of gas distribution companies on a monthly basis over the 1998-2012 time periods. He employs the EPS growth rate forecasts of Wall Street analysts as the DCF growth rate. To compute the RP, he then subtracts the yield on 'A' rated utility bonds.

The primary error in this approach is that he uses the EPS growth rate forecasts of Wall Street analysts as the one and only measure of growth in the DCF model. This issue was addressed above and in Appendix B. As I have discussed, analysts' EPS growth rate forecasts are highly inaccurate estimates of future earnings (a random walk model performs just as well), and are overly optimistic and upwardly-biased measures of actual future EPS growth for companies in general as well as for utilities. As a result, Dr. Vander Weide's ex-ante risk premium is overstated because his expected return measure is inflated.

Q. PLEASE REVIEW DR. VANDER WEIDE'S EX POST OR HISTORIC RP STUDY.

A. Dr. Vander Weide performs an ex-post or historical RP study that appears in Schedules 4 and 5 of Exhibit__(JVW-1). This study involves an assessment of the historical differences between S&P Public Utility Index and the S&P 500 stock returns and public utility bond returns over various time periods between the years 1937-2012. From the results of his study, he concludes that an appropriate risk premium is 3.80% using S&P public utility stock returns and 4.3% using S&P 500 stock returns.

Q. FIRST, HAS DR. VANDER WEIDE PROVIDED ANY EMPIRICAL EVIDENCE WHATSOEVER THAT THE S&P PUBLIC UTILITIES AND/OR THE S&P 500 COMPANIES ARE APPROPRIATE RISK

PROXIES FOR WATER COMPANIES?

A. No. Dr. Vander Weide has provided no such evidence, and as I have previously indicated, water utilities are among the least risky companies in the U.S. Hence, since Dr. Vander Weide has provided no such evidence that these are appropriate proxies for water companies, the results of this study should be ignored.

Q. PLEASE ADDRESS THE ISSUES INVOLVED IN USING HISTORICAL STOCK AND BOND RETURNS TO COMPUTE A FORWARD-LOOKING OR EX ANTE RISK PREMIUM.

A. As previously discussed, it is common to compute a market risk premium as the difference between historic stock and bond returns. However, this approach can produce differing results depending on several factors, including the measure of central tendency used, the time period evaluated, and the stock and bond market index employed. In addition, there are a myriad of empirical problems in the approach, which result in historical market returns producing inflated estimates of expected risk premiums. Among the errors are the U.S. stock market survivorship bias (the "Peso Problem"), the company survivorship bias (only successful companies survive – poor companies do not survive), and unattainable return bias (the Ibbotson procedure presumes monthly portfolio rebalancing). These issues are discussed in Appendix D of this testimony.

3. CAPM Approach

Q. PLEASE DISCUSS DR. VANDER WEIDE'S CAPM.

A. In Schedules 7 and 8 of Exhibit No. __(JVW-1), Dr. Vander Weide develops an equity cost rate using the CAPM. In Schedule 7 he employs a historical market risk premium and in Schedule 8 he uses an expected market risk premium. Dr. Vander Weide's CAPM results are provided in Panels E and F of page 2 of Exhibit JRW-13**.** He reports CAPM equity cost rates of 9.58% using the historical CAPM and 10.15% using the expected CAPM. He includes a flotation cost adjustment of 0.17% in each.

Dr. Vander Weide uses a risk-free interest rate of 5.11% in each CAPM and betas from *Value Line*. His historical CAPM uses the Ibbotson return data and the market risk premium is calculated as the difference between the arithmetic mean stock return and the bond income return over the 1926-2011 period. Dr. Vander Weide develops his expected market risk premium for his CAPM of 8.4% in Schedule 8 of Exhibit__JVW-1) by applying the DCF model to the companies in the S&P 500. Dr. Vander Weide estimates an expected market return of 12.6% using an adjusted dividend yield of 2.3% and an expected DCF growth rate of 10.3%.

Q. WHAT ARE THE ERRORS IN DR. VANDER WEIDE'S CAPM ANALYSIS?

A. First, Dr. Vander Weide has ignored the results of his CAPM analyses. In

addition, there are several flaws with Dr. Vander Weide's CAPM: (1) his risk-free rate of 5.1%; (2) the historic and expected market risk premiums; and (3) the flotation cost adjustment.

Q. PLEASE DISCUSS DR. VANDER WEIDE'S RISK-FREE RATE OF INTEREST IN HIS CAPM.

A. Dr. Vander Weide uses a risk-free rate of interest of 5.1% in his CAPM. This figure represents the average projected rate on twenty-year Treasury bonds by *Value Line* and EIA. Such a forecast is excessive given current interest rates and recent statements from the Federal Reserve Board. The current rate on twenty-year Treasury bonds, as of March, 2013, is only 2.9%. In addition, as noted early in this testimony, the Federal Reserve Board has indicated that it will keep interest rates low for the foreseeable future. As such, Dr. Vander Weide's risk-free interest rate is overstated.

Q. PLEASE ADDRESS THE PROBLEMS WITH DR. VANDER WEIDE'S HISTORIC CAPM.

A. Dr. Vander Weide historical CAPM uses an equity risk premium of 6.6% which is based on the difference between the arithmetic mean stock and bond income returns over the 1926-2011 period. The errors associated with computing an expected equity risk premium using historical stock and bond returns are addressed in D of this testimony. In short, there are a myriad of empirical problems, which result in historical market returns producing

inflated estimates of expected risk premiums. Among the errors are the U.S. stock market survivorship bias (the 'Peso Problem'), the company survivorship bias (only successful companies survive – poor companies do not survive), and unattainable return bias (the Ibbotson procedure presumes monthly portfolio rebalancing). In addition, in this case, Dr. Vander Weide has compounded the error by using the bond income return and not the actual bond return. By omitting the price change component of the bond return, he has magnified the historic risk premium by not matching the returns on stock with the actual returns on bonds.

Q. PLEASE REVIEW THE ERRORS IN DR. VANDER WEIDE'S MARKET RISK PREMIUM IN HIS EXPECTED CAPM APPROACH.

A. Dr. Vander Weide develops an expected market risk premium for his CAPM of 7.5% in Schedule 8 of Exhibit__JVW-1) by applying the DCF model to the S&P 500. Dr. Vander Weide estimates an expected market return of 12.6% using a dividend yield of 2.3% and an expected DCF growth rate of 10.3%. The expected DCF growth rate for the S&P 500 is the average of the expected EPS growth rates from I/B/E/S. This is the primary error in this approach. As previously discussed, the expected EPS growth rates of Wall Street analysts are overly optimistic and upwardly biased. In addition, as explained below, Dr. Vander Weide's projected EPS growth rate of 10.3% is inconsistent with economic and earnings growth in the U.S.

Q. BEYOND YOUR PREVIOUS DISCUSSION OF THE UPWARD BIAS IN WALL STREET ANALYSTS' AND *VALUE LINE*'S EPS GROWTH RATE FORECASTS, WHAT OTHER EVIDENCE CAN YOU PROVIDE THAT THE DR. VANDER WEIDE'S S&P 500 GROWTH RATE IS EXCESSIVE?

A. A long-term EPS growth rate of 10.3% is not consistent with historic as well as projected economic and earnings growth in the U.S for several reasons: (1) long-term EPS and economic growth, as measured by GDP, is about 2/3rds of Dr. Vander Weide's projected EPS growth rate of 10.3%; (2) more recent trends in GDP growth, as well as projections of GDP growth, suggest slower economic and earnings growth in the future; and (3) over time, EPS growth tends to lag behind GDP growth.

The long-term economic, earnings, and dividend growth rate in the U.S. has only been in the 5% to 7% range. I performed a study of the growth in nominal GDP, S&P 500 stock price appreciation, and S&P 500 EPS and DPS growth since 1960. The results are provided on page 1 of Exhibit JRW-14, and a summary is given in the table below.

GDP, S&P 500 Stock Price, EPS, and DPS Growth
1960-Present

Nominal GDP	**6.74%**
S&P 500 Stock Price	**6.35%**
S&P 500 EPS	**6.96%**
S&P 500 DPS	**5.39%**
Average	**6.36%**

The results are presented graphically on page 2 of Exhibit JRW-14. In sum, the historical long-run growth rates for GDP, S&P EPS, and S&P DPS are in the 5% to 7% range. By comparison, Dr. Vander Weide's long-run growth rate projection of 10.3% is vastly overstated. These estimates suggest that companies in the U.S. would be expected to: (1) increase their growth rate of EPS by over 50% in the future and (2) maintain that growth indefinitely in an economy that is expected to grow at about one-half of his projected growth rates.

Q. DO MORE RECENT DATA SUGGEST THAT THE U.S. ECONOMY GROWTH IS FASTER OR SLOWER THAN THE LONG-TERM DATA?

A. The more recent trends suggest lower future economic growth than the long-term historic GDP growth. The historic GDP growth rates for 10-, 20-, 30-, 40- and 50- years are presented in Panel A of page 3 of Exhibit JRW-14. These figures clearly suggest that nominal GDP growth in recent decades has slowed and that a figure in the range of 4.0% to 5.0% is more appropriate today for the U.S. economy. These figures indicate that Dr. Vander Weide long-term growth EPS growth rate of 10.3% is even more inflated.

Q. WHAT LEVEL OF GDP GROWTH IS FORECASTED BY ECONOMISTS AND VARIOUS GOVERNMENT AGENCIES?

A. There are several forecasts of annual GDP growth that are available from economists and government agencies. These are listed in Panel B of page 3 of

Exhibit JRW-14. The mean 10-year nominal GDP growth forecast (as of February 2013) by economists in the recent *Survey of Professional Forecasters* is 4.8%. The Energy Information Administration (EIA), in its projections used in preparing *Annual Energy Outlook*, forecasts long-term GDP growth of 4.5% for the period 2011-2040. The Congressional Budget Office, in its forecasts for the period 2013 to 2023, projects a nominal GDP growth rate of 4.6%. As such, projections of nominal GDP growth provide additional evidence that Dr. Vander Weide's long-term EPS growth rate of 10.3% is highly overstated.

Q. PLEASE HIGHLIGHT THE RECENT RESEARCH ON THE LINK BETWEEN ECONOMIC AND EARNINGS GROWTH AND EQUITY RETURNS.

A. Brad Cornell of the California Institute of Technology recently published a study on GDP growth, earnings growth, and equity returns. He finds that long-term EPS growth in the U.S. is directly related GDP growth, with GDP growth providing an upward limit on EPS growth. In addition, he finds that long-term stock returns are determined by long-term earnings growth. He concludes with the following observations:[25]

> The long-run performance of equity investments is fundamentally linked to growth in earnings. Earnings growth, in turn, depends on growth in real GDP. This article demonstrates that both theoretical research and empirical research in development economics suggest relatively strict limits on future growth. In particular, real GDP growth

[25] Bradford Cornell, "Economic Growth and Equity Investing," *Financial Analysts Journal* (January- February, 2010), p. 63.

> in excess of 3 percent in the long run is highly unlikely in the developed world. In light of ongoing dilution in earnings per share, this finding implies that investors should anticipate real returns on U.S. common stocks to average no more than about 4–5 percent in real terms.

Given current inflation in the 2% to 3% range, the results imply nominal expected stock market returns in the 7% to 8% range. As such, Dr. Vander Weide's projected earnings growth rates and implied expected stock market returns and equity risk premiums are not indicative of the realities of the U.S. economy and stock market. As such, his expected CAPM equity cost rate is significantly overstated.

Q. PLEASE PROVIDE A SUMMARY ASSESSMENT OF DR. VANDER WEIDE'S MARKET RISK PREMIUMS.

A. Dr. Vander Weide's historical and expected market risk premiums are inflated due to errors and bias in his studies. Investment banks, consulting firms, and CFOs use the equity risk premium concept every day in making financing, investment, and valuation decisions. I have provided the results of recent surveys of CFOs, financial forecasters, analysts, and companies, and their equity risk premium estimates are in the 4% to 5% range and not in the 6% to 9% range. On this issue, the opinions of these market participants are especially relevant. They deal with capital markets on an ongoing basis since they must continually assess and evaluate capital costs for their companies. They are well aware of the historical equity risk premium results as published by

Ibbotson Associates as well as Wall Street analysts' EPS growth rate projections. Nonetheless, the CFOs in the March 2013 *CFO Magazine* – Duke University Survey of almost 350 CFOs shows an expected market risk premium of 4.50% over the next ten years. In addition, surveys conducted in 2012 by Fernandez indicates that financial analysts and companies are using equity risk premiums of 5.0% to 5.5%. As such, using these real world equity risk premiums, the appropriate equity cost rate for a public utility should be in the 8.0% to 9.0% range and not in the 10.9% range.

Q. PLEASE EVALUATE DR. VANDER WEIDE'S OBSERVATION THAT THE CAPM UNDERSTATES THE EQUITY COST RATE DUE TO A COMPANY'S SIZE.

A. Dr. Vander Weide claims that an adjustment is required for the size of a company when using the CAPM to estimate an equity cost rate. This adjustment is based on the historical stock market returns studies as performed and published by Ibbotson Associates. This argument is erroneous for several reasons.

First, as previously discussed, there are numerous errors in using historical market returns to compute risk premiums. These errors provide inflated estimates of expected risk premiums. Among the errors are the well-known survivorship bias (only successful companies survive – poor companies do not survive) and unattainable return bias (the Ibbotson procedure presumes monthly portfolio rebalancing). The net result is that

Ibbotson's size premiums are poor measures for any risk adjustment to account for the size of the Company.

Second, Professor Annie Wong has tested for a size premium in utilities and concluded that, unlike industrial stocks, utility stocks do not exhibit a significant size premium.[26] As explained by Professor Wong, there are several reasons why such a size premium would not be attributable to utilities. Utilities are regulated closely by state and federal agencies and commissions and hence, their financial performance is monitored on an ongoing basis by both the state and federal governments. In addition, public utilities must gain approval from government entities for common financial transactions such as the sale of securities. Furthermore, unlike their industrial counterparts, accounting standards and reporting are fairly standardized for public utilities. Finally, a utility's earnings are predetermined to a certain degree through the ratemaking process in which performance is reviewed by state commissions and other interested parties. Overall, in terms of regulation, government oversight, performance review, accounting standards, and information disclosure, utilities are much different than industrials, which could account for the lack of a size premium.

Q. PLEASE DISCUSS RECENT RESEARCH ON THE SIZE PREMIUM IN ESTIMATING THE EQUITY COST RATE.

[26] Annie Wong, "Utility Stocks and the Size Effect: An Empirical Analysis," *Journal of the Midwest Finance Association*, pp. 95-101, (1993).

A. As noted, there are a number of errors in using historical market returns to compute risk premiums. With respect to the small firm premium, Richard Roll (1983) found that one-half of the historic return premium for small companies disappears once biases are eliminated and historic returns are properly computed. The error arises from the assumption of monthly portfolio rebalancing and the serial correlation in historic small firm returns.[27]

In a more recent paper, Ching-Chih Lu (2009) estimated the size premium over the long-run. Lu acknowledges that many studies have demonstrated that smaller companies have historically earned higher stock market returns. However, Lu highlights that these studies rebalance the size portfolios on an annual basis. This means that at the end of each year the stocks are sorted based on size, split into deciles, and the returns are computed over the next year for each stock decile. This annual rebalancing creates the problem. Using a size premium in estimating a CAPM equity cost rate requires that a firm carry the extra size premium in its discount factor for an extended period of time, not just for one year, which is the presumption with annual rebalancing. Through an analysis of small firm stock returns for longer time periods (and without annual rebalancing), Lu finds that the size premium disappears within two years. Lu's conclusion with respect to the size premium is:[28]

[27] *See* Richard Roll, "On Computing Mean Returns and the Small Firm Premium," *Journal of Financial Economics*, pp. 371-86, (1983).

[28] Ching-Chih Lu, "The Size Premium in the Long Run," 2009 Working Paper, SSRN abstract no. 1368705.

However, an analysis of the evolution of the size premium will show that it is inappropriate to attach a fixed amount of premium to the cost of equity of a firm simply because of its current market capitalization. For a small stock portfolio which does not rebalance since the day it was constructed, its annual return and the size premium are all declining over years instead of staying at a relatively stable level. This confirms that a small firm should not be expected to have a higher size premium going forward sheerly because it is small now.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.