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Admin. Law Judge	:	Karl Bemesderfer___
DRA Witness	:	Dr. J. Randall Woolridge
	:	

DIVISION OF RATEPAYER ADVOCATES
CALIFORNIA PUBLIC UTILITIES COMMISSION

Testimony of

Dr. J. Randall Woolridge

on Behalf of the Division of Ratepayer Advocates

Cost of Capital

Applications 11-05-001; 11-05-002; 11-05-003; 11-05-004

San Francisco, California
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Q. PLEASE STATE YOUR FULL NAME, ADDRESS, AND OCCUPATION.

A. My name is J. Randall Woolridge, and 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 California Division of Ratepayer Advocates ("DRA") to provide an opinion as to the overall fair rate of return or cost of capital for the California Class A Water Companies ("CCAWCs") for the test years 2012-2014. The CCAWCs include California America Water Company ("CAW"), California Water Service Company ("CWS"), Golden State Water Company ("GSWC") and San Jose Water Company ("SJW"). The relevant application numbers are: California American Water (A.11-05-003), California Water Service (A.11-05-001), Golden State Water Company (A.11-05-004), and San

Jose Water Company (A.11-05-002).

Q. HOW IS YOUR TESTIMONY ORGANIZED?

A. First, I present my cost of capital recommendations for the CCAWCs. Second, I provide an assessment of capital costs in today's capital markets. Third, I discuss my proxy groups of companies for estimating the cost of capital for CCAWCs. Fourth, I discuss the concept of the cost of equity capital and then estimate the base equity cost rate for the water companies. Fifth, I present my individual equity cost rate recommendations for the individual water companies, and then combine these with the capital structures and debt cost rates for each of the companies to arrive at cost of capital estimates. Finally, I critique the witnesses' rate of return analyses for each of the CCAWCs. 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 CCAWCS.

A. I have reviewed and, in some cases, adjusted the Company's proposed capital structure and debt cost rates. I have applied the Discounted Cash Flow Model ("DCF") and the Capital Asset Pricing Model ("CAPM") to a proxy group of publicly-held water utility ("Water Proxy Group") companies. I have also analyzed data for a proxy group of gas distribution companies ("Gas Proxy Group"), but I do not rely on these results in developing my equity cost rate recommendation for the CCAWCs. My analysis indicates a base return on

equity ("ROE") of 8.75% for the CCAWCs. I have used the bond ratings of the CCAWCs as a gauge of their riskiness relative to the Water Proxy Group. The average Standard & Poor's ("S&P") bond rating of the Water Proxy Group is 'A'. The bond ratings of CWS, GSW, and SJW are at least an 'A' and therefore I have used the base equity cost rate of 8.75% for these three companies. I have added 25 basis points to the base ROE for CAW, which has an S&P bond rating of BBB+. Therefore I am recommending a 9.0% ROE for CAW.

In support of my equity cost rate recommendation, I provide capital market evidence that equity cost rates have declined since the last CCAWC case. In particular, I provide evidence showing: (1) the yields on 10-year U.S. Treasury bond and 30-year 'A' rated Utility bonds have decreased by about 75 basis points; (2) the projected EPS growth rates of Wall Street analysts for water companies have declined by about 300 basis points; and (3) the average betas of water companies have declined from 0.94 to 0.70. This data provides strong support that the required returns on water utility stocks have declined over the past three years.

I have reviewed the recommended capital structures and debt cost rates for the CCAWCs. I have found that the recommended capital structures have more common equity than the capitalizations of their corporate parent organizations as well as other the water utility companies. As a result, I have adjusted these proposed capital structures to be more in line with their parent capital structures as well as those of other water utilities. I have also made

slight adjustments to the proposed debt cost rates because of the divergence between the projected debt cost rates used by the companies and current market interest rates

There are several primary areas of contention in the area of the estimation of the cost of capital. In the application of the DCF, the witnesses for the CCAWCs rely exclusively on the projected earnings per share ("EPS") growth rates of Wall Street analysts and *Value Line*. I provide empirical evidence that demonstrates 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 CAPM and Risk Premium ("RP") approaches require an estimate of the risk-free interest rate or base yield and the market or equity risk premium. The CAPM risk-free interest rates and RP base yields the CCAWCs use are excessive and are not reflective of interest rates in today's economy. The primary issue is that the interest rates the CCAWC witnesses use are significantly above current market interest rates bonds. The current yield on 30-year Treasury bonds is in the 3.5% range, and long-term A-rated utility bond yields are below 5.0%. In addition, the CCAWCs' witnesses have used inflated estimates of the market or equity risk premium in their CAPM and RP models. As I highlight in my testimony, there are three procedures for

estimating an equity risk premium – historic returns, surveys, and expected return models. I have used an equity risk premium of 5.10%, which uses all three approaches to estimating an equity premium and employs the results of over thirty equity risk premium studies. As I note, my market risk premium is consistent with the market risk premiums: (1) discovered in recent academic studies by leading finance scholars; (2) employed by leading management consulting firms; and (3) that result from surveys of analysts, companies, financial forecasters, and corporate CFOs.

In the end, while there are other issues in estimating the cost of capital for the individual CCAWCs, the most significant areas of disagreement are: (1) the appropriate capital structure and debt cost rate for each company; (2) the use of the projected growth rates of Wall Street analysts to measure expected growth in the DCF model; and (3) the measurement and magnitude of the equity risk premium the CAPM and RP approaches use.

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 Attachment JRW-3. These yields peaked in the early 1980s and have

generally declined since that time. In the summer of 2003, these yields hit a 60-year low at 3.33%. They subsequently increased and fluctuated between the 4.0% and 5.0% levels over the next four years in response to ebbs and flows in the economy. Ten-year Treasury yields began to decline in mid-2007 at the beginning of the financial crisis. In 2008 Treasury yields declined to below 3.0% as a result of the expansion of the mortgage and subprime market credit crisis, the turmoil in the financial sector, the government bailout of financial institutions, and the economic recession. Overall, these economic developments led investors to seek out low risk investments. These yields have been in the 3.0% range in recent months.

Panel B on page 1 of Attachment 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 a much lesser 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 3.0% area until 2005, declined to 1.5% until late 2007, and then increased significantly in response to the current financial crisis. This differential peaked at 6.0% at the height of the financial crisis in November of 2008, due to tightening in credit markets, which increased corporate bond yields and the "flight to quality," which decreased treasury yields. The differential declined

significantly in 2009 and has been in the 2.50% to 3.0% range over the past two 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 equity risk premium is the return premium required to purchase stocks as opposed to bonds. The 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 estimating the equity risk premium, and the 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 5-7% 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 DESCRIBE HOW THE FINANCIAL CRISIS OF 2008 IMPACTED CAPITAL COSTS FOR UTILITIES.

A. United States Treasury Rates declined to levels not seen since the 1950s. This

reflects the "flight to quality" in the credit markets, as investors have sought out low risk investments, and the massive monetary stimulus provided by the Federal Reserve Board. The credit market for corporate and utility debt experienced higher rates during the financial crisis. The short-term credit markets were hit with credit issues, leading to the demise of several large financial institutions. The primary indicator of the short-term credit market is the London Interbank Offered Rate ("LIBOR"). LIBOR peaked in the third quarter of 2008 at 4.75%. It subsequently declined to below 0.5% as the short-term credit markets opened up. LIBOR and short-term U.S. Treasury rates have remained at very low levels.

The long-term credit market has also improved significantly. The credit crisis was associated with concerns among credit providers – mainly financial institutions – in terms of making loans and investing in bonds due to the overleveraging and perceived weakness of the economy. Panel A of page 1 of Attachment JRW-4 provides the yields on 'A', BBB+, and BBB rated public utility bonds. These yields peaked in November 2008, declined by 200 to 300 basis points ("BPs") through the summer of 2010, increased about 50 to 75 by the end of 2010, and have since declined again. For example, the yields on 'A' rated utility bonds, which peaked at over 7.50% in November of 2008, declined to 5.0% as of last summer, and now are in the 5.25% range. Panel B of Attachment JRW-4 provides the yield spreads on A, BBB+, and BBB rated public utility bonds relative to Treasury bonds. These yield spreads increased dramatically in the third quarter of 2008 during the peak of the

financial crisis and have since decreased to pre-crisis levels. For example, the yield spread between 30-year, 'A' rated utility bonds and 30-Year Treasury bonds, increased from 1.5% to 3.5% in November of 2008. This yield spread has decreased since that time, and now stands at about 1.0%.

In sum, while the economy continues to face significant problems, the actions of the government and Federal Reserve have 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 pre-financial crisis levels.

III. PROXY GROUP SELECTION

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

A. To develop a fair rate of return recommendation for the CCAWCs, I have evaluated the return requirements of investors on the common stock of two proxy groups. These groups include a proxy group of 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. However, I have used these results to simply provide an indication as

to the appropriate equity cost rate. 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. For example, only five water companies are covered in the Standard Edition of the *Value Line Investment Survey*. In addition, analysts' coverage of the water companies is limited. 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. In 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 also listed in Attachment JRW-5. The median operating revenues and net plant for the Water Proxy Group are $218.9M and $711.8M, respectively. The group receives 95% of revenues from regulated

water operations, has an 'A' bond rating, a common equity ratio of 45.3%, and an earned return on common equity of 9.7%.

My Gas Proxy Group consists of nine natural gas distribution companies covered by the Standard Edition of the *Value Line Investment Survey*. These companies meet the following selection criteria: (1) listed as a Natural Gas Distribution, Transmission, and/or Integrated Gas Company in *AUS Utility Reports*; (2) listed as a Natural Gas Utility in the Standard Edition of the *Value Line Investment Survey*; (3) receives at least 40% of revenues from regulated gas operations; and (4) has an investment grade bond rating by Moody's and Standard & Poor's. A summary of financial statistics for the group are listed in Attachment JRW-4. The median operating revenues and net plant for the Gas Proxy Group are $1,693.3M and $2,434.9M, respectively. The group receives 65% of revenues from regulated gas operations, has an 'A' bond rating from Standard & Poor's, a current common equity ratio of 52%, and an earned return on common equity of 10.2%.

On page 2 of Attachment JRW-4, I have assessed the riskiness of the two groups using six different risk measures published by *Value Line*. These measures include Beta, Safety, Financial Strength, Stock Price Stability, Price Growth Persistence, and Earnings Predictability. All six 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 substantial. Nonetheless, these *Value Line* measures do suggest that that the Gas Proxy Group is a little less risky than the Water Proxy Group.

IV. 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 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:[1]

> 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 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.

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

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:[2]

> 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*

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 Attachment JRW-6. The average R-squares for the electric, gas, and water companies are 0.65, 0.60, and 0.92, respectively.[3] This demonstrates the strong positive relationship between return on equities ("ROEs") and market-to-book ratios for public utilities.

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

[3] 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.

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

A. Attachment 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, hovered in the 5.50%-6.50% ranges from mid-2003 until mid-2008, spiked up to the 7.0% to 8.0% range with onset of the financial crisis, remained high and volatile until early 2009, and then have decreased to the 5.5% to 6.0% range.

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 the 3.5% range as of 2010. The Gas Proxy Group yields bottomed out at 3.75% in 2007, and have since increased to the 4.0% range.

Average earned returns on common equity and market-to-book ratios for the two groups are on page 3 of Attachment JRW-7. For the Water Proxy Group, earned returns on common equity peaked early in the decade at 11.0%. Over the past five years, they have been in the 8.0% to 9.0% range. As of 2010, 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 2010, the market-to-book average was 1.65X. 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 2010 was 10.5%. Over the past decade, the average market-to-book ratios for this group have ranged from 1.50 to 1.80.

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 WATER UTILITY AND GAS DISTRIBUTION COMPANIES 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.

Attachment 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.[4] The study shows that the investment risk of utilities is very low. The average beta for electric, water, and gas utility companies are 0.75, 0.70, and 0.65, 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

[4] They may be found on the Internet at http:// www.stern.nyu.edu/~adamodar.

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 CCAWCS?

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 Attachment 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 ATTACHMENT JRW-10.

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

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 Attachment JRW-10 for the six-month period ending August 2011. For the DCF dividend yields for the groups, I am using the median of the six month and August 2011 dividend yields. The table below shows these dividend yields.

	August 2011 Dividend Yield	**Six Month Dividend Yield**	**DCF Dividend Yield**
Water Proxy Group	**3.2%**	**3.2%**	**3.20%**
Gas Proxy Group	**3.9%**	**3.9%**	**3.90%**

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.[5]

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 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 ("FREC").[6] 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.

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[5] *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).

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

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.

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

A. I have analyzed a number of measures of growth for companies in the proxy groups. I have 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 have 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 have 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 virtually all investors and are presumably an important ingredient in forming

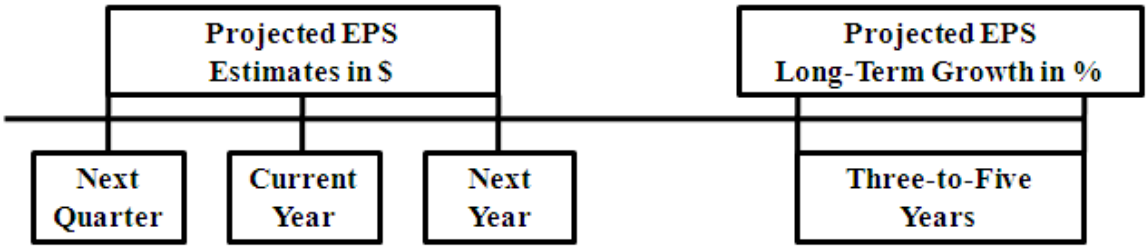
expectations concerning future growth. However, one must use historical growth numbers as measures of investors' expectations with caution. In some cases, past growth may not reflect future growth potential. Also, employing a single growth rate number (for example, for five or ten years), is unlikely 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 ANALYSTS' EPS FORECASTS.

A. EPS forecasts are collected and published by a number of different services, including by Zack's, First Call, I/B/E/S, and Reuters. These services retrieve and compile EPS forecasts from Wall Street analysts. These analysts come from both sell side financial firms such as Merrill Lynch and Morgan Stanley and buy side financial firms such as Prudential Insurance and Fidelity Investments.

These services collect and publish: (1) EPS estimates for future quarterly and annual time periods; and (2) long-term EPS growth rate forecasts. The EPS estimates are in dollars and cents per share, and the services report the high, low, and mean of the estimates collected for analysts. The long-term projected EPS growth rate is expressed in percentage terms. As shown in the figure below, the projected EPS near-term estimates are usually provided for the next quarter, the current fiscal year, the next fiscal year. The long-term projected EPS growth rate is for a three-to-five year time period.



Q. PLEASE PROVIDE AN EXAMPLE OF THESE EPS FORECASTS.

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

Consensus Earnings Estimates
American States Water Company
www.reuters.com
August 1, 2011

	# of Estimates	Mean	High	Low
Earnings (per share)				
Quarter Ending Sep-11	6	0.74	0.85	0.66
Quarter Ending Dec-11	6	0.37	0.45	0.27
Year Ending Dec-11	7	2.06	2.15	1.98
Year Ending Dec-12	7	2.16	2.27	2.02
LT Growth Rate (%)	2	5.50	8.00	3.00

These figures can be interpreted as follows. The top line shows that six analysts have provided EPS estimates for the quarter ending September 30, 2011. The mean, high, and low estimates are $0.74, $0.85, and $0.66. The second line shows the quarterly EPS estimates for the quarter ending December 31, 2011. Lines three and four show the annual EPS estimates for the fiscal years ending December 2011 and 2012. These quarterly and annual EPS forecasts are expressed in dollars and cents. It is common for more analysts to provide estimates of annual EPS as opposed to quarterly EPS. The bottom line of the table is the projected long-term EPS growth rate. This figure is expressed as a percent, and there are usually fewer analysts providing this figure. For AWR, two analysts have provided a long-term EPS growth rate forecast, and the mean, high, and low growth rates are 5.50%, 8.00%, and 3.00%.

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 GROUP?

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, 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. Hence, using these growth rates as a DCF growth rate will provide an overstated equity cost rate.

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 GROUPS AS PROVIDED IN THE *VALUE LINE INVESTMENT SURVEY.*

A. Historic growth rates for the companies in the groups, as published in the *Value Line Investment Survey*, are on page 3 of Attachment JRW-10. For the Water Proxy Group, the data are limited. The historical growth measures in EPS, DPS, and BVPS, as measured by the medians, range from 3.5% to 5.5%, with an average of 4.5%. The range of the medians for the Gas Proxy Group is 2.0% 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 proxy groups are shown on page 4 of Attachment JRW-10. As above, due to the presence of outliers, medians are used in the analysis. The projected *Value Line* data

for the water companies are limited, as only five companies are covered in the full Standard Edition. The median range is from 3.5% to 5.5%, with an average of 4.3%. For the Gas Proxy Group, the median range is from 3.3% to 5.3%, with an average of 4.4%.

Also provided on page 4 of Attachment 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 a primary driver of long-run earnings growth. For the Water Proxy Group, the median prospective sustainable growth rate for the three companies with data is 4.8%. The median prospective sustainable growth rate for the Gas Proxy Group is 4.3%.

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

A. Zacks, First Call and Reuters collect, summarize, and publish Wall Street analysts' 5-year EPS growth rate forecasts for the companies in the proxy groups. These forecasts for the companies in the proxy groups are on page 5 of Attachment JRW-10. There is limited coverage of the companies in the Water Proxy Group. The medians of analysts' projected EPS growth rates for the Water and Gas Proxy Group 6.0% and 4.2%, respectively.[7]

[7] 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.

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

A. The summary DCF growth rate indicators for the two proxy groups are on page 6 of Attachment JRW-10. The data for the Gas Proxy Group are much more complete and provide a much better indication of expected growth and the DCF equity cost rate. *Value Line* only has projections for five 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 4.5%. The high end of the range for the Water Proxy Group is the projected EPS growth rates of Wall Street analysts which is 6.0%. 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 4.9%, and the average of the sustainable and projected EPS growth rates is 5.1%. As indicated, analysts' projected EPS growth for the companies in the Water Proxy Group is 6.0%. However, the prospective sustainable growth for the group, 4.8%, suggests that this figure is excessive. Given primary weight to the sustainable and projected growth rate measures, I believe that an expected growth rate in the 5.5% to 6.0% range is appropriate for the Water Proxy Group. I will use the midpoint of this range, 5.75%, 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 in the 4.3% range for these companies. The projected and sustainable growth rates from *Value Line* are 3.8% and 4.3% for the group. Analysts projected EPS growth is 4.2%. The average of sustainable and projected EPS growth rate indicators is 4.3%. Giving more weight to the projected and sustainable growth rate indicators, an expected DCF growth rate in the 4.25% range is reasonable for the group. I will use this figure as the DCF growth rate for the Gas 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 rate for the groups is summarized on page 1 of Attachment 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	**3.20%**	**1.02875**	**5.75%**	**9.0%**
Gas Proxy Group	**3.90%**	**1.02250**	**4.25%**	**8.2%**

These results are summarized on page 1 of Attachment JRW-10.

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), and is illustrated as follows:

$$k = R_f + RP$$

The yield on long-term U.S. 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: (1) firm-specific risk or unsystematic risk and (2) 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: (1) the risk-free rate of interest (R_f), (2) the beta (ß), and (3) the expected equity or market risk premium $[E(R_m) - (R_f)]$. R_f is the easiest of the inputs to measure – it is the yield on long-term U.S. 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 ATTACHMENT JRW-11.

A. Attachment JRW-11 provides the summary results for my CAPM study. Page 1 shows the summary of the results, and pages 2-11 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. I am using the yields on 30-year Treasury bonds. The yield on 30-year Treasury bonds has been in the 3.5% to 4.5% range over the last six months. As of August 17, 2011, the rate on 30-year U.S. Treasury Bonds was 3.48%. Given the current and recent range of yields, I will use 4.00%, 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 Attachment 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.

Numerous 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 groups, I am using the betas for the companies as provided in the *Value Line Investment Survey*. As shown on page 3 of Attachment JRW-11, the median betas for the companies in the Water and Gas Proxy Group 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 Attachment 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% 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.[8] 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.[9]

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 600 CFOs participate in the survey.[10] 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*.[11] This survey of professional economists has been published for

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

[9] R. Mehra and Edward Prescott, "The Equity Premium: A Puzzle," *Journal of Monetary Economics* (1985).

[10] See www.cfosurvey.org.

[11] Federal Reserve Bank of Philadelphia, *Survey of Professional Forecasters,* (February 12, 2010). 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

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.

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.[12] 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.

Page 5 of Attachment 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 Attachment JRW-11, I have categorized the studies as

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

[12] Richard Derrig and 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), and Zhiyi Song, "The Equity Risk Premium: An Annotated Bibliography," CFA Institute, (2007).

discussed on page 4 of Attachment 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 B. The Building Blocks approach is a hybrid approach employing elements of both historic and ex ante models.

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

A. Page 5 of Attachment 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 4.61%.

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

A. The studies cited on page 5 of Attachment 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 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 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 Attachment JRW-11 I have reconstructed page 5 of Attachment JRW-11, but I have eliminated all studies published before January 2, 2010. The median for this subset of studies is 5.10%.

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

A. I am using the median equity risk premium for the 2010-2011 studies and surveys, which is 5.10%.

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

A. Yes. In the previously referenced June, 2011 CFO survey conducted by *CFO Magazine* and Duke University, the expected 10-year equity risk premium was 3.40%.

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 8 of Attachment JRW-11, the mean long-term expected stock and bond returns were 7.37% and 4.50%, respectively. This provides an ex ante equity risk premium of 2.87%.

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 2011 survey of financial analysts and companies. This survey included over 6,000 responses. The median equity risk premiums employed by U.S. analysts and companies were 5.0% and 5.2%, 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 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.[13]

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

Q. HAS MCKINSEY REAFFIRMED ITS OPINION ON THE EQUITY RISK PREMIUM IN LIGHT OF THE FINANCIAL CRISIS?

A. Yes. As previously discussed, McKinsey has recently published a study in which they reaffirm their estimate of the equity risk premium in light of the financial turmoil of the past two years.[14]

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	**4.0%**	**0.70**	**5.10%**	**7.6%**
Gas Proxy Group	**4.0%**	**0.65**	**5.10%**	**7.3%**

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

D. EQUITY COST RATE SUMMARY

Q. PLEASE SUMMARIZE YOUR EQUITY COST RATE STUDY.

A. The results for my DCF and CAPM analyses for the two proxy groups are indicated below:

	DCF	CAPM
Water Proxy Group	**9.0%**	**7.6%**
Gas Proxy Group	**8.2%**	**7.3%**

[14]Richard Dobbs, Bin Jang, and Timothy Koeller, "Why the Crisis Hasn't Shaken the Cost of Capital," *McKinsey Quarterly* (December 2008), p. 1-6.

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

A. These results for the two proxy groups suggest an equity cost rate for the CCAWCs between 7.6% and 9.0%. I have given no weight to the equity cost rate results for the Gas Proxy Group. Since I give primary weight to the DCF results, it is my opinion that the appropriate equity cost rate for CCAWCS is in the 8.5% to 9.0% range. Given these results, I will use the midpoint of this range, 8.75%, as the equity cost rate for the CCAWCs. This figure appears reasonable given the equity cost rate results for the Gas Proxy Group.

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 CCAWCS?

A. While I give no weight to the results for the Gas Proxy Group, I do believe that the equity cost rate results 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 only five companies in the Standard Edition of the *Value Line Investment Survey* and 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 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 8.75% RETURN ON EQUITY IS APPROPRIATE AT THIS TIME?

A. Yes. There are several reasons why an 8.75% return on equity is appropriate for CCAWCS in this case. First, as shown on in Attachment JRW-8, the water utility is one of the lowest risk industries as ranked by Beta in *Value Line*. As such, water companies have among the lowest cost of equity capital of any industry in the U.S. according to the CAPM. Second, as shown in Attachment JRW-4, capital costs for utilities, as indicated by long-term bond yields, have continued to decline and now are below pre-financial crisis levels. The current yield on 30-year, A rated utility bonds is below 5.0%. Third, while the financial markets have recovered significantly over the past two years, the economy has not. The economic times are viewed as being difficult, with nearly nine percent unemployment, a very weak housing market, and low levels of consumer confidence. 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 8.75% return is appropriate for a regulated water utility company.

Q. DO YOU BELIEVE THAT YOUR 8.75% RECOMMENDATION IS CONSISTENT WITH THE AUTHORIZED RETURNS ON EQUITY FOR WATER COMPANIES?

A. Yes. Page 1 of Attachment JRW-12 provides the most recent authorized ROEs for the water companies as reported by *AUS Utilities Reports*. The range of the authorized ROEs is 9.63% to 10.33%, and the average is 10.02%. 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 Attachment JRW-5) I believe that my 8.75% ROE recommendation is consistent with the reported authorized ROEs for water companies.

Q. CAN YOU PROVIDE DIRECT EVIDENCE THAT WATER COMPANY EQUITY COST RATES HAVE DECLINED SINCE THE LAST CCAWC RATE CASE?

A. Yes. Panels A and B of Page 3 of Attachment JRW-12 provides the yields on 10-year U.S. Treasury bond and 30-year A-Rated Utility bonds for the six months ending August 2008 and August 2011. I filed my testimony in the last rate case in August of 2008. The yields on both of these bonds are about 75 basis points lower in 2011 versus 2008. The DCF equity cost rate is a function of the dividend yields and expected growth. Panel C provides the dividend yields for water companies for six months in 2008. On average, the dividend yield in 2011 (3.2%) are slightly higher than in 2008 (3.0%). However, the expected EPS growth rate of Wall Street analysts was over 9.0% in 2008 (see Panel D of Page 3 of Attachment JRW-12), as opposed to 6.0% in 2011 (see page 5 of Attachment JRW-10). Finally, Beta is a key equity

cost rate factor in the CAPM. As shown in Panel E of Page 3 of Attachment JRW-12, the average Beta for water companies was 0.94 in 2008. Currently the average Beta for water companies is 0.70.

These capital market changes provide direct evidence that the equity cost rate for water utilities, as indicated by both the DCF and CAPM approaches, is somewhat lower in 2011 as opposed to 2008.

Q. ARE YOU RECOMMENDING AN 8.75% FOR EACH OF THE CCAWCS?

A. No. I am using the credit ratings for the CCAWCs as an indicator of risk. Panel A of page 4 of Attachment JRW-12 provides the debt ratings for the CCAWCs. They range from A+ for CWS and GSW, A for SJW, and BBB+ for CAW. The average bond rating for the Water Proxy Group, as provided in Panel A of page 1 of Attachment JRW-5, is an 'A'. Based on the credit ratings of the CCAWCs and the Water Proxy Group, I will presume that the riskiness of CWS, GSW, and SJW are relative similar. However, these ratings indicate that CAW is riskier than the average risk of the Water Proxy Group.

Panel B of page 4 of Attachment JRW-12 provides the weekly yields on the 30-year utility bonds rated A and BBB+ over the year 2011. The average yield differential is approximate 25 basis points (the average yields for A and BBB+ utility bonds for 2011 are 5.45% and 5.67%).

Based on the credit ratings of the CCAWCs and the Water Proxy Group, I will use the base level ROE of 8.75% for CWS, GSW, and SJW. I

will use the 25 basis point risk differential for CAW. Therefore I will recommend an equity cost rate of 9.0% for CAW. These results are provided in Panel C of page 4 of Attachment JRW-12.

V. CAPITAL STRUCTURE AND DEBT COST RATE

Q. PLEASE SUMMARIZE THE CAPITAL STRUCTURE AND DEBT COST RATE RECOMMENDATIONS MADE BY THE CCAWC WITNESSES.

A. The capital structure and debt cost rate recommendations of the witnesses for the water companies are provided along with their overall cost of capital recommendations in Attachment JRW-2.

Q. PLEASE PROVIDE AN OVERVIEW OF ATTACHMENT JRW-13.

A. Attachment JRW-13 provides my recommended capital structures and debt cost rates for the CCAWCs as well as supporting schedules that I have used in developing these recommendations.

Q. PLEASE REVIEW THE CAPITAL STRUCTURE RECOMMENDATIONS OF THE INDIVIDUAL COMPANIES.

A. Mr. Stephenson provides the capital structure recommendation for CAW. He has proposed a capital structure consisting of 50.31% long-term debt and 49.69% common equity under certain conditions. As stated in his testimony at page 10:

> California American Water firmly believes that it is most appropriate and cost efficient to allow an appropriate return on all regulatory assets and then use the 50% debt / 50% equity capital structure. The reason for this recommendation is that allowing an appropriate rate of return on the regulatory assets would mean that the true cost of these assets would be recognized and that the appropriate customers would then be supporting the regulatory assets related to their service. If the Commission continues to not recognize an appropriate rate of return on the regulatory assets and then allows the ratemaking capital structure to accommodate the loss of recognition of an appropriate return on the regulatory assets, that position would mean a higher required return on all ratemaking assets thereby transferring costs from the costs causers (the regulatory assets) to all other items of the regulated rate base. This would cause all current customers to pay for costs that were caused by a smaller subset of customers as a result of the regulatory assets.

These certain conditions regarding the appropriate return on regulatory assets are Special Request #4 and Special Request #33. If these special requests are not adopted by the Commission, Mr. Stephenson recommends a capital structure of 37.84% long-term debt and 62.16% common equity. In this alternative proposal Mr. Stephenson has effectively included the regulatory assets of CAW in the equity component of the capital structure.

Mr. Kropelnicki develops the recommended capital structure for CWS. The proposed capitalizations include common equity ratios of 54.5% in 2012, 50.4% in 2013, and 55.1% in 2014. The average common equity ratio for the years 2012-2014 is 53.6%. His proposed capitalization includes an equity issue of $100M in 2011, a debt issue of $100M in 2013, and an equity issue of $100M in 2014.

Ms. Tang provides the recommended capital structure and debt cost rate for GSW. The recommendation includes a capital structure consisting of

44.4% debt and 55.6% common equity be used for the years 2012 through 2014. This represents the average of the capital structure for years 2012, 2013, and 2014. The starting point of her calculation is the capital structure as of December 31, 2010, with a total capitalization of $681 million. This included $295 million of long-term debt (43.4%) and $385 million of equity (56.6%). The $385 million of equity includes certain long-term regulatory assets totaling approximately $27.2 million. As such, similar to the alternative recommendation of Mr. Stephenson for CAW, Ms. Tang has included regulatory assets in the equity of her recommended capital structure.

Mr. Lynch provides the recommended capital structure and debt cost rate for SJW. The recommendation includes a capital structure consisting of 48.48% debt and 51.52% common equity be used for the years 2012 and 2013. This includes equity infusions of $40M over the next two years.

Q. HOW DO THESE RECOMMENDED CAPITAL STRUCTURE RATIOS COMPARE TO THE CAPITAL STRUCTURE RATIOS OF THE PARENT COMPANIES OF THE CCAWCS AND THE WATER PROXY GROUP?

A. Page 2 of Attachment JRW-13 shows, for each of the CCAWCs, the average: (1) recommended capital structure ratios of the CCAWCs; (2) capital structure ratios of the parent companies of the CCAWCs; and (3) capital structure ratios of the Water Proxy Group.

The capitalization data reveal that the average proposed capitalizations of the CCAWCs contain more equity than the capitalizations of their parent

companies and the Water Proxy Group. The average proposed common equity ratios for the CCAWCs and the average common equity ratios of the parent companies are: (1) CAW -- 49.69%, AWK – 40.94%; (2) CWS – 53.9%, CWT – 41.24%; (3) GSW -- 55.5%, AWR – 49.26%; and San Jose – 51.35%, SJW – 41.13%. The average common equity ratio for the Water Proxy Group is 45.34%. It is important to note that these capital structure ratios exclude short-term debt. The inclusion of short-term debt lowers the common equity ratios of the parent companies and the Water Proxy group by about 200 basis points.

Q. PLEASE DISCUSS THE GUIDELINES YOU USED IN DEVELOPING CAPITAL STRUCTURE RATIOS FOR THE CCAWCS.

A. There are several common themes that I have used in developing these capital structures: (1) the fact that the recommended capital structures of the CCAWCs consistently have somewhat more equity than their parent organizations. These parent organizations are the ultimate source of capital and bond ratings for the CCAWCs; (2) the fact that the recommended capital structures of the CCAWCs consistently have somewhat more equity than the companies in the Water Proxy Group. The Water Proxy group, which includes the parent companies of the CCAWCs, is used to estimate the appropriate ROE for the CCAWCs. Therefore, the CCAWCs are using the companies in the Water Proxy Group to estimate an equity cost rate that have capitalizations with less common equity than the capitalizations that they are recommending in this proceeding; and (3) in D.09-

05-019, the Commission noted: "We find equity components in excess of 50% to be problematic and have concerns about equity ratios less than 45%."

Q. BASED ON THESE OBSERVATIONS, WHAT CAPITAL STRUCTURE RATIOS ARE YOU RECOMMENDING FOR THE CCAWCS?

A. My recommended capital structures are provided on page 1 of Attachment JRW-13.

Panel A of page 1 of Attachment JRW-13 provides the recommended capital structure for CAW. I am using the projected capital structure as of the end of 2011 as provided in CAW Attachment A, Chapter 3, Table 1A. This capitalization includes 52.2% long-term debt and 47.8% common equity. This recommendation strikes a balance between the Company's recommended capitalization with a common equity ratio of 49.8% and the more leveraged capitalization of CAW's parent, American Water Works. Furthermore, I have not included in the determination of an appropriate capital structure for CAW's Special Request #4 and Special Request #33. These Requests, along with the associated capital structure issues raised by Mr. Stephenson, are addressed by DRA's witness Mr. Rauschmeier.

Panel B of page 1 of Attachment JRW-13 provides the recommended capital structure for CWS. Consistent with D.09-05-019, I am recommending a capital structure of 50% long-term debt and 50% common equity. This recommendation strikes a balance between the Company's recommended

capitalization with a common equity ratio of 53.90% and the more leveraged capitalization of CWS' parent, CWT.

My capital structure recommendation for GSW is provided in Panel C of page 1 of Attachment JRW-13. I have proposed a capital structure that includes 47% long-term debt and 53% common equity. GSW and its parent, AWR, have historically had capitalizations with higher common equity ratios than the other CCAWCs. In particular, AWR has been financed with more common equity (nearly 50%) than the parent companies of the other CCAWCs. However, GSW has included an inappropriate $27M equity adjustment in this proceeding. The capitalization with a 53% common equity ratio represents an approximate average of common equity ratios proposed by GSW and those of AWR.

Panel D of page 1 of Attachment JRW-13 provides the recommended capital structure for San Jose The common equity ratio as of 2011 for San Jose is 48.07%. I am recommending a capital structure consisting of 50% long-term debt and 50% common equity. This figure balances: (1) the Company's current capitalization with a common equity ratio of 48.07%; (2) the recommended capitalization with a common equity ratio of 51.17%; and (3) the more leveraged capitalization of San Jose's parent, SJW,

Q. PLEASE REVIEW THE DEBT COST RATE RECOMMENDATIONS OF THE INDIVIDUAL COMPANIES.

A. Mr. Stephenson recommends debt cost rates of 6.63% as of 2011 and 6.70% for 2012. These debt cost rates include a 2011 debt issuance with an interest rate of

6.41% and a 2012 debt issuance with an interest rate of 6.41%.

CWS recommends a debt cost rate of 6.16% for the 2012 and 2013 rate years.

Ms. Tang provides the recommended debt cost rate for GSW. Including the debt cost rate of the Miramar plant, she computes a debt cost rate of 6.99% as of 2011. She includes a proforma debt issue with an interest rate of 8.21% in her projected debt cost rates of 7.06% in 2013 and 7.12% in 2014.

Mr. Lynch provides the recommended debt cost rate for SJW. He develops a debt cost rate of 6.68% for the rate years 2012 and 2013 and includes an interest rate of 6.61% on a 2013 $50M debt issuance.

Q. PLEASE DISCUSS THE GUIDELINES YOU USED IN DEVELOPING THE DEBT COST RATES FOR THE CCAWCS.

A. There are two guidelines that I have used in developing the debt cost rates: (1) I have started with the reported cost of long-term debt rates reported for the companies as of 2011; and (2) I have observed that utility debt cost rates have declined and therefore the projected interest costs on future financings are below those projected by the companies. The table below provides the current yields (as of August 19) for 10- and 30- year utility bonds rate 'A' and BBB+.

Current Utility Bond Yield
10-Year and 30-Year Maturities
A and BBB+ Rated Bonds

	10-Year	30-Year
A	3.39%	4.51%
BBB+	3.43%	4.81%

Q. WHAT DEBT COST RATES ARE YOU RECOMMENDING FOR THE CCAWCS?

A. My recommended long-term debt cost rates are provided on page 1 of Attachment JRW-13.

Panel A of page 1 of Attachment JRW-13 provides my recommended long-term debt cost rate for CAW. I am using CAW's reported debt cost rate of 6.63% for 2011. Give current BBB+ utility yields, the projected financings will be below this figure.

Panel B of page 1 of Attachment JRW-13 provides my recommended long-term debt cost rate for CWS. CWS recommends a debt cost rate of 6.16% for the 2012 and 2013 rate years. I will use this figure as my long-term debt cost rate for CWS.

Panel C of page 1 of Attachment JRW-13 provides my recommended long-term debt cost rate for GSW. As noted, GSW computes a debt cost rate of 6.99% as of 2011. The proforma debt cost rate of 8.21% is vastly overstated given current interest rates as well as the Company's recent financing cost rate. As a result, I will use the 2011 debt cost figure of 6.99%.

Panel D of page 1 of Attachment JRW-13 provides my recommended long-term debt cost rate for San Jose. San Jose's debt cost rate for 2012 and 2013 is 6.68%. The projected debt issue of $50M is at a rate above current market interest rates. Therefore, I will use the debt cost rate of 6.68% for the rate years 2012 and 2013.

VI. CRITIQUE OF CCAWCS' RATE OF RETURN TESTIMONY

Q. PLEASE SUMMARIZE THE COST OF CAPITAL AND EQUITY COST RATE POSITIONS OF THE FOUR WATER COMPANIES.

A. The cost of capital recommendations of the four companies are presented in Attachment JRW-2. The issues related to their capital structure and debt cost rate position have previously been discussed. In this section I will focus on the errors in their equity cost rate studies. The witnesses that provide the equity cost rate recommendations are: (1) CAW – Ms. Benite Valladsen, (2) CWS – Mr. Michael J. Vilbert; (3) GSWC – Mr. Thomas M. Zepp; and (4) SJW – Ms. Pauline Ahern. These witnesses use proxy groups and employ various common equity cost rate approaches – the Discounted Cash Flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), Risk Premium ("RP") model, Comparable Earnings ("CE"), and the After-Tax Weighted Average Cost of Capital Approach ("ATWACC").

Page 1 of Attachment JRW-14 provides a summary of the equity cost rate results and methodologies for the CCAWC witnesses. This summary highlights the equity cost rate recommendations, the average recommended common equity ratio, adjustments made to the common equity ratio, the type and number of companies in the proxy group, the equity cost rate approaches used, and other adjustments made to the recommended equity cost rate.

In my discussion below, I will address the equity cost rate analyses and estimates from the different witnesses. I will evaluate these recommendations

by equity cost rate approach (DCF, CAPM, etc.), and highlight and discuss common issues in their analyses as well as individual areas of concern. Since both Ms. Villadsen and Mr. Vilbert are from the Brattle Group, and they use very similar approaches, I will address issues with their analyses together.

A. DCF EQUITY COST RATE ANALYSES

Q. PLEASE SUMMARIZE THE EQUITY COST RATE ANALYSES OF MS. VILLADSEN AND MR. VILBERT.

A. Ms. Villadsen and Mr. Vilbert develop equity cost rates for CAW and CWS using the ATWACC approach along with CAPM and DCF equity cost rate methods. In the ATWACC approach, an overall cost of capital is estimated using a proxy group and debt and equity cost rates and the market values of debt and equity. The equity cost rate for the utility is then computed by applying the ATWACC for the proxy group to the book value capital structure of the utility. This results in a leverage adjustment to the equity cost rate to reflect the difference in the market value capital structures of the proxy group and the book value capital structure of the utility. To estimate the equity cost rate, Ms. Villadsen and Mr. Vilbert use DCF and a CAPM approaches and proxy groups of water and gas companies. They call their CAPM approach a Risk Positioning Approach, and use a variant of the CAPM, the so-called Empirical CAPM ("ECAPM"). They use different levels of interest rates and equity risk premiums. They also use alternative alpha levels for the ECAPM. They then

include a leverage adjustment to reflect the market value capital structures of the water companies relative to the proposed capital structure for CAW and CWS.

Their results are summarized on pages 1 and 2 of Attachment JRW-15. Ms. Villadsen estimates an equity cost rate of 11.50% for CAW, and Mr. Vilbert estimates and equity cost rate of 11.25% for CWS.

Q. PLEASE EXPRESS YOUR CONCERNS WITH THE EQUITY COST RATE STUDIES.

A. I have four primary areas on concern for the testimonies of Ms. Villadsen and Mr. Vilbert. These issues include: (1) the use of the ATWACC approach and the associated leverage adjustment to the equity cost rate; (2) the full year adjustment to the dividend yield; (3) the sole reliance on Wall Street analysts' and *Value Line*'s EPS growth rate forecasts for a DCF growth rate; and (4) the use of overstated risk-free interest rates and equity risk premiums in the CAPM approach.

Q. PLEASE DISCUSS MR. ZEPP'S APPROACHES AND RESULTS.

A. Mr. Zepp provides equity cost recommendations for both GSW. Mr. Zepp uses a proxy group of eight water companies and employs the DCF approach as well as four different versions of the RP approach. The risk premium analyses include an assessment of allowed and earned returns on common equity for water companies. His equity cost rate estimates for GSW are in Panel A of page 3 of Attachment JRW-15. Based on these figures, Mr. Zepp arrives at an

equity cost rate of 11.50% for GSW. Panels B-C on page 3 of Attachment JRW-15 summarizes the inputs and results of his alternative equity cost rate approaches.

Q. PLEASE DISCUSS THE ERRORS WITH MR. ZEPP'S RECOMMENDED EQUITY COST RATE FOR GSW.

A. Mr. Zepp's proposed common equity cost rate is excessive primarily due to: (1) the full-year adjustment to the dividend yield and an inflated growth rate in his DCF approach; and (2) excessive base yields and equity risk premiums in his various RP approaches.

Q. PLEASE REVIEW MS. AHERN'S EQUITY COST RATE APPROACHES AND RESULTS.

A. Ms. Ahern employs a proxy group of eight water companies and employs DCF, CAPM, RP, and CEM equity cost rate approaches. Her equity cost rate estimates for San Jose are summarized in Panel A of page 4 of Attachment JRW-15. She concludes from these results that the appropriate equity cost rate for San Jose is 11.50%. Panels B-E of pages 4 and 5 of Attachment JRW-15 summarizes the inputs and results of his alternative equity cost rate approaches. Ms. Ahern's equity cost rate includes business and financial risk adjustments of 40 and 35 basis points to her baseline equity cost rate of 10.75%.

Q. PLEASE DISCUSS THE ERRORS WITH MS. AHERN'S RECOMMENDED EQUITY COST RATE.

A. Ms. Ahern's proposed return on common equity is excessive primarily due to: (1) the full-year adjustment to the dividend yield and an inflated growth rate in his DCF approach; (2) excessive base yields and equity risk premiums in her CAPM and RP approaches; (3) utilizing the CEM approach; (4) and unjustified business and financial risk adjustments.

Q. PLEASE SUMMARIZE THE DCF EQUITY COST RATE ANALYSES OF MS. VILLADSEN AND MR. VILBERT.

A. Ms. Villadsen and Mr. Vilbert develop an equity cost rate by applying traditional and multistage DCF models to 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. For his traditional DCF, they use a growth rate which is the average of: (1) the projected EPS growth rate of Wall Street analysts as listed by Bloomberg; and (2) the average projected EPS growth rate from *Value Line*. Ms. Villadsen and Mr. Vilbert both employ the ATWACC approach. This approach effectively makes a leverage adjustment to the equity cost rate to reflect the difference between the market value capital structures of the water and gas companies and the utility's ratemaking book value capital structure. They both use a three growth rate stages: (1) stage 1 (years 1-5) the projected growth rate used in his traditional DCF model; (2) stage 2 (years 5-10) a linear extrapolation between the state 1 and stage 3 growth rates; and (3) stage 3 (years 11-forward) a forecasted GDP growth rate of 4.8%. Ms. Villadsen and Mr.

Vilbert's DCF results are summarized in Panel B of pages 1 and 2 Attachment JRW-15.

Q. PLEASE EXPRESS YOUR CONCERNS WITH OF MS. VILLADSEN AND MR. VILBERT'S DCF STUDY.

A. I have four primary issues with the DCF equity cost rate approach of the two witnesses. These issues include: (1) the full year adjustment to the dividend yield; (2) the ATWACC approach and the associated leverage adjustment to the equity cost rate; (3) the sole reliance on Wall Street analysts' and *Value Line*'s EPS growth rate forecasts for a DCF growth rate; and (4) the use of projected GDP growth as a long-term growth rate in the multistage DCF model.

Q. PLEASE REVIEW MR. ZEPP'S DCF APPROACH.

A. Mr. Zepp's DCF analysis is summarized in Panel B of page 3 Attachment JRW-15. Mr. Zepp employs his group of seven water companies, employs dividend yields computed over three and twelve month periods, and uses two measures of growth: (1) a so-called 'Theoretically Correct' growth rate which is the average projected EPS growth rates of analysts' as provided by Zacks, Yahoo, Reuters, and *Value Line*; and (2) a so-called 'Conservative' growth estimate which is the average (a) historical EPS, BVPS, and stock price growth rates over 5-year and 10-years periods, and (b) the projected EPS growth rates of analysts' as provided by Zacks, Yahoo, Reuters, and *Value Line*.

Q. PLEASE EVALUATE MR. ZEPP'S DCF APPROACH.

A. There are four primary issues with Mr. Zepp's DCF results. These include: (1) an inflated adjustment to his DCF dividend yield; (2) an incorrect evaluation of the historic and projected EPS growth rates of water companies; (3) a misstatement of the historical grow of his water group; and (4) most significantly, the use of upwardly biased EPS growth rate estimates of Wall Street analysts and *Value Line*.

Q. PLEASE SUMMARIZE MS. AHERN'S DCF ESTIMATES.

A. Panel B of page 4 of Attachment JRW-15 summarizes Ms. Ahern's DCF approach which she applies to her proxy groups of water companies. Ms. Ahern adjusts the dividend yield to reflect the quarterly payment of dividends. To estimate the DCF growth rate, Ms. Ahern averages the projected EPS growth rates of Wall Street analysts as compiled by Zacks, Yahoo, Reuters, and *Value Line*.

Q. WHAT ARE THE ERRORS IN MS. AHERN'S DCF APPROACH?

A. Ms. Ahern has (1) made an inflated adjustment to her DCF dividend yield; and (2) most significantly, relied exclusively on the upwardly biased EPS growth rate estimates of Wall Street analysts and *Value Line*.

Q. HOW WILL YOU CRITIQUE THE DCF ANALYSES OF THE WATER COMPANIES?

A. I will discuss the common errors in the DCF studies of the companies, and then I will review the individual errors. The common errors include: (1) the water and gas proxy groups; (2) the full-year adjustment to the dividend yield; and (3) the excessive reliance on Wall Street analysts' and *Value Line*'s EPS growth rate forecasts for a DCF growth rate.

1. Proxy Groups

Q. PLEASE DISCUSS THE PROXY GROUP ISSUE.

A. Ms. Villadsen and Mr. Vilbert have used a proxy group of gas companies in their analyses. I have used the Gas Proxy Group, but only used the results as a guide to the equity cost rate for water companies. As indicated above, the data for water companies are limited. In particular, only five water companies have projected *Value Line* EPS, DPS, and BVPS growth rates. In addition, very few analysts cover water companies and provide projected growth rates. In some cases there is only one analyst who has provided an EPS growth rate estimate. This issue is significant because, as I highlight later in my testimony, it is well known that the projected EPS growth rates of Wall Street analysts are overly optimistic and upwardly biased. In addition, there is an issue with some of the projected growth rates being somewhat different between the different services. As a consequence, I have included the results for the Gas Proxy Group as a guide to the appropriate equity cost rate for water companies. The data for the Gas Proxy Group are much more complete

and provide a much better indication of expected growth and the DCF equity cost rate.

2. The Dividend Yield Adjustment

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

A. The cost of capital witnesses adjust the dividend yield in their DCF analyses to reflect a full year of growth. This is an error. As I previously noted, the appropriate dividend yield adjustment for growth in the DCF model is the expected dividend for the next quarter multiplied by four. The appropriate growth rate adjustment to the dividend yield in the DCF model is complicated because companies change their quarterly dividend payments at different times during the year. This means that it is not appropriate to make a full-year adjustment to the dividend yield. Therefore, I have adjusted the dividend yield by 1/2 the expected growth rate. As I noted, this is the approach used by the Federal Energy Regulatory Commission ("FERC") in its DCF model.

3. DCF Growth Rate

Q. PLEASE REVIEW THE ISSUE OF THE DCF GROWTH RATE.

A. The witnesses for the CCAWCs all rely on the projected EPS growth rates of Wall Street analysts and *Value Line* in arriving at a DCF growth rate. As

noted, this data is limited for water companies. Only five water companies have projected *Value Line* EPS, DPS, and BVPS growth rates. In addition, very few analysts cover water companies and provide projected growth rates. In some cases there is only one analyst who has provided an EPS growth rate estimate. In addition, there is variation in the projected EPS growth rates published by different services. Nonetheless, the most significant issue with the EPS growth rate forecasts of Wall Street analysts is that they are overly optimistic and upwardly biased. In addition, as I show, *Value Line*'s EPS and stock price growth rate forecasts are excessive and unrealistic. Hence, using these projected EPS growth rates as a DCF growth rate provides an overstated equity cost rate. I also demonstrate in that the Wall Street analysts' long-term EPS growth rate forecasts are excessive for electric utilities and gas distribution companies.

Q. PLEASE REVIEW THE ACADEMIC RESEARCH ON THE ACCURACY OF ANALYSTS' NEAR-TERM EPS ESTIMATES AND LONG-TERM EPS GROWTH RATE FORECASTS.

A. There is a long history of studies that evaluate how well analysts forecast near-term EPS estimates and long-term EPS growth rates. Most of the early studies evaluated the accuracy of earnings forecasts for the next quarter or the next year. These studies document that analysts make overly optimistic EPS earnings forecasts (Stickel (1990); Brown (1997); Chopra (1998)).[15] Harris

[15] S. Stickel, "Predicting Individual Analyst Earnings Forecasts," *Journal of Accounting Research*, Vol. 28, 409-417, 1990. Brown, L.D., "Analyst Forecasting Errors: Additional Evidence," *Financial Analysts Journal*, Vol. 53, 81-88, 1997, and Chopra, V.K., "Why So Much Error in Analysts' Earnings Forecasts?" *Financial Analysts Journal*, Vol. 54, 30-37, (1998).

(1999) published the first study examining the accuracy of long-term EPS growth rate forecasts.[16] He evaluated the accuracy of analysts' long-term EPS forecasts over the 1982-1997 time-period. He concluded the following: (1) the accuracy of analysts' long-term EPS forecasts is very low; (2) a superior long-run method to forecast long-term EPS growth is to assume that all companies will have an earnings growth rate equal to historic GDP growth; and (3) analysts' long-term EPS forecasts are significantly upwardly biased, with forecasted earnings growth exceeding actual earnings growth by seven percent per annum. Subsequent studies by DeChow, P., A. Hutton, and R. Sloan (2000), and Chan, Karceski, and Lakonishok (2003) also conclude that analysts' long-term EPS growth rate forecasts are overly optimistic and upwardly biased.[17]

More recent studies have shown that the optimistic bias tends to be more substantial for longer-term forecasts and smaller for forecasts made nearer to the EPS announcement date. Richardson, Teoh, and Wysocki, P (2004) report that the upward bias in earnings growth rates declines in the quarters leading up to the earnings announcement date.[18] They call this result the "walk-down to beatable analyst forecasts." They hypothesize that the walk-down might be driven by the "earning-guidance game," in which

[16] R.D. Harris, "The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts," *Journal of Business Finance & Accounting*, pp. 725-55, (June/July 1999).
[17] P. DeChow, A. Hutton, and R. Sloan, "The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings," *Contemporary Accounting Research (2000)* and K. Chan, L., Karceski, J., & Lakonishok, J., "The Level and Persistence of Growth Rates," *Journal of Finance* pp. 643−684, (2003).
[18] S. Richardson, S. Teoh, and P. Wysocki, "The Walk-Down to Beatable Analyst Forecasts: The Role of Equity Issuance and Insider Trading Incentives," *Contemporary Accounting Research*, pp. 885−924, (2004).

analysts give optimistic forecasts at the start of a fiscal year, then revise their estimates downwards until the firm can beat the forecasts at the earnings announcement date.

In sum, there have been many studies of analysts' earnings forecasts. The studies conclude (almost unanimously) that analysts' earnings forecasts of short-term earnings estimates and long-term earnings growth rates are overly optimistic. In terms of analysts' projections of long-term earnings growth, all previous studies have come to this conclusion.

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Q. PLEASE DISCUSS YOUR STUDY OF THE ACCURACY OF ANALYSTS' LONG-TERM EARNINGS GROWTH RATES.

A. To evaluate the accuracy of analysts' EPS forecasts, I have compared actual 3-5 year EPS growth rates with forecasted EPS growth rates on a quarterly basis over the past 20 years for all companies covered by the I/B/E/S data base. In Panel A of page 1 of Attachment JRW-16, I show the average analysts' forecasted 3-5 year EPS growth rate with the average actual 3-5 year EPS growth rate for the past twenty years.

The following example shows how the results can be interpreted. For the 3-5 year period prior to the first quarter of 1999, analysts had projected an EPS growth rate of 15.13%, but companies only generated an average annual EPS growth rate over the 3-5 years of 9.37%. This projected EPS growth rate figure represented the average projected growth rate for over 1,510 companies, with an average of 4.88 analysts' forecasts per company. For the

entire twenty-year period of the study, for each quarter there was on average 5.6 analysts' EPS projections for 1,281 companies. Overall, my findings indicate that forecast errors for long-term estimates are predominantly positive, which indicates an upward bias in growth rate estimates. The mean and median forecast errors over the observation period are 143.06% and 75.08%, respectively. The forecasting errors are negative for only eleven of the eighty quarterly time periods: five consecutive quarters starting at the end of 1995 and six consecutive quarters starting in 2006. As shown in Panel A of page 1 of Attachment JRW-16, the quarters with negative forecast errors were for the 3-5 year periods following earnings declines associated with the 1991 and 2001 economic recessions in the U.S. Thus, there is evidence of a persistent upward bias in long-term EPS growth forecasts.

The average 3-5 year EPS growth rate projections for all companies provided in the I/B/E/S database on a quarterly basis from 1988 to 2008 are shown in Panel B of page 1 of Attachment JRW-16. In this graph, no comparison to actual EPS growth rates is made, and hence, there is no follow-up period. Therefore, since companies are not lost from the sample due to a lack of follow-up EPS data, these results are for a larger sample of firms. Analysts' forecasts for EPS growth were higher for this larger sample of firms, with a more pronounced run-up and then decline around the stock market peak in 2000. The average projected growth rate hovered in the 14.5%-17.5% range until 1995 and then increased dramatically over the next five years to 23.3% in the fourth quarter of the year 2000. Forecasted EPS

growth has since declined to the 15.0% range.

Q. IS THE UPWARD BIAS IN ANALYSTS' GROWTH RATE FORECASTS GENERALLY KNOWN IN THE MARKETS?

A. Yes. Page 2 of Attachment JRW-16 provides an article published in the *Wall Street Journal*, dated March 21, 2008, that discusses the upward bias in analysts' EPS growth rate forecasts.[19] In addition, a recent *Bloomberg Businessweek* article also highlighted the upward bias in analysts' EPS forecasts. This article is provided on pages 3 and 4 of Attachment JRW-16. The article concludes with the following:[20]

> ***The bottom line:*** *Despite reforms intended to improve Wall Street research, stock analysts seem to be promoting an overly rosy view of profit prospects.*

Q. PLEASE ADDRESS THE ISSUE REGARDING THE SUPERIORITY OF ANALYSTS' EPS FORECASTS OVER HISTORIC AND TIME-SERIES ESTIMATES OF EPS GROWTH?

A. As highlighted by the classic study by Brown and Rozeff (1976) and the other studies that followed, analysts' forecasts of quarterly earnings estimates are superior to the estimates derived from historic and time-series analyses.[21] This is often attributed to the information and timing advantage that analysts have over historic and time-series analyses. However, more recently Bradshaw, Drake, Myers, and Myers (2009) discovered that time-series estimates of annual

[19] Andrew Edwards, "Study Suggests Bias in Analysts' Rosy Forecasts," *Wall Street Journal* (March 21, 2008), p. C6.
[20] Roben Farzad, 'For Analysts, Things are Always Looking Up,' *Bloomberg Businessweek* (June 14, 2010), pp. 39-40.
[21] L. Brown and M. Rozeff, "The Superiority of Analyst Forecasts as Measures of Expectations: Evidence from Earnings," *The Journal of Finance* 33 (1): pp. 1-16 (1976).

earnings are more accurate over longer horizons than analysts' forecasts of earnings. As the authors state, "These findings suggest an incomplete and misleading generalization about the superiority of analysts' forecasts over even simple time-series-based earnings forecasts."[22]

With respect to long-term earnings growth, analysts' forecasts of long-term growth have not been found to be superior to other historic growth rate measures. Harris (1999) concluded that historic GDP growth was superior to analysts' forecasts for long run earnings growth. These results are supported by empirical results of Chan, Karceski, and Lakonishok (2003).

Q. WHAT IMPACT HAVE NEW STOCK MARKET AND REGULATORY DEVELOPMENTS HAD ON ANALYSTS' EPS GROWTH RATE FORECASTS?

A. Analysts' EPS growth rate forecasts have subsided somewhat since the stock market peak of 2000. Two regulatory developments over the past decade have potentially impacted analysts' EPS growth rate estimates. First, the Securities and Exchange Commission ("SEC") in October of 2000 introduced the Regulation Fair Disclosure ("Reg FD"). The Reg FD prohibits private communication between analysts and management so as to level the information playing field in the markets. With Reg FD, analysts are less dependent on gaining access to management to obtain information and therefore, are not as likely to make optimistic forecasts to gain access to management. Second, the conflict of interest within investment firms with

[22] M. Bradshaw, M. Drake, J. Myers, and L. Myers, "A Re-examination of Analysts' Superiority Over Time-Series Forecasts," Workings paper, (1999), http://ssrn.com/abstract=1528987.

investment banking and analyst operations was addressed in the Global Analysts Research Settlements ("GARS"). GARS, as agreed upon on April 23, 2003, between the SEC, NASD, NYSE and ten of the largest U.S. investment firms, includes a number of regulations that were introduced to prevent investment bankers from pressuring analysts to provide favorable projections.

The impact of these regulatory developments on the accuracy of short-term EPS estimates was addressed in a recent study by Hovakimian and Saenyasiri (2009).[23] They investigated analysts' forecasts of annual earnings for the following time periods: (1) the time prior to Reg FD (1984-2000); (2) the time period after Reg FD but prior to GARS (2000-2002);[24] and (3) the time period after GARS (2002-2006). For the pre-Reg FD period, Hovakimian and Saenyasiri find that analysts generally make overly optimistic forecasts of annual earnings. The forecast bias is higher for early forecasts and steadily declines in the months leading up to the earnings announcement. The results are similar for the time period after Reg FD, but prior to GARS. However, the bias is lower in the later forecasts (the forecasts made just prior to the announcement). For the time period after GARS, the average forecasts declined significantly, but a positive bias remains. In sum, Hovakimian and Saenyasiri find that: (1) analysts make overly optimistic short-term forecasts

[23] A. Hovakimian and E. Saenyasiri, "Conflicts of Interest and Analysts Behavior: Evidence from Recent Changes in Regulation," Working Paper, (April 20, 2009) (SSRN No, 1133102).

[24] Whereas the GARS settlement was signed in 2003, rules addressing analysts' conflict of interest by separating the research and investment banking activities of analysts went into effect with the passage of NYSE and NASD rules in July of 2002.

of annual earnings; (2) Reg FD had no effect on this bias; and (3) GARS did result in a significant reduction in the bias, but analysts' short-term forecasts of annual earnings still have a small positive bias.

Whereas Hovakimian and Saenyasiri evaluated the impact of regulations on analysts' short-term EPS estimates, there is little research on the impact of Reg FD and GARS on the long-term EPS forecasts of Wall Street analysts. My study with Patrick Cusatis did find that the long-term EPS growth rate forecasts of analysts did not decline significantly and have continued to be overly-optimistic in the post Reg FD and GARS period.[25] Analysts' long-term EPS growth rate forecasts before and after GARS are about two times the level of historic GDP growth. These observations are supported by a *Wall Street Journal* article entitled "Analysts Still Coming Up Rosy – Over-Optimism on Growth Rates is Rampant – and the Estimates Help to Buoy the Market's Valuation." The following quote provides insight into the continuing bias in analysts' forecasts:

> Hope springs eternal, says Mark Donovan, who manages Boston Partners Large Cap Value Fund. "You would have thought that, given what happened in the last three years, people would have given up the ghost. But in large measure they have not.
>
> These overly optimistic growth estimates also show that, even with all the regulatory focus on too-bullish analysts allegedly influenced by their firms' investment-banking relationships, a lot of things haven't changed.

[25] P. Cusatis and J. R. Woolridge, "The Accuracy of Analysts' Long-Term EPS Growth Rate Forecasts," Working Paper, (July 2008).

> Research remains rosy and many believe it always will.[26]

Q. ARE THESE OBSERVATIONS CONSISTENT WITH THE FINDINGS OF A RECENT MCKINSEY STUDY ON THE IMPACT OF THESE REGULATIONS ON THE ACCURACY OF ANALYSTS' EPS GROWTH RATE FORECASTS?

A. Yes. McKinsey recently published a study entitled "Equity Analysts: Still too Bullish" in which they reported on a study of the accuracy on analysts long-term EPS growth rate forecasts. They concluded that after a decade of stricter regulation, analysts' earnings long-term earnings forecasts continue to be excessively optimistic.

They made the following observation (emphasis added): [27]

> Alas, a recently completed update of our work only reinforces this view—despite a series of rules and regulations, dating to the last decade, that were intended to improve the quality of the analysts' long-term earnings forecasts, restore investor confidence in them, and prevent conflicts of interest. For executives, many of whom go to great lengths to satisfy Wall Street's expectations in their financial reporting and long-term strategic moves, this is a cautionary tale worth remembering. This pattern confirms our earlier findings that analysts typically lag behind events in revising their forecasts to reflect new economic conditions. When economic growth accelerates, the size of the forecast error declines; when economic growth slows, it increases. So as economic growth cycles up and down, the actual earnings S&P 500 companies report occasionally coincide with the analysts' forecasts, as they did, for example, in 1988, from 1994 to 1997, and from 2003 to 2006. <u>Moreover, analysts have been persistently overoptimistic for the past 25 years, with estimates ranging from 10 to 12 percent a year, compared with actual earnings growth of 6 percent. Over this time frame, actual earnings growth surpassed forecasts in only two instances, both during the earnings recovery following a recession. On average, analysts' forecasts have been almost 100</u>

[26] Ken Brown, "Analysts Still Coming Up Rosy – Over-Optimism on Growth Rates is Rampant – and the Estimates Help to Buoy the Market's Valuation," *Wall Street Journal*, p. C1, (January 27, 2003).

[27] Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, "Equity Analysts, Still Too Bullish," McKinsey on Finance, pp. 14-17, (Spring 2010).

percent too high.

Q. ARE ANALYSTS' EPS GROWTH RATE FORECASTS LIKEWISE UPWARDLY BIASED FOR UTILITY COMPANIES?

A. Yes. To evaluate whether analysts' EPS growth rate forecasts are upwardly biased for utility companies, I conducted a study similar to the one described in above using a group of electric utility and gas distribution companies. The results are shown on Panels A and B of page 5 of Attachment JRW-16. The projected EPS growth rates for electric utilities have been in the 4% to 6% range over the last twenty years, with the recent figures approximately 5%. As shown, the achieved EPS growth rates have been volatile and on average, below the projected growth rates. Over the entire period, the average quarterly 3-5 year projected and actual EPS growth rates are 4.59% and 2.90%, respectively.

For gas distribution companies, the projected EPS growth rates have declined from about 6% in the 1990s to about 5% in the 2000s. The achieved EPS growth rates have been volatile. Over the entire period, the average quarterly 3-5 year projected and actual EPS growth rates are 5.15% and 4.53%, respectively.

Overall, the upward bias in EPS growth rate projections for electric utility and gas distribution companies is not as pronounced as it is for all companies. Nonetheless, the results here are consistent with the results for

companies in general -- analysts' projected EPS growth rate forecasts are upwardly-biased for utility companies.

Q. ARE *VALUE LINE*'S GROWTH RATE FORECASTS OVERLY OPTIMISTIC?

A. Yes. *Value Line* has a decidedly positive bias to its earnings growth rate forecasts as well. To assess *Value Line*'s earnings growth rate forecasts, I used the *Value Line Investment Analyzer*. The results are summarized in Panel A of Page 6 of Attachment JRW-16. I initially filtered the database and found that *Value Line* has 3-5 year EPS growth rate forecasts for 2,339 firms. The average projected EPS growth rate was 12.00%. This is high given that the average historical EPS growth rate in the U.S. is about 7%. A major factor seems to be that *Value Line* only predicts negative EPS growth for 114 companies. This is less than five percent of the companies covered by *Value Line*. Given the ups and downs of corporate earnings, this is unreasonable.

To put this figure in perspective, I screened the *Value Line* companies to see what percent of companies covered by *Value Line* had experienced negative EPS growth rates over the past five years. *Value Line* reported a five-year historic growth rate for 2,139 companies. The results are shown in Panel B of page 4 of Attachment JRW-16 and indicate that the average 5-year historic growth rate was 11.53%, and *Value Line* reported negative historic growth for 515 firms, which represents 24.06% of these companies.

These results indicate that *Value Line*'s EPS forecasts are excessive and

unrealistic. It appears that the analysts at *Value Line* are similar to their Wall Street brethren in that they are reluctant to forecast negative earnings growth.

4. Individual DCF Errors

Q. PLEASE REVIEW THE ATWACC APPROACH USED BY MS. VILLADSEN AND MR. VILBERT.

A. Ms. Villadsen and Mr. Vilbert develop equity cost rates for CAW and CWS using the ATWACC approach. In the ATWACC approach, an equity cost rate is computed as in the following: (1) the ATWACC, or an overall cost of capital is estimated using a proxy group and debt and equity cost rates and the market values of debt and equity; and (2) the equity cost rate for the utility is then computed by applying the ATWACC for the proxy group to the book value capital structure of the utility. Therefore, the ATWACC approach effectively results in a leverage adjustment to the equity cost rate to reflect the difference in the market value capital structures of the proxy group and the book value capital structure of the utility.

Q. PLEASE REVIEW THE LEVERAGE ADJUSTMENT.

A. The leverage adjustment is unwarranted for the following reasons:

(1) The market value of a firm's equity exceeds the book value of equity when the firm is expected to earn more on the book value of investment than investors require. This relationship is described very succinctly in the Harvard Business

School case study, which I quote earlier in my testimony. As such, the reason that market values exceed book values is that the company is earning a return on equity in excess of its cost of equity;

(2) There is no change in leverage. There is no need for a leverage adjustment because there is no change in leverage. The Company's financial statements and fixed financial obligations remain the same;

(3) Financial publications and investment firms report capitalizations on a book value and not a market value basis;

(4) There is no record of state regulatory agencies using the ATWACC approach and the associated leverage adjustment.

Q. WHY DO YOU BELIEVE STATE REGULATORY COMMISSIONS HAVE REJECTED THE LEVERAGE ADJUSTMENT?

A. I believe that state regulatory commissions have rejected the leverage adjustment because it increases the ROEs for utilities that have high returns on common equity and decreases the ROEs for utilities that have low returns on common equity.

In the graphs presented in Attachment JRW-6, I have demonstrated that there is a strong positive relationship between expected returns on common equity and market-to-book ratios for public utilities. Hence, in the context of the leverage adjustment, this means that: (1) for a utility with a relatively high market-to-book ratio (e.g., 2.5) and ROE (e.g., 12.0%), the leverage adjustment will increase the estimated equity cost rate, while (2) for a utility with a

relatively low market-to-book ratio (e.g., 0.5) and ROE (e.g., 5.0%), the leverage adjustment will decrease the estimated equity cost rate. Therefore, the adjustment will result in even higher market-to-book ratios for utilities with relatively high ROEs and even lower market-to-book ratios for utilities with relatively low ROEs.

Q. PLEASE EVALUATE MR. ZEPP'S ANALYSIS OF THE PROJECTED AND HISTORICAL EPS GROWTH OF WATER COMPANIES.

A. In Table 5 of his testimony, Mr. Zepp makes the claim that historic growth in EPS and DPS are no longer comparable to growth as estimated by analysts' growth forecasts. While the study cited by Mr. Zepp is out of date, the most important error is that it addresses the wrong issue. Instead of comparing historic growth rates to current projections, the study should be comparing the projected growth rates from five years ago versus the actual achieved growth rates over the past five years. Had he examined these growth rates, he would have discovered the well-known upward bias in Wall Street analysts' projected EPS growth rates which was discussed above.

Q. HOW DOES MR. ZEPP MISSTATE THE HISTORICAL GROWTH OF HIS WATER GROUP?

A. Mr. Zepp computes 5-year and 10-year historic growth rates for his water group in Table 2. His analysis indicates a 5-year and 10-year average historical growth rate of 6.9%. He then averages this figure with his average projected EPS growth rate in his 'Conservative' DCF approach which is presented in Table 8.

The historical average growth rate overstates the actual historical growth rate for the group.

There are two reasons for the overstatement. First, he uses the average of the 'Average Annual Change' in historical growth and not compounded historical growth. This tends to result in an inflated measure of actual growth because this approach overstates the actual growth that occurred. Second, I would argue that he has mistakenly included price per share growth. The error here is that stock price growth is a function in both firm-specific factors (such as earnings and dividend growth) as well as market-wide factors (such as changes in interest rates and market psychology). The error is that Mr. Zepp's inclusion of stock price growth presupposes assumptions about market conditions that are not necessarily elements of the fundamental growth factors for water companies. The average historic stock price growth rate of 9.6% is well above the other historic growth rates.

Q. PLEASE SUMMARIZE YOUR ASSESSMENT OF THE DCF EQUITY COST RATES OF THE WATER COMPANIES.

A. The DCF equity cost rates of the witnesses for the water companies are significantly overstated. The primary reason is the excessive reliance on the upwardly biased EPS growth rate estimates of Wall Street analysts and *Value Line*.

B. CAPM AND RP ANALYSES

Q. PLEASE NOW TURN TO THE RP AND CAPM ANALYSES THE WATER COMPANIES PERFORMED.

A. Since the CAPM is a form of the RP approach, I will now discuss the water company witnesses' RP and CAPM analyses together. I will provide an overview of their approaches and results, and then discuss the common and individual errors in the CAPM and RP analyses.

Q. MR. VILBERT AND MS. VILLADESEN'S CAPMS.

A. Mr. Vilbert and Ms. Villadsen apply the CAPM/ECAPM methodologies to their two groups of water and gas companies. As noted above, they call their CAPM approach a Risk Positioning Approach, and use a variant of the CAPM, the so-called Empirical CAPM ("ECAPM"). They use different levels of interest rates and equity risk premiums as well as alternative alpha levels for the ECAPM. They use long-term interest rates of 4.49%, 4.61%, and 4.74%. Their equity risk premium of 6.5% is based on historic stock and bond returns. They also report results with equity risk premiums of 7.0% and 7.5% due to the 'ongoing financial turmoil.' They then include a leverage adjustment to reflect the market value capital structures of the water companies relative to the proposed capital structure for CAW and CWS. Their results are summarized in Panel A of pages 1 and 2 of Attachment JRW-15.

Q. PLEASE DISCUSS MR. VILBERT AND MS. VILLADESEN'S CAPM/ECAPM STUDIES' ERRORS.

A. There are four flaws with their CAPM/ECAPM analyses: (1) the leverage or financial risk adjustment; (2) the risk-free interest rate; (3) the application of the ECAPM approach; and (4) most significantly, the equity risk premiums of both their CAPM and ECAPM approaches. The leverage adjustment was addressed above, and the other three issues are discussed below.

Q. PLEASE PROVIDE A SUMMARY OF MR. ZEPP'S VARIOUS RISK PREMIUM APPROACHES.

A. Panel C on page 3 of Attachment JRW-15 provides a summary of Mr. Zepp's risk premium studies. I have labeled the Risk Premium Studies as them as RPS I, RPS II, RPS III and RPS IV. In RPS I and III, Mr. Zepp evaluates the authorized (RP I) and earned (RP-III) ROEs for water utilities relative to 30-year Treasury yields. In RP I, he computes the risk premium (over 5-year and 10-year periods) as the annual average earned ROE for water utilities minus the yield on 30-year Treasuries. In RPS III, Mr. Zepp performs a regression on the annual average earned ROE for water utilities relative to the yield on Baa bonds so as to capture the relationship between the changes in interest rates and earned ROEs for water companies. In RPS II, Mr. Zepp develops a risk premium (over 5-year and 10-year periods) by computing: (1) an expected return for water utility companies using a DCF framework with Wall Street analysts' and *Value Line* expected EPS forecasts as measures of expected growth; and (2) subtracting the yields on 30-year Treasuries. He then adds the derived risk premiums to the

projected yield on 30-year Treasury bonds.

Q. WHAT ARE THE ERRORS IN MR. ZEPP'S RP ANALYSIS?

A. Mr. Zepp's errors include: (1) his base yield of 5.17% is well above current market interest rates; and (2) his risk premium studies contain several empirical flaws that result in overstated risk premiums and equity cost rates.

Q. PLEASE REVIEW MS. AHERN'S RP AND CAPM ANALYSIS.

A. Ms. Ahern's RP and CAPM results for her water proxy group are in Panel C on page 4 and Panel D on page 5 of Attachment JRW-15. She uses a prospective yield on 'A' rated public utility bonds of 6.06% as a base yield in her RPS approach. She uses a risk-free interest rate of 4.88% in her CAPM. She also employs the ECAPM variant of the CAPM. To arrive at an equity risk premium in her RP and CAPM analyses, Ms. Ahern averages the results of historic and projected equity risk premium studies and then adjusts the resulting equity risk premium by beta. The historic risk premium comes from Ibbotson Associates, and the projected equity risk premium is based on a projected market return from *Value Line*.

Q. WHAT ARE THE ERRORS IN MS. AHERN'S RP AND CAPM ANALYSIS?

A. There are three errors with Ms. Ahern's RP analysis. These errors are: (1) her prospective yield on 'A' rated public utility bonds in her RP approach and her

risk-free interest rate in her CAPM are both inflated and well above current market interest rates; (2) the use of the ECAPM methodology; and (3) she has developed an excessive risk premium based on historic stock and bond returns and an overstated forecasted equity risk premium based on *Value Line* forecasts.

1. Common Errors in RP and CAPM Analysis

Q. WHAT ARE THE WATER COMPANY WITNESSES' COMMON ERRORS IN THE RP AND CAPM ANALYSES?

A. The common errors include: (1) inflated base interest rates in the CAPM and RP studies; (2) the calculation of a historic equity risk premium based on historical stock and bond returns; The use of the ECAPM (Vilbert, Villadsen, and Ahern); and (4) the projected or forecasted market return studies used to compute an expected equity risk premium. The historic risk premium uses historic stock and bond returns from Ibbotson Associates. Mr. Vilbert, Ms. Villadsen, Mr. Zepp, and Ms. Ahern use this approach. Ms. Ahern has also used a forward-looking current equity risk premium which is calculated from a forecasted market return studies based on applying the DCF model to the *Value Line* universe of companies. Mr. Zepp has also applied the DCF model to utilities over time to compute an average historic forward-looking equity risk premium.

Q. PLEASE EVALUATE THE RISK-FREE INTEREST RATES IN THE CAPM STUDIES AND THE BASE YIELDS IN THE RISK PREMIUM STUDIES.

A. The CAPM risk-free interest rates and RP base yields are excessive and are not reflective of interest rates in today's economy. The primary issue is that this rate is significantly above current market interest rate bonds. The witnesses have used risk-free interest rates of ranging from 4.49% (Vilbert and Villadsen) to 5.17% (Zepp). The current yield on 30-year Treasury bonds is in the 3.5% range. Ms. Ahern has used a long-term A-rated utility bond yield of 6.06%. The current rate, as shown on page of Attachment JRW-4 is below 5.0%. Investors are not going buy these bonds at these rates if they believe that the yields on these bonds are going to increase by over 100 basis points in the next year or two. In addition, I am not aware of any studies that provide empirical evidence that long-term interest rate forecasts are better indicators of future interest rates than current interest rates. Therefore, in my opinion, the CAPM risk-free interest rates and RP base yields of the CCAWC witnesses are excessive and serve to inflate their rate of return recommendations.

Q. WHAT ISSUES DO YOU HAVE WITH THE ECAPM?

A. Mr. Vilbert, Ms.Villadsen, and Ms. Ahern have employed not only a traditional CAPM, but also the so-called ECAPM. These witnesses claim to use the ECAPM because the CAPM understates returns for low risk stocks and overstates returns for high risk stocks. However, all three witnesses have used adjusted Betas. Betas are adjusted to reflect the fact that historically, betas tend to regress toward 1.0 over time. Using adjusted betas, therefore, increases the

return for stocks with betas less than 1.0, and decreases the return for stocks with betas greater than 1.0. Hence, adjusted Betas make the same adjustment as the ECAPM.

Q. PLEASE DISCUSS THE MEASUREMENT OF THE HISTORIC RISK PREMIUM.

A. The CCAWC witness measure the historic equity risk premium based on the difference between historical stock return and bond income returns over time. There are two issues with this approach. First, an annual stock return is measured as the annual dividend paid plus the change stock price over the year, dividend by the stock price at the beginning of the year. Likewise, an annual bond return is measured as the annual interest paid plus the change bond price over the year, dividend by the bond price at the beginning of the year. However, the CCAWC witnesses only use the interest income portion of the bond in measuring the bond return. This is erroneous because it omits the change in the bond price portion of the return. Therefore, the bond income return is not directly comparable to total stock return. Second, and most significantly, there are a myriad of empirical problems, which result in historical stock and bond returns producing inflated estimates of expected risk premiums.

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

A. Using the historical relationship between stock and bond returns to measure an ex ante equity risk premium is erroneous and, especially in this case, overstates the true market equity risk premium. The equity risk premium is based on expectations of the future and when past market conditions vary significantly from the present, historic data does not provide a realistic or accurate barometer of expectations of the future. Using historical returns to measure the ex ante equity risk premium ignores current market conditions and masks the change in the risk and return relationship between stocks and bonds. This change suggests that the equity risk premium has declined.

Q. PLEASE DISCUSS THE PROBLEMS WITH USING HISTORIC STOCK AND BOND RETURNS TO ESTIMATE AN EQUITY RISK PREMIUM.

A. There are a number of flaws in using historic returns over long time periods to estimate expected equity risk premiums. These issues include:

(A) Biased historical bond returns;

(B) The arithmetic versus the geometric mean return;

(C) The large error in measuring the equity risk premium using historical returns;

(D) Unattainable and biased historical stock returns;

(E) Company Survivorship bias; and

(F) The "Peso Problem" - U.S. stock market survivorship bias;

These issues will be addressed in order.

A.) Biased Historical Bond Returns

Q. HOW ARE HISTORICAL BOND RETURNS BIASED?

A. An essential assumption of these studies is that over long periods of time, investors' expectations are realized. However, the experienced returns of bondholders in the past violate this critical assumption. Historic bond returns are biased downward as a measure of expectancy because of capital losses suffered by bondholders in the past. As such, risk premiums derived from this data are biased upwards.

B.) The Arithmetic versus the Geometric Mean Return

Q. PLEASE DISCUSS THE ISSUE RELATING TO THE USE OF THE ARITHMETIC VERSUS THE GEOMETRIC MEAN RETURNS IN THE IBBOTSON METHODOLOGY.

A. The measure of investment return has a significant effect on the interpretation of the risk premium results. When analyzing a single security price series over time (i.e., a time series), the best measure of investment performance is the geometric mean return. Using the arithmetic mean overstates the return experienced by investors. In a study entitled "Risk and Return on Equity: The Use and Misuse of Historical Estimates," Carleton and Lakonishok make the following observation: "The geometric mean measures the changes in wealth over more than one period on a buy and hold (with dividends invested)

strategy."[28] Since these historic study covers more than one period (and he assumes that dividends are reinvested), he should be employing the geometric mean and not the arithmetic mean.

Q. PLEASE PROVIDE AN EXAMPLE DEMONSTRATING THE PROBLEM WITH USING THE ARITHMETIC MEAN RETURN.

A. To demonstrate the upward bias of the arithmetic mean, consider the following example. Assume that you have a stock (that pays no dividend) that is selling for $100 today, increases to $200 in one year, and then falls back to $100 in two years. The table below shows the prices and returns.

Time Period	Stock Price	Annual Return
0	$100	
1	$200	100%
2	$100	-50%

The arithmetic mean return is simply (100% + (-50%))/2 = 25% per year. The geometric mean return is $((2 * .50)^{(1/2)}) - 1 = 0\%$ per year. Therefore, the arithmetic mean return suggests that your stock has appreciated at an annual rate of 25%, while the geometric mean return indicates an annual return of 0%. Since after two years, your stock is still only worth $100, the geometric mean return is the appropriate return measure. For this reason, when stock returns and earnings growth rates are reported in the financial press, they are generally reported using the geometric mean. This is because

[28] Willard T. Carleton and Josef Lakonishok, "Risk and Return on Equity: The Use and Misuse of Historical Estimates," *Financial Analysts Journal*, pp. 38-47, (January-February, 1985).

of the upward bias of the arithmetic mean. As further evidence of the appropriate mean return measure, the SEC requires equity mutual funds to report historic return performance using geometric mean and not arithmetic mean returns.[29] Therefore, the historic arithmetic mean return measures are biased and should be disregarded.

Q. PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE DEBATE OVER THE USE OF THE ARITHMETIC VERSUS THE GEOMETRIC MEAN RETURN IN DEVELOPING AN EXPECTED MARKET RISK PREMIUM.

A. In measuring historic returns to develop an expected equity risk premium, finance texts will often recommend the use of an arithmetic mean return as a measure of central tendency. A common justification for using the arithmetic mean return is that since annual stock returns are not serially correlated, the best measure of a return for next year is the arithmetic mean of past returns. On the other hand, Damodaran suggests that such an estimate is not appropriate in estimating an equity risk premium:[30]

> There are, however, strong arguments that can be made for the use of geometric averages. First, empirical studies seem to indicate that returns on stocks are negatively correlated over long periods of time. Consequently, the arithmetic average return is likely to overstate the premium. Second, while asset pricing models may be single period models, the use of these models to get expected returns over long periods (such as five or ten years) suggests that the estimation period may be much longer than a year. In this context, the argument for geometric average premiums becomes stronger

[29] SEC, Form N-1A.

[30] Aswath. Damodaran, "A New "Risky" World Order: Unstable Risk Premiums - Implications for Practice" NUU Working Paper, 2010, p. 25.

C.) The Error in Measuring Equity Risk Premiums with Historic Data

Q. PLEASE DISCUSS THE ERROR IN MEASURING THE EQUITY RISK PREMIUM USING HISTORICAL STOCK AND BOND RETURNS.

A. Measuring the equity risk premium using historical stock and bond return is subject to a substantial forecasting error. For example, the arithmetic mean long-term equity risk premium of approximately 6.5% has a standard deviation of over 20.0%. This may be interpreted in the following way with respect to the historical distribution of the long-term equity risk premium using a standard normal distribution and a 95%, +/- 2 standard deviation confidence interval: We can say, with a 95% degree of confidence, that the true equity risk premium is between -34.7% and +47.7%. As such, the historical equity risk premium is measured with a substantial degree of error.

D.) Unattainable and Biased Historic Stock Returns

Q. YOU NOTE THAT HISTORIC STOCK RETURNS ARE BIASED USING THE IBBOTSON METHODOLOGY. PLEASE ELABORATE.

A. Returns developed using Ibbotson's methodology are computed on stock indexes and therefore: (1) cannot be reflective of expectations because these returns are unattainable to investors and (2) produce biased results. This methodology assumes: (1) monthly portfolio rebalancing and (2) reinvestment of interest and dividends. Monthly portfolio rebalancing presumes that investors rebalance

their portfolios at the end of each month in order to have an equal dollar amount invested in each security at the beginning of each month. The assumption generates high transaction costs and thereby renders these returns unattainable to investors. In addition an academic study demonstrates that the monthly portfolio rebalancing assumption produces biased estimates of stock returns.[31]

Transaction costs themselves provide another bias in historic versus expected returns. In the past, the observed stock returns were not the realized returns of investors due to the much higher transaction costs of previous decades. These higher transaction costs are reflected through the higher commissions on stock trades and the lack of low cost mutual funds like index funds.

E.) Company Survivorship Bias

Q. HOW DOES COMPANY SURVIVORSHIP BIAS AFFECT THE HISTORIC EQUITY RISK PREMIUM?

A. Using historic data to estimate an equity risk premium suffers from company survivorship bias. Company survivorship bias results when using returns from indexes like the S&P 500. The S&P 500 includes only companies that have survived. The fact that returns of firms that did not perform well were dropped from these indexes is not reflected. Therefore, these stock returns are

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

upwardly biased because they only reflect the returns from more successful companies.

F.) The "Peso Problem" - U.S. Stock Market Survivorship Bias

Q. WHAT IS THE "PESO PROBLEM," AND HOW DOES IT RELATE TO SURVIVORSHIP BIAS IN U. S. STOCK MARKET RETURNS?

A. The use of historic return data also suffers from the so-called "Peso Problem," which is also known as U.S. stock market survivorship bias. The "peso problem" issue was first highlighted by the Nobel laureate, Milton Friedman, and gets its name from conditions related to the Mexican peso market in the early 1970s. This issue involves the fact that past stock market returns were higher than were expected at the time because despite war, depression and other social, political, and economic events, the U.S. economy survived and did not suffer hyperinflation, invasion and/or the calamities of other countries. As such, highly improbable events, which may or may not occur in the future, are factored into stock prices, leading to seemingly low valuations. Higher than expected stock returns are then earned when these events do not subsequently occur. Therefore, the "peso problem" indicates that historic stock returns are overstated as measures of expected returns because the U.S. markets have not experienced the disruptions of other major markets around the world.

Q. DO YOU HAVE ANY OTHER THOUGHTS ON THE USE OF HISTORICAL RETURN DATA TO ESTIMATE AN EQUITY RISK PREMIUM?

A. Yes. Jay Ritter, a Professor of Finance at the University of Florida, identified the use of historical stock and bond return data to estimate a forward-looking equity risk premium as one of the "Biggest Mistakes" taught by the finance profession.[32] His argument is based on the theory behind the equity risk premium, the excessive results produced by historical returns, and the previously-discussed errors such as survivorship bias in historical data.

Q. PLEASE NOW TURN TO YOUR SPECIFIC COMMENTS ON DR. ZEPP'S VARIOUS RISK PREMIUM APPROACHES. PLEASE ASSESS HIS EVALUATION OF EARNED AND AUTHORIZED RETURNS ON COMMON EQUITY.

A. Panel C on page 3 of Attachment JRW-15 provides a summary of Mr. Zepp's risk premium studies. In RPS I and III, Mr. Zepp evaluates the earned and authorized returns on equity for water utilities relative to 30-year Treasury yields. In RPS I, he computes the risk premium (over 5-year and 10-year periods) as the annual average earned ROE for water utilities minus the yields on 30-year Treasuries and Baa utility bonds. He then adds these risk premiums to the forecasted yields on 30-year Treasury bond. RPS III is identical to RPS I, except that Dr. Zepp uses the annual authorized ROEs for water utilities instead of the earned ROEs.

In RPS II, Mr. Zepp develops a risk premium by computing: (1) an

[32] Jay Ritter, "The Biggest Mistakes We Teach," *Journal of Financial Research* (Summer 2002).

expected return for water utility companies using a DCF framework with Wall Street analysts' and *Value Line* expected EPS forecasts as measures of expected growth; and (2) subtracting the yields on 30-year Treasury bonds. He then adds the derived risk premiums to the projected yield on 30-year Treasury bonds. The error with this approach is that Mr. Zepp has used the overly optimistic projected EPS growth rates of Wall Street analysts to estimate his DCF growth rate. This results in an overstated risk premium.

Q. PLEASE DISCUSS THE ERRORS IN MR. ZEPP'S RPS I AND III.

A. The primary issue in RPSs I and III is the magnitude of the risk premium from each of the studies. These approaches measure the risk premium as the earned or authorized ROE above a base yield. For these RPSs, Mr. Zepp has not performed any analysis to examine whether the annual earned or allowed ROEs are above, equal to, or below investors' required return. As discussed above, if a firm's return on equity is above (below) the return that investor's require, the market price of its stock will be above (below) the book value of the stock. Mr. Zepp has not evaluated the market-to-book ratios for the water utilities, therefore he cannot indicate whether these earned or allowed ROEs are above or below investors' requirements.

To evaluate this issue, I assessed the authorized and earned ROEs for publicly-held water companies over the past decade. The results of this analysis are provided on page 2 of Attachment JRW-12. The average annual authorized and earned ROEs and market-to-book ratios are provided in Panel A, and these

figures are graphed in Panel B. The average authorized ROE has declined slightly over the past decade, and has hovered slightly above 10.0% in recent years. Water companies, on average, have consistently earned a ROE that is below their authorized ROE. The average in recent years has been about 9.0%. The average market-to-book ratio for water companies has declined in recent years, but still stands at 1.70X as of 2010. Overall, despite the fact the water companies have consistently earned ROEs below their authorized ROEs over the entire decade, the average market-to-book ratio for water companies has remained well above 1.0. These market-to-book ratio results provide direct evidence that the authorized and earned ROEs for water companies have been more than the returns required by investors. With respect to Mr. Zepp's RPSs I and III, these results indicate that the risk premiums are inflated relative to the returns required by investors.

Q. PLEASE SUMMARIZE THE ERRORS IN MR. ZEPP'S RISK PREMIUM AND CAPM STUDIES.

A. The major issue in Mr. Zepp's various RP approaches is the magnitude of the risk premium. In his RPS I and III, Mr. Zepp develops risk premiums using authorized and earned ROEs for water companies. As I demonstrate by evaluating market-to-book ratios for water companies, these authorized and earned ROEs, and the resulting risk premiums, are well in excess of the returns required by investors. Mr. Zepp's RPS III RPS uses the upwardly

biased EPS growth rate forecasts of Wall Street analysts and *Value Line* to develop an equity risk premium.

Q. PLEASE CRITIQUE MS. AHERN's PROSPECTIVE EQUITY RISK PREMIUM OF 7.46%, WHEREIN SHE CALCULATES EXPECTED MARKET RETURNS USING *VALUE LINE'S* PROJECTED RETURNS.

A. Ms. Ahern computes an expected equity risk premium of 7.46% using an expected market return of 12.34%, which is derived from *Value Line's* 3-5 year annual return projection. The primary error in using *Value Line's* 3-5 year annual return projections is that these projections are consistently high relative to actual experienced returns and as such, provide upwardly biased equity risk premiums.

Q. PLEASE ASSESS MS. AHERN'S EXPECTED MARKET RETURN BASED ON *VALUE LINE'S* PROJECTED RETURNS.

A. Ms. Ahern's expected equity risk premium is based on an expected stock market return of 12.34% computed using *Value Line's* 3-5 year projected market price appreciation potential. The problem with this approach is that *Value Line* has consistently overstated market price appreciation potential in the past. This bias is highlighted in a study shown on page 1 of Attachment JRW-17. Over the 1984-2010 time period, this study demonstrates that *Value Line's* projected 3-5 year annual return has been, on average, 4.85% above the actual 3-5 year annual return. As such, *Value Line's* 3-5 year annual returns produce excessive equity risk premiums.

Q. PLEASE PROVIDE ADDITIONAL EMPIRICAL EVIDENCE ON

BIASES IN USING *VALUE LINE*'S DIVIDEND YIELD AND MEDIAN APPRECIATION POTENTIAL TO ESTIMATE AN EXPECTED MARKET RETURN.

A. To evaluate the use of *Value Line*'s data to estimate an expected market return, I used the *Value Line Investment Analyzer* (April 7, 2011). I discovered two errors in Ms. Ahern's analysis, which lead to an overstatement of the expected market return and therefore, equity risk premium.

1. The dividend yield of 1.86% Ms. Ahern used is only for stocks followed by *Value Line* that pay a dividend. As of April 7, 2011, *Value Line* reported no dividend yield for 763 of its 1,687 stocks (45% of the nearly 1,700 stocks). Therefore, the expected return on these stocks using the DCF model would simply be the annual price appreciation potential. The median dividend yield for all 1,687 stocks is 0.47%. By using the dividend yield for only those stocks that pay a dividend, Ms. Ahern has inflated her dividend yield by 1.39% (1.86% - 0.47% = 1.39%).

2. As shown above, *Value Line* has a tendency to produce inflated projected measures of growth, primarily since the service rarely forecasts negative growth. As of April 7, 2011, *Value Line* projected negative price appreciation potential for only 55 of the 1,687 stocks. This is only 3.25% of the stocks it covers. In other words, *Value Line*'s presumption is that 96.75% of stocks will see price appreciation over the next 3-5 years. This is an unrealistic assumption. To put this figure in perspective, *Value Line* reported a negative stock return over

the last five years for 37% of its stocks.

Q. PLEASE PROVIDE AN OVERLL SUMMARY ASSESSMENT OF THE EQUITY RISK PREMIUMS USED IN THE CAPM AND RP ANALYSES.

A. The equity risk premiums the CCAWCs witnesses used do not reflect the risk premiums used in the real world of finance. Investment banks, consulting firms, analysts, companies, 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, companies, analysts, and financial forecasters 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 CFOs are especially relevant. CFOs 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' projections. Nonetheless, the CFOs in the June 2011 *CFO Magazine* – Duke University Survey of almost 500 CFOs shows an expected equity risk premium of 3.40% over the next ten years. In addition, surveys conducted in 2011 by Fernandez indicates that financial analysts and companies are using equity risk premiums of 5.0% and 5.2%. As such, using these real world equity risk premiums, the appropriate equity cost rate for a public utility should be in the 9.0%

range and not in the 11.0% to 12.0% range.

C. MS. AHERN'S COMPARABLE EARNINGS APPROACH

Q. PLEASE DISCUSS MS. AHERN'S CE ANALYSIS.

A. Ms. Ahern also develops an equity cost rate for the Company employing the CE approach. His methodology involves averaging projected returns on common equity for a proxy group of non-utility companies 'comparable' in risk to his proxy group as determined from screening *Value Line's* Value Screen database. Ms. Ahern screens the database on four risk measures and arrives at a group of thirty-eight unregulated comparable companies. The average returns on common equity for the group is 14.5%.

This approach is fundamentally flawed for several reasons. Ms. Ahern has not performed any analysis to examine whether her return on equity figures are likely measures of long-term earnings expectations. More importantly, since Ms. Ahern has not evaluated the market-to-book ratios for these companies, she cannot indicate whether the past and projected returns on common equity are above or below investors' requirements. These returns on common equity are excessive if the market-to-book ratios for these companies are above 1.0. For example, Sara Lee is one of the companies 'comparable' to CCAWCs. The projected return on equity of Sara Lee is 46.0%, and Ms. Ahern used it in her CE analysis to arrive at the equity cost rate for CCAWCs. However, I doubt if any financial analyst, including Ms. Ahern, would suggest

that Sara Lee has an equity cost rate of 46.0%. Indeed, the market-to-book ratio for the company is almost 10.0. This indicates that its return on equity is well above its cost of equity capital.

Q. PLEASE DISCUSS MS. AHERN'S FINANCIAL AND BUSINESS RISK ADJUSTMENT.

A. Ms. Ahern makes financial and business risk adjustments of 35 and 40 basis points in her equity cost rate recommendation for San Jose. The financial risk adjustment is because SJW uses a riskier capital structure than that of the proxy group and the business risk adjustment is to reflect a number of factors and is based on the relative size of San Jose.

The financial risk adjustment is erroneous because, as shown in Attachment JRW-13, the capital structure of water companies includes a common equity ratio lower than SJW's proposed capital structure. In addition, the bond ratings of SJW are in line with the average of water companies and therefore no financial risk adjustment.

Q. MS. AHERN JUSTIFIES HER BUSINESS RISK ADJUSTMENT BASED ON THE SIZE OF SJW. PLEASE DISCUSS THE SIZE ADJUSTMENT.

A. The size adjustment is based on the historical stock market returns studies Morningstar (formerly Ibbotson Associates) performed. 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.

In addition, Professor Annie Wong has tested for a size premium in utilities and concluded that, unlike industrial stocks, utility stocks do not have a significant size premium.[33] 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.

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

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

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.[34]

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

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

disappears within two years. Lu's conclusion with respect to the size premium is:[35]

> 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**.**

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

Appendix A
Educational Background, Research, and Related Business Experience
J. Randall Woolridge

J. Randall Woolridge is a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed Faculty Fellow in Business Administration in the College of Business Administration of the Pennsylvania State University in University Park, PA. In addition, Professor Woolridge is Director of the Smeal College Trading Room and President and CEO of the Nittany Lion Fund, LLC.

Professor Woolridge received a Bachelor of Arts degree in Economics from the University of North Carolina, a Master of Business Administration degree from the Pennsylvania State University, and a Doctor of Philosophy degree in Business Administration (major area-finance, minor area-statistics) from the University of Iowa. At Iowa he received a Graduate Fellowship and was awarded membership in Beta Gamma Sigma, a national business honorary society. He has taught Finance courses at the University of Iowa, Cornell College, and the University of Pittsburgh, as well as the Pennsylvania State University. These courses include corporation finance, commercial and investment banking, and investments at the undergraduate, graduate, and executive MBA levels.

Professor Woolridge's research has centered on the theoretical and empirical foundations of corporation finance and financial markets and institutions. He has published over 35 articles in the best academic and professional journals in the field, including the *Journal of Finance*, the *Journal of Financial Economics*, and the *Harvard Business Review*. His research has been cited extensively in the business press. His work has been featured in the *New York Times*, *Forbes*, *Fortune*, *The Economist*, *Financial World*, *Barron's*, *Wall Street Journal*, *Business Week*, *Washington Post*, *Investors' Business Daily*, *Worth Magazine*, *USA Today*, and other publications. In addition, Dr. Woolridge has appeared as a guest to discuss the implications of his research on CNN's *Money Line*, CNBC's *Morning Call* and *Business Today*, and Bloomberg's *Morning Call*.

Professor Woolridge's popular stock valuation book, *The StreetSmart Guide to Valuing a Stock* (McGraw-Hill, 2003), was released in its second edition. He has also co-authored *Spinoffs and Equity Carve-Outs: Achieving Faster Growth and Better Performance* (Financial Executives Research Foundation, 1999) as well as a textbook entitled *Basic Principles of Finance* (Kendall Hunt, 2011). Dr. Woolridge is a founder and a managing director of www.valuepro.net - a stock valuation website.

Professor Woolridge has also consulted with and prepared research reports for major corporations, financial institutions, and investment banking firms, and government agencies. In addition, he has directed and participated in over 500 university- and company- sponsored professional development programs for executives in 25 countries in North and South America, Europe, Asia, and Africa.

Dr. Woolridge has prepared testimony and/or provided consultation services in the following cases:

Pennsylvania: Dr. Woolridge has prepared testimony on behalf of the Pennsylvania Office of Consumer Advocate in the following cases before the Pennsylvania Public Utility Commission; Bell Telephone Company (R-811819), Peoples Natural Gas Company (R-832315), Pennsylvania Power Company (R-832409), Western Pennsylvania Water Company (R-832381), Pennsylvania Power Company (R-842740), Pennsylvania Gas and Water Company (R-850178), Metropolitan Edison Company (R-860384), Pennsylvania Electric Company (R-860413), North Penn Gas Company (R-860535), Philadelphia Electric Company (R-870629), Western Pennsylvania Water Company (R-870825), York Water Company (R-870749), Pennsylvania-American Water Company (R-880916), Equitable Gas Company (R-880971), the Bloomsburg Water Co. (R-891494), Columbia Gas of Pennsylvania, Inc. (R-891468), Pennsylvania-American Water Company (R-90562), Breezewood Telephone Company (R-901666), York Water Company (R-901813), Columbia Gas of Pennsylvania, Inc. (R-901873), National Fuel Gas Corporation (R-911912), Pennsylvania-American Water Company (R-911909), Borough of Media Water Fund (R-912150), UGI Utilities, Inc. - Electric Utility Division (R-922195), Dauphin Consolidated Water Supply Company - General Waterworks of Pennsylvania, Inc, (R-932604), National Fuel Gas Corporation (R-932548), Commonwealth Telephone Company (I-

920020), Conestoga Telephone and Telegraph Company (I-920015), Peoples Natural Gas Company (R-932866), Blue Mountain Consolidated Water Company (R-932873), National Fuel Gas Corporation (R-942991), UGI - Gas Division (R-953297), UGI - Electric Division (R-953534), Pennsylvania-American Water Company (R-973944), Pennsylvania-American Water Company (R-994638), Philadelphia Suburban Water Company (R-994868;R-994877;R-994878; R-9948790), Philadelphia Suburban Water Company (R-994868), Wellsboro Electric Company (R-00016356), Philadelphia Suburban Water Company (R-00016750), National Fuel Gas Corporation (R-00038168), Pennsylvania-American Water Company (R-00038304), York Water Company (R-00049165), Valley Energy Company (R-00049345), Wellsboro Electric Company (R-00049313), National Fuel Gas Corporation (R-00049656), T.W. Phillips Gas and Oil Co. (R-00051178), PG Energy (R-00061365), City of Dubois Water Company (Docket No. R-00050671), R-00049165), York Water Company (R-00061322), Emporium Water Company (R-00061297), Pennsylvania-American Water Company (R-00072229), UGI Central Penn Gas (Docket No. R-2008-2079675), Columbia Gas of Pennsylvania, Inc. (R-2009-2149262), Pennsylvania-American Water Company – Claysville, Clarion, Northeast, and Coatesville (R-2010-2166210, R-2010-2166208, R-2010-2166212, and R-2010-2166214), Peoples Natural Gas Company (Docket No. R-2010-2201702), City of Lancaster Water Fund (Docket No. 2010-2179103).

New Jersey: Dr. Woolridge prepared testimony for the New Jersey Department of the Public Advocate, Division of Rate Counsel: New Jersey-American Water Company (R-91081399J), New Jersey-American Water Company (R-92090908J), and Environmental Disposal Corp. (R-94070319).

Alaska: Dr. Woolridge prepared testimony for Attorney General's Office of Alaska: Golden Heart Utilities, Inc. and College Utilities Corp. (Water Public Utility Service TA-29-118 and Sewer Public Utility Service TA-82-97), Anchorage Water and Wastewater Utility (TA-106-122), Anchorage Water and Wastewater Utility (TA-08-157 and TA-08-158), Municipal Light & Power (TA304-121).

Arizona: Dr. Woolridge prepared testimony for Utility Division staff of the Arizona Corporation Commission, Arizona Public Service Company (Docket No. E-01345A-06-0009).

Hawaii: Dr. Woolridge prepared testimony for the Hawaii Office of the Consumer Advocate: East Honolulu Community Services, Inc. (Docket No. 7718).

Delaware: Dr. Woolridge prepared testimony for the Delaware Division of Public Advocate: Artesian Water Company (R-00-649). Dr. Woolridge prepared testimony for the staff of the Public Service Commission: Artesian Water Company (R-06-158).

Ohio: Dr. Woolridge prepared testimony for the Ohio Office of Consumers' Council: SBC Ohio (Case No. 02-1280-TP-UNC R-00-649), Cincinnati Gas & Electric Company (Case No. 05-0059-EL-AIR), Dominion East Ohio Company (Case No. 07-829-GA-AIR), Cleveland Electric Illuminating Company and Toledo Edison Company (Case No. 08-935-EL-SSO), Columbia Gas of Ohio, Inc. (Case No. 08-0072-GA-AIR), and Columbus Southern Power Company (Case No. 08-917-EL-SSO).

Texas: Dr. Woolridge prepared testimony for the Atmos Cities Steering Committee: Mid-Texas Division of Atmos Energy Corp. (Docket No. 9670), Atmos Pipeline LLC (GUD No. 10000).

New York: Dr. Woolridge prepared testimony for the County of Nassau in New York State: Long Island Lighting Company (PSC Case No. 942354).

Appendix A
Educational Background, Research, and Related Business Experience
J. Randall Woolridge

Florida: Dr. Woolridge prepared testimony for the Office of Public Counsel in Florida: Florida Power & Light Co. (Docket No. 050045-EL), Tampa Electric Company (Docket No 080317-EI), Peoples Gas Company (Docket No 080318-GU), Florida Power & Light Co. (Docket Nos. 080677-EI & 090130-EI), and Progress Energy Florida, (Docket No. 090079-EI).

Nebraska: Dr. Woolridge prepared testimony for the Office of Public Advocate: Source Gas Distribution Co. (Docket No. NG-0060), Black Hills (Docket No. NG-0061), SourceGas Distribution Company (Docket No. NG-0060).

Indiana: Dr. Woolridge prepared testimony for the Indiana Office of Utility Consumer Counsel (OUCC) in the following cases: Southern Indiana Gas and Electric Company (IURC Cause No. 43111 and IURC Cause No. 43112), and Northern Indiana Public Service Company (IURC Cause No. 43526).

Oklahoma: Dr. Woolridge prepared testimony for the Oklahoma Industrial Energy Companies (OIEC) in the following cases: Public Service Company of Oklahoma (Cause No. PUD 200600285), Oklahoma Gas & Electric Company (Cause No. PUD 200700012).

Connecticut: Dr. Woolridge prepared testimony for the Office of Consumer Counsel in Connecticut: United Illuminating (Docket No. 96-03-29), Yankee Gas Company (Docket No. 04-06-01), Southern Connecticut Gas Company (Docket No. 03-03-17), the United Illuminating Company (Docket No. 05-06-04), Connecticut Light and Power Company (Docket No. 05-07-18), Birmingham Utilities, Inc. (Docket No. 06-05-10), Connecticut Water Company (Docket No. 06-07-08), Connecticut Natural Gas Corp. (Docket No. 06-03-04), Aquarion Water Company (Docket No. 07-05-09), Yankee Gas Company (Docket No. 06-12-02), Connecticut Light and Power Company (Docket No. 07-07-01), the United Illuminating Company (Docket No. 08-07-03), Connecticut Natural Gas Corp. (Docket No. 08-12-06), Southern Connecticut Gas Company (Docket No. 08-12-06), Connecticut Water Company (Docket No. 09-12-11), Connecticut Light and Power Company (Docket No. 09-12-05), Yankee Gas Company (Docket No. 10-12-02).

California: Dr. Woolridge prepared testimony for the Office of Ratepayer Advocate in California: San Gabriel Valley Water Company (Docket No. 05-08-021), Pacific Gas & Electric (Docket No. 07-05-008), San Diego Gas & Electric (Docket No. 07-05-007), Southern California Edison (Docket No. 07-05-003), California-American Water Company (Docket No. 08-05-003), Golden State Water Company (Docket No. 08-05-004), and California Water Service Company (Docket No. 08-05-002), California Water Utilities (Valencia, San Jose, San Gabriel, Park Valley, and Suburban (Docket No. 09-06-005).

Colorado: Dr. Woolridge prepared testimony for the Office of Consumer Counsel in Colorado: Public Service Company of Colorado (Docket No. 09AL-299E), and Public Service Company of Colorado (Docket No. 08S-520E).

South Carolina: Dr. Woolridge prepared testimony for the Office of Regulatory Staff in South Carolina: South Carolina Electric and Gas Company (Docket No. 2005-113-G), Carolina Water Service Co. (Docket No. 2006-87-WS), Tega Cay Water Company (Docket No. 2006-97-WS), United Utilities Companies, Inc. (Docket No. 2006-107-WS).

Missouri: Dr. Woolridge prepared testimony for the Department of Energy in Missouri: Kansas City Power & Light Company (Case No. ER-2006-0314). Dr. Woolridge prepared testimony for the Office of Attorney General of Missouri: Union Electric Company (CASE NO. ER-2007-0002).

Kentucky: Dr. Woolridge prepared testimony for the Office of Attorney General in Kentucky: Kentucky-American Water Company (Case No. 2004-00103), Union Heat, Light, and Power Company (Case No. 2004-00042), Kentucky Power Company (Case No. 2005-00341), Union Heat, Light, and Power Company (Case No. 2006-00172), Atmos Energy Corp. (Case No. 2006-00464), Columbia Gas Company (Case No. 2007-00008), Delta Natural Gas Company

(Case No. 2007-00089), Kentucky-American Water Company (Case No. 2007-00143), Columbia Gas Company (Case No. 2009-00141), Kentucky-American Water Company (Case No. 2010-00136), Kentucky Utilities and Louisville Gas & Electric (Case No. 2009-00549 and Case No. 2009-00548).

Massachusetts: Dr. Woolridge prepared testimony for the Office of Attorney General: National Grid (Docket No. D.P.U. 09-39), National Grid (Docket No. D.P.U. 10-55), New England Gas Company (D.P.U. 10-114), Western Massachusetts Electric Company (D.P.U 10-70), Fitchburg Gas and Electric Light Company (D.P.U. 11-01).

Washington, D.C.: Dr. Woolridge prepared testimony for the Office of the People's Counsel in the District of Columbia: Potomac Electric Power Company (Formal Case No. 939), Potomac Electric Power Company (Formal Case No. 1036), Washington Gas Light Company (Formal Case No. 1054).

Washington: Dr. Woolridge consulted with trial staff of the Washington Utilities and Transportation Commission on the following cases: Puget Energy Corp. (Docket Nos. UE-011570 and UG-011571); and Avista Corporation (Docket No. UE-011514).

Kansas: Dr. Woolridge prepared testimony on behalf of the Kansas Citizens' Utility Ratepayer Board in the following cases: Western Resources Inc. (Docket No. 01-WSRE-949-GIE), UtiliCorp (Docket No. 02-UTCG701-CIG), and Westar Energy, Inc. (Docket No. 05-WSEE-981-RTS).

Utah: Dr. Woolridge prepared testimony on behalf of the Utah Committee on Consumer Services (CCS) in the following case: Questar Gas Company (Docket No. No. 07-057-13).

FERC: Dr. Woolridge has prepared testimony on behalf of the Pennsylvania Office of Consumer Advocate in the following cases before the Federal Energy Regulatory Commission: National Fuel Gas Supply Corporation (RP-92-73-000) and Columbia Gulf Transmission Company (RP97-52-000).

Vermont: Dr. Woolridge prepared testimony for the Department of Public Service in the Central Vermont Public Service (Docket No. 6988) and Vermont Gas Systems, Inc. (Docket No. 7160).

Q. PLEASE DISCUSS YOUR DEVELOPMENT OF AN EQUITY RISK PREMIUM COMPUTED USING THE BUILDING BLOCKS METHODOLOGY.

A. Ibbotson and Chen (2003) evaluate the ex post historical mean stock and bond returns in what is called the Building Blocks approach.[1] They use 75 years of data and relate the compounded historical returns to the different fundamental variables employed by different researchers in building ex ante expected equity risk premiums. Among the variables included were inflation, real EPS and DPS growth, ROE and book value growth, and price-earnings ("P/E") ratios. By relating the fundamental factors to the ex post historical returns, the methodology bridges the gap between the ex post and ex ante equity risk premiums. Ilmanen (2003) illustrates this approach using the geometric returns and five fundamental variables – inflation ("CPI"), dividend yield ("D/P"), real earnings growth ("RG"), repricing gains ("PEGAIN") and return interaction/reinvestment ("INT").[2] This is shown on page 7 of Exhibit JRW-11. The first column breaks the 1926-2000 geometric mean stock return of 10.7% into the different return components demanded by investors: the historical U.S. Treasury bond return (5.2%), the excess equity return (5.2%), and a small interaction term (0.3%). This 10.7% annual stock return over the 1926-2000 period can then be broken down into the following fundamental elements: inflation (3.1%), dividend yield (4.3%),

[1] Roger Ibbotson and Peng Chen, "Long Run Returns: Participating in the Real Economy," *Financial Analysts Journal*, (January 2003).

[2] Antti Ilmanen, Expected Returns on Stocks and Bonds," *Journal of Portfolio Management*, (Winter 2003), p. 11.

real earnings growth (1.8%), repricing gains (1.3%) associated with higher P/E ratios, and a small interaction term (0.2%).

Q. HOW ARE YOU USING THIS METHODOLOGY TO DERIVE AN EX ANTE EXPECTED EQUITY RISK PREMIUM?

A. The third column in the graph on page 7 of Exhibit JRW-11 shows current inputs to estimate an ex ante expected market return. These inputs include the following:

CPI – To assess expected inflation, I have employed expectations of the short-term and long-term inflation rate. Long term inflation forecasts are available in the Federal Reserve Bank of Philadelphia's publication entitled *Survey of Professional Forecasters*. While this survey is published quarterly, only the first quarter survey includes long-term forecasts of gross domestic product ("GDP") growth, inflation, and market returns. In the first quarter 2011 survey, published on February 11, 2011, the average long-term (10-year) expected inflation rate as measured by the CPI was 2.30% (see Panel A of page 8 of Exhibit JRW-11).

The University of Michigan's Survey Research Center surveys consumers on their short-term (one-year) inflation expectations on a monthly basis. As shown on page 9 of Exhibit JRW-11, the current short-term expected inflation rate is 3.0%.

As a measure of expected inflation, I will use the average of the long-term (2.3%) and short-term (3.0%) inflation rate measures, or 2.65%.

D/P – As shown on page 10 of Exhibit JRW-11, the dividend yield on the S&P 500 has fluctuated from 1.0% to almost 3.5% over the past decade. Ibbotson and Chen (2003) report that the long-term average dividend yield of the S&P 500 is 4.3%. Currently, the S&P 500 dividend yield is 1.9%. I will use this figure in my ex ante risk premium analysis.

RG – To measure expected real growth in earnings, I use the historical real earnings growth rate S&P 500 and the expected real GDP growth rate. The S&P 500 was created in 1960 and includes 500 companies which come from ten different sectors of the economy. On page 11 of Exhibit JRW-11, real EPS growth is computed using the CPI as a measure of inflation. The real growth figure over 1960-2010 period for the S&P 500 is 2.6%.

The second input for expected real earnings growth is expected real GDP growth. The rationale is that over the long-term, corporate profits have averaged a relatively consistent 5.50% of U.S. GDP.[3] Expected GDP growth, according to the Federal Reserve Bank of Philadelphia's *Survey of Professional Forecasters*, is 2.9% (see Panel B of page 8 of Exhibit JRW-11).

Given these results, I will use 2.75%, for real earnings growth.

PEGAIN – PEGAIN is the repricing gain associated with an increase in the P/E ratio. It accounted for 1.3% of the 10.7% annual stock return in the 1926-2000 period. In estimating an ex ante expected stock market return, one issue is whether investors expect P/E ratios to increase from their current levels. The P/E

[3]Marc. H. Goedhart, et al, "The Real Cost of Equity," *McKinsey on Finance* (Autumn 2002), p.14.

ratios for the S&P 500 over the past 25 years are shown on page 10 of Exhibit JRW-11. The run-up and eventual peak in P/Es in the year 2000 is very evident in the chart. The average P/E declined until late 2006, and then increased to higher high levels, primarily due to the decline in EPS as a result of the financial crisis and the recession. The current average P/E for the S&P 500 is approximately 15.0, which is in line with the historic average. Since the current figure is near the historic average, a PEGAIN would not be appropriate in estimating an ex ante expected stock market return.

Q. GIVEN THIS DISCUSSION, WHAT IS THE EX ANTE EXPECTED MARKET RETURN AND EQUITY RISK PREMIUM USING THE "BUILDING BLOCKS METHODOLOGY"?

A. My expected market return is represented by the last column on the right in the graph entitled "Decomposing Equity Market Returns: The Building Blocks Methodology" set forth on page 7 of Exhibit JRW-11. As shown, my expected market return of 7.30% is composed of 2.65% expected inflation, 1.90% dividend yield, and 2.75% real earnings growth rate.

Q. IS AN EXPECTED MARKET RETURN OF 7.30% CONSISTENT WITH THE FORECASTS OF MARKET PROFESSIONALS?

A. Yes. In the first quarter 2011 *Survey of Financial Forecasters*, published on February 11, 2011 by the Federal Reserve Bank of Philadelphia, the mean long-term expected return on the S&P 500 was 7.37% (see Panel D of page 8 of Exhibit JRW-11).

Q. IS AN EXPECTED MARKET RETURN OF 7.30% CONSISTENT WITH THE EXPECTED MARKET RETURNS OF CORPORATE CHIEF FINANCIAL OFFICERS (CFOs)?

A. Yes. John Graham and Campbell Harvey of Duke University conduct a quarterly survey of corporate CFOs. The survey is a joint project of Duke University and *CFO Magazine*. In the June 2011 survey, the mean expected return on the S&P 500 over the next ten years was 6.5%.[4]

Q. GIVEN THIS EXPECTED MARKET RETURN, WHAT IS THE EX ANTE EQUITY RISK PREMIUM USING THE BUILDING BLOCKS METHODOLOGY?

A. The current 30-year U.S. Treasury yield is approximately 4.00%. This ex ante equity risk premium is simply the expected market return from the Building Blocks methodology minus this risk-free rate:

Ex Ante Equity Risk Premium = 7.30% - 4.0% = 3.30%

Q. HOW ARE YOU USING THIS EQUITY RISK PREMIUM ESTIMATE IN YOUR CAPM EQUITY COST RATE STUDY?

[4] The survey results are available at www.cfosurvey.org.

A. This is only one estimate of the equity risk premium. As shown on page 5 of Exhibit JRW-11, I am also using the results of over thirty other studies and surveys to determine an equity risk premium for my CAPM.

Attachment JRW-1
California Water Utility Cost of Capital Report
Cost of Capital

California American Water Company

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	52.20%	6.63%	3.46%
Common Equity	47.80%	9.00%	4.30%
Total	100.00%		7.76%

California Water Service Company

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	50.00%	6.16%	3.08%
Common Equity	50.00%	8.75%	4.38%
Total	100.00%		7.46%

Golden State Water Company

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	47.00%	6.99%	3.29%
Common Equity	53.00%	8.75%	4.64%
Total	100.00%		7.92%

San Jose Water Company

z

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	50.00%	6.68%	3.34%
Common Equity	50.00%	8.75%	4.38%
Total	100.00%		7.72%

Exhibit JRW-2
California Water Cost of Capital Report
Cost of Capital

California American Water Company
2011

Capital Source	Capitalization Ratio*	Cost Rate	Weighted Cost Rate
Long-Term Debt	52.20%	6.63%	3.46%
Common Equity	47.80%	11.50%	5.50%
Total	100.00%		8.96%

2012

Capital Source	Capitalization Ratio*	Cost Rate	Weighted Cost Rate
Long-Term Debt	49.94%	6.70%	3.35%
Common Equity	50.06%	11.50%	5.76%
Total	100.00%		9.10%

Exhibit JRW-2
California Water Cost of Capital Report
Cost of Capital

California Water Service Company
2012-2013

Capital Source	Capitalization Ratio*	Cost Rate	Weighted Cost Rate
Long-Term Debt	46.10%	6.16%	2.84%
Common Equity	53.90%	11.25%	6.06%
Total	100.00%		8.90%

Exhibit JRW-2
California Water Utility Cost of Capital Report
Cost of Capital

GOLDEN STATE WATER COMPANY
AVERAGE YEARS 2012, 2013, and 2014 ESTIMATED

	Capital Ratio %	Cost Factor %	Weighted Cost %
2011			
Long-term Debt	44.4	7.09	3.15
Common Equity	55.6	11.50	6.39
Total	100.0		9.54
2012			
Long-term Debt	44.4	6.99	3.10
Common Equity	55.6	11.50	6.39
Total	100.0		9.49
2013			
Long-term Debt	44.4	7.06	3.13
Common Equity	55.6	11.50	6.39
Total	100.0		9.52
2014			
Long-term Debt	44.4	7.12	3.16
Common Equity	55.6	11.50	6.39
Total	100.0		9.55

Attachment JRW-2
California Water Utility Cost of Capital Report
Cost of Capital

SAN JOSE WATER COMPANY
(U-168-W)

Estimated for the Year 2012

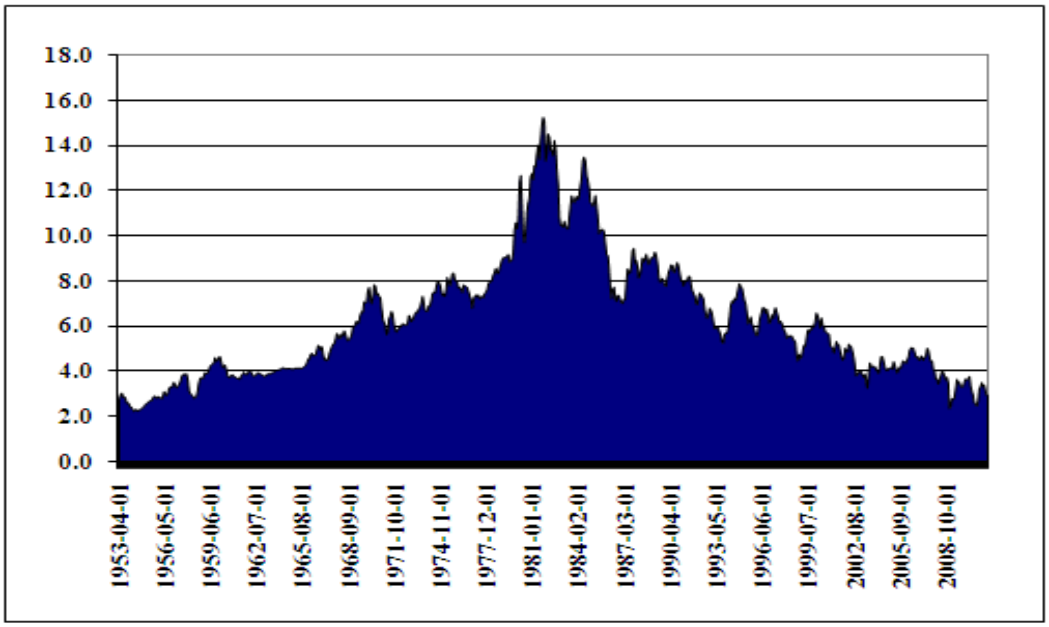
Type of Capital	Ratios (1)	Cost Rate
Long-Term Debt	48.83%	6.68%
Common Equity	51.17%	11.50%
Total	100.00%	

Estimated for the Years 2013 and 2014

Type of Capital	Ratios (1)	Cost Rate
Long-Term Debt	48.48%	6.68%
Common Equity	51.52%	11.50%
Total	100.00%	

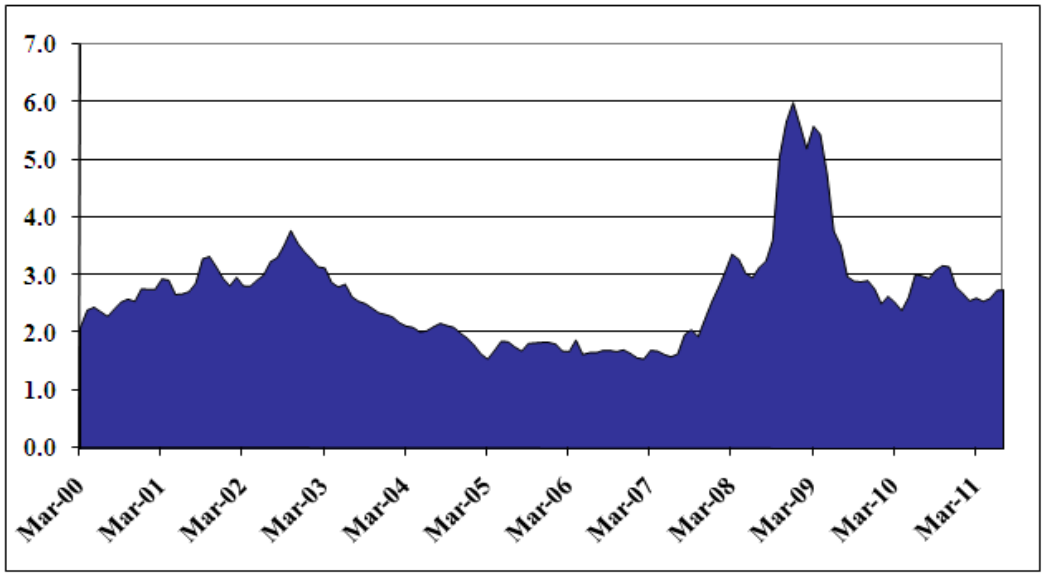
Attachment JRW-3

Panel A
Ten-Year Treasury Yields
1953-Present

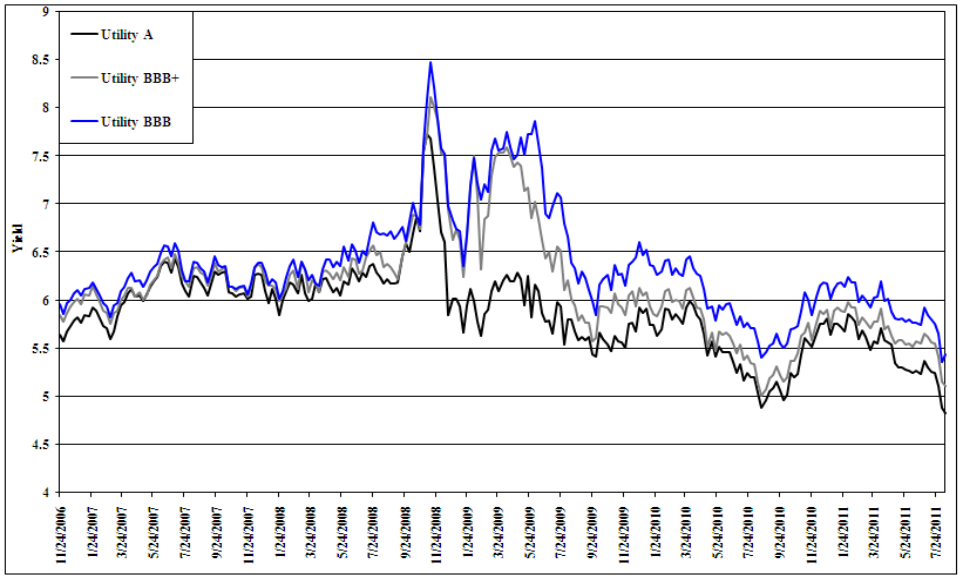


Source: http://research.stlouisfed.org/fred2/data/GS10.txt

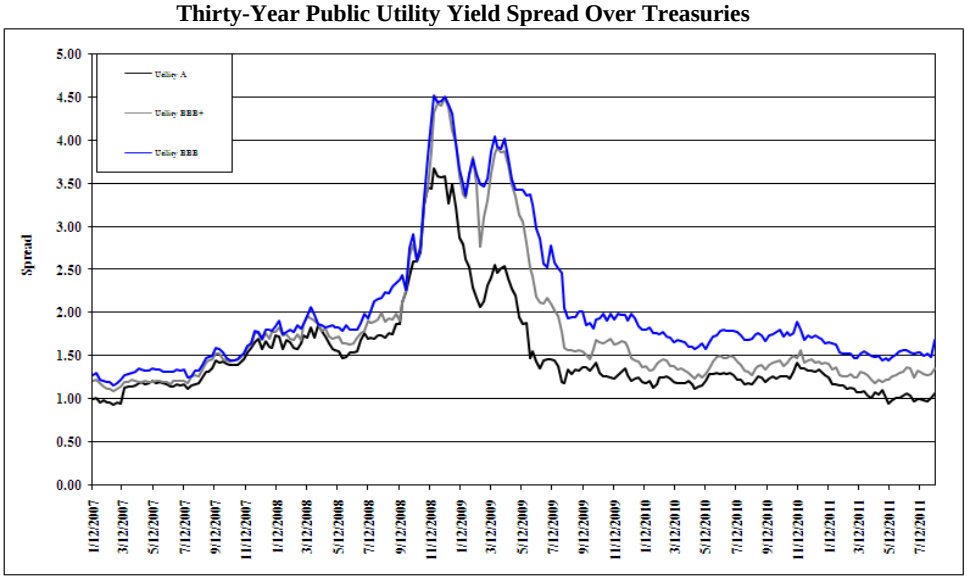
Panel B
Long-Term Moody's Baa Yields Minus Ten-Year Treasury Yields
2000-Present



Attachment JRW-4
Panel A
Thirty-Year Public Utility Yields



Panel B
Thirty-Year Public Utility Yield Spread Over Treasuries



Attachment JRW-5
California Water Utility Cost of Capital Report
Summary Financial Statistics for Proxy Groups

Panel A
Water Proxy Group

Company	Operating Revenue ($mil)	Percent Water Revenue	Net Plant ($mil)	S&P Bond Rating	Moody's Bond Rating	Pre-Tax Interest Coverage	Primary Service Area	Common Equity Ratio*	Return on Equity	Market to Book Ratio
American States Water Co. (NYSE-AWR)	404.8	73	868.0	A+	A2	4.4	CA, AZ	51.3	8.7	1.67
American Water Works Co., Inc. (NYSE-AWK)	2,733.6	89	10,421.1	BBB+	Baa1	2.4	30 States	42.0	12.1	1.17
Aqua America, Inc. (NYSE-WTR)	736.9	98	3,496.8	AA-	NR	4.5	13 States	41.9	11.5	2.64
Artesian Resources Corp. (NDQ-ARTNA)	64.7	92	346.3	NR	NR	NA	DE,MD,PA	41.4	7.5	1.54
California Water Service Group (NYSE-CWT)	468.3	95	1,308.4	AA-	NR	3.2	CA,WA,NM	45.9	9.0	1.72
Connecticut Water Service, Inc. (NDQ-CTWS)	70.3	99	344.5	A	NR	NA	CT	45.3	9.8	1.94
Middlesex Water Company (NDQ-MSEX)	104.5	90	402.4	A	NR	NA	NJ, DE	52.2	9.7	1.62
SJW Corporation (NYSE-SJW)	218.9	96	711.8	A	NR	2.6	CA,TX	45.1	9.5	1.67
York Water Company (NDQ-YORW)	39.6	98	228.2	A-	NR	NA	PA	52.0	10.3	2.35
Mean	538.0	92.2	2014.2	A		3.2		46.3	9.8	1.83
Median	218.9	95.0	711.8	A		2.9		45.3	9.7	1.69

Data Source: AUS *Utility Reports* , July, 2011; Pre-Tax Interest Coverage and Primary Service Territory are from *Value Line Investment Survey* , 2011.

Panel B
Gas Proxy Group

Company	Operating Revenue ($mil)	Percent Gas Revenue	Net Plant ($mil)	S&P Bond Rating	Moody's Bond Rating	Pre-Tax Interest Coverage	Primary Service Area	Common Equity Ratio*	Return on Equity	Market to Book Ratio
AGL Resources Inc. (NYSE-AGL)	2,248.0	66	4,518.0	A-	A3	6.5	GA,VA	46.2	12.0	1.64
Atmos Energy Corporation (NYSE-ATO)	4,330.9	64	4,914.7	BBB+	Baa2	3.1	LA,KY,TX,CO,KS	52.4	8.7	1.22
Laclede Group, Inc. (NYSE-LG)	1,596.5	55	898.0	A	A2	4.0	MO	61.0	9.7	1.45
Northwest Natural Gas Co. (NYSE-NWN)	371.2	93	1,859.9	A+	A1	7.0	OR,WA	47.9	9.9	1.64
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	1,450.3	100	2,484.9	A	A3	3.5	NC,SC,TN	55.6	11.0	2.05
South Jersey Industries, Inc. (NYSE-SJI)	927.7	49	1,211.8	A	A2	6.2	NJ	50.3	14.7	2.52
Southwest Gas Corporation (NYSE-SWX)	1,790.1	81	3,069.0	BBB	Baa2	3.2	AZ,NV,CA	52.3	9.0	1.39
WGL Holdings, Inc. (NYSE-WGL)	2,737.9	47	2,384.9	AA-	A2	5.7	DC,MD,VA	64.0	10.4	1.53
Mean	1,931.6	69	2,667.7	A	A3	4.9		50.4	13.3	1.68
Median	1,693.3	65	2,434.9	A	A3	4.9		52.4	10.2	1.59

Data Source: AUS *Utility Reports* , July, 2011; Pre-Tax Interest Coverage and Primary Service Territory are from *Value Line Investment Survey* , 2011.

Attachment JRW-45
California Water Utility Cost of Capital Report
***Value Line* Risk Metrics**

Panel A
Water Proxy Group

Company	Beta	Safety Rank	Financial Strength	Earnings Predictability	Price Stability
American States Water Co. (NYSE-AWR)	0.75	3	B++	85	85
American Water Works Co., Inc. (NYSE-AWK)	0.65	3	B	15	90
Aqua America, Inc. (NYSE-WTR)	0.65	3	B+	100	100
Artesian Resources Corp. (NDQ-ARTNA)	0.60	2	B+	90	100
California Water Service Group (NYSE-CWT)	0.70	3	B+	85	90
Connecticut Water Service, Inc. (NDQ-CTWS)	0.80	2	B+	80	95
Middlesex Water Company (NDQ-MSEX)	0.75	2	B++	85	95
SJW Corporation (NYSE-SJW)	0.90	3	B+	85	70
York Water Company (NDQ-YORW)	0.70	2	B++	100	90
Mean	0.72	2.6	B+	81	90

Data Source: *Value Line Investment Survey* , 2011.

Panel B
Gas Proxy Group

Company	Beta	Safety Rank	Financial Strength	Earnings Predictability	Price Stability
AGL Resources Inc. (NYSE-ATG)	0.75	2	B++	95	100
Atmos Energy Corporation (NYSE-ATO)	0.65	2	B+	90	100
Laclede Group, Inc. (NYSE-LG)	0.60	2	B+	85	100
Northwest Natural Gas Co. (NYSE-NWN)	0.60	1	A	90	100
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	0.65	2	B++	95	100
South Jersey Industries, Inc. (NYSE-SJI)	0.65	2	B++	85	100
Southwest Gas Corporation (NYSE-SWX)	0.75	3	B	75	100
WGL Holdings, Inc. (NYSE-WGL)	0.65	1	A	95	100
Mean	0.66	1.9	B++	89	100

Attachment JRW-5
California Water Utility Cost of Capital Report
Value Line Risk Metrics

Beta - A relative measure of the historical sensitivity of the stock's price to overall fluctuations in the New York Stock Exchange Composite Index. A Beta of 1.50 indicates a stock tends to rise (or fall) 50% more than the New York Stock Exchange Composite Index. The "Beta coefficient" is derived from a regression analysis of the relationship between weekly percentage changes in the price of a stock and weekly percentage changes in the NYSE Index over a period of five years. In the case of shorter price histories, a smaller time period is used, but two years is the minimum. The Betas are adjusted for their long-term tendency to converge toward 1.00. Additionally, Value Line shows betas computed based on monthly total returns for the trailing three year, five-year and 10-year periods.

Safety Rank - A measurement of potential risk associated with individual common stocks. The Safety Rank is computed by averaging two other Value Line indexes - the Price Stability Index and the Financial strength Rating. Safety Ranks range from 1 (Highest) to 5 (Lowest). Conservative investors should try to limit their purchases to equities ranked 1 (Highest) and 2 (Above Average) for Safety.

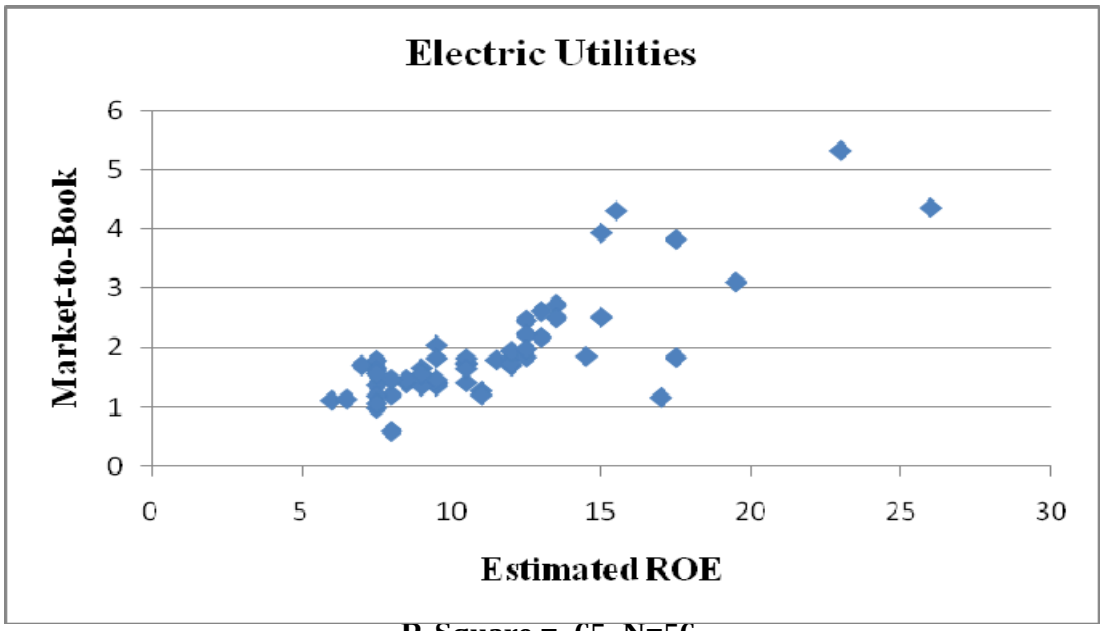
Financial Strength Rating - A relative measure of financial strength of the companies reviewed by Value Line. The relative ratings range from A++ (strongest) down to C (weakest), in nine steps.

Price Stability Index - A measure of the stability of a stock's price. It includes sensitivity to the market (see Beta) as well as the stock's inherent volatility. Value Line Stability ratings range from 100 (highest) to 5 (lowest).

Earnings Predictability Index - A measure of the reliability of an earnings forecast. Predictability is based upon the stability of year-to-year comparisons, with recent years being weighted more heavily that earlier ones. The most reliable forecasts tend to be those with the highest rating (100); the least reliable, the lowest (5). The earnings stability is derived from the standard deviation of percentage changes in quarterly earnings over an eight-year period. Special adjustments are made for comparisons around zero and from plus to minus.

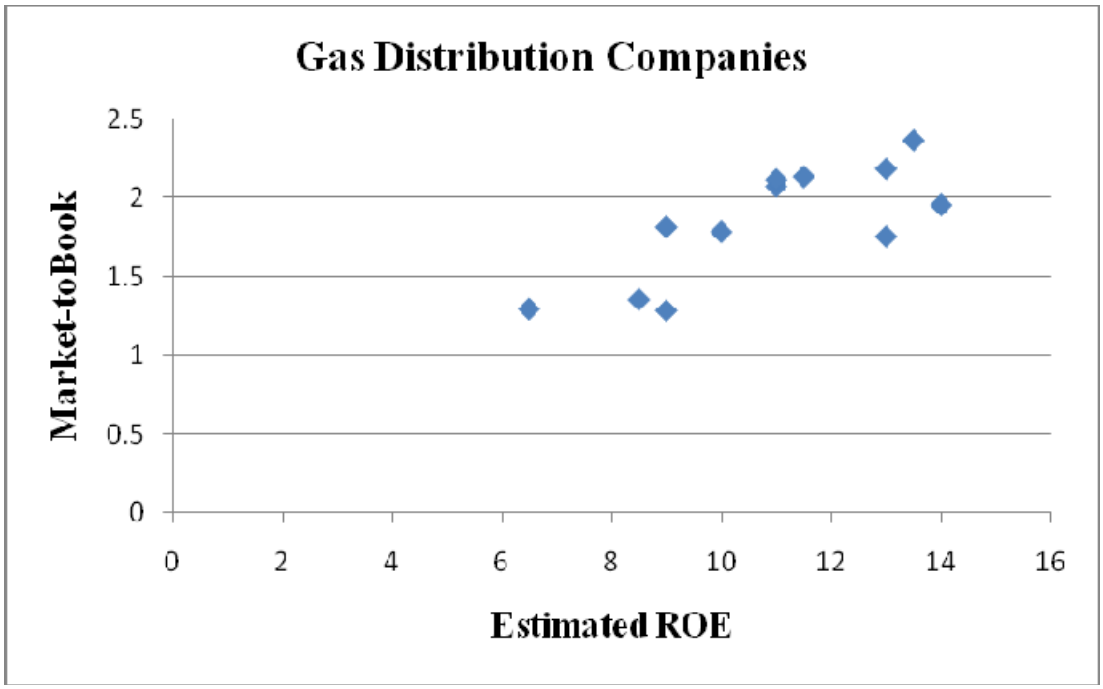
Attachment JRW-6

Panel A



R-Square = .65, N=56.

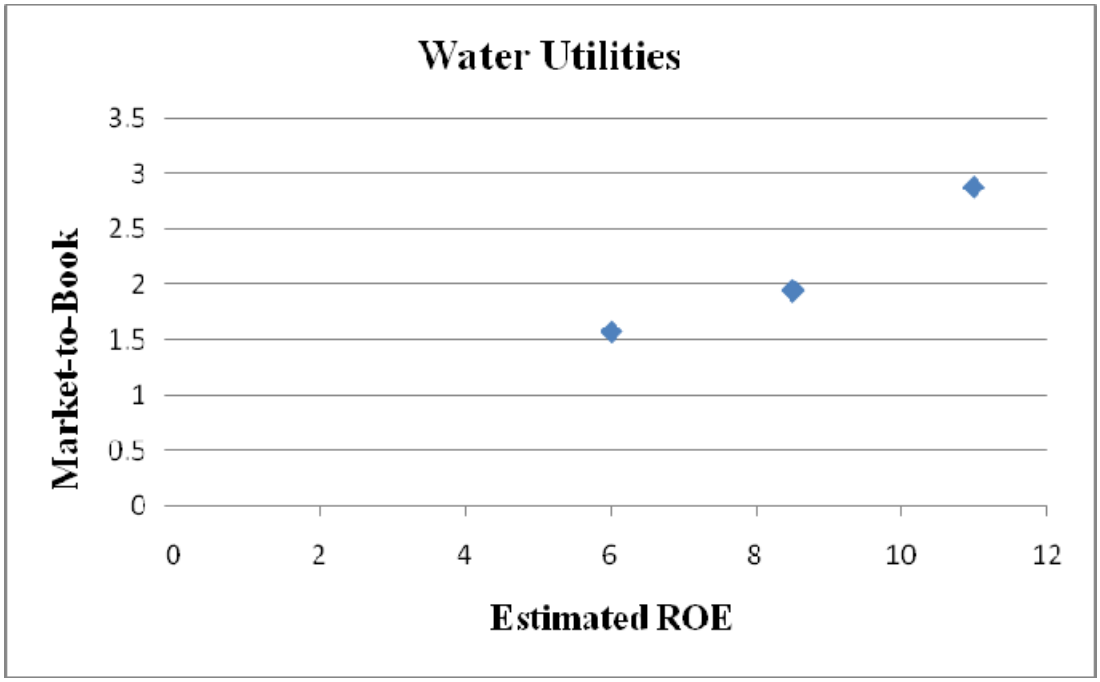
Panel B



R-Square = .60, N=12.

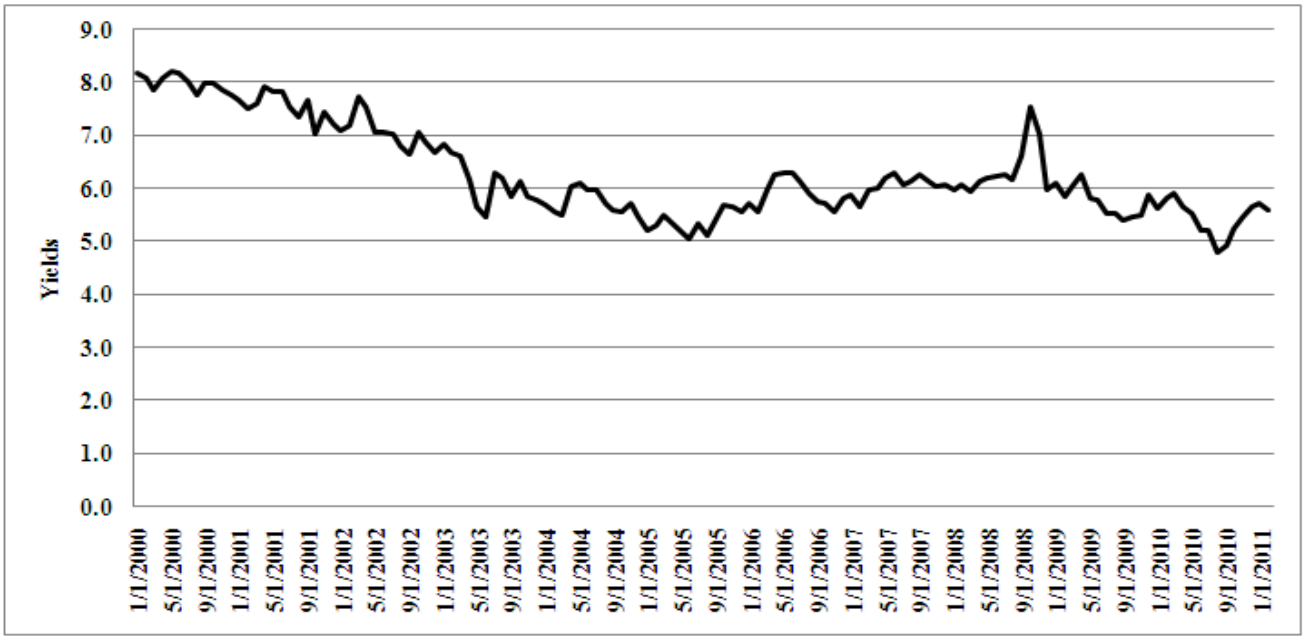
Attachment JRW-6

Panel C



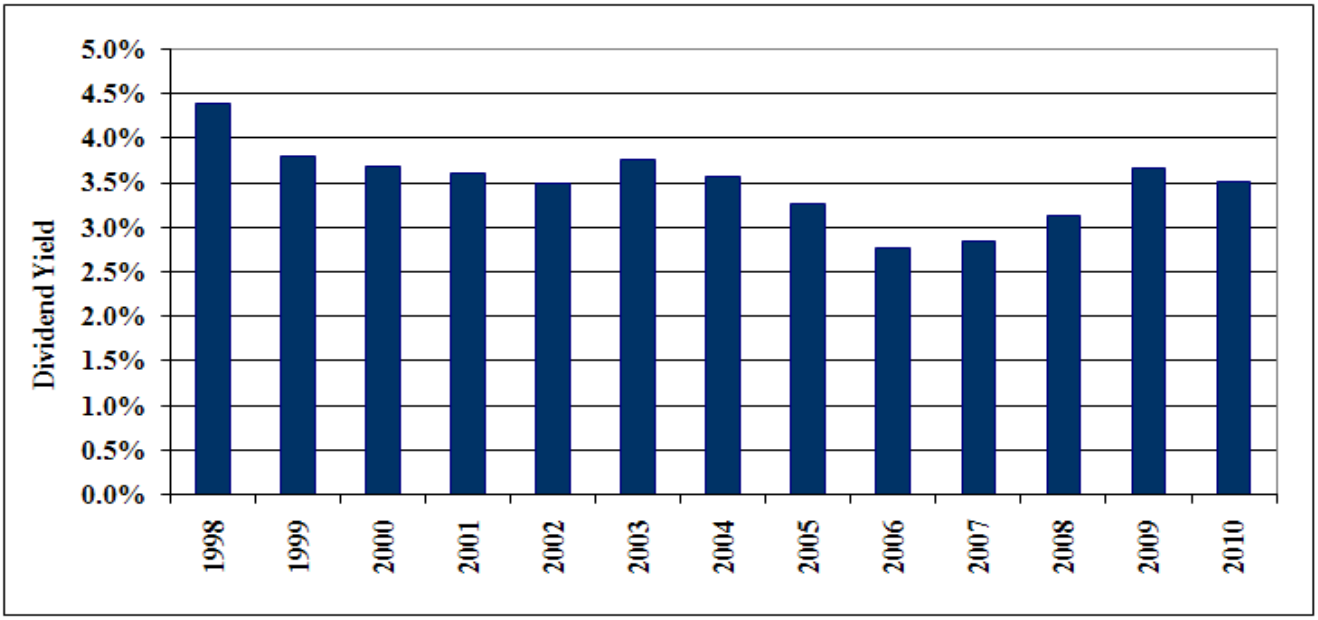
R-Square = .92, N=4.

Attachment JRW-7
Long-Term A, BBB+, and BBB Rated Public Utility Bonds

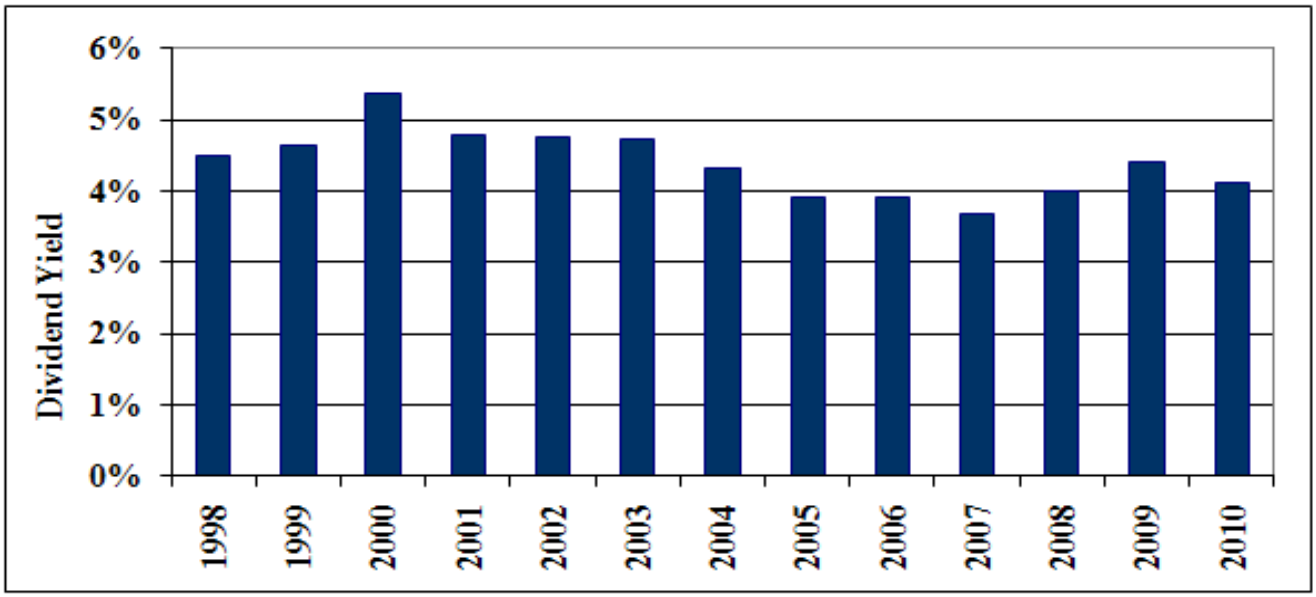


Attachment JRW-7

Panel A
Water Proxy Group Average Dividend Yield



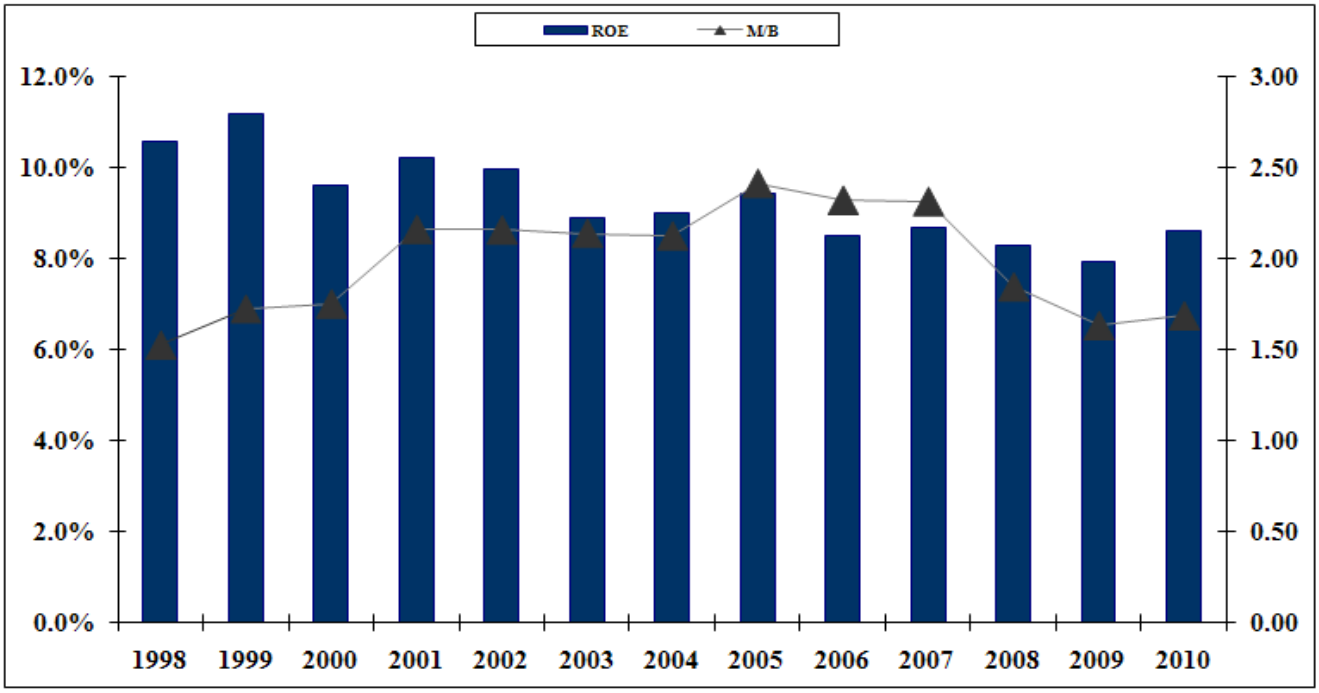
Panel B
Gas Proxy Group Average Dividend Yield



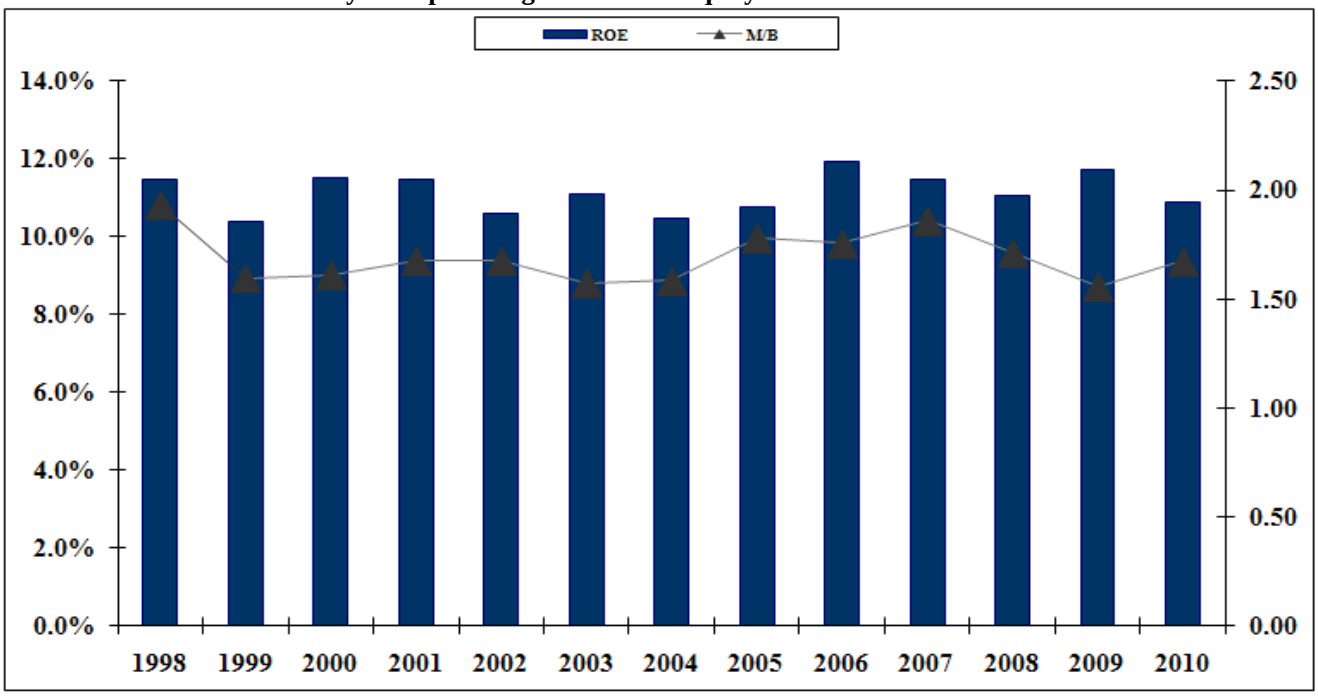
Data Source: *Value Line Investment Survey.*

Attachment JRW-7

Panel A
Water Proxy Group Average Return on Equity and Market-to-Book Ratios



Panel B
Gas Proxy Group Average Return on Equity and Market-to-Book Ratios



Data Source: *Value Line Investment Survey*.

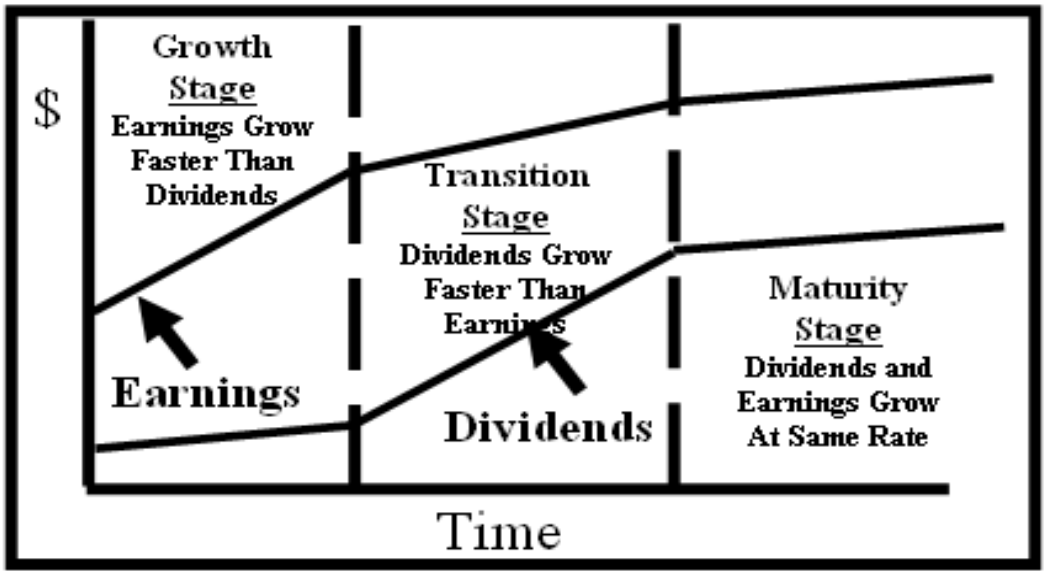
Attachment JRW-8

Industry Average Betas

Industry Name	No.	Beta	Industry Name	No.	Beta	Industry Name	No.	Beta
Public/Private Equity	8	2.18	Retail Store	38	1.33	Packaging & Container	27	1.06
Heavy Truck/Equip Maker	8	1.94	Building Materials	47	1.33	Computer Software/Svcs	247	1.06
Advertising	28	1.79	Metals & Mining (Div.)	69	1.33	Telecom. Equipment	104	1.04
Semiconductor Equip	14	1.79	Restaurant	60	1.33	Telecom. Utility	28	1.03
Auto Parts	47	1.78	Electrical Equipment	79	1.32	Medical Supplies	231	1.02
Hotel/Gaming	52	1.76	Shoe	18	1.31	Telecom. Services	85	1.01
Steel (Integrated)	13	1.72	Publishing	23	1.30	Utility (Foreign)	5	0.99
Entertainment	75	1.72	R.E.I.T.	6	1.29	Reinsurance	8	0.98
Newspaper	13	1.71	Chemical (Basic)	17	1.28	Oil/Gas Distribution	12	0.97
Furn/Home Furnishings	30	1.67	Railroad	14	1.28	Pharmacy Services	19	0.96
Engineering & Const	17	1.65	Computers/Peripherals	101	1.27	Bank (Midwest)	40	0.96
Steel (General)	19	1.59	Precision Instrument	83	1.27	Industrial Services	137	0.96
Coal	25	1.59	Toiletries/Cosmetics	15	1.27	Healthcare Information	26	0.94
Semiconductor	115	1.56	Wireless Networking	48	1.25	Insurance (Prop/Cas.)	67	0.92
Retail (Special Lines)	143	1.54	Natural Gas (Div.)	32	1.25	Retail Building Supply	8	0.92
Paper/Forest Products	37	1.52	Securities Brokerage	25	1.25	Beverage	34	0.92
Chemical (Diversified)	31	1.51	Funeral Services	5	1.22	Medical Services	139	0.88
Recreation	52	1.50	Diversified Co.	111	1.22	Food Processing	109	0.87
Automotive	19	1.50	Machinery	114	1.22	Bank (Canadian)	7	0.86
Oilfield Svcs/Equip.	95	1.48	Petroleum (Integrated)	23	1.21	Pipeline MLPs	11	0.85
Office Equip/Supplies	24	1.45	Air Transport	40	1.21	Environmental	69	0.85
Human Resources	24	1.44	Property Management	27	1.20	Educational Services	37	0.79
Metal Fabricating	30	1.44	Trucking	33	1.20	Electric Util. (Central)	23	0.78
Retail Automotive	15	1.44	Precious Metals	74	1.18	Electric Utility (West)	14	0.75
Cable TV	24	1.43	Household Products	22	1.17	Bank	418	0.75
Homebuilding	24	1.39	Aerospace/Defense	63	1.15	Retail/Wholesale Food	29	0.74
Entertainment Tech	31	1.39	Canadian Energy	10	1.14	Tobacco	13	0.73
Insurance (Life)	31	1.39	E-Commerce	52	1.14	Electric Utility (East)	25	0.73
Financial Svcs. (Div.)	230	1.37	Foreign Electronics	9	1.14	Water Utility	12	0.70
Maritime	53	1.37	Biotechnology	120	1.13	Thrift	181	0.70
Chemical (Specialty)	83	1.37	Electronics	158	1.13	Natural Gas Utility	27	0.65
Petroleum (Producing)	163	1.36	Drug	301	1.11	**Total Market**	**5928**	**1.15**
Apparel	48	1.35	Internet	180	1.11			
Power	68	1.34	Information Services	26	1.10			

Source: Damodaran Online 2011 - http://pages.stern.nyu.edu/~adamodar/

Attachment JRW-9
Three-Stage DCF Model



Source: William F. Sharpe, Gordon J. Alexander, and Jeffrey V. Bailey, Investments (Prentice-Hall, 1995), pp. 590-91.

Attachment JRW-10

California Water Utility Cost of Capital Report
Discounted Cash Flow Analysis

Panel A
Water Proxy Group

Dividend Yield*	3.20%
Adjustment Factor (1 + 1/2g)	1.02875
Adjusted Dividend Yield	3.29%
Growth Rate**	5.75%
Equity Cost Rate	9.0%

* Page 2 of Attachment JRW-10
** Based on data provided on pages 3, 4, 5, and 6 of Attachment JRW-10

Panel B
Gas Proxy Group

Dividend Yield*	3.90%
Adjustment Factor (1 + 1/2g)	1.02125
Adjusted Dividend Yield	3.98%
Growth Rate**	4.25%
Equity Cost Rate	8.2%

* Page 2 of Attachment JRW-10
** Based on data provided on pages 3, 4, 5, and 6 of Attachment JRW-10

Attachment JRW-10

California Water Utility Cost of Capital Report
Monthly Dividend Yields

Panel A
Water Proxy Group

Company	Feb	Mar	Apr	Jun	Jul	Aug	Mean
American States Water Co. (NYSE-AWR)	3.0%	3.1%	3.1%	3.3%	3.3%	3.2%	3.2%
American Water Works Co., Inc. (NYSE-AWK)	3.5%	3.2%	3.2%	3.0%	3.0%	3.0%	3.2%
Aqua America, Inc. (NYSE-WTR)	2.6%	2.7%	2.8%	2.8%	2.9%	2.8%	2.8%
Artesian Resources Corp. (NDQ-ARTNA)	3.9%	3.9%	3.9%	3.9%	3.9%	4.1%	3.9%
California Water Service Group (NYSE-CWT)	3.2%	3.3%	3.4%	3.3%	3.4%	3.3%	3.3%
Connecticut Water Service, Inc. (NDQ-CTWS)	3.5%	3.7%	3.7%	3.7%	3.7%	3.6%	3.7%
Middlesex Water Company (NDQ-MSEX)	3.9%	4.0%	4.1%	4.0%	3.9%	3.9%	4.0%
SJW Corporation (NYSE-SJW)	2.6%	2.9%	3.0%	3.1%	3.0%	2.9%	2.9%
York Water Company (NDQ-YORW)	3.1%	3.0%	3.1%	3.1%	3.0%	3.0%	3.1%
Mean	3.3%	3.3%	3.4%	3.4%	3.3%	3.3%	3.3%
Median	3.2%	3.2%	3.2%	3.3%	3.3%	3.2%	3.2%

Data Source: AUS *Utility Reports* , monthly issues.

Panel B
Gas Proxy Group

Company	Feb	Mar	Apr	Jun	Jul	Aug	Mean
AGL Resources Inc. (NYSE-ATG)	4.8%	4.6%	4.6%	4.4%	4.5%	4.4%	4.6%
Atmos Energy Corporation (NYSE-ATO)	4.1%	4.0%	4.0%	4.1%	4.2%	4.0%	4.1%
Laclede Group, Inc. (NYSE-LG)	4.1%	4.2%	4.3%	4.3%	4.4%	4.3%	4.3%
Northwest Natural Gas Co. (NYSE-NWN)	3.8%	3.7%	3.7%	3.9%	3.9%	3.8%	3.8%
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	3.9%	3.9%	3.8%	3.7%	3.9%	3.8%	3.8%
South Jersey Industries, Inc. (NYSE-SJI)	2.7%	2.7%	2.7%	2.6%	2.8%	2.7%	2.7%
Southwest Gas Corporation (NYSE-SWX)	2.6%	2.6%	2.6%	2.7%	2.8%	2.7%	2.7%
WGL Holdings, Inc. (NYSE-WGL)	4.1%	4.0%	3.9%	4.0%	4.1%	3.9%	4.0%
Mean	3.8%	3.7%	3.7%	3.7%	3.8%	3.7%	3.7%
Median	4.0%	4.0%	3.9%	4.0%	4.0%	3.9%	3.9%

Data Source: AUS *Utility Reports* , monthly issues.

Attachment JRW-10

California Water Utility Cost of Capital Report
DCF Equity Cost Growth Rate Measures
***Value Line* Historic Growth Rates**

Panel A
Water Proxy Group

Company	*Value Line* Historic Growth					
	Past 10 Years			Past 5 Years		
	Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
American States Water Co. (NYSE-AWR)	4.5%	2.0%	5.0%	11.5%	2.5%	5.0%
American Water Works Co., Inc. (NYSE-AWK)						
Aqua America, Inc. (NYSE-WTR)	6.5%	7.5%	9.0%	4.5%	8.0%	7.0%
Artesian Resources Corp. (NDQ-ARTNA)				5.5%	5.5%	5.5%
California Water Service Group (NYSE-CWT)	3.0%	1.0%	4.5%	6.5%	1.0%	5.5%
Connecticut Water Service, Inc. (NDQ-CTWS)				1.5%	1.5%	3.0%
Middlesex Water Company (NDQ-MSEX)				4.5%	1.5%	5.5%
SJW Corporation (NYSE-SJW)	2.0%	5.0%	6.0%	-1.5%	5.5%	6.5%
York Water Company (NDQ-YORW)				5.0%	5.0%	8.5%
Mean	4.0%	3.9%	6.1%	4.7%	3.8%	5.8%
Median	3.8%	3.5%	5.5%	4.8%	3.8%	5.5%
	Average of Median Figures =			4.5%		

Data Source: *Value Line Investment Survey, 2011.*

Panel B
Gas Proxy Group

Company	*Value Line* Historic Growth					
	Past 10 Years			Past 5 Years		
	Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
AGL Resources Inc. (NYSE-ATG)	9.0%	5.0%	7.0%	4.5%	7.5%	5.5%
Atmos Energy Corporation (NYSE-ATO)	5.0%	2.0%	6.5%	4.0%	1.5%	5.0%
Laclede Group, Inc. (NYSE-LG)	6.0%	1.5%	4.5%	7.5%	2.5%	7.0%
Northwest Natural Gas Co. (NYSE-NWN)	6.0%	2.0%	3.5%	9.5%	3.5%	4.0%
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	5.0%	4.5%	5.0%	5.0%	4.5%	3.5%
South Jersey Industries, Inc. (NYSE-SJI)	10.5%	5.5%	10.5%	9.5%	8.5%	8.0%
Southwest Gas Corporation (NYSE-SWX)	3.5%	1.0%	4.5%	6.0%	2.0%	5.0%
WGL Holdings, Inc. (NYSE-WGL)	4.0%	2.0%	4.0%	2.5%	2.5%	5.0%
Mean	6.1%	2.9%	5.7%	6.1%	4.1%	5.4%
Median	5.5%	2.0%	4.8%	5.5%	3.0%	5.0%
	Average of Median Figures =			4.3%		

Data Source: *Value Line Investment Survey, 2011.*

Attachment JRW-10

California Water Utility Cost of Capital Report
DCF Equity Cost Growth Rate Measures
***Value Line* Projected Growth Rates**

Panel A
Water Proxy Group

Company	*Value Line* Projected Growth Est'd. '08-'10 to '14-'16			*Value Line* Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Sustainable Growth
American States Water Co. (NYSE-AWR)	5.5%	4.0%	2.0%	11.5%	48.0%	5.5%
American Water Works Co., Inc. (NYSE-AWK)	8.5%	8.0%	-0.5%	9.0%	48.0%	4.3%
Aqua America, Inc. (NYSE-WTR)	10.5%	5.5%	6.0%	12.5%	44.0%	5.5%
Artesian Resources Corp. (NDQ-ARTNA)	3.6%					
California Water Service Group (NYSE-CWT)	6.0%	3.0%	3.5%	10.5%	46.0%	4.8%
Connecticut Water Service, Inc. (NDQ-CTWS)	4.0%					
Middlesex Water Company (NDQ-MSEX)	3.0%					
SJW Corporation (NYSE-SJW)	5.5%	3.5%	5.5%	6.5%	34.0%	2.2%
York Water Company (NDQ-YORW)	6.0%					
Mean	5.8%	4.8%	3.3%	10.0%	44.0%	4.5%
Median	5.5%	4.0%	3.5%	10.5%	46.0%	4.8%
Average of Median Figures =		4.3%			Median =	4.8%

Data Source: *Value Line Investment Survey, 2011.*

Panel B
Gas Proxy Group

Company	*Value Line* Projected Growth Est'd. '08-'10 to '14-'16			*Value Line* Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Internal Growth
AGL Resources Inc. (NYSE-ATG)	5.0%	3.0%	6.0%	12.0%	48.0%	5.8%
Atmos Energy Corporation (NYSE-ATO)	5.0%	2.0%	4.5%	9.0%	47.0%	4.2%
Laclede Group, Inc. (NYSE-LG)	2.5%	2.5%	5.0%	10.0%	42.0%	4.2%
Northwest Natural Gas Co. (NYSE-NWN)	4.5%	3.5%	6.5%	10.0%	44.0%	4.4%
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	3.0%	3.5%	3.0%	12.5%	31.0%	3.9%
South Jersey Industries, Inc. (NYSE-SJI)	9.0%	8.5%	6.5%	15.5%	51.0%	7.9%
Southwest Gas Corporation (NYSE-SWX)	8.0%	4.5%	5.5%	9.0%	58.0%	5.2%
WGL Holdings, Inc. (NYSE-WGL)	1.5%	2.5%	3.5%	10.0%	36.0%	3.6%
Mean	4.8%	3.8%	5.1%	11.0%	44.6%	4.9%
Median	4.8%	3.3%	5.3%	10.0%	45.5%	4.3%
Average of Median Figures =		4.4%			Median =	4.3%

Data Source: *Value Line Investment Survey, 2011.*

Attachment JRW-10

California Water Utility Cost of Capital Report
DCF Equity Cost Growth Rate Measures
Analysts Projected EPS Growth Rate Estimates

Panel A
Water Proxy Group

Company	Yahoo First Call	Zack's	Reuters	Average
American States Water Co. (NYSE-AWR)	5.50%	NA	5.50%	5.5%
American Water Works Co., Inc. (NYSE-AWK)	8.70%	8.69%	11.23%	9.5%
Aqua America, Inc. (NYSE-WTR)	6.00%	6.50%	7.20%	6.6%
Artesian Resources Corp. (NDQ-ARTNA)	4.53%	NA	4.53%	4.5%
California Water Service Group (NYSE-CWT)	9.00%	NA	6.33%	7.7%
Connecticut Water Service, Inc. (NDQ-CTWS)	3.00%	4.00%	5.50%	4.2%
Middlesex Water Company (NDQ-MSEX)	3.00%	3.00%	-1.00%	1.7%
SJW Corporation (NYSE-SJW)	14.00%	NA	14.00%	14.0%
York Water Company (NDQ-YORW)	6.00%	6.00%	6.00%	6.0%
Mean	6.6%	5.6%	6.6%	6.6%
Median	6.0%	6.0%	6.0%	6.0%

Data Sources: www.reuters.com, www.zacks.com, http://quote.yahoo.com, August, 2011

Panel B
Gas Proxy Group

Company	Yahoo First Call	Zack's	Reuters	Average
AGL Resources Inc. (NYSE-AGL)	6.0%	4.0%	5.2%	5.1%
Atmos Energy Corporation (NYSE-ATO)	3.4%	4.5%	3.9%	3.9%
Laclede Group, Inc. (NYSE-LG)	3.5%	3.0%	5.0%	3.8%
Northwest Natural Gas Co. (NYSE-NWN)	3.6%	4.6%	3.9%	4.0%
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	4.8%	4.8%	4.4%	4.6%
South Jersey Industries, Inc. (NYSE-SJI)	7.5%	6.0%	7.0%	6.8%
Southwest Gas Corporation (NYSE-SWX)	2.8%	6.0%	2.7%	3.8%
WGL Holdings, Inc. (NYSE-WGL)	4.0%	5.3%	3.8%	4.4%
Mean	4.44%	4.8%	4.5%	4.6%
Median	3.80%	4.7%	4.1%	4.2%

Data Sources: www.reuters.com, www.zacks.com, http://quote.yahoo.com, August, 2011

Attachment JRW-10

California Water Utility Cost of Capital Report
DCF Growth Rate Indicators

Summary Growth Rates

Growth Rate Indicator	Water Proxy Group	Gas Proxy Group
Historic *Value Line* Growth in EPS, DPS, and BVPS	4.5%	4.3%
Projected *Value Line* Growth in EPS, DPS, and BVPS	4.3%	4.4%
Sustainable Growth ROE * Retention Rate	4.8%	4.3%
Projected EPS Growth from First Call, Zacks, and Reuters	6.0%	4.2%
Average of Historic and Projected Growth Rates	4.9%	4.3%
Average of Sustainable and Projected Growth Rates	5.1%	4.3%

Attachment JRW-11

California Water Utility Cost of Capital Report
Capital Asset Pricing Model

Panel A
Water Proxy Group

Risk-Free Interest Rate	**4.00%**
Beta*	**0.70**
Ex Ante Equity Risk Premium**	**5.10%**
CAPM Cost of Equity	**7.6%**

* See page 3 of Attachment JRW-11
** See pages 5 and 6 of Attachment JRW-11

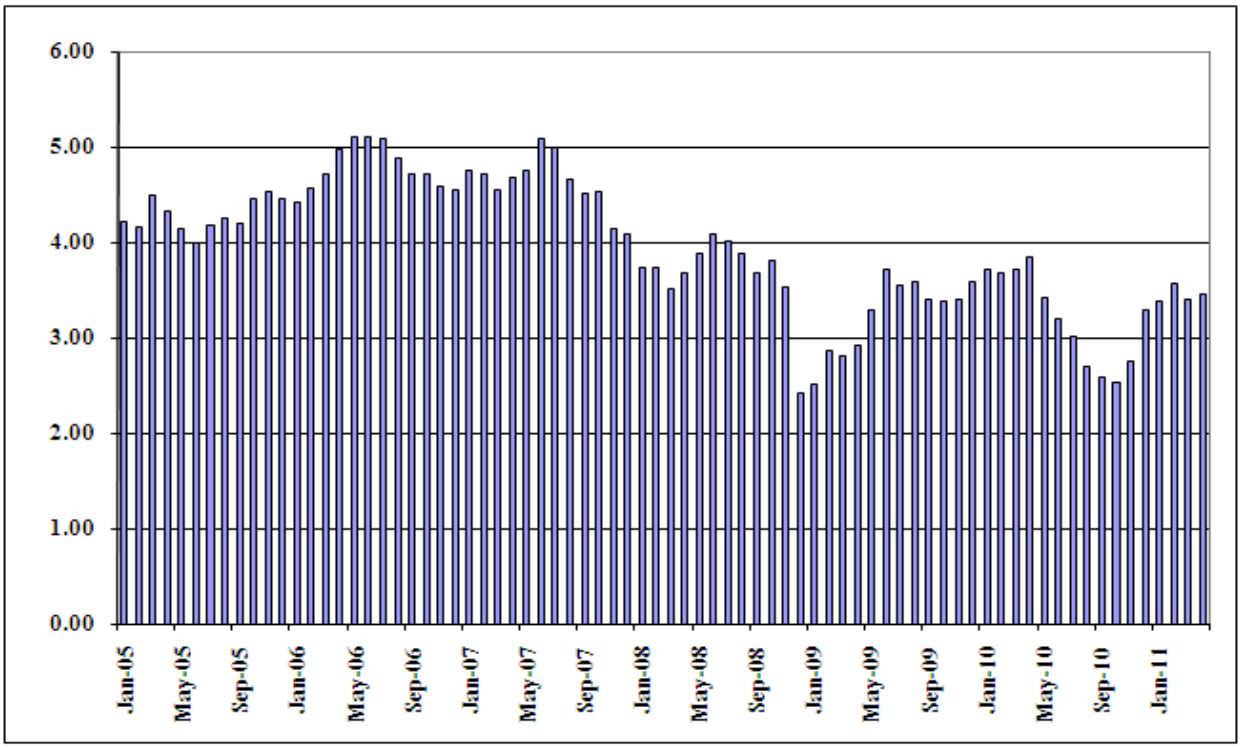
Panel B
Gas Proxy Group

Risk-Free Interest Rate	**4.00%**
Beta*	**0.65**
Ex Ante Equity Risk Premium**	**5.10%**
CAPM Cost of Equity	**7.3%**

* See page 3 of Attachment JRW-11
** See pages 5 and 6 of Attachment JRW-11

Attachment JRW-11

Panel A
Ten-Year U.S. Treasury Yields
January 2000-Present

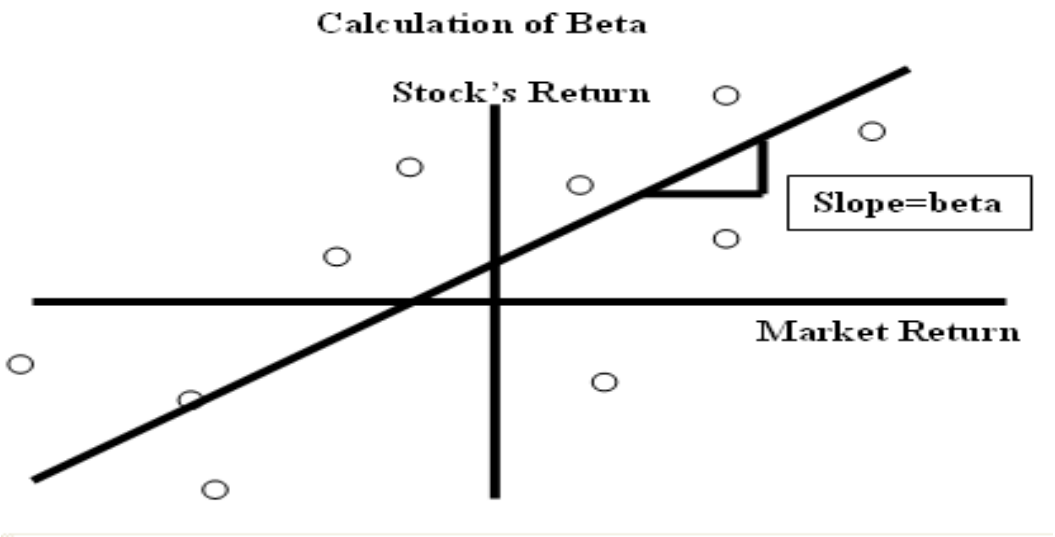


Panel B
Current Rates

U.S. Treasuries	COUPON	MATURITY	PRICE/YIELD
3-Month	0.000	11/17/2011	0.01 / 0.01
6-Month	0.000	02/16/2012	0.04 / 0.04
12-Month	0.000	07/26/2012	0.09 / 0.09
2-Year	0.375	07/31/2013	100-12 / 0.18
3-Year	0.500	08/15/2014	100-18¾ / 0.30
5-Year	1.500	07/31/2016	103-03 / 0.86
7-Year	2.250	07/31/2018	105-17+ / 1.41
10-Year	2.125	08/15/2021	100-09+ / 2.09
30-Year	3.750	08/15/2041	105-00½ / 3.48

Attachment JRW-11

Panel A



Panel B
Proxy Group Betas

Water Proxy Group

Company	Beta
American States Water Co. (NYSE-AWR)	0.75
American Water Works Co., Inc. (NYSE-AWK)	0.65
Aqua America, Inc. (NYSE-WTR)	0.65
Artesian Resources Corp. (NDQ-ARTNA)	0.60
California Water Service Group (NYSE-CWT)	0.70
Connecticut Water Service, Inc. (NDQ-CTWS)	0.80
Middlesex Water Company (NDQ-MSEX)	0.75
SJW Corporation (NYSE-SJW)	0.90
York Water Company (NDQ-YORW)	0.70
Mean	0.72
Median	0.70

Data Source: *Value Line Investment Survey, 2011.*

Gas Proxy Group

Company	Beta
AGL Resources Inc. (NYSE-ATG)	0.75
Atmos Energy Corporation (NYSE-ATO)	0.65
Laclede Group, Inc. (NYSE-LG)	0.60
Northwest Natural Gas Co. (NYSE-NWN)	0.60
Piedmont Natural Gas Co., Inc. (NYSE-PNY)	0.65
South Jersey Industries, Inc. (NYSE-SJI)	0.65
Southwest Gas Corporation (NYSE-SWX)	0.75
WGL Holdings, Inc. (NYSE-WGL)	0.65
Mean	0.66
Median	0.65

Data Source: *Value Line Investment Survey, 2011.*

Attachment JRW-11

Risk Premium Approaches

	Historical Ex Post Excess Returns	Surveys	Ex Ante Models and Market Data
Means of Assessing the Equity-Bond Risk Premium	Historical average is a popular proxy for the ex ante premium – but likely to be misleading	Investor and expert surveys can provide direct estimates of prevailing expected returns/premiums	Current financial market prices (simple valuation ratios or DCF-based measures) can give most objective estimates of feasible ex ante equity-bond risk premium
Problems/Debated Issues	Time variation in required returns and systematic selection and other biases have boosted valuations over time, and have exaggerated realized excess equity returns compared with ex ante expected premiums	Limited survey histories and questions of survey representativeness. Surveys may tell more about hoped-for expected returns than about objective required premiums due to irrational biases such as extrapolation.	Assumptions needed for DCF inputs, notably the trend earnings growth rate, make even these models' outputs subjective. The range of views on the growth rate, as well as the debate on the relevant stock and bond yields, leads to a range of premium estimates.

Source: Antti Ilmanen, Expected Returns on Stocks and Bonds," *Journal of Portfolio Management* , (Winter 2003).

Attachment JRW-11

California Water Utility Cost of Capital Report
Capital Asset Pricing Model
Equity Risk Premium

Category	Study Authors	Publication Date	Time Period Of Study	Methodology	Return Measure	Range Low	Range High	Midpoint of Range	Mean	Median
Historical Risk Premium										
	Ibbotson	2011	1926-2010	Historical Stock Returns - Bond Returns	Arithmetic				6.00%	
					Geometric				4.40%	
	Bate	2008	1900-2007	Historical Stock Returns - Bond Returns	Geometric				4.50%	
	Shiller	2006	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				7.00%	
					Geometric				5.50%	
	Damodoran	2006	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				6.70%	
					Geometric				5.10%	
	Siegel	2005	1926-2005	Historical Stock Returns - Bond Returns	Arithmetic				6.10%	
					Geometric				4.60%	
	Dimson, Marsh, and Staunton	2006	1900-2005	Historical Stock Returns - Bond Returns	Arithmetic				5.50%	
	Goyal & Welch	2006	1872-2004	Historical Stock Returns - Bond Returns					4.77%	
	Median									5.50%
Ex Ante Models (Puzzle Research)										
	Claus Thomas	2001	1985-1998	Abnormal Earnings Model					3.00%	
	Arnott and Bernstein	2002	1810-2001	Fundamentals - Div Yld + Growth					2.40%	
	Constantinides	2002	1872-2000	Historical Returns & Fundamentals - P/D & P/E					6.90%	
	Cornell	1999	1926-1997	Historical Returns & Fundamental GDP/Earnings		3.50%	5.50%	4.50%	4.50%	
	Easton, Taylor, et al	2002	1981-1998	Residual Income Model					5.30%	
	Fama French	2002	1951-2000	Fundamental DCF with EPS and DPS Growth		2.55%	4.32%		3.44%	
	Harris & Marston	2001	1982-1998	Fundamental DCF with Analysts' EPS Growth					7.14%	
	Best & Byrne	2001								
	McKinsey	2002	1962-2002	Fundamental (P/E, D/P, & Earnings Growth)		3.50%	4.00%		3.75%	
	Siegel	2005	1802-2001	Historical Earnings Yield	Geometric				2.50%	
	Grabowski	2006	1926-2005	Historical and Projected		3.50%	6.00%	4.75%	4.75%	
	Maheu & McCurdy	2006	1885-2003	Historical Excess Returns, Structural Breaks,		4.02%	5.10%	4.56%	4.56%	
	Bostock	2004	1960-2002	Bond Yields, Credit Risk, and Income Volatility		3.90%	1.30%	2.60%	2.60%	
	Bakshi & Chen	2005	1982-1998	Fundamentals - Interest Rates					7.31%	
	Donaldson, Kamstra, & Kramer	2006	1952-2004	Fundamental, Dividend yld., Returns,, & Volatility		3.00%	4.00%	3.50%	3.50%	
	Campbell	2008	1982-2007	Historical & Projections (D/P & Earnings Growth)		4.10%	5.40%		4.75%	
	Best & Byrne	2001	Projection	Fundamentals - Div Yld + Growth					2.00%	
	Fernandez	2007	Projection	Required Equity Risk Premium					4.00%	
	DeLong & Magin	2008	Projection	Earnings Yield - TIPS					3.22%	
	Damodoran	2011	Projection	Fundamentals - Implied from FCF to Equity Model					5.92%	
	Social Security									
	Office of Chief Actuary		1900-1995							
	John Campbell	2001	1860-2000	Historical & Projections (D/P & Earnings Growth)	Arithmetic	3.00%	4.00%	3.50%	3.50%	
			Projected for 75 Years		Geometric	1.50%	2.50%	2.00%	2.00%	
	Peter Diamond	2001	Projected for 75 Years	Fundamentals (D/P, GDP Growth)		3.00%	4.80%	3.90%	3.90%	
	John Shoven	2001	Projected for 75 Years	Fundamentals (D/P, P/E, GDP Growth)		3.00%	3.50%	3.25%	3.25%	
	Median									3.75%
Surveys										
	Survey of Financial Forecasters	2011	10-Year Projection	About 50 Financial Forecastsers					2.87%	
	Duke - CFO Magazine Survey	2011	10-Year Projection	Approximately 500 CFOs					3.40%	
	Welch - Academics	2008	30-Year Projection	Random Academics		5.00%	5.74%	5.37%	5.37%	
	Fernandez - Academics	2011	Long-Term	Survey of Academics					5.50%	
	Fernandez - Analysts	2011	Long-Term	Survey of Analysts					5.00%	
	Fernandez - Companies	2011	Long-Term	Survey of Companies					5.20%	
	Median									5.10%
Building Block										
	Ibbotson and Chen	2011	1926-2010	Historical Supply Model (D/P & Earnings Growth)	Arithmetic			5.99%	4.95%	
					Geometric			3.91%		
	Woolridge		2011	Current Supply Model (D/P & Earnings Growth)					3.30%	
	Median									4.13%
Mean										**4.62%**
Median										**4.61%**

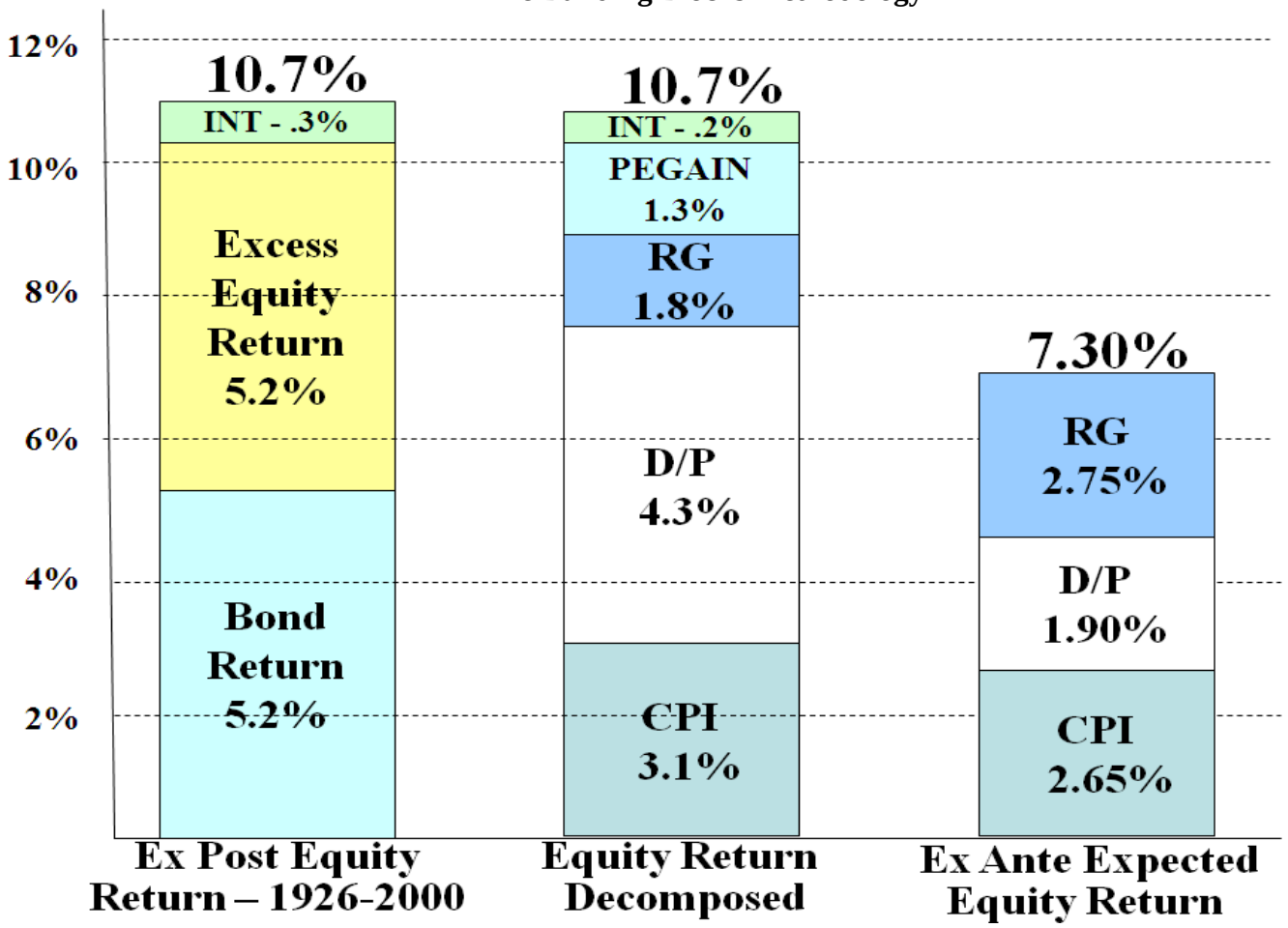
Attachment JRW-11

California Water Utility Cost of Capital Report
Capital Asset Pricing Model
Equity Risk Premium
Summary of 2010 Equity Risk Premium Studies

Category	Study Authors	Publication Date	Time Period Of Study	Methodology	Return Measure	Range Low	Range High	Midpoint of Range	Mean	Average
Historical Risk Premium										
	Ibbotson	2011	1926-2010	Historical Stock Returns - Bond Returns	Arithmetic				6.00%	
					Geometric				4.40%	
	Median									5.20%
Ex Ante Models (Puzzle Research)										
	Damodoran	2011	Projection	Fundamentals - Implied from FCF to Equity Model					5.92%	
	Median									5.92%
Surveys										
	Survey of Financial Forecasters	2011	10-Year Projection	About 50 Financial Forecastsers					2.87%	
	Duke - CFO Magazine Survey	2011	10-Year Projection	Approximately 500 CFOs					3.40%	
	Fernandez - Academics	2011	Long-Term	Survey of Academics					5.50%	
	Fernandez - Analysts	2011	Long-Term	Survey of Analysts					5.00%	
	Fernandez - Companies	2011	Long-Term	Survey of Companies					5.20%	
	Median									5.00%
Building Block										
	Ibbotson and Chen	2011	1926-2010	Historical Supply Model (D/P & Earnings Growth)	Arithmetic			5.99%	4.95%	
					Geometric			3.91%		
	Woolridge		2011	Current Supply Model (D/P & Earnings Growth)					3.30%	
	Median									4.13%
Mean										**5.06%**
Median										**5.10%**

Attachment JRW-11

California Water Utility Cost of Capital Report
Decomposing Equity Market Returns
The Building Blocks Methodology



Attachment JRW-11

California Water Utility Cost of Capital Report

2011 Survey of Professional Forecasters
Philadelphia Federal Reserve Bank
Long-Term Forecasts

Table Seven
LONG-TERM (10 YEAR) FORECASTS

Panel A

SERIES: CPI INFLATION RATE	
STATISTIC	
MINIMUM	0.70
LOWER QUARTILE	2.00
MEDIAN	2.30
UPPER QUARTILE	2.50
MAXIMUM	3.50
MEAN	2.30
STD. DEV.	0.55
N	36
MISSING	7

Panel B

SERIES: REAL GDP GROWTH RATE	
STATISTIC	
MINIMUM	1.70
LOWER QUARTILE	2.70
MEDIAN	2.84
UPPER QUARTILE	3.20
MAXIMUM	4.00
MEAN	2.93
STD. DEV.	0.48
N	34
MISSING	9

Panel C

SERIES: PRODUCTIVITY GROWTH	
STATISTIC	
MINIMUM	1.50
LOWER QUARTILE	1.80
MEDIAN	2.00
UPPER QUARTILE	2.20
MAXIMUM	3.00
MEAN	2.04
STD. DEV.	0.35
N	26
MISSING	17

Panel D

SERIES: STOCK RETURNS (S&P 500)	
STATISTIC	
MINIMUM	4.20
LOWER QUARTILE	6.30
MEDIAN	7.25
UPPER QUARTILE	8.25
MAXIMUM	12.00
MEAN	7.37
STD. DEV.	1.80
N	20
MISSING	23

Panel E

SERIES: BOND RETURNS (10-YEAR)	
STATISTIC	
MINIMUM	-4.00
LOWER QUARTILE	4.25
MEDIAN	4.88
UPPER QUARTILE	5.00
MAXIMUM	6.50
MEAN	4.50
STD. DEV.	1.80
N	30
MISSING	13

Panel F

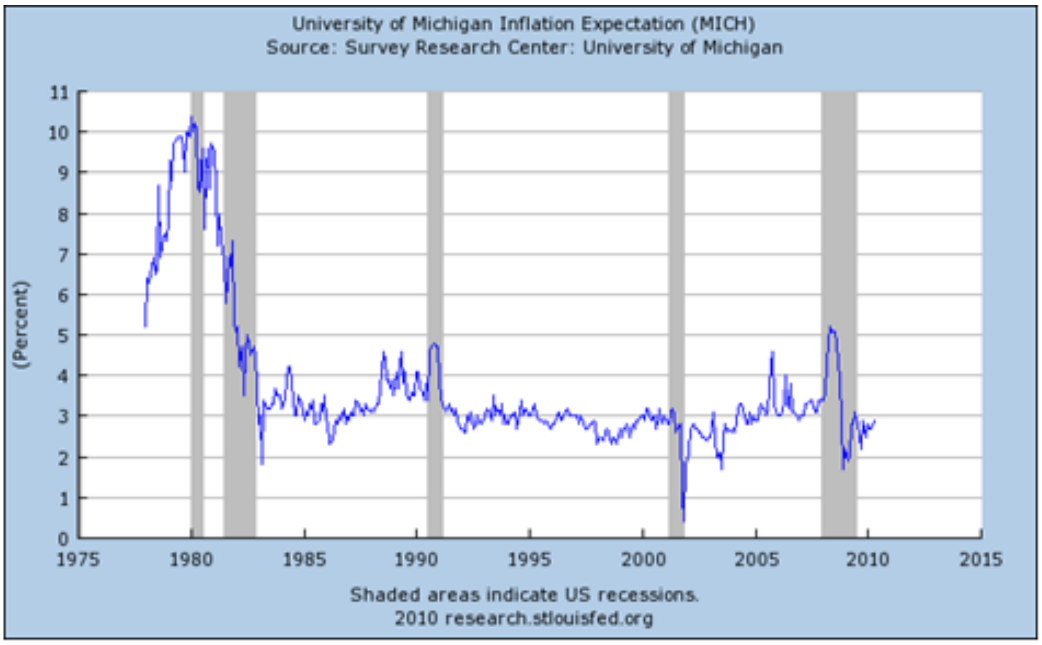
SERIES: BILL RETURNS (3-MONTH)	
STATISTIC	
MINIMUM	-2.00
LOWER QUARTILE	2.75
MEDIAN	3.00
UPPER QUARTILE	3.31
MAXIMUM	4.75
MEAN	2.93
STD. DEV.	1.13
N	30
MISSING	13

Source: Philadelphia Federal Researve Bank, Survey of Professional Forecasters, February 11, 2011.

Attachment JRW-11

California Water Utility Cost of Capital Report

University of Michigan Survey Research Center
Expected Short-Term Inflation Rate

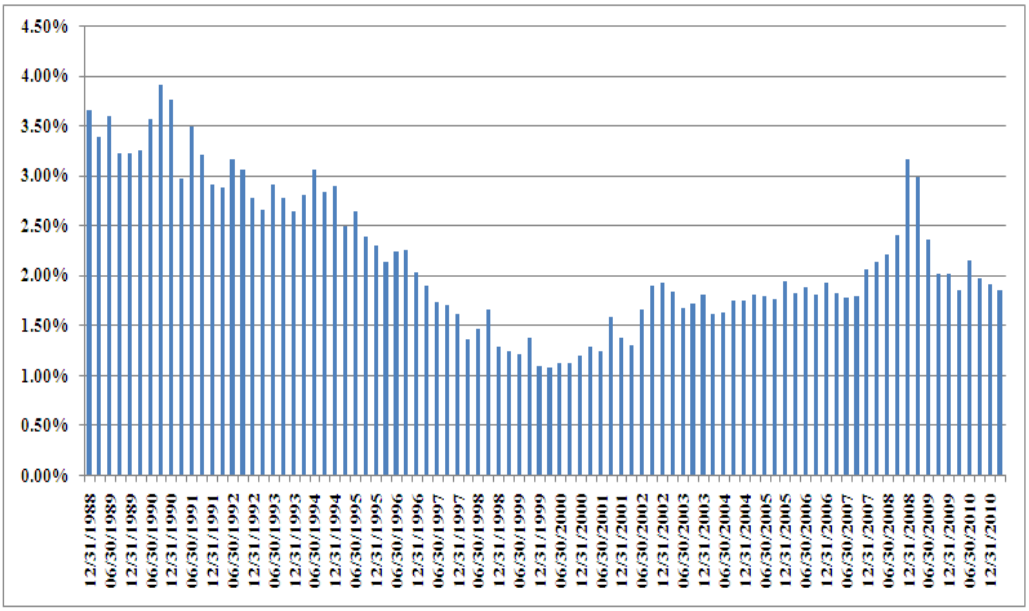


Data Source: http://research.stlouisfed.org/fred2/series/MICH?cid=98

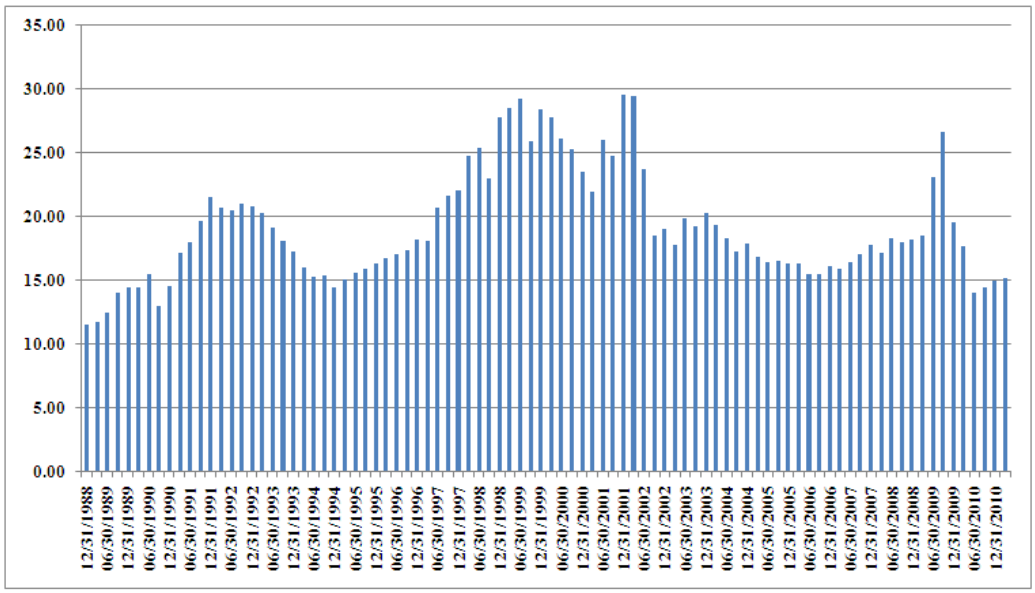
Exhibit JRW-11

Decomposing Equity Market Returns
The Building Blocks Methodology

S&P 500 Dividend Yield



S&P 500 P/E Ratio



Attachment JRW-11

CAPM
Real S&P 500 EPS Growth Rate

Year	S&P 500 EPS	Annual Inflation CPI	Inflation Adjustment Factor	Real S&P 500 EPS	
1960	3.10	1.48		3.10	
1961	3.37	0.07	1.01	3.35	
1962	3.67	1.22	1.02	3.59	
1963	4.13	1.65	1.04	3.99	
1964	4.76	1.19	1.05	4.55	
1965	5.30	1.92	1.07	4.97	
1966	5.41	3.35	1.10	4.90	
1967	5.46	3.04	1.14	4.80	
1968	5.72	4.72	1.19	4.81	
1969	6.10	6.11	1.26	4.83	10-Year
1970	5.51	5.49	1.34	4.13	2.89%
1971	5.57	3.36	1.38	4.04	
1972	6.17	3.41	1.43	4.33	
1973	7.96	8.80	1.55	5.13	
1974	9.35	12.20	1.74	5.37	
1975	7.71	7.01	1.86	4.14	
1976	9.75	4.81	1.95	4.99	
1977	10.87	6.77	2.08	5.22	
1978	11.64	9.03	2.27	5.13	
1979	14.55	13.31	2.57	5.66	10-Year
1980	14.99	12.40	2.89	5.18	2.30%
1981	15.18	8.94	3.15	4.82	
1982	13.82	3.87	3.27	4.23	
1983	13.29	3.80	3.40	3.91	
1984	16.84	3.95	3.53	4.77	
1985	15.68	3.77	3.66	4.28	
1986	14.43	1.13	3.70	3.90	
1987	16.04	4.41	3.87	4.15	
1988	22.77	4.42	4.04	5.64	
1989	24.03	4.65	4.22	5.69	10-Year
1990	21.73	6.11	4.48	4.85	-0.65%
1991	19.10	3.06	4.62	4.14	
1992	18.13	2.90	4.75	3.81	
1993	19.82	2.75	4.88	4.06	
1994	27.05	2.67	5.01	5.40	
1995	35.35	2.54	5.14	6.88	
1996	35.78	3.32	5.31	6.74	
1997	39.56	1.70	5.40	7.33	
1998	38.23	1.61	5.48	6.97	
1999	45.17	2.68	5.63	8.02	10-Year
2000	52.00	3.39	5.82	8.93	6.29%
2001	44.23	1.55	5.92	7.48	
2002	47.24	2.38	6.06	7.80	
2003	54.15	1.88	6.17	8.77	
2004	67.01	3.26	6.37	10.51	5-Year
2005	68.32	3.42	6.60	10.35	3.00%
2006	81.96	2.54	6.77	12.11	
2007	87.51	4.08	7.04	12.43	
2008	65.39	0.09	7.05	9.28	
2009	59.65	2.72	7.24	8.24	

Authorized ROEs for Publicly-Held Water Companies

	Authorized ROE	Date
American States Water	10.20%	May-09
American Water Works	9.63%	
Aqua America, Inc.	10.33%	
Artesian Resources Corp.	10.00%	Sep-09
California Water Service Group	10.20%	May-09
Connecticut Water Services, Inc.	9.75%	Jul-10
Middlesex Water Company	10.15%	
Pennichuck Corporation	9.75%	
SJW Corp.	10.20%	Oct-10
York Water Company	NA	
Average	10.02%	

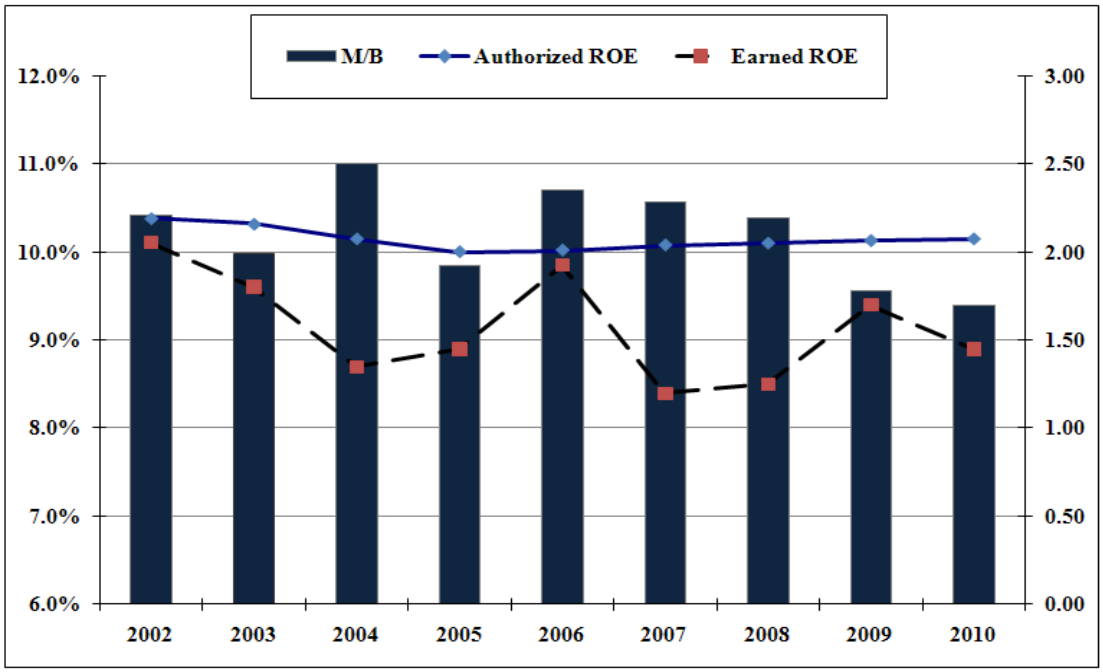
Data Source: *AUS Utility Reports, August, 2011*.

Panel A
Authorized and Earned ROEs and M/B Ratios for Publicly-Held Water Companies

Year	Authorized ROE	Earned ROE	M/B
2002	10.39%	10.10%	2.21
2003	10.32%	9.60%	1.99
2004	10.15%	8.70%	2.50
2005	10.00%	8.90%	1.92
2006	10.02%	9.85%	2.35
2007	10.08%	8.40%	2.29
2008	10.10%	8.50%	2.19
2009	10.13%	9.40%	1.78
2010	10.15%	8.90%	1.70

Data Source: *AUS Utility Reports* .

Panel B
Summary of Authorized ROEs and M/B Ratios for Publicly-Held Water Companies



Attachment JRW-12
Water Company Capital Cost Indicators
2008 and 2011

Panel A
Ten-Year Treasury Yields
2008, 2011

2008-03-01	3.51	3/1/2011	3.41
2008-04-01	3.68	4/1/2011	3.46
2008-05-01	3.88	5/1/2011	3.17
2008-06-01	4.10	6/1/2011	3.00
2008-07-01	4.01	7/1/2011	3.00
2008-08-01	3.89	8/1/2011	2.50
Average	3.85		3.09

Panel B
Thirty-Year, A-Rated Public Utility Bonds
2008, 2011

3/7/2008	6.27	2/28/2011	5.60
4/4/2008	6.17	3/31/2011	5.58
5/2/2008	6.15	4/30/2011	5.54
6/6/2008	6.16	5/31/2011	5.24
7/4/2008	6.29	6/30/2011	5.35
8/1/2008	6.28	7/29/2011	5.11
Average	6.22		5.40

Panel C
Water Company Dividend Yields

Company	Feb	Mar	Apr	May	June	July	Mean
American States Water	2.7%	3.1%	2.9%	2.6%	2.9%	2.8%	2.8%
Aqua America, Inc.	2.5%	2.5%	2.7%	2.6%	2.9%	2.9%	2.6%
Artesian Resources Corp.	3.7%	3.7%	3.8%	3.8%	3.9%	3.8%	3.8%
California Water Service G	3.2%	3.4%	3.0%	2.9%	3.2%	3.2%	3.1%
Connecticut Water Service	3.6%	3.6%	3.7%	3.6%	3.6%	3.6%	3.6%
Middlesex Water Compan	3.8%	3.8%	3.9%	3.8%	3.7%	3.8%	3.8%
SJW Corp.	2.0%	2.1%	2.2%	2.2%	2.1%	2.1%	2.1%
York Water Company	3.0%	3.2%	3.2%	3.0%	3.2%	3.2%	3.1%
Mean	2.9%	3.0%	3.0%	2.9%	3.0%	3.1%	3.0%

Data Sources: Testimony of Jr. Randall Woolridge, 2008 California Class A Water Company Report, Exhibit JRW-6, page 2

Panel D
Water Company Projected EPS Growth Rates

Company		Yahoo First Call	Zack's	Average
American States Water		7.6%	10.0%	8.8%
Aqua America, Inc.		9.0%	9.6%	9.3%
Artesian Resources Corp.		5.0%	5.0%	5.0%
California Water Service Group		8.6%	9.3%	9.0%
Connecticut Water Services, Inc.		15.0%		15.0%
Middlesex Water Company		8.0%	8.0%	8.0%
SJW Corp.		10.0%	10.0%	10.0%
York Water Company		8.0%	11.5%	9.8%
Mean		8.9%	9.1%	9.3%
Median		8.3%	9.6%	9.1%
Average				9.2%

Data Sources: Testimony of Jr. Randall Woolridge, 2008 California Class A Water Company Report, Exhibit JRW-6, page 6

Panel E
Water Company Betas
2008, 2011

Company		Beta
American States Water		1.05
Aqua America, Inc.		0.95
California Water Service Group		1.15
Connecticut Water Services, Inc.		0.85
Middlesex Water Company		0.90
SJW Corp.		1.15
York Water Company		0.50
Mean		0.94

Data Sources: Testimony of Jr. Randall Woolridge, 2008 California Class A Water Company Report, Exhibit JRW-7, page 2

Panel A
Corporate Credit Ratings ("CCRs") for CCAWCs

	CCR
California American Water Company	BBB+
California Water Service Company	A+
Golden State Water Company	A+
San Jose Water Company	A

Panel B
2011 Yields on 30-Year, A and BBB+ Rated Bonds

Date	A	BBB+
8/12/11	4.82	5.11
8/5/11	4.88	5.16
7/29/11	5.11	5.41
7/22/11	5.25	5.55
7/15/11	5.25	5.57
7/8/11	5.30	5.62
7/1/11	5.36	5.65
6/24/11	5.23	5.55
6/17/11	5.26	5.57
6/10/11	5.25	5.51
6/3/11	5.26	5.55
5/27/11	5.27	5.54
5/20/11	5.30	5.58
5/13/11	5.30	5.58
5/6/11	5.35	5.55
4/29/11	5.54	5.63
4/22/11	5.56	5.73
4/15/11	5.58	5.69
4/8/11	5.71	5.91
4/1/11	5.55	5.78
3/25/11	5.57	5.78
3/18/11	5.48	5.71
3/11/11	5.61	5.77
3/4/11	5.69	5.82
2/25/11	5.60	5.74
2/18/11	5.78	5.92
2/11/11	5.82	5.93
2/4/11	5.86	5.98
1/28/11	5.67	5.87
1/21/11	5.72	5.89
1/14/11	5.76	5.92
1/7/11	5.75	5.89
Average	5.45	5.67

Panel C
Equity Cost Rate Results for CCAWCs

	ROE
California American Water Company	9.00%
California Water Service Company	8.75%
Golden State Water Company	8.75%
San Jose Water Company	8.75%

Attachment JRW-13
California Water Utility Cost of Capital Report
Capital Structure and Debt Cost Rate

California American Water Company
2012-13

Capital Source	Capitalization Ratio	Cost Rate
Long-Term Debt	52.20%	6.63%
Common Equity	47.80%	
Total	100.00%	

California Water Service Company
2012-13

Capital Source	Capitalization Ratio	Cost Rate
Long-Term Debt	50.00%	6.16%
Common Equity	50.00%	
Total	100.00%	

Golden State Water Company
2012-13

Capital Source	Capitalization Ratio	Cost Rate
Long-Term Debt	47.00%	6.99%
Common Equity	53.00%	
Total	100.00%	

Exhibit JRW-13

Capital Structure Ratios

Panel A - California American Water Company

	CAW Average Proposed Ratio	AWK Average Actual Ratio	WPG Average Actual Ratio
Long-Term Debt	50.31%	58.67%	54.40%
Preferred Stock	0.00%	0.05%	0.15%
Common Equity	49.69%	41.29%	45.45%
Total Capital	100.00%	100.00%	100.00%

Source: Pages 3,4 and 5 of Attachment JRW-13

Panel B - California Water Service Company

	CWS Average Proposed Ratio	CWT Average Actual Ratio	WPG Average Actual Ratio
Long-Term Debt	46.10%	59.48%	54.40%
Preferred Stock	0.00%	0.00%	0.15%
Common Equity	53.90%	40.52%	45.45%
Total Capital	100.00%	100.00%	100.00%

Source: Pages 3,4 and 5 of Attachment JRW-13

Panel C - Golden State Water Company

	GSW Average Proposed Ratio	AWR Average Actual Ratio	WPG Average Actual Ratio
Long-Term Debt	44.40%	50.76%	54.40%
Preferred Stock	0.00%	0.00%	0.15%
Common Equity	55.60%	49.24%	45.45%
Total Capital	100.00%	100.00%	100.00%

Source: Pages 3,4 and 5 of Attachment JRW-13

Panel D - San Jose Water Water Company

	San Jose Average Proposed Ratio	SJW Average Actual Ratio	WPG Average Actual Ratio
Long-Term Debt	48.66%	59.54%	54.40%
Preferred Stock	0.00%	0.00%	0.15%
Common Equity	51.35%	40.46%	45.45%
Total Capital	100.00%	100.00%	100.00%

Source: Pages 3,4 and 5 of Attachment JRW-13

Exhibit JRW-13
CCAWCs Parent Company Capital Structures
Capital Structure Ratios
Water Proxy Group

Panel A
Capital Structure Ratios With Short-Term Debt

		6/30/11	3/31/11	12/31/10	9/30/10			6/30/11	3/31/11	12/31/10	9/30/10	Average
AWR						AWR						
	Short Term Debt	12,392	61,282	61,276	21,699		Short Term Debt	1.51%	7.47%	7.50%	2.80%	**4.82%**
	Long-Term Debt	416,295	377,773	378,164	390,338		Long-Term Debt	50.68%	46.07%	46.29%	50.30%	**48.33%**
	Preferred Stock						Preferred Stock	0.00%	0.00%	0.00%	0.00%	**0.00%**
	Common Equity	392,809	380,897	377,541	363,966		Common Equity	47.82%	46.45%	46.21%	46.90%	**46.85%**
	Total	821,496	819,952	816,981	776,003		Total	100.00%	100.00%	100.00%	100.00%	**100.00%**
AWK	Short Term Debt	458,379	335,652	274,459	225,825	AWK	Short Term Debt	4.42%	3.27%	2.63%	2.18%	**3.13%**
	Long-Term Debt	5,759,044	5,771,026	6,021,480	5,988,695		Long-Term Debt	55.48%	56.26%	57.74%	57.86%	**56.84%**
	Preferred Stock	4,547	4,547	4,547	4,547		Preferred Stock	0.04%	0.04%	0.04%	0.04%	**0.04%**
	Common Equity	4,157,920	4,146,107	4,127,725	4,131,206		Common Equity	40.06%	40.42%	39.58%	39.91%	**39.99%**
	Total	10,379,890	10,257,332	10,428,211	10,350,273		Total	100.00%	100.00%	100.00%	100.00%	**100.00%**
CWT						CWT						
	Short Term Debt	35,137	31,227	26,130	58,624		Short Term Debt	3.09%	2.77%	2.32%	5.51%	**3.42%**
	Long-Term Debt	665,245	665,362	666,080	567,931		Long-Term Debt	58.43%	58.95%	59.06%	53.43%	**57.47%**
	Preferred Stock						Preferred Stock	0.00%	0.00%	0.00%	0.00%	**0.00%**
	Common Equity	438,240	432,135	435,526	436,482		Common Equity	38.49%	38.29%	38.62%	41.06%	**39.11%**
	Total	1,138,622	1,128,724	1,127,736	1,063,037		Total	100.00%	100.00%	100.00%	100.00%	**100.00%**
SJW						SJW						
	Short Term Debt	7,919	12,649	5,133	4,644		Short Term Debt	1.17%	2.01%	0.82%	0.74%	**1.19%**
	Long-Term Debt	413,291	362,548	364,056	365,343		Long-Term Debt	61.11%	57.73%	58.32%	58.18%	**58.84%**
	Preferred Stock						Preferred Stock	0.00%	0.00%	0.00%	0.00%	**0.00%**
	Common Equity	255,148	252,773	255,032	257,967		Common Equity	37.72%	40.25%	40.86%	41.08%	**39.98%**
	Total	676,358	627,970	624,221	627,954		Total	100.00%	100.00%	100.00%	100.00%	**100.00%**
						Summary		6/30/11	3/31/11	12/31/10	9/30/10	
							Short Term Debt	2.55%	3.88%	3.32%	2.81%	**3.14%**
							Long-Term Debt	56.42%	54.75%	55.35%	54.94%	**55.37%**
							Preferred Stock	0.01%	0.01%	0.01%	0.01%	**0.01%**
							Common Equity	41.02%	41.35%	41.32%	42.24%	**41.48%**
							Total	100.00%	100.00%	100.00%	100.00%	**100.00%**

Panel B
Capital Structure Ratios Without Short-Term Debt

		6/30/11	3/31/11	12/31/10	9/30/10			6/30/11	3/31/11	12/31/10	9/30/10	Average
AWR						AWR						
	Long-Term Debt	416,295	377,773	378,164	390,338		Long-Term Debt	51.45%	49.79%	50.04%	51.75%	**50.76%**
	Preferred Stock	0	0	0	0		Preferred Stock	0.00%	0.00%	0.00%	0.00%	**0.00%**
	Common Equity	392,809	380,897	377,541	363,966		Common Equity	48.55%	50.21%	49.96%	48.25%	**49.24%**
	Total	809,104	758,670	755,705	754,304		Total	100.00%	100.00%	100.00%	100.00%	**100.00%**
AWK						AWK						
	Long-Term Debt	5,759,044	5,771,026	6,021,480	5,988,695		Long-Term Debt	58.05%	58.17%	59.30%	59.15%	**58.67%**
	Preferred Stock	4,547	4,547	4,547	4,547		Preferred Stock	0.05%	0.05%	0.04%	0.04%	**0.05%**
	Common Equity	4,157,920	4,146,107	4,127,725	4,131,206		Common Equity	41.91%	41.79%	40.65%	40.80%	**41.29%**
	Total	9,921,511	9,921,680	10,153,752	10,124,448		Total	100.00%	100.00%	100.00%	100.00%	**100.00%**
CWT						CWT						
	Long-Term Debt	665,245	665,362	666,080	567,931		Long-Term Debt	60.29%	60.63%	60.46%	56.54%	**59.48%**
	Preferred Stock	0	0	0	0		Preferred Stock	0.00%	0.00%	0.00%	0.00%	**0.00%**
	Common Equity	438,240	432,135	435,526	436,482		Common Equity	39.71%	39.37%	39.54%	43.46%	**40.52%**
	Total	1,103,485	1,097,497	1,101,606	1,004,413		Total	100.00%	100.00%	100.00%	100.00%	**100.00%**
SJW						SJW						
	Long-Term Debt	413,291	362,548	364,056	365,343		Long-Term Debt	61.83%	58.92%	58.81%	58.61%	**59.54%**
	Preferred Stock	0	0	0	0		Preferred Stock	0.00%	0.00%	0.00%	0.00%	**0.00%**
	Common Equity	255,148	252,773	255,032	257,967		Common Equity	38.17%	41.08%	41.19%	41.39%	**40.46%**
	Total	668,439	615,321	619,088	623,310		Total	100.00%	100.00%	100.00%	100.00%	**100.00%**
						Summary		6/30/11	3/31/11	12/31/10	9/30/10	**Average**
							Long-Term Debt	57.90%	56.88%	57.15%	56.51%	**57.11%**
							Preferred Stock	0.01%	0.01%	0.01%	0.01%	**0.01%**
							Common Equity	42.09%	43.11%	42.84%	43.47%	**42.88%**
							Total	100.00%	100.00%	100.00%	100.00%	**100.00%**

Exhibit JRW-13
Water Proxy Group Capital Structures
Capital Structure Ratios With Short-Term Debt
Water Proxy Group

		6/30/11	3/31/11	12/31/10	9/30/10			6/30/11	3/31/11	12/31/10	9/30/10
AWR						AWR					
	Short Term Debt	12,392	61,282	61,276	21,699		Short Term Debt	1.51%	7.47%	7.50%	2.80%
	Long-Term Debt	416,295	377,773	378,164	390,338		Long-Term Debt	50.68%	46.07%	46.29%	50.30%
	Preferred Stock						Preferred Stock	0.00%	0.00%	0.00%	0.00%
	Common Equity	392,809	380,897	377,541	363,966		Common Equity	47.82%	46.45%	46.21%	46.90%
	Total	821,496	819,952	816,981	776,003		Total	100.00%	100.00%	100.00%	100.00%
AWK	Short Term Debt	458,379	335,652	274,459	225,825	AWK	Short Term Debt	7.37%	5.50%	4.36%	3.63%
	Long-Term Debt	5,759,044	5,771,026	6,021,480	5,988,695		Long-Term Debt	92.63%	94.50%	95.64%	96.37%
	Preferred Stock	4,547	4,547	4,547	4,547		Preferred Stock	0.07%	0.07%	0.07%	0.07%
	Common Equity	-4,547	-4,547	-4,547	-4,547		Common Equity	-0.07%	-0.07%	-0.07%	-0.07%
	Total	6,217,423	6,106,678	6,295,939	6,214,520		Total	100.00%	100.00%	100.00%	100.00%
WTR						WTR					
	Short Term Debt	209,386	120,345	118,081	82,277		Short Term Debt	7.13%	4.16%	4.13%	3.01%
	Long-Term Debt	1,534,668	1,596,771	1,598,942	1,518,930		Long-Term Debt	52.27%	55.23%	55.98%	55.62%
	Preferred Stock						Preferred Stock	0.00%	0.00%	0.00%	0.00%
	Common Equity	1,192,116	1,174,254	1,139,000	1,129,523		Common Equity	40.60%	40.61%	39.88%	41.36%
	Total	2,936,170	2,891,370	2,856,023	2,730,730		Total	100.00%	100.00%	100.00%	100.00%
ARTNA						ARTNA					
	Short Term Debt	27,285	26,958	30,616	25,408		Short Term Debt	11.11%	10.99%	12.40%	10.51%
	Long-Term Debt	122,561	123,068	121,220	121,984		Long-Term Debt	49.91%	50.18%	49.08%	50.45%
	Preferred Stock						Preferred Stock	0.00%	0.00%	0.00%	0.00%
	Common Equity	95,705	95,204	95,146	94,381		Common Equity	38.98%	38.82%	38.52%	39.04%
	Total	245,551	245,230	246,982	241,773		Total	100.00%	100.00%	100.00%	100.00%
CWT						CWT					
	Short Term Debt	31,227	26,130	58,624	58,073		Short Term Debt	2.77%	2.32%	5.51%	5.54%
	Long-Term Debt	665,362	666,080	567,931	568,032		Long-Term Debt	58.95%	59.06%	53.43%	54.24%
	Preferred Stock						Preferred Stock	0.00%	0.00%	0.00%	0.00%
	Common Equity	432,135	435,526	436,482	421,201		Common Equity	38.29%	38.62%	41.06%	40.22%
	Total	1,128,724	1,127,736	1,063,037	1,047,306		Total	100.00%	100.00%	100.00%	100.00%
CTWS						CTWS					
	Short Term Debt	26,426	26,297	26,342	31,039		Short Term Debt	9.08%	9.09%	9.12%	10.48%
	Long-Term Debt	148,182	148,225	148,394	151,798		Long-Term Debt	50.89%	51.25%	51.40%	51.27%
	Preferred Stock	772	772	772	772		Preferred Stock	0.27%	0.27%	0.27%	0.26%
	Common Equity	115,786	113,916	113,191	112,459		Common Equity	39.77%	39.39%	39.21%	37.98%
	Total	291,166	289,210	288,699	296,068		Total	100.00%	100.00%	100.00%	100.00%
MSEX						MSEX					
	Short Term Debt	24,698	22,243	21,432	23,150		Short Term Debt	7.32%	6.30%	6.07%	7.01%
	Long-Term Debt	134,709	154,088	155,105	130,550		Long-Term Debt	39.91%	43.63%	43.92%	39.54%
	Preferred Stock	3,353	3,353	3,362	3,362		Preferred Stock	0.99%	0.95%	0.95%	1.02%
	Common Equity	174,752	173,483	173,279	173,135		Common Equity	51.78%	49.12%	49.06%	52.43%
	Total	337,512	353,167	353,178	330,197		Total	100.00%	100.00%	100.00%	100.00%
SJW						SJW					
	Short Term Debt	12,649	5,133	4,644	12,958		Short Term Debt	2.01%	0.82%	0.74%	2.06%
	Long-Term Debt	362,548	364,056	365,343	364,691		Long-Term Debt	57.73%	58.32%	58.18%	57.94%
	Preferred Stock						Preferred Stock	0.00%	0.00%	0.00%	0.00%
	Common Equity	252,773	255,032	257,967	251,784		Common Equity	40.25%	40.86%	41.08%	40.00%
	Total	627,970	624,221	627,954	629,433		Total	100.00%	100.00%	100.00%	100.00%
YORW						YORW					
	Short Term Debt	82	132	41	3,041		Short Term Debt	0.05%	0.07%	0.02%	1.77%
	Long-Term Debt	85,006	85,031	85,132	78,189		Long-Term Debt	47.64%	47.97%	48.25%	45.55%
	Preferred Stock						Preferred Stock	0.00%	0.00%	0.00%	0.00%
	Common Equity	93,364	92,109	91,257	90,438		Common Equity	52.32%	51.96%	51.72%	52.68%
	Total	178,452	177,272	176,430	171,668		Total	100.00%	100.00%	100.00%	100.00%
						Summary		6/30/11	3/31/11	12/31/10	9/30/10
							Short Term Debt	5.37%	5.19%	5.54%	5.20%
							Long-Term Debt	55.62%	56.25%	55.80%	55.70%
							Preferred Stock	0.15%	0.14%	0.14%	0.15%
							Common Equity	38.86%	38.42%	38.52%	38.95%
							Total	100.00%	100.00%	100.00%	100.00%

Exhibit JRW-13
Water Proxy Group Capital Structures
Capital Structure Ratios Without Short-Term Debt
Water Proxy Group

		6/30/11	3/31/11	12/31/10	9/30/10
AWR					
	Long-Term Debt	416,295	377,773	378,164	390,338
	Preferred Stock	0	0	0	0
	Common Equity	392,809	380,897	377,541	363,966
	Total	809,104	758,670	755,705	754,304
AWK					
	Long-Term Debt	5,759,044	5,771,026	6,021,480	5,988,695
	Preferred Stock	4,547	4,547	4,547	4,547
	Common Equity	4,157,920	4,146,107	4,127,725	4,131,206
	Total	9,921,511	9,921,680	10,153,752	10,124,448
WTR					
	Long-Term Debt	1,534,668	1,596,771	1,598,942	1,518,930
	Preferred Stock				
	Common Equity	1,192,116	1,174,254	1,139,000	1,129,523
	Total	2,726,784	2,771,025	2,737,942	2,648,453
ARTNA					
	Long-Term Debt	122,561	123,068	121,220	121,984
	Preferred Stock				
	Common Equity	95,705	95,204	95,146	94,381
	Total	218,266	218,272	216,366	216,365
CWT					
	Long-Term Debt	665,362	666,080	567,931	568,032
	Preferred Stock				
	Common Equity	432,135	435,526	436,482	421,201
	Total	1,097,497	1,101,606	1,004,413	989,233
CTWS					
	Long-Term Debt	148,182	148,225	148,394	151,798
	Preferred Stock	772	772	772	772
	Common Equity	115,786	113,916	113,191	112,459
	Total	264,740	262,913	262,357	265,029
MSEX					
	Long-Term Debt	134,709	154,088	155,105	130,550
	Preferred Stock	3,353	3,353	3,362	3,362
	Common Equity	174,752	173,483	173,279	173,135
	Total	312,814	330,924	331,746	307,047
SJW					
	Long-Term Debt	362,548	364,056	365,343	364,691
	Preferred Stock				
	Common Equity	252,773	255,032	257,967	251,784
	Total	615,321	619,088	623,310	616,475
YORW					
	Long-Term Debt	85,006	85,031	85,132	78,189
	Preferred Stock				
	Common Equity	93,364	92,109	91,257	90,438
	Total	178,370	177,140	176,389	168,627

		6/30/11	3/31/11	12/31/10	9/30/10
AWR					
	Long-Term Debt	51.45%	49.79%	50.04%	51.75%
	Preferred Stock	0.00%	0.00%	0.00%	0.00%
	Common Equity	48.55%	50.21%	49.96%	48.25%
	Total	100%	100%	100%	100%
AWK					
	Long-Term Debt	58.05%	58.17%	59.30%	59.15%
	Preferred Stock	0.05%	0.05%	0.04%	0.04%
	Common Equity	41.91%	41.79%	40.65%	40.80%
	Total	100.00%	100.00%	100.00%	100.00%
WTR					
	Long-Term Debt	56.28%	57.62%	58.40%	57.35%
	Preferred Stock	0.00%	0.00%	0.00%	0.00%
	Common Equity	43.72%	42.38%	41.60%	42.65%
	Total	100.00%	100.00%	100.00%	100.00%
ARTNA					
	Long-Term Debt	56.15%	56.38%	56.03%	56.38%
	Preferred Stock	0.00%	0.00%	0.00%	0.00%
	Common Equity	43.85%	43.62%	43.97%	43.62%
	Total	100.00%	100.00%	100.00%	100.00%
CWT					
	Long-Term Debt	60.63%	60.46%	56.54%	57.42%
	Preferred Stock	0.00%	0.00%	0.00%	0.00%
	Common Equity	39.37%	39.54%	43.46%	42.58%
	Total	100.00%	100.00%	100.00%	100.00%
CTWS					
	Long-Term Debt	55.97%	56.38%	56.56%	57.28%
	Preferred Stock	0.29%	0.29%	0.29%	0.29%
	Common Equity	43.74%	43.33%	43.14%	42.43%
	Total	100.00%	100.00%	100.00%	100.00%
MSEX					
	Long-Term Debt	43.06%	46.56%	46.75%	42.52%
	Preferred Stock	1.07%	1.01%	1.01%	1.09%
	Common Equity	55.86%	52.42%	52.23%	56.39%
	Total	100.00%	100.00%	100.00%	100.00%
SJW					
	Long-Term Debt	58.92%	58.81%	58.61%	59.16%
	Preferred Stock	0.00%	0.00%	0.00%	0.00%
	Common Equity	41.08%	41.19%	41.39%	40.84%
	Total	100.00%	100.00%	100.00%	100.00%
YORW					
	Long-Term Debt	47.66%	48.00%	48.26%	46.37%
	Preferred Stock	0.00%	0.00%	0.00%	0.00%
	Common Equity	52.34%	52.00%	51.74%	53.63%
	Total	100.00%	100.00%	100.00%	100.00%

Summary	3/31/11	12/31/10	9/30/10	6/30/10
Long-Term Debt	54.24%	54.69%	54.50%	54.15%
Preferred Stock	0.16%	0.15%	0.15%	0.16%
Common Equity	45.60%	45.16%	45.35%	45.69%
Total	100.00%	100.00%	100.00%	100.00%

Attachment JRW-14
California Water Utility Cost of Capital Report

Summary of ROE Results and Methodologies

Capital Source	ROE	Avg. Common Equity Ratio	Capital Structure Adjustment*	No. Water Proxy Group	No. Gas Proxy Group	DCF	CAPM	Risk Premium	Comparable Earnings	ATWACC/ Market Value Adjustment**	Business Risk Adjustment	Financial Risk Adjustment
Villadesen (CAW)	11.50%	49.3%	Yes	8	9	Yes	Yes	No	No	Yes	No	No
Vilbert (CWS)	11.25%	53.9%	No	8	9	Yes	Yes	No	No	Yes	No	No
Zepp (GSW)	11.50%	55.6%	Yes	8	0	Yes	Yes	Yes	No	No	No	No
Ahern (SJW)	11.50%	51.3%	No	8	0	Yes	Yes	Yes	Yes	No	Yes	Yes

* For Regulatory Assets
** Leverage Adjustment To Equity Cost Rate Based on Market Value Capitalization of Proxy Companies

Summary of California American Water Company's ROE Results

Panel A
ummary of Dr. Villadsen Equity Cost Rate Approaches and Results

Water Utility Sample
Return on Equity Summary and Sensitivity Analysis
Using Brattle Betas

Estimated Return on Equity	Baseline [1]	Scenario 2 [2]	Scenario 3 [3]
Full Sample			
CAPM	11.5%	11.9%	12.2%
ECAPM (α = 0.5%)	11.6%	12.0%	12.3%
ECAPM (α = 1.5%)	11.9%	12.3%	12.6%
Sub-Sample			
CAPM	12.0%	12.4%	12.8%
ECAPM (α = 0.5%)	12.2%	12.5%	12.9%
ECAPM (α = 1.5%)	12.4%	12.8%	13.2%

Sources and Notes:
Baseline: Long-Term Risk Free Rate of 4.74%, Long-Term Market Risk Premium of 6.50%.
Scenario 2: Long-Term Risk Free Rate of 4.61%, Long-Term Market Risk Premium of 7.00%.
Scenario 3: Long-Term Risk Free Rate of 4.49%, Long-Term Market Risk Premium of 7.50%.

Gas LDC Sample
Return on Equity Summary and Sensitivity Analysis
Using Brattle Betas

Estimated Return on Equity	Baseline [1]	Scenario 2 [2]	Scenario 3 [3]
Full Sample			
CAPM	11.0%	11.3%	11.6%
ECAPM (α = 0.5%)	11.2%	11.5%	11.8%
ECAPM (α = 1.5%)	11.5%	11.8%	12.1%
Sub-Sample			
CAPM	11.2%	11.5%	11.9%
ECAPM (α = 0.5%)	11.4%	11.7%	12.0%
ECAPM (α = 1.5%)	11.8%	12.1%	12.4%

Sources and Notes:
Baseline: Long-Term Risk Free Rate of 4.74%, Long-Term Market Risk Premium of 6.50%.
Scenario 2: Long-Term Risk Free Rate of 4.61%, Long-Term Market Risk Premium of 7.00%.
Scenario 3: Long-Term Risk Free Rate of 4.49%, Long-Term Market Risk Premium of 7.50%.

Panel B
Water Utility Sample
DCF Return on Equity Summary

	DCF	
	Simple	Multi-stage
Full Sample		
Cost of Equity	10.7%	9.3%
Sub-Sample		
Cost of Equity	10.7%	9.3%

Gas LDC Sample
DCF Return on Equity Summary

	DCF	
	Simple	Multi-stage
Full Sample		
Cost of Equity	11.2%	9.9%
Sub-Sample		
Cost of Equity	11.4%	9.7%

Summary of California Water Company's ROE Results

Panel A
Summary of Dr. Vilbert's Equity Cost Rate Approaches and Results

Water Utility Sample
Return on Equity Summary and Sensitivity Analysis
Using Brattle Betas

Estimated Return on Equity	Baseline [1]	Scenario 2 [2]	Scenario 3 [3]
Full Sample			
CAPM	11.5%	11.9%	12.2%
ECAPM (α = 0.5%)	11.6%	12.0%	12.3%
ECAPM (α = 1.5%)	11.9%	12.3%	12.6%
Sub-Sample			
CAPM	12.0%	12.4%	12.8%
ECAPM (α = 0.5%)	12.2%	12.5%	12.9%
ECAPM (α = 1.5%)	12.4%	12.8%	13.2%

Sources and Notes:
Baseline: Long-Term Risk Free Rate of 4.74%, Long-Term Market Risk Premium of 6.50%.
Scenario 2: Long-Term Risk Free Rate of 4.61%, Long-Term Market Risk Premium of 7.00%.
Scenario 3: Long-Term Risk Free Rate of 4.49%, Long-Term Market Risk Premium of 7.50%.

Gas LDC Sample
Return on Equity Summary and Sensitivity Analysis
Using Brattle Betas

Estimated Return on Equity	Baseline [1]	Scenario 2 [2]	Scenario 3 [3]
Full Sample			
CAPM	11.0%	11.3%	11.6%
ECAPM (α = 0.5%)	11.2%	11.5%	11.8%
ECAPM (α = 1.5%)	11.5%	11.8%	12.1%
Sub-Sample			
CAPM	11.2%	11.5%	11.9%
ECAPM (α = 0.5%)	11.4%	11.7%	12.0%
ECAPM (α = 1.5%)	11.8%	12.1%	12.4%

Sources and Notes:
Baseline: Long-Term Risk Free Rate of 4.74%, Long-Term Market Risk Premium of 6.50%.
Scenario 2: Long-Term Risk Free Rate of 4.61%, Long-Term Market Risk Premium of 7.00%.
Scenario 3: Long-Term Risk Free Rate of 4.49%, Long-Term Market Risk Premium of 7.50%.

Panel B
Water Utility Sample
DCF Return on Equity Summary

	DCF	
	Simple	Multi-stage
Full Sample		
Cost of Equity	10.7%	9.3%
Sub-Sample		
Cost of Equity	10.7%	9.3%

Gas LDC Sample
DCF Return on Equity Summary

	DCF	
	Simple	Multi-stage
Full Sample		
Cost of Equity	11.2%	9.9%
Sub-Sample		
Cost of Equity	11.4%	9.7%

Panel A
Summary of Dr. Zepp's Equity Cost Rate Approaches and Results

		Estimated Equity Costs for Benchmark Utilities		
DCF Analysis				
	DCF analysis -- Table 7	11.7%	to	12.0%
	DCF analysis -- Table 8	11.2%	to	11.5%
	DCF Range	0.5%	to	11.8%
CAPM Estimates				
	Risk Premium -- Table 10	10.8%	to	10.9%
	Risk Premium -- Table 11	11.4%	to	12.6%
	Risk Premium -- Table 12		10.7%	11.8%
	CAPM -- Table 13	10.1%	to	11.6%
	Range of Risk Premium and CAPM		11.3%	
Range of Equity Cost Estimates		11.1%	to	11.7%

Panel B
Summary of Dr. Zepp's DCF Equity Cost Rate Approaches

DCF Estimates Based on 'Theoretically Correct' Growth Rates			
3-month Current Yield	3.26%	12-month Current Yield	3.54%
Growth Rate	8.20%	Growth Rate	8.20%
Expected Yield	3.53%	Expected Yield	3.83%
ROE	11.73%	ROE	12.03%
DCF Estimates Based on 'Conservative' Growth Rates			
3-month Current Yield	3.26%	12-month Current Yield	3.54%
Growth Rate	7.67%	Growth Rate	7.67%
Expected Yield	3.51%	Expected Yield	3.82%
ROE	11.18%	ROE	11.48%
Range of ROE Estimates for Water Utilities	11.02% to		11.50%

Panel C
Summary of Dr. Zepp's Risk Premium Equity Cost Rate Approaches

RP I - RP Using Authorized ROEs		**RP II - RP Using Annual DCF Estimates**	
Risk-Free Rate	5.17%	Risk-Free Rate	5.17%
Risk Premium - 10-Year	5.64%	Risk Premium - 10-Year	6.26%
Risk Premium - 5-Year	5.77%	Risk Premium - 5-Year	7.42%
ROE - 10-Year	10.8%	ROE - 10-Year	11.43%
ROE - 5-Year	10.9%	ROE - 5-Year	12.59%
RP III - RP Using Historic ROEs			
Risk-Free Rate	5.17%		
Risk Premium	5.50%		
ROE	10.70%		
RP IV - CAPM			
CAPM Using Historic Returns		**CAPM Using Projected Returns**	
Risk-Free Rate	5.17%	Risk-Free Rate	5.17%
Beta	0.74	Beta	0.74
Market Risk Premium	6.70%	Market Risk Premium	9.40%
ROE	10.10%	ROE	12.10%
Range of ROE Estimate for Water Utilities	10.80% to		11.60%

Summary of San Jose Water Company's ROE Results

Panel A

Summary of Ms. Ahern's Equity Cost Rate Approaches and Results

Principal Methods	Water Group*
Discounted Cash Flow Model (DCF)	9.80%
Risk Premium Model (RPM)	10.61%
Capital Asset Pricing Model (CAPM)	10.26%
Comparable Earnings Model (CEM)	14.50%
Indicated Common Equity Cost Rate	10.75%
Business Risk Adjustment	0.40%
Financial Risk Adjustment	0.35%
Risk Adj. Common Equity Cost Rate	11.50%
Midpoint of Common Equity Cost Rate	
Recommended Common Equity Cost Rate	11.50%

* Proxy Group of Eight Water Utility Water Companies

Panel B

Summary of Ms. Ahern's DCF Results

	Water Group
Adjusted Dividend Yield	3.38%
Growth	6.65%
DCF Result	9.80%

Panel C

Summary of Ms. Ahern's Risk Premium Results

	Water Group
Prospective AAA Bond Yield	5.55%
AAA-A Yield Differential	0.51%
Adjusted Prospective A Bond Yield	6.06%
Bond Rating Adjustment	0.16%
Adjusted Prospective Bond Yield	6.22%
Equity Risk Premium	4.39%
Risk Premium Equity Cost Rate	10.61%

Summary of San Jose Water Company's ROE Results

Panel D
Summary of Ms. Ahern's CAPM Results

	Water Group
Risk-Free Rate	4.88%
Adjusted Beta	0.74
Equity Risk Premium	7.08%
CAPM Equity Cost Rate	10.02%

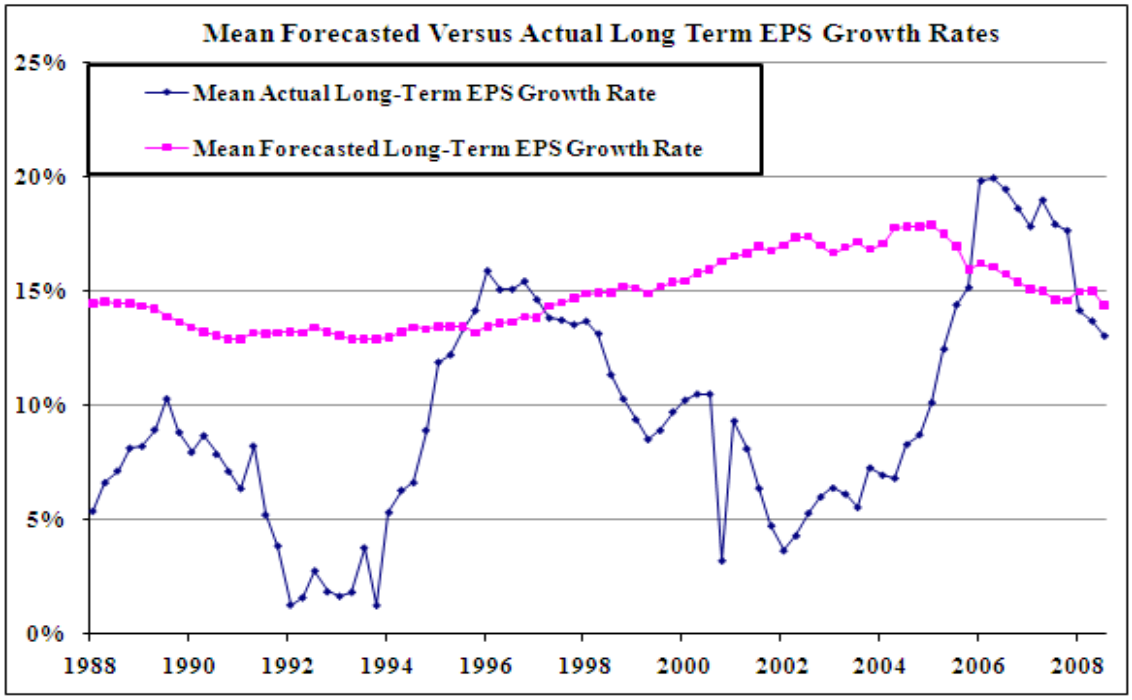
Summary of Ms. Ahern's ECAPM Results

	Water Group
Risk-Free Rate	4.88%
Adjusted Beta	0.74
Equity Risk Premium	7.08%
CAPM Equity Cost Rate	10.50%

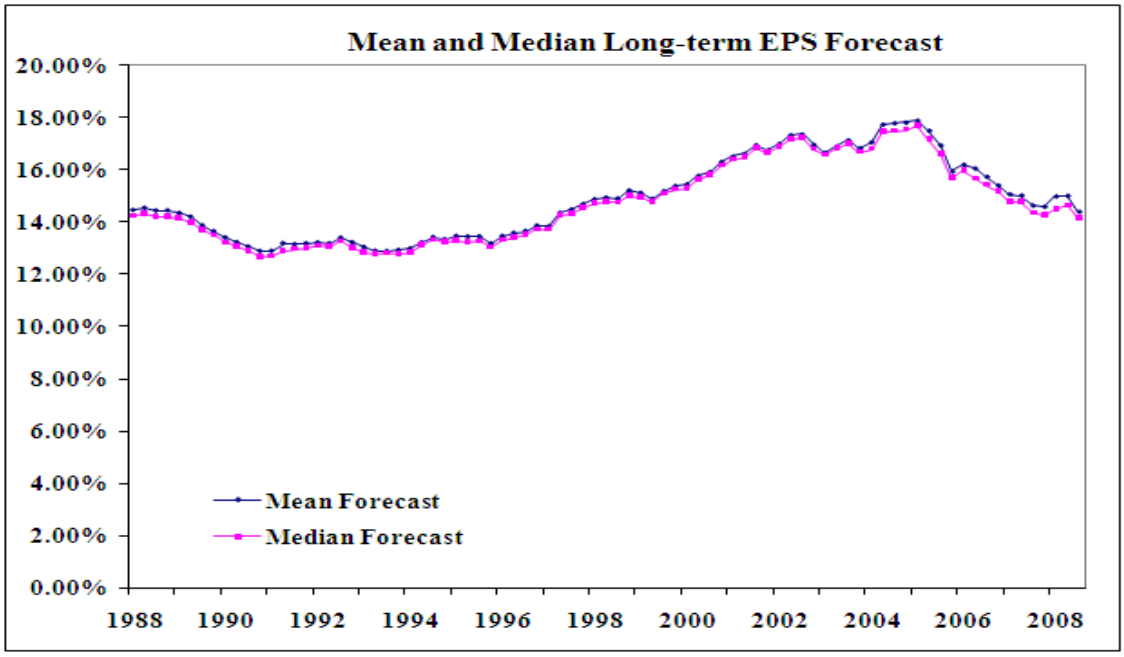
Panel E
Summary of Ms. Ahern's Comparable Earnings Results

	Water Group
Comparable Earnings Equity Cost Rate	14.50%

Panel A
Long-Term Forecasted Versus Actual EPS Growth Rates
1988-2008



Panel B
Long-Term Forecasted EPS Growth Rates
1988-2008



Source: Patrick J. Cusatis and J. Randall Woolridge, "The Accuracy of Analysts' Long-Term Earnings Per Share Growth Rate Forecasts," (July, 2008).

THE WALL STREET JOURNAL.

Study Suggests Bias in Analysts' Rosy Forecasts

By ANDREW EDWARDS
March 21, 2008; Page C6

Despite an economy teetering on the brink of a recession -- if not already in one -- analysts are still painting a rosy picture of earnings growth, according to a study done by Penn State's Smeal College of Business.

The report questions analysts' impartiality five years after then-New York Attorney General Eliot Spitzer forced analysts to pay $1.5 billion in damages after finding evidence of bias.

"Wall Street analysts basically do two things: recommend stocks to buy and forecast earnings," said J. Randall Woolridge, professor of finance. "Previous studies suggest their stock recommendations do not perform well, and now we show that their long-term earnings-per-share growth-rate forecasts are excessive and upwardly biased."

The report, which examined analysts' long-term (three to five years) and one-year per-share earnings expectations from 1984 through 2006 found that companies' long-term earnings growth surpassed analysts' expectations in only two instances, and those came right after recessions.

Over the entire time period, analysts' long-term forecast earnings-per-share growth averaged 14.7%, compared with actual growth of 9.1%. One-year per-share earnings expectations were slightly more accurate: The average forecast was for 13.8% growth and the average actual growth rate was 9.8%.

"A significant factor in the upward bias in long-term earnings-rate forecasts is the reluctance of analysts to forecast" profit declines, Mr. Woolridge said. The study found that nearly one-third of all companies experienced profit drops over successive three-to-five-year periods, but analysts projected drops less than 1% of the time.

The study's authors said, "Analysts are rewarded for biased forecasts by their employers, who want them to hype stocks so that the brokerage house can garner trading commissions and win underwriting deals."

They also concluded that analysts are under pressure to hype stocks to generate trading commissions, and they often don't follow stocks they don't like.

Write to Andrew Edwards at andrew.edwards@dowjones.com

Markets & Finance June 10, 2010, 5:00PM EST

Bloomberg Businessweek

For Analysts, Things Are Always Looking Up

They're raising earnings estimates for U.S. companies at a record pace

By Roben Farzad

For years, the rap on Wall Street securities analysts was that they were shills, reflexively producing upbeat research on companies they cover to help their employers win investment banking business. The dynamic was well understood: Let my bank take your company public, or advise it on this acquisition, and—wink, wink—I will recommend your stock through thick or thin. After the Internet bubble burst, that was supposed to change. In April 2003 the Securities & Exchange Commission reached a settlement with 10 Wall Street firms in which they agreed, among other things, to separate research from investment banking.

Seven years on, Wall Street analysts remain a decidedly optimistic lot. Some economists look at the global economy and see troubles—the European debt crisis, persistently high unemployment worldwide, and housing woes in the U.S. Stock analysts as a group seem unfazed. Projected 2010 profit growth for companies in the Standard & Poor's 500-stock index has climbed seven percentage points this quarter, to 34 percent, data compiled by Bloomberg show. According to Sanford C. Bernstein (AB), that's the fastest pace since 1980, when the Dow Jones industrial average was quoted in the hundreds and Nancy Reagan was getting ready to order new window treatments for the Oval Office.

Among the companies analysts expect to excel: Intel (INTL) is projected to post an increase in net income of 142 percent this year. Caterpillar, a multinational that gets much of its revenue abroad, is expected to boost its net income by 47 percent this year. Analysts have also hiked their S&P 500 profit estimate for 2011 to $95.53 a share, up from $92.45 at the beginning of January, according to Bloomberg data. That would be a record, surpassing the previous high reached in 2007.

With such prospects, it's not surprising that more than half of S&P 500-listed stocks boast overall buy ratings. It is telling that the proportion has essentially held constant at both the market's October 2007 high and March 2009 low, bookends of a period that saw stocks fall by more than half. If the analysts are correct, the market would appear to be attractively priced right now. Using the $95.53 per share figure, the price-to-earnings ratio of the S&P 500 is a modest 11 as of June 9. If, however, analysts end up being too high by, say, 20 percent, the P/E would jump to almost 14.

If history is any guide, chances are good that the analysts are wrong. According to a recent McKinsey report by Marc Goedhart, Rishi Raj, and Abhishek Saxena, "Analysts have been persistently over-optimistic for 25 years," a stretch that saw them peg earnings growth at 10 percent to 12 percent a year when the actual number was ultimately 6 percent. "On average," the researchers note, "analysts' forecasts have been almost 100 percent too high," even after regulations were enacted to weed out conflicts and improve the rigor of their calculations. As the chart below shows, in most years analysts have been forced to lower their estimates after it became apparent they had set them too high.

While a few analysts, like Meredith Whitney, have made their names on bearish calls, most are chronically bullish. Part of the problem is that despite all the reforms they remain too aligned with the companies they cover. "Analysts still need to get the bulk of their information from companies, which have an incentive to be over-optimistic," says Stephen Bainbridge, a professor at UCLA Law School who specializes in the securities industry. "Meanwhile, analysts don't want to threaten that ongoing access by being too negative." Bainbridge says that with the era of the overpaid, superstar analyst long over, today's job description calls for resisting the urge to be an iconoclast. "It's a matter of herd behavior," he says.

So what's a more plausible estimate of companies' earning power? Looking at factors including the strengthening dollar, which hurts exports, and higher corporate borrowing costs, David Rosenberg, chief economist at Toronto-based investment shop Gluskin Sheff + Associates, says "disappointment looms." Bernstein's Adam Parker says every 10 percent drop in the value of the euro knocks U.S. corporate earnings down by 2.5 percent to 3 percent. He sees the S&P 500 earning $86 a share next year.

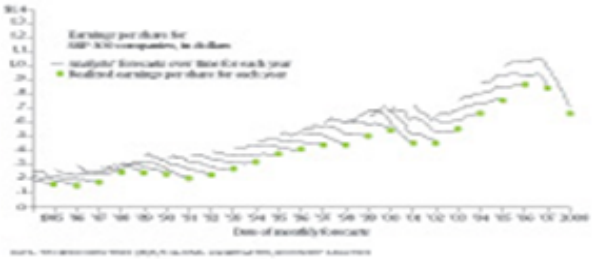
As realities hit home, "It's only natural that analysts will have to revise down their views," says Todd Salamone, senior vice-president at Schaeffer's Investment Research. The market may be making its own downward adjustment, as the S&P 500 has already fallen 14 percent from its high in April. If precedent holds, analysts are bound to curb their enthusiasm belatedly, telling us next year what we really needed to know this year.

The bottom line: *Despite reforms intended to improve Wall Street research, stock analysts seem to be promoting an overly rosy view of profit prospects.*

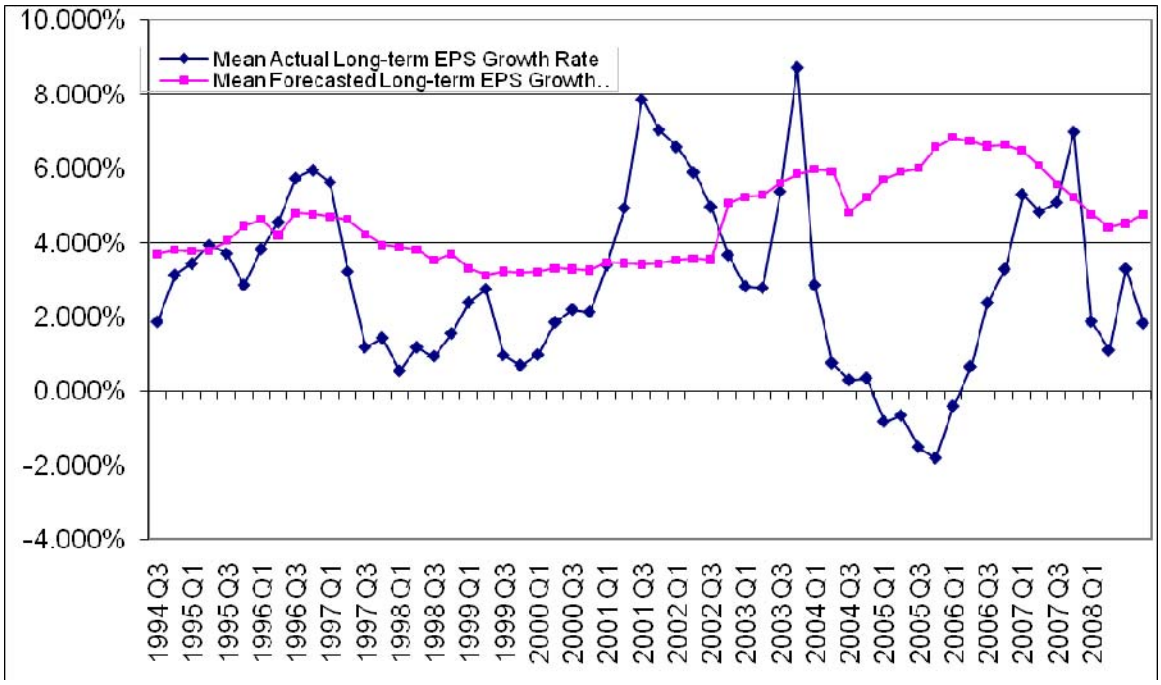
Bloomberg Businessweek Senior Writer Farzad covers Wall Street and international finance.

The Earnings Roller Coaster

Analysts have a long history of overestimating future profits. As this chart from McKinsey shows, analysts on average tend to start high and ratchet their numbers down as the companies get closer to releasing their results. Initial estimates proved to be too low in only a few cases.

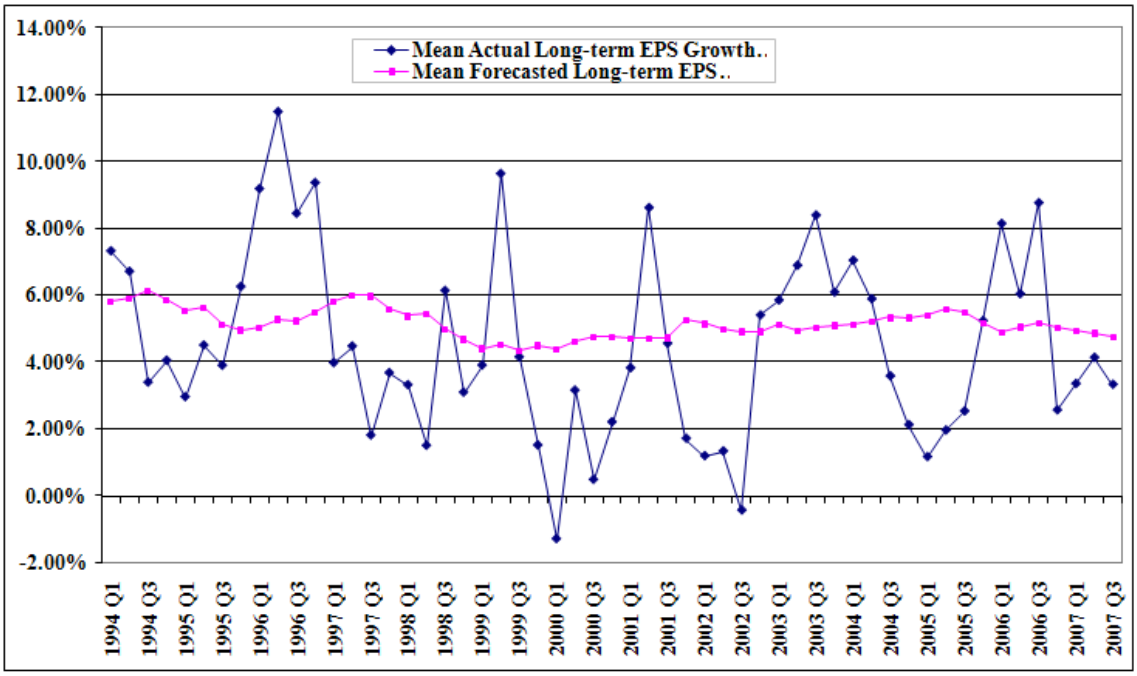


Long-Term Forecasted Versus Actual EPS Growth Rates
Electric Utility Companies
1988-2008



Data Source: IBES

Long-Term Forecasted Versus Actual EPS Growth Rates
Gas Distribution Companies



Panel A
Value Line 3-5 year EPS Growth Rate Forecasts

	Average Projected EPS Growth rate	Number of Negative EPS Growth Projections	Percent of Negative EPS Growth Projections
1,996 Companies	**14.45%**	**56**	**2.81%**

Panel B
Historical Five-Year EPS Growth Rates for Value Line Companies

	Average Historical EPS Growth rate	Number with Negative Historical EPS Growth	Percent with Negative Historical EPS Growth
2,147 Companies	**8.38%**	**654**	**30.40%**

Source: *Value Line Investment Analyzer* , April 2011.

Attachment JRW-17
***Value Line* Projected Return Study**

	Value Line Projected Four-Year Return	Large Cap Actual One-Year Return	Large Cap Actual Four-Year Return	Value Line - Large Cap Four-Year Return
1984	23.3%	6.3%	15.0%	8.3%
1985	20.0%	32.2%	17.8%	2.3%
1986	14.4%	18.5%	17.6%	-3.3%
1987	14.7%	5.2%	11.8%	2.8%
1988	18.7%	16.8%	18.0%	0.6%
1989	16.8%	31.5%	15.7%	1.1%
1990	20.9%	-3.2%	10.6%	10.3%
1991	19.0%	30.6%	11.9%	7.1%
1992	17.7%	7.7%	13.3%	4.4%
1993	15.0%	10.0%	17.2%	-2.2%
1994	15.6%	1.3%	22.9%	-7.3%
1995	15.1%	37.4%	30.5%	-15.4%
1996	13.2%	23.1%	26.4%	-13.2%
1997	11.6%	33.4%	17.2%	-5.6%
1998	12.3%	28.6%	5.7%	6.6%
1999	15.1%	21.0%	-6.8%	21.8%
2000	18.9%	-9.1%	-5.3%	24.2%
2001	17.2%	-11.9%	-0.5%	17.7%
2002	16.5%	-22.1%	3.9%	12.6%
2003	16.0%	28.7%	14.7%	1.3%
2004	11.6%	10.9%	9.2%	2.4%
2005	11.4%	4.9%	-5.2%	16.6%
2006	11.2%	15.8%	-0.7%	11.9%
2007	10.6%	5.5%	-0.8%	11.4%
2008		-37.0%		
2009		26.5%		
2010		15.1%		
	Average Projected - Actual Return			**4.85%**

Data Source: Value Line Investment Survey, various issues.
2011 SBBI Classic Yearbook, Morningstar.