

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. He has taught Finance courses including corporation finance, commercial and investment banking, and investments at the undergraduate, graduate, and executive MBA levels.

Professor Woolridge's research has centered on empirical issues in corporation finance and financial markets. 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*, *Barron's*, *Wall Street Journal*, *Business Week*, *Investors' Business Daily*, *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 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).

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

Over the past twenty-five years Dr. Woolridge has prepared testimony and/or provided consultation services in regulatory rate cases in the rate of return area in following states: Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Hawaii, Indiana, Kansas, Kentucky, Maryland, Massachusetts, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Washington, D.C. He has also testified before the Federal Energy Regulatory Commission.

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Academic Experience

Professor of Finance, the Smeal College of Business Administration, the Pennsylvania State University (July 1, 1990 to the present).

President, Nittany Lion Fund LLC, (January 1, 2005 to the present)

Director, the Smeal College Trading Room (January 1, 2001 to the present)

Goldman, Sachs & Co. and Frank P. Smeal Endowed University Fellow in Business Administration (July 1, 1987 to the present).

Associate Professor of Finance, College of Business Administration, the Pennsylvania State University.

Assistant Professor of Finance, College of Business Administration, the Pennsylvania State University.

Education

Doctor of Philosophy in Business Administration, the University of Iowa. Major field: Finance.

Master of Business Administration, the Pennsylvania State University.

Bachelor of Arts, the University of North Carolina Major field: Economics.

Books

James A. Miles and J. Randall Woolridge, *Spinoffs and Equity Carve-Outs: Achieving Faster Growth and Better Performance* (Financial Executives Research Foundation), 1999

Patrick Cusatis, Gary Gray, and J. Randall Woolridge, *The StreetSmart Guide to Valuing a Stock* (2nd Edition, McGraw-Hill), 2003.

J. Randall Woolridge and Gary Gray, *The New Corporate Finance, Capital Markets, and Valuation: An Introductory Text* (Kendall Hunt, 2003).

Research

Dr. Woolridge 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*.

Appendix B The Use of Historical Returns to Measure an Expected Risk Premium

It is quite common for analysts to estimate an equity or market risk premium as the difference between historical stock and bond returns. However, using the historical relationship between stock and bond returns to measure an ex ante equity risk premium can produce an inflated measure of the true market or equity risk premium. The equity risk premium is based on expectations of the future. When past market conditions vary significantly from the present, historic data does not provide a realistic or accurate barometer of expectations of the future. More significantly, there are a number of empirical issues that can result in historical returns being poor measures of the expected risk premium.

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

- (A) Biased historical bond returns
- (B) Use of 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
- (F) The “Peso Problem” - U.S. stock market survivorship bias

These issues will be addressed in order.

A. Biased Historical Bond Returns

An essential assumption of this approach is that over long periods of time, investors' expectations are realized. However, the experienced returns of bondholders in the past invalidate this critical assumption. Historic bond returns are biased downward as a measure of expectancy

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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

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.”¹ When a historic stock and bond return 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.

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%

¹ 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).

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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 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.² Therefore, the historic arithmetic mean return measures are biased and should be disregarded.

Nonetheless, 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:³

“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.”

² SEC, Form N-1A.

³ Aswath. Damodaran, “Equity Risk Premiums (ERP): Determinants, Estimation and Implications – The 2013 Edition” NYU Working Paper, 2013, p. 27.

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

Measuring the equity risk premium using historical stock and bond returns 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 amount of error.

D. Unattainable and Biased Historic Stock Returns

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.⁴

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

⁴ See Richard Roll, "On Computing Mean Returns and the Small Firm Premium," *Journal of Financial Economics*, pp. 371-86, (1983).

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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

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

F. The “Peso Problem” - U.S. Stock Market Survivorship Bias

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

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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.

F. One of the Biggest Mistakes in Teaching Finance

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.⁵ 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.

⁵ Jay Ritter, “The Biggest Mistakes We Teach,” *Journal of Financial Research* (Summer 2002).

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S.

DOCKET NO. 20180006-WS
ORDER NO. PSC-2018-0327-PAA-WS
ISSUED: June 26, 2018

The following Commissioners participated in the disposition of this matter:

ART GRAHAM, Chairman
JULIE I. BROWN
DONALD J. POLMANN
GARY F. CLARK
ANDREW GILES FAY

NOTICE OF PROPOSED AGENCY ACTION
ORDER APPROVING THE LEVERAGE FORMULA FOR WATER AND WASTEWATER UTILITIES

BY THE COMMISSION:

NOTICE is hereby given by the Florida Public Service Commission that the action discussed herein is preliminary in nature and will become final unless a person whose interests are substantially affected files a petition for a formal proceeding, pursuant to Rule 25-22.029, Florida Administrative Code (F.A.C.).

I. Case Background

Section 367.081(4)(f), Florida Statutes (F.S.), authorizes us to establish, not less than once each year, a leverage formula to calculate a reasonable range of returns on equity (ROE) for water and wastewater (WAW) utilities. In 2001, the leverage formula methodology was established in Order No. PSC-2001-2514-FOF-WS.¹

On October 23, 2008, we held a formal hearing in Docket No. 20080006-WS to allow interested parties to provide testimony regarding the validity of the leverage formula that was

¹Order No. PSC-2001-2514-FOF-WS, issued December 24, 2001, in Docket No. 20010006-WS, *In re: Water and wastewater industry annual reestablishment of authorized range of return on common equity of water and wastewater utilities pursuant to Section 367.081(4)(f), F.S.*

established in 2001.² Based on the record in that proceeding, we approved the 2008 leverage formula.³ In that order, we reaffirmed the methodology that was previously approved in 2001.

In 2011, we approved the current leverage formula by Order No. PSC-2011-0287-PAA-WS.⁴ From 2012 through 2017, we voted to continue to use the 2011 leverage formula for establishing the authorized ROE for WAW utilities.⁵ From 2012 through 2017, we found that the range of returns on equity derived from the annual leverage formulas were not optimal for determining the appropriate authorized ROE for WAW utilities due to Federal Reserve monetary policies that resulted in historically low interest rates. Consequently, we decided it was reasonable to continue using the range of returns on equity of 8.74 percent to 11.16 percent from the 2011 leverage formula docket.

On November 8, 2017, our staff held a workshop to solicit input from interested persons regarding potential changes to the current leverage formula methodology. As part of the workshop, interested parties were requested to file comments by October 30, 2017. The only stakeholders that filed comments in the docket were the Office of Public Counsel (OPC) and Utilities, Inc. of Florida (UIF). OPC also filed post-workshop comments on January 31, 2018. OPC's post-workshop comments all resulted in lowering the ROE. UIF's suggestions mostly resulted in increasing the ROE.

A. OPC Post-Workshop Comments

OPC submitted that we adopt a rule setting forth the leverage formula. OPC contended that continued application of the leverage formula constitutes an unadopted rule. In addition, OPC questioned the applicability of a Bond Yield Differential if an all WAW utility proxy group is used. OPC specifically questioned whether the assumed bond rating of Baa3 for the average WAW utility in Florida is still a valid assumption.

OPC's post-workshop comments also stated that the leverage formula should differentiate between Class A WAW utilities and Class B and C WAW utilities. OPC opined that Class A WAW utilities would not need a small-utility risk premium.

²At the May 20, 2008, Commission Conference, upon request of the Office of Public Counsel, we voted to set the establishment of the appropriate leverage formula directly for hearing.

³Order No. PSC-2008-0846-FOF-WS, issued December 31, 2008, in Docket No. 20080006-WS, *In re: Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S.*

⁴Order No. PSC-2011-0287-PAA-WS, issued July 5, 2011, in Docket No. 20110006-WS, *In re: Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S.*

⁵Order No. PSC-2017-0249-PAA-WS, issued June 26, 2018, in Docket No. 20170006-WS, *In re: Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S.*

OPC further commented that the small-utility risk premium adjustment is duplicative of the bond yield risk premium and ignores the fact that several Florida WAW utilities could be comparable to water utilities included in the new index and therefore the small-utility risk premium should be removed from the formula.

OPC also submitted that the private placement premium of 50 basis points should be removed from the leverage formula for Class A WAW utilities. OPC stated it does not believe that investors require a premium for the lack of liquidity of privately placed debt for large Florida WAW utilities that are owned by substantially larger corporations. OPC further questioned why the private placement premium of 50 basis points is fixed and if it is reasonable.

Finally, OPC submitted that flotation costs should not be included in the DCF and CAPM models since none of Florida's WAW utilities are publicly traded and do not incur costs related to issuing new shares of stock.

B. UIF's Post-workshop Comments

UIF retained Ms. Pauline M. Ahern, who provided 47 pages of technically detailed suggestions and comments to change the DCF and CAPM methodologies used to derive the ROE of the proxy group. UIF suggested that we include a WAW utility index along with or replacing the natural gas utility index in the leverage formula. UIF further suggested we consider changing the DCF model to utilize the single-stage DCF model and use expected growth rate projections of EPS (earnings per share) as published in Value Line in place of using projected dividends.

In addition, UIF stated we should eliminate foreign companies in the CAPM Market Equity Risk Premium (MERP) because the WAW utilities are based in the US. UIF suggested that the CAPM MERP should be based on a market-value weighted average instead of a simple average. According to UIF, we should add two additional MERP estimates to the CAPM and average the results. The first one using a linear Ordinary Least Squares regression, and the second using an Empirical CAPM.

Also, UIF suggested that the private placement premium should remain at 50 basis points. UIF added that the small-utility risk premium should be increased from 50 basis points to 100 basis points. Additionally, UIF suggested that flotation costs of 20 basis points, or 4%, should be included, and that we should use a projected yield on Baa3/BBB- rated public utilities in the derivation to adjust the cost of equity at a 40% equity ratio.

This order addresses the appropriate leverage formula for 2018. We have jurisdiction pursuant to Section 367.081, F.S.

II. Modification of the Leverage Formula

A. Analysis of OPC's Post-Workshop Comments

OPC asks us to adopt a leverage formula rule. Section 367.081(4)(f), F.S., states:

The Commission may regularly, not less often than once each year, *establish by order* a leverage formula or formulae that reasonably reflect the range of returns on common equity for an average water or wastewater utility and which, for purposes of this section, shall be used to calculate the last authorized rate of return on equity for any utility which otherwise would have no established rate of return on equity. In any other proceeding in which an authorized rate of return on equity is to be established, a utility, in lieu of presenting evidence on its rate of return on common equity, may move the commission to adopt the range of rates of return on common equity that has been established under this paragraph. (Emphasis added)

We believe that the statute, on its face, makes it clear that we may establish a leverage formula by order. We review the leverage formula yearly. Thus, if it was codified in a rule, we would have to initiate rulemaking every year to review the leverage formula. Based on the statutory language allowing the leverage formula to be established by order, it appears that the legislature did not intend for us to be in a constant rulemaking posture for this matter. Establishing a rule for the leverage formula may limit our discretion in an area where maximum discretion is advised. Maximum discretion is advised because determination of the required return on equity is subjective and a matter of opinion arrived at by informed judgement. Consequently, we decline OPC's suggestion to establish a rule for the leverage formula.

Regarding OPC's comments on the bond yield differential, we believe it is a necessary adjustment that recognizes the spread between the median bond rating of the utility proxy group (usually an A rating) to the assumed average Florida WAW utility's bond rating which is the lowest investment grade bond rating (Baa3). If the Florida WAW utilities under our jurisdiction were to be rated, we believe that, on average, they would be well below investment grade.

Regarding OPC's contention that the leverage formula should differentiate between large Class A WAW utilities and smaller Class B and C WAW utilities, we disagree. The leverage formula is derived to appropriately compensate the average WAW utility in Florida. The largest WAW utility in Florida is substantially smaller and more risky from a financial perspective than the utilities in the proxy group. UIF is by far the largest WAW utility in Florida and has total common equity of \$47 million. The average market capitalization of the utilities in the proxy group is \$3.9 billion and the smallest company has a market capitalization of \$400 million. Small-company risk premiums are a widely accepted adjustment that have been used by financial analysts for decades to account for the differences in the expected returns between small-cap and large-cap companies. If any adjustment should be made to account for the difference between the Class A and Class B and C WAW utilities, an upward adjustment should be made for Class B and C WAW utilities.

Reasons why smaller WAW utilities are more risky than other utilities include: (1) WAW utilities are more capital intensive than electric or natural gas utilities; (2) WAW utilities experience lower relative depreciation rates than other utilities, thereby providing less cash flow; (3) WAW utilities experience consistently negative free cash flow, thereby increasing their financing requirements; (4) WAW utilities' credit metrics are inferior to those of electric and natural gas utilities; (5) Florida WAW utilities are substantially smaller than electric and natural gas utilities by virtually any measure including total revenues, total assets, and market capitalization; (6) WAW utilities' earnings are much more volatile (uncertain) than electric and natural gas utilities' earnings; and (7) WAW utilities experience many more business failures than electric and natural gas utilities.

Regarding OPC's claim that the risk premium adjustment is duplicative, we disagree. The small-utility risk premium adjustment and the bond yield risk premium adjustment are not the same and compensate an investor for different risks. The small-utility risk premium is an adjustment for the smaller sized companies based on market capitalization and the bond yield risk premium is an adjustment based on the assumed credit rating of the average Florida WAW utility (Baa3) as compared to the median credit rating of the proxy group (A).

Regarding OPC's comment about the private placement premium, we have previously included this adjustment to reflect the difference in yields on publicly traded debt and privately placed debt, which is illiquid. We understand that a private placement premium may change over time based on financial market conditions. However, information regarding actual private placement premiums is not readily available to derive an actual amount. Nevertheless, we believe recognition of the private placement risk should be included in the leverage formula. The private placement premium of 50 basis points was approved in Order No. PSC-2008-0846-FOF-WS.⁶ In this order, we stated:

In addition, we find that the average WAW utility in Florida does not have access to public financing. The fact that an average WAW utility in Florida cannot access public financing justifies the inclusion of a private placement premium adjustment to compensate for the lack of liquidity and the higher cost of financing of privately placed debt. For these reasons, we find that that it is appropriate to continue to make a private placement premium adjustment of 50 basis points as reflected in Attachment 1 to this Order.

We believe that the average WAW utility in Florida continues to not have access to public financing and will have to pay a higher interest rate for privately placed debt and a private placement premium is still appropriate.

Regarding flotation costs, we disagree with OPC and believe that accounting for flotation costs in the application of the models is appropriate and in accordance with financial theory and application of the financial models. Although none of Florida's WAW utilities are publically

⁶Order No. PSC-2008-0846-FOF-WS, issued December 31, 2008, in Docket No. 20080006-WS, *In re: Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S.*

traded, application of the DCF and CAPM models to a proxy group is used to approximate the required return on equity and appropriate estimation of the required ROE includes an adjustment for flotation costs.

B. Analysis of UIF's Post-Workshop Comments

Several of UIF's suggestions are already included in the current leverage formula methodology as a result of the outcome of the 2008 hearing and subsequent order. In this docket, we included WAW utilities along with the natural gas utilities in its proxy group as suggested by UIF to increase the sample group of companies available. The private placement premium and small-utility risk premium are also included in the current methodology. We do not believe that the small-utility risk premium should be increased without further study to determine if that would be appropriate. We agree that flotation costs should be recognized in the application of the ROE models and they have been since 2001.

UIF suggests that an estimated projected yield on Baa3 rated public utility bonds be used to calculate the assumed bond yield for the average Florida WAW utility. The required return on equity is a forward-looking concept and is based on projections. Also, the costs included in the test year should reflect the costs expected during the period rates are going to be in effect. Consequently, we believe it is reasonable to use a projected Baa3 rated utility bond yield and that it is consistent with our practice of relying on the projected risk-free rate used in the CAPM.

Regarding UIF's suggestion to use a single-stage DCF model using expected earnings growth in the model, we disagree. All DCF models are derived from the equation that represents all expected cash flows into perpetuity. The multi-stage model allows us to avail ourselves of the explicit expected dividends provided by Value Line. Using a less robust form of the DCF model provides no benefit. We also disagree with the use of expected earnings growth in lieu of expected dividend growth. DCF theory is unambiguous when explaining that the expected cash flows associated with a share of stock are dividends. This is important because the time value of money underscores DCF theory and all earnings are not paid out to investors when they are earned. Expected earnings are crucial to determining expected dividends, but expected dividends are the expected cash flows that determine the value of a stock.

Regarding UIF's recommendation that foreign stocks be removed from the determination of the expected market return in the CAPM model, we disagree. Under CAPM theory, the expected market return is the return on all asset classes worldwide. Most analysts use the expected return on the US stock market as a proxy for the return on all asset classes out of convenience. Consequently, there is no reason to exclude foreign companies trading on the US market.

Regarding UIF's recommendations to consider adding more versions of the CAPM to the leverage formula analysis, we believe the additional methodologies require a much greater level of subjectivity than the traditional CAPM but will continue to consider their inclusion in the leverage formula analysis.

C. Modification of the Leverage Formula is Necessary

Section 367.081(4)(f), F.S., authorizes us to establish a leverage formula to calculate a reasonable range of returns on common equity for WAW utilities. We must establish this leverage formula not less than once a year. For administrative efficiency, the leverage formula is used to determine the appropriate return for an average Florida WAW utility. However, use of the leverage formula by utilities is discretionary, and a utility can file cost of equity testimony in lieu of using the leverage formula. As is the case with other regulated companies under our jurisdiction, we have discretion in the determination of the appropriate ROE based on the evidentiary record in any proceeding. If one or more parties in a rate case or limited proceeding file testimony in lieu of the use of the leverage formula, we will determine the appropriate ROE based on the evidentiary record in that proceeding.

The leverage formula depends on four basic assumptions:

- 1) Business risk is similar for all WAW utilities;
- 2) The cost of equity is an exponential function of the equity ratio but a linear function of the debt to equity ratio over the relevant range;
- 3) The marginal weighted average cost of investor capital is constant over the equity ratio range of 40 percent to 100 percent; and
- 4) The debt cost rate at an assumed Moody's Baa3 bond rating, plus a 50 basis point private placement premium and a 50 basis point small-utility risk premium, represents the average marginal cost of debt to an average Florida WAW utility over an equity ratio range of 40 percent to 100 percent.

Since 2001, we have used the leverage formula methodology established in Order No. PSC-2001-2514-FOF-WS and reaffirmed in Order No. PSC-2008-0846-FOF-WS. This methodology used ROEs derived from financial models applied to an index of natural gas utilities. We determined in 2001 and 2008 that there were an insufficient number of publicly traded WAW utilities that met the requisite criteria to assemble an appropriate proxy group, and, therefore, natural gas utilities were used instead. However, due to mergers and acquisitions of natural gas utilities over the past two years, the number of acceptable natural gas utilities has been reduced from eight to five. Concurrently, the number of publicly-traded water companies followed by Value Line has risen from four to nine.

Based on comments made at the workshop and the analysis conducted by our staff, which is presented in more detail in Attachment 1, we believe modification of the leverage formula methodology is warranted. We find that it is necessary to refine the leverage formula methodology to reflect newly available information and to reflect best practices. The leverage formula methodology shall be modified to include a combined proxy group of natural gas and WAW utilities with updated financial data based on market-capitalization based weighted averages. Also, the cost of debt used in determining the leverage formula shall be based on the projected cost of debt.

D. The Modifications to the Leverage Formula

Proxy Group: The leverage formula methodology shall be modified to include a combined proxy group of natural gas and WAW utilities as proxy companies in calculating the leverage formula. We find that the selected natural gas utilities and WAW utilities that derive at least 50 percent of their revenue from regulated rates. These utilities have market power and are influenced significantly by economic regulation. In Attachment 1, the returns calculated using the proxy group are adjusted to reflect the risks faced by Florida WAW utilities. The updated index consists of five natural gas companies and seven WAW companies that derive at least 50 percent of their total revenue from regulated operations. These companies have a median Standard and Poor's bond rating of "A".

Weighted Average: In addition, the leverage formula shall be modified to use a weighted average, where appropriate, as opposed to using a simple average as was done in the previous leverage formula calculations. The weighted average was calculated using the market capitalization of the proxy companies. We find that it is reasonable to use the market-capitalization based weighted average because of the size disparity among the companies comprising the new proxy group. There is a much greater size difference between companies in both assets and revenues when using both WAW and natural gas companies as opposed to using only natural gas companies. As pointed out in UIF's comments, "a market value weighted average is consistent with the manner in which returns for the Standard & Poor's 500 composite Index (S&P) are estimated."⁷ We used a market capitalization weighted average of: (1) Discounted Cash Flow (DCF) model results, (2) the Beta values in the Capital Asset Pricing Model (CAPM), and (3) the equity ratio of the proxy group.

Projected Yield: The leverage formula shall be modified to use a projected yield on Baa3 rated public utility bonds to estimate the bond yield of an average Florida WAW utility in the calculation of the weighted average cost of capital of the proxy group is reasonable and appropriate. We find that using a projected yield is appropriate because required returns are forward looking and based on projections. The previously approved methodology used the most current monthly average bond yield for a Baa2 rated utility and added the 120-month average spread between a Baa3 rated utility bond yield and the Baa2 rated bond yield as published by Value Line Investment Survey (Value Line). We believe the methodology should be updated to use the projected Baa2 rated utility bond yield for the upcoming four quarters as published by the most recent Blue Chip Financial Forecasts (Blue Chip). We find that modifying the formula to add the 120-month average spread to the projected Baa2 rated utility bond yield to estimate a projected Baa3 rated utility bond yield is also necessary.

ROE Models: The result of the ROE models shall be adjusted so that the leverage formula reflects the differences in risk and debt cost between the proxy group and the average

⁷Comments on Florida leverage formula to establish the annual authorized range of returns for water & wastewater utilities of Pauline M. Ahern, CRRA, on behalf of Utilities, Inc. of Florida, P. 20.

Florida WAW utility. The ROE models shall also include a four percent adjustment for flotation costs. The ROE models are as follows:

- A multistage Discounted Cash Flow (DCF) model applied to an index of natural gas and WAW utilities that have publicly traded stock and are followed by the Value Line. This DCF model is an annually compounded model and uses prospective dividend growth rates.
- A Capital Asset Pricing Model (CAPM) that relies on a market return for companies followed by Value Line, the average projected yield on the U.S. Treasury's 30-year bonds published by Blue Chip Financial Forecasts, and the weighted average beta for the index of natural gas and WAW utilities. The market return for the 2018 leverage formula was calculated using a quarterly DCF model with stock prices as of April 16, 2018.

The updated leverage formula will average the results of the DCF and CAPM models and the result will be as follows:

- A bond yield differential of 64 basis points was added to reflect the difference in yields between an A/A2 rated bond, which is the median bond rating for the combined utility index, and a BBB-/Baa3 rated bond. Florida WAW utilities are assumed to be comparable to companies with the lowest investment grade bond rating, which is Baa3. This adjustment compensates for the difference between the credit quality of 'A' rated debt and the credit quality of the minimum investment grade rating.
- A private placement premium of 50 basis points is added to reflect the difference in yields on publicly traded debt and privately placed debt, which is illiquid. Investors require a premium for the lack of liquidity of privately placed debt.
- A small-utility risk premium of 50 basis points is added because the average Florida WAW utility is too small to qualify for privately placed debt and smaller companies are considered by investors to be more risky than larger companies.

After the above adjustments, the resulting cost of equity estimate will be included in the weighted average capital structure of the proxy group of utilities to derive the leverage formula.

Using the updated financial data in the revised leverage formula decreases the lower end of the current allowed ROE range by 63 basis points and decreases the upper end of the range by 23 basis points. Overall, the spread between the range of returns on equity based on the updated leverage formula is 282 basis points (8.11 percent to 10.93 percent). In comparison, the range of

returns on equity for the existing leverage formula from 2011 is 242 basis points (8.74 percent to 11.16 percent).

The projected assumed Baa3 bond rate of 6.24 percent used in the updated leverage formula calculation includes a 50 basis point adjustment for small-company risk and a 50 basis point adjustment for a private placement premium and remains low relative to historic levels. In comparison, the assumed Baa3 bond rate used in the existing leverage formula is 7.13 percent. The lower Baa3 bond rate of 6.24 percent is the cause of the decrease at the lower end of the range and the increased spread.

Based on the aforementioned, we find that the revised leverage formula methodology applied to a proxy group of natural gas and WAW utilities with updated financial data based on market-capitalization weighted averages produces a reasonable range of ROEs for WAW utilities and reflects current financial markets. We find that the following leverage formula shall be used until a new leverage formula is determined in 2019:

$$\text{ROE} = 6.24\% + (1.88 \div \text{Equity Ratio})$$

Where the Equity Ratio = Common Equity \div (Common Equity + Preferred Equity + Long-Term and Short-Term Debt).

Range: 8.11% at 100% equity to 10.93% at 40% equity

Additionally, we will cap returns on common equity at 10.93 percent for all WAW utilities with equity ratios less than 40 percent. This is in an effort to discourage imprudent financial risk. This cap is consistent with the methodology in Order No. PSC-2008-0846-FOF-WS.

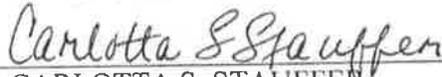
Based on the foregoing, it is

ORDERED by the Florida Public Service Commission that the leverage formula is set forth in the body of this Order and in Attachment 1 of this Order. It is further

ORDERED that the provisions of this Order, issued as proposed agency action, shall become final and effective upon the issuance of a Consummating Order unless an appropriate petition, in the form provided by Rule 28-106.201, Florida Administrative Code, is received by the Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on the date set forth in the "Notice of Further Proceedings" attached hereto. It is further

ORDERED that this docket should remain open to allow staff to monitor changes in capital market conditions and to readdress the reasonableness of the leverage formula as conditions warrant.

By ORDER of the Florida Public Service Commission this 26th day of June, 2018.



CARLOTTA S. STAUFFER
Commission Clerk
Florida Public Service Commission
2540 Shumard Oak Boulevard
Tallahassee, Florida 32399
(850) 413-6770
www.floridapsc.com

Copies furnished: A copy of this document is provided to the parties of record at the time of issuance and, if applicable, interested persons.

AEH

NOTICE OF FURTHER PROCEEDINGS OR JUDICIAL REVIEW

The Florida Public Service Commission is required by Section 120.569(1), Florida Statutes, to notify parties of any administrative hearing that is available under Section 120.57, Florida Statutes, as well as the procedures and time limits that apply. This notice should not be construed to mean all requests for an administrative hearing will be granted or result in the relief sought.

Mediation may be available on a case-by-case basis. If mediation is conducted, it does not affect a substantially interested person's right to a hearing.

The action proposed herein is preliminary in nature. Any person whose substantial interests are affected by the action proposed by this order may file a petition for a formal proceeding, in the form provided by Rule 28-106.201, Florida Administrative Code. This petition must be received by the Office of Commission Clerk, 2540 Shumard Oak Boulevard, Tallahassee, Florida 32399-0850, by the close of business on July 17, 2018.

In the absence of such a petition, this order shall become final and effective upon the issuance of a Consummating Order.

Any objection or protest filed in this/these docket(s) before the issuance date of this order is considered abandoned unless it satisfies the foregoing conditions and is renewed within the specified protest period.

SUMMARY OF RESULTS
 2018 Water and Wastewater Leverage Formula

	<u>Updated Results</u>	<u>Currently In Effect</u>
(A) DCF ROE	7.63%	8.25%
(B) CAPM ROE	<u>9.46%</u>	<u>9.40%</u>
AVERAGE	8.55%	8.83%
Bond Yield Differential	0.64%	0.57%
Private Placement Premium	0.50%	0.50%
Small-Utility Risk Premium	0.50%	0.50%
Adjustment to Reflect Required Equity Return at a 40% Equity Ratio	<u>0.74%</u>	<u>0.76%</u>
 Cost of Equity for Average Florida WAW Utility at 40% Equity Ratio	 <u>10.93%</u>	 <u>11.16%</u>

2017 Leverage Formula (Currently in Effect)
 Return on Common Equity = 7.13% + (1.61 ÷ Equity Ratio)
 Range of Returns on Equity = 8.74% to 11.16%

2018 Leverage Formula
 Return on Common Equity = 6.24% + (1.88 ÷ Equity Ratio)
 Range of Returns on Equity = 8.11% to 10.93%

Marginal Cost of Investor Capital
 Average Water and Wastewater Utility

Capital Component	<u>Ratio</u>	<u>Marginal Cost Rate</u>	<u>Weighted Marginal Cost Rate</u>
Common Equity	47.48%	10.19%	4.84%
Total Debt	<u>52.52%</u>	6.24%*	<u>3.27%</u>
	<u>100.00%</u>		<u>8.11%</u>

A 40% equity ratio is the floor for calculating the required return on common equity.
 The return on equity at a 40% equity ratio: $6.24\% + (1.88 \div 0.40) = 10.93\%$

Marginal Cost of Investor Capital
 Average Water and Wastewater Utility at 40% Equity Ratio

Capital Component	<u>Ratio</u>	<u>Marginal Cost Rate</u>	<u>Weighted Marginal Cost Rate</u>
Common Equity	40.00%	10.93%	4.37%
Total Debt	<u>60.00%</u>	6.24%*	<u>3.74%</u>
	<u>100.00%</u>		<u>8.11%</u>

Where: $\text{Equity Ratio} = \text{CE} / (\text{CE} + \text{Pref. Equity} + \text{LTD} + \text{STD})$

*Assumed Baa3 rate for April 2018 plus a 50 basis point private placement premium and
 A 50 basis point small utility risk premium.

Sources:
 Value Line Selection and Opinion
 Companies' 10-K Filings

Discounted Cash Flows Results

Company	<u>Weight^[1]</u>	<u>Div₀</u>	<u>Div₁</u>	<u>Div₂</u>	<u>Div₃</u>	<u>Div₄</u>	<u>EPS₄</u>	<u>ROE₄</u>	<u>GR₁₋₄</u>	<u>GR₄₊</u>	<u>AVG-PR^[2]</u>	Weighted DCF Results ^[3]
Atmos Energy	19.40%	1.94	2.08	2.21	2.35	2.50	5.15	0.11	1.06	1.06	81.78	1.58%
Northwest Natural Gas Company	3.41%	1.89	2.00	2.06	2.13	2.20	3.50	0.11	1.03	1.04	57.17	0.25%
ONE Gas, Inc.	7.46%	1.84	2.00	2.15	2.32	2.50	4.00	0.09	1.08	1.03	65.22	0.50%
Southwest Gas Holdings	6.82%	2.08	2.18	2.31	2.45	2.60	5.10	0.09	1.06	1.04	68.10	0.51%
Spire Inc.	6.82%	2.25	2.40	2.43	2.47	2.50	5.50	0.10	1.01	1.05	69.14	0.56%
American States Water	4.05%	1.07	1.15	1.24	1.34	1.45	2.45	0.14	1.08	1.06	52.42	0.32%
American Water Works	30.92%	1.78	1.95	2.15	2.36	2.60	4.50	0.11	1.10	1.04	80.35	2.22%
Aqua America	12.79%	0.85	0.91	1.01	1.12	1.25	1.95	0.13	1.11	1.04	32.91	0.98%
California Water Service Group	3.84%	0.75	0.78	0.85	0.93	1.02	1.90	0.12	1.09	1.05	36.43	0.29%
Middlesex Water	1.28%	0.91	0.96	1.01	1.06	1.11	2.10	0.13	1.05	1.06	38.37	0.11%
SJW Group	2.35%	1.12	1.20	1.28	1.36	1.45	3.45	0.14	1.07	1.08	56.04	0.24%
York Water	0.85%	0.70	0.75	0.83	0.91	1.00	1.60	0.14	1.10	1.05	30.24	0.07%
Annual Weighted DCF Results:											<u>7.63%</u>	

The ROE of 7.63 percent represents the expected cost of equity required to match the average stock price with present value of expected cash flows.

Sources:

Stock prices obtained from Yahoo Finance for the 30-day period April 1, 2018 through April 30, 2018
 Natural Gas company dividends, earnings, and ROE obtained from Value Line Reports issued March 2, 2018
 Water and Wastewater company dividends, earnings and ROE obtained from Value Line Reports issued April 13, 2018

Notes:

- ^[1] Company's weight is based off of the Company's Market-Capitalization
- ^[2] Average Stock Prices include four percent flotation cost
- ^[3] Company's DCF results are weighed against their Market Capitalization Weight

Capital Asset Pricing Model Cost of Equity for
Water and Wastewater Industry

CAPM analysis formula

- K = $RF + \text{Beta} (MR - RF) + \text{Flotation Cost}$
K = Investor's required rate of return
Beta = Measure of industry-specific risk (average for natural gas and water utilities followed by Value Line)
MR = Market Return (Value Line Investment Analyzer Web Browser)
RF = Risk-free rate (Blue Chip forecast for Long-Term Treasury Bond)

$$9.46\% = 3.58\% + 0.69 (11.83\% - 3.58\%) + 0.20\%$$

Note:

We calculated the market return using a quarterly DCF model for a large number of dividend paying stocks followed by Value Line. As of April 16, 2018, the result was 11.83 percent. We added 20 basis points to the CAPM result to account for a flotation cost of four percent.

Public Utility Long-Term Bond Yield Averages

Month, Year	A2	Spread	A3	Spread	Baa1	Spread	Baa2	Spread	Baa3
April, 2018	4.15	0.11	4.26	0.11	4.37	0.11	4.48	0.11	4.59
120 – Month Average Spread							4.480	0.161	0.0464

Consensus Forecasts – Corporate Baa Bond Rate

2Q 2018	3Q 2018	4Q 2018	1Q 2019
4.8	5.0	5.2	5.3
Average Forecasted Corporate Baa Bond Rate:			5.075

Assumed Bond Yield for Baa3 Utilities: 0.161 + 5.075 = 5.236

	Updated Results	Currently In Effect
Private Placement Premium	0.50%	0.50%
Small-Utility Risk Premium	0.50%	0.50%
Assumed Bond Yield for Baa3 Utilities	5.24%	6.13%
Assumed Bond Yield for Florida WAW Utilities:	<u>6.24%</u>	<u>7.13%</u>

Sources:
 Value Line Selection and Opinion
 Blue Chip Financial Forecast – May 2018

2018 Leverage Formula Proxy Group

Company	S&P Bond Rating	Percent Regulated Revenue	V/L Market Capital (Millions)	Equity Ratio	Weighted Equity Ratio	Value Line Beta	Weighted Value Line Beta
Atmos Energy	A	95.99%	\$9,100	52.59%	10.20%	0.70	0.14
NW Natural Gas	A+	96.16%	\$1,600	47.10%	1.61%	0.65	0.02
One Gas, Inc.	A	100.00%	\$3,500	55.71%	4.16%	0.70	0.05
SW Gas	BBB+	51.09%	\$3,200	47.07%	3.21%	0.75	0.05
Spire, Inc.	A-	95.36%	\$3,200	43.63%	2.98%	0.65	0.04
American States Water	A+	77.24%	\$1,900	58.22%	2.36%	0.75	0.03
American Water Works	A	88.11%	\$14,500	41.08%	12.70%	0.65	0.20
Aqua America	A+	99.43%	\$6,000	47.70%	6.10%	0.70	0.09
Cal. Water Service	A+	93.93%	\$1,800	46.22%	1.77%	0.75	0.03
Middlesex Water	A	88.28%	\$600	56.86%	0.73%	0.80	0.01
SJW Group	A	96.63%	\$1,100	50.39%	1.18%	0.70	0.02
York Water	A-	100.00%	\$400	56.71%	0.48%	0.80	0.01
AVERAGE	A	90.19%	\$3,908	50.27%	47.48%	0.72	0.69

Sources:
 Value Line Ratings and Reports
 S.E.C. Form 10K for Companies
 Standard and Poor's



STATE OF CONNECTICUT

DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION
PUBLIC UTILITIES REGULATORY AUTHORITY
TEN FRANKLIN SQUARE
NEW BRITAIN, CT 06051

DOCKET NO. 13-01-29 INVESTIGATION FOR STREAMLINING THE
RATEMAKING PROCESS FOR SMALL WATER
COMPANIES

October 23, 2013

By the following Commissioners:

John W. Betkoski, III
Arthur H. House
Michael A. Caron

Lead Staff: James K. Sutphin
Legal Advisor: Robert Luysterborghs

DECISION

DECISION

I. INTRODUCTION

A. SUMMARY

In this Decision, the Public Utilities Regulatory Authority approves the Settlement Agreement as submitted on June 20, 2013 by the Parties to this Docket. The Settlement Agreement provides for an allowed return on equity calculated as the current allowed return on equity average of Aquarion Water Company and The Connecticut Water Company plus a 50 basis point fixed adder. The provisions of the Settlement Agreement also include a 50 basis point variable adder for exemplary performance in such areas as management efficiency, customer service, and cost containment initiatives. In addition, the Settlement Agreement includes a provision for the small water companies to manage their capital structures so that the common equity portion is in a range of 40% to 60% of their total capital structure.

B. BACKGROUND

On its own motion, the Public Utilities Regulatory Authority (PURA or Authority) established this docket, pursuant to §§16-19 and 16-19e of the General Statutes of Connecticut (Conn. Gen. Stat.). On March 21, 2013, the PURA held a noticed technical meeting to discuss methods to streamline the rate case process for the small water companies. Issues discussed included:

1. Assigning the PURA's Prosecutorial Staff to assist small water companies in the preparation of rate cases.
2. Benchmarking the allowed return on equity (ROE) for small water companies with allowed ROEs of larger water companies.
3. Developing an ROE using standard ratemaking methodology that will be applied to all small water companies.
4. Developing similar accounting treatment of expense and rate base items for all small water companies.
5. Any other issues relevant to the topic of streamlining small water company rate cases.

The Authority requested that admitted parties submit written comments and preferably a settlement agreement on or before April 26, 2013, addressing the following formula for setting an allowed ROE for small water companies:

Aquarion Water Company (Aquarion Water)	Using the allowed ROE from last rate case, 9.95%, as an example.
The Connecticut Water Company (Connecticut Water)	Using the allowed ROE from last rate case, 9.75%, as an example.
Average	Example the allowed ROE average of Aquarion Water Company and Connecticut Water of 9.85% $[(9.95\%+9.75\%)/2]$.
Formula adder	Reasonable % adder to be determined by the Settling Parties.
Total ROE	Final result allowed ROE of ???%. Example of $(9.85\%+adder\%)$.

C. CONDUCT OF THE PROCEEDING

By Notice of Technical Meeting issued on March 5, 2013, the Authority conducted a Technical Meeting on March 21, 2013 at its offices at Ten Franklin Square, New Britain, Connecticut. On April 4, 2013, the Authority issued a Notice of Request for Written Comments and Settlement Agreement (Notice of Settlement Agreement). On April 23, 2013, the Office of Consumer Counsel (OCC) requested an extension to file written comments or a settlement agreement in the subject matter. On April 24, 2013, the small water companies filed a letter of non-opposition to the OCC's request provided that the extension was granted to all parties. On April 25, 2013, the Authority granted the request for extension until May 20, 2013. On May 17, 2013, the OCC requested, and the small water companies did not oppose, a further extension until June 20, 2013 to file a settlement agreement or written comments. The Authority approved that request. The Parties submitted a settlement (Settlement Agreement) on June 20, 2013. A copy of that agreement is attached hereto as Attachment A. By Notice of Hearing dated August 19, 2013, pursuant to Conn. Gen. Stat. §§16-11, 16-19 and 16-19e, the Authority held a public hearing on this matter on August 30, 2013 at its offices.

D. PARTIES TO THE PROCEEDING

The Authority designated the Hazardville Water Company, 281 Hazard Avenue, Enfield, CT 06082; Torrington Water Company, P.O. Box 867, Torrington, CT 06790; Avon Water Company, 14 West Main Street, Avon, CT 06001; Valley Water Systems, Inc. 37 Northwest Drive, Plainville, CT 06062; and the Heritage Village Water Company P.O. Box 873, Southbury, CT 06488; (collectively, Small Water Companies) and the Office of Consumer Counsel, Ten Franklin Square, New Britain, Connecticut 06051, as Parties to this proceeding.

II. AUTHORITY ANALYSIS

A. INTRODUCTION

The Authority received the Settlement Agreement on June 20, 2013, and reviewed its contents. The following is the Authority's analysis of the proposed Settlement Agreement.

B. SETTLEMENT AGREEMENT

The main points of the Settlement Agreement are as follows:

Aquarion Water	Base Allowed ROE from the most recent rate case (i.e., currently 9.95% ¹).
Connecticut Water	Base Allowed ROE from most recent rate case. (i.e., currently 9.75%).
Average	Allowed ROE average of Aquarion Water and Connecticut Water, currently 9.85% [(9.95%+9.75%)/2].
Fixed Formula Adder	Fixed Adder of 0.50%.
Variable Performance Adder	Up to 0.50% based on exemplary performance in such areas as management efficiency, customer service and cost containment initiatives.
Total ROE	Final result allowed ROE of 10.35% - 10.85%. Example of (9.85% + 0.50% fixed adder + 0.00% to 0.50% Performance Adder).

1. Aquarion Water and Connecticut Water Base Allowed ROE. The Base Allowed ROE Average for Aquarion Water and Connecticut Water excludes any bonus, incentive or penalty adjustments made by the PURA to the allowed ROE for the individual company.
2. Fixed Formula Adder. A 50 basis point formula adder is determined as reasonable by the Settling Parties.
3. Variable Performance Adder. The water company filing the rate application can request up to an additional 50 basis point adder based on exemplary performance in such areas as: management efficiency, customer service and cost containment initiatives. Applicant will be responsible for demonstrating these qualitative measures justifying the additional adder.

¹ At the time the Settlement Agreement was signed, the current allowed ROE for Aquarion Water was 9.95%. Recently, this was changed by the Decision dated September 24, 2013 in Docket No. 13-02-20, Application of Aquarion Water Company of Connecticut to Amend Its Rates, to an allowed ROE of 9.63% (9.13% Base ROE plus 0.50% bonus)

Other provisions of the Settlement Agreement are as follows:

1. Capital Structure. Companies will attempt to manage capital structure so that common equity represents 40% – 60% of capital structure. Settlement does not preclude capital structure adjustments if equity weight is outside 40-60% of capital structure or to balance capitalization with rate base.
2. Regulatory Compliance, Management Prudence and Service Quality. The ROE Formula assumes compliance with PURA and the Department of Public Health (DPH) orders, prudent management and satisfactory service quality. The Settlement Agreement does not preclude ROE penalties for inferior customer service, management performance, or imprudence.

Settlement Agreement, pp. 3 and 4.

C. RETURN ON EQUITY

Effective upon the Authority's approval of this Settlement Agreement for rate cases filed through December 31, 2023, the signatories to this agreement will have their allowed return on equity level set based on the above formula. The Settlement Agreement provides for a ROE determined by an average of the large water companies in the state (Aquarion Water and Connecticut Water) which is identical to the formula provided in the Notice of Settlement Agreement together with a 50 basis point fixed adder. The ROE combined with the fixed adder is the average base ROE separately approved in Aquarion Water's and Connecticut Water's last rate cases. The base allowed ROE average for Aquarion Water and Connecticut Water excludes any bonus, incentive or penalty adjustments made by the Authority to the allowed ROE. This base ROE is before an adder as numerated in Public Act 13-78 An Act Concerning Water Infrastructure and Conservation, Municipal Reporting Requirements and Unpaid Utility Accounts at Multi-Family Dwellings or any other adders and before any adjustments downward based on prudence.

The fixed adder of 50 basis points was agreed to by the parties to the Settlement Agreement as outlined in the Notice of Settlement Agreement. Those parties added a variable performance adder, to the ROE, of up to 50 basis points based on exemplary performance in such areas as management efficiency, customer service and cost containment initiatives.

The most significant element of the Settlement Agreement is that it creates administrative efficiencies which could lead to significant cost savings in the rate case process. The OCC believes the Settlement Agreement and methodology will save money and time for each of the companies and their ratepayers, their participants, the OCC, and the Authority. Tr. 8/30/13, pp. 96 and 97. It is expected that these cost savings would be passed on to ratepayers. Cost savings include the following:

1. Decrease of \$30,000 to \$40,000 in costs to retain cost of capital witnesses per Small Water Company for each rate case.

2. Decrease of \$25,000 in costs associated with the OCC hiring an expert witness in rebuttal.
3. The preparation and processing of interrogatories, rebuttal and briefing documents on the part of the Small Water Companies.
4. Cost of hearings will be reduced to perhaps one procedural hearing.
5. Savings in rate case legal fees.

Response to Interrogatory FI-1, Tr. 8/30/13, pp. 101-108.

Additionally, the Small Water Companies will benefit from the Settlement Agreement in time and monetary savings for non-recoverable rate case expenses such as the time value of money for up-fronting rate case expenses. Other savings come from not having to subscribe to financial publications to support their positions and to respond to counter testimony. Other savings that are hard to quantify include employee work time that can be deployed to non-rate case activities and therefore, delay or eliminate the need for incremental employees. The agreed upon ROE formula gives the Small Water Companies a more certain pre-determined ROE range when applying to the Authority for rate relief. Response to Interrogatory FI-2, Tr. 8/30/13, pp. 106 and 107.

The Authority establishes the total cost savings per rate case for the Small Water Companies and the OCC at \$80,000 based on cross examination of the parties. This \$80,000 includes savings for cost of capital witnesses, attorney fees, preparation and processing of interrogatories, rebuttal, and briefing documents. The OCC and the Small Water Companies, agreed to an estimate of savings of \$80,000 for each rate case based on the provisions of the Settlement Agreement. Tr. 8/30/13, p. 108.

The fixed formula adder of 50 basis points was developed through negotiation by the OCC and the Small Water Companies. This fixed formula adder is in recognition of the lack of financial flexibility for the Small Water Companies due to their size and as such lack of access to the financial markets. This 50 basis point adder was believed to be reasonable when compared with the various deciles of micro-cap size adjustments recommended by Ibbotson Associates which is a research firm that compiles stock and other financial data. The 9th and 10th decile companies, of which the Small Water Companies are comparable, all rated at least a 2.22% percentage point adder in a range of 2.22%-3.81%. In addition, when the 9th and 10th deciles are further broken down by size, relative to the Small Water Companies, the Ibbotson adders increase even more. Response to Interrogatory FI-10. The Authority finds the Settlement Agreement's fixed formula adder to be reasonable given the data from Ibbotson Associates.

A variable performance adder of 50 basis points was included as a provision to the Settlement Agreement as an incentive for management efficiency, customer service and cost containment initiatives. The variable performance adder of 50 basis points was found reasonable by the Parties, reasoning that a variable performance adder equal to the fixed formula adder would encourage excellence in performance. The Authority notes that the fixed and variable performance adder when combined is still significantly less than the 9th and 10th decile companies in the 2.22%-3.81% range. Response to Interrogatory FI-11. The Small Water Companies believe that data to support the areas of management efficiency, customer service, and cost containment can be easily generated since they track these measurements. Tr. 8/30/13, pp. 112 and 113. The

Authority is of the opinion that this variable performance adder should provide for better service for water customers.

D. CAPITAL STRUCTURE

A provision was included in the Settlement Agreement for the Small Water Companies to manage the common equity in their capital structures to a range of 40% to 60% of their total capital structure. This was included as a provision “. . . since it was viewed as a reasonable capital structure for ratemaking purposes.” Tr. 8/30/13, p. 110. This range was determined by water utility industry comparison. From a recent issue of Value Line analysis of the water utility industry; of 7 publicly traded water utilities, the average common equity ratio in 2013 is 52% with a range from 45.5% to 58%. The Small Water Companies report that this ratio has trended slowly upward coincidental with increased environmental risks. Documentation of this slow trend upward is found in Value Line where in 2003, equity ratios averaged 49.1% and have since climbed to a 52.0% average. One of the principle reasons behind this upward movement in the equity ratio is the perception of increased business risk in the water utility industry and the need to mitigate that risk in the capital structure. The lower limit of 40% was determined as the lowest an equity ratio should be in order to maintain adequate financial coverage on the debt as well as meet many bond indenture capital limitations for investment grade securities. The Small Water Companies assert that their smaller size as micro-cap water utilities renders them even more susceptible to business and financial risks than larger water utilities. Response to Interrogatory FI-3.

The Small Water Companies plan to manage their capital structure by periodically alternating between long term debt and common equity issues. The Small Water Companies believe that they should be able to complete the task of managing their respective common equity ratios between 40% and 60%, on average, as each construction cycle dictates. This is important since the water utility industry is capital intensive and therefore requires constant and significant proportions of capital. This capital comes from periodic long-term sources coupled with short-term bank credit lines used in the interim between major financings. Long-term capital such as debt and equity must be acquired in the financial markets and therefore maintenance of an appropriate capital structure is paramount. Management by the Small Water Companies of their capital ratios will consist of a monitored balancing between internal cash flows of earnings and depreciation and draw downs on bank lines of credit. The start and end of each construction cycle controls the timing between short and long-term financing. Periodically, the Small Water Companies will alternate between long-term debt and common equity issuances as the means to manage their common equity ratio between 40% and 60%, on average, as each construction cycle dictates. Response to Interrogatory FI-4.

The Authority has concern over the affect the 60% top of the equity range has on customers' bills since equity customarily has a greater cost than debt. All the Small Water Companies equity ratios are different but in the 40% to 60% range. Over the life of the Settlement Agreement there may be instances when all the five water utilities, for a legitimate business reason, will have less financial risk and increase or maintain their common equity ratio at or near the 60% level. Conversely, there may also be times when the equity ratio of one of more of the five Small Water Companies drops toward the 40%

level. The Settlement Agreement set this range wide enough to be inclusive of multiple risk circumstances in addition to market fluctuations in debt and equity costs. There was no intent in the Settlement Agreement to restrict common equity movement of the Small Water Companies at the same time and as such, they are being treated as individual entities. Response to Interrogatory FI-6.

The Authority recognizes that depending on the timing of rate filings of one of the Small Water Companies and the concurrent equity ratios that a 60% equity ratio, would generate higher required revenues all other things being equal. However, there may be offsetting savings in debt costs which could offset an increase in revenue requirements. For example if one of the Small Water Companies has just completed a debt financing at costs and terms more favorable than normal and because the additional debt has the effect of bringing the company closer to the lower limit of 40% equity that, small water company may determine to increase its common equity ratio to balance the capital structure at 60% or 50% equity. This balancing of the capital structure may produce a higher incremental cost of the equity component. However, there may be an even greater saving in the debt cost component of capital. Response to Interrogatory FI-7. The Authority finds that the range of equity between 40% to 60% of equity in the capital structure is reasonable.

E. REGULATORY COMPLIANCE, MANAGEMENT PRUDENCE AND SERVICE QUALITY

The Settlement Agreement provides that the ROE formula assumes compliance with the PURA and DPH orders, prudent management and satisfactory service quality. Settlement Agreement, Section B4. The Settlement Agreement does not preclude ROE penalties for inferior customer service, management performance or imprudence. The Authority finds this is reasonable and assures ratepayers are fairly treated and that service quality remains at a high level.

F. PUBLIC ACT 13-78

Public Act 13-78 (PA 13-78), An Act Concerning Water Infrastructure and Conservation, Municipal Reporting Requirements and Unpaid Utility Accounts at Multi-Family Dwellings, was signed into law after the Settlement Agreement was filed with the Authority. PA 13-78 requires the Authority to:

. . . authorize rates for each water company, as defined in section 16-1 of the general statutes, which promote comprehensive supply-side and demand-side water conservation. In establishing such rates, the authority shall take into consideration state energy policies, the capital intensive nature of sustaining water systems that minimize water losses and the competition for capital for continued investments in such systems. Such rates shall consider (1) demand projections that recognize the effects of conservation, (2) implementation of metering and measures to provide timely price signals to consumers, (3) multiyear rate plans, (4) measures to reduce system water losses, and (5) alternative rate designs that promote conservation.

Thus, PA 13-78 provides for a revenue adjustment mechanism that reconciles in rates, the difference between actual and allowed revenues, an earnings sharing mechanism, and a premium rate of return to a water company that has acquired non-viable systems.

The OCC asserts that PA 13-78 and the Settlement Agreement do not conflict. The OCC also suggests that the only conflict may be from the premium ROE given to a water company that has acquired non-viable systems. In the opinion, of the OCC, the premium section of PA 13-78 was geared to larger water utilities such that there would be an incentive to take over non-viable systems. Tr. 8/30/13, pp. 115 and 116. The Authority finds no conflict between PA 13-78 and this Settlement Agreement.

III. FINDINGS OF FACT

1. The Authority received the Settlement Agreement on June 20, 2013.
2. The Settlement Agreement is effective through December 31, 2023.
3. The Settlement Agreement provided for calculation of the allowed ROE based on the prescribed formula of the average of the latest base allowed ROE of Connecticut Water and Aquarion Water.
4. The Settlement Agreement provides for a fixed formula adder of 0.50%.
5. The Settlement Agreement provides for a variable performance adder of up to 0.50% based on exemplary performance in such areas as management efficiency, customer service and cost containment initiatives.
6. The Settlement Agreement permits the Small Water Companies to manage the common equity in their capital structures to a range of 40% to 60% of their total capital structure.
7. The ROE formula assumes compliance with the PURA and DPH orders, prudent management and satisfactory service quality.
8. The Settlement Agreement does not preclude ROE penalties for inferior customer service, management performance, or imprudence.

IV. CONCLUSION

The Authority hereby approves the Settlement Agreement submitted in its entirety. The Authority finds the Settlement Agreement will lead to cost savings for every rate case submitted by the Small Water Companies which will benefit its ratepayers, the OCC, other rate case participants, and the PURA. Lastly, the Settlement Agreement is in the public interest.

The Connecticut Department of Energy and Environmental Protection is an Affirmative Action/Equal Opportunity Employer that is committed to requirements of the Americans with Disabilities Act. Any person with a disability who may need

information in an alternative format may contact the agency's ADA Coordinator at 860-424-3194 or at deep.hrmed@ct.gov. Any person with limited proficiency in English, who may need information in another language, may contact the agency's Title VI Coordinator at 860-424-3035 or at deep.aao@ct.gov. Any person with a hearing impairment may call the State of Connecticut relay number – 711. Discrimination complaints may be filed with DEEP's Title VI Coordinator. Requests for accommodations must be made at least two weeks prior to any agency hearing, program or event.

**DOCKET NO. 13-01-29 INVESTIGATION FOR STREAMLINING THE
RATEMAKING PROCESS FOR SMALL WATER
COMPANIES**

This Decision is adopted by the following Directors:

John W. Betkoski, III

Arthur H. House

Michael A. Caron

CERTIFICATE OF SERVICE

The foregoing is a true and correct copy of the Decision issued by the Public Utilities Regulatory Authority, State of Connecticut, and was forwarded by Certified Mail to all parties of record in this proceeding on the date indicated.



Nicholas E. Neeley
Department of Energy and Environmental Protection
Acting Executive Secretary
Public Utilities Regulatory Authority

October 24, 2013

Date

ATTACHMENT A

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC UTILITY CONTROL

RE: INVESTIGATION FOR : DOCKET NO. 13-01-29
 STREAMLINING THE :
 RATEMAKING PROCESS FOR :
 SMALL WATER UTILITIES : JUNE 20, 2013

SETTLEMENT AGREEMENT

This Settlement Agreement is made this 20th day of June 2013, by and between Avon Water Company, Hazardville Water Company, Torrington Water Company and Valley Water Systems, Inc. (collectively, the "Small Water Companies") and the Office of Consumer Counsel ("OCC") (collectively, the "Parties", and each individually as a "Party");

On January 31, 2013, the Public Utility Regulatory Authority ("PURA"), on its own motion, established a proceeding to investigate alternatives to the current regulatory process that could be used to reduce time and expense for small water utility rate proceedings. In its motion PURA noted that "Small Water Utilities expend funds for items such as cost of capital and accounting expert testimony during rate proceedings filed in accordance with General Statutes of Connecticut §16-19. Additionally, significant resources in staff and utility time are devoted to these issues."

On March 21, 2013 PURA held a noticed technical meeting to discuss methods to streamline the rate case process for the Small Water Companies. Issues discussed included:

6. Assigning prosecutorial staff to assist small water companies in the preparation of rate cases.
7. Benchmarking the allowed return on equity ("ROE") for small water companies with allowed ROEs of larger water companies.
8. Developing an ROE, using standard ratemaking methodology, that will be applied to all Small Water Companies.
9. Developing similar accounting treatment of expense and rate base items for all Small Water Companies.

10. Any other issues relevant to the topic of streamlining Small Water Company rate cases.

On April 4, 2013, PURA issued a Notice of Request for Written Comments and Settlement Agreement. In its April 4, 2013 Notice PURA requested that admitted Parties and Interveners to the proceeding submit written comments and preferably a settlement agreement on or before April 26, 2013, addressing the following formula for setting an allowed ROE for Small Water Companies:

Aquarion Water	Using allowed ROE from last rate case, 9.95%, as an example.
Connecticut Water	Using allowed ROE from last rate case, 9.75%, as an example.
Average	Example allowed ROE average of Aquarion Water Company and Connecticut Water of 9.85% $[(9.95\%+9.75\%)/2]$.
Formula adder	Reasonable % adder to be determined by the Settling Parties.
Total ROE	Final result allowed ROE of ???%. Example of $(9.85\%+adder \%)$.

On April 23, 2013, the OCC requested an extension to file written comments or a settlement agreement in the subject matter. On April 24, 2013, the Small Water Companies filed a letter of non-opposition to OCC's request provided said extension was granted to all parties. On April 25, 2013 PURA granted the request for extension until May 20, 2013. On May 17, 2013 OCC requested, and the Small Water Companies did not oppose, a further extension until June 20, 2013 to file a settlement agreement or written comments. The Department approved the second extension until June 20, 2013 for the parties to file written comments or a settlement agreement.

Since PURA's Notice was filed on April 4, 2013, the Small Water Companies and the OCC have had numerous meetings, discussions and exchanges of proposals surrounding a simplified formula to set an allowed ROE for the Small Water Companies. As a result of these discussions, the Parties reached agreement on the issues raised therein, as set forth below:

WHEREAS, the OCC and Small Water Companies have carefully examined the proposed formula contained in PURA's April 4, 2013, Notice of Request for Written Comments and Settlement Agreement; and

WHEREAS, the Parties engaged in good faith settlement negotiations to address the proceeding's purpose of finding an alternative to the current regulatory process that could be used to reduce time and expense for small water utility rate proceedings associated with cost of capital expert testimony during rate proceedings, and were successful in arriving at an agreement that each of the Parties believes would be a reasonable outcome and disposition of the proceeding; and

WHEREAS, Section 16-19jj of the Connecticut General Statutes establishes a policy to encourage the use of proposed settlements to resolve contested cases and proceedings; and

WHEREAS, the Small Water Companies and the OCC all wish to save future rate case expenses (an expense ultimately borne by customers) and staff time associated with continued lengthy litigation of these issues which is disproportionate to the size of the Small Water Companies from a benefit-cost perspective. The costs for the Smaller Water Companies to hire an outside consultant to address ROE and other related financial issues during a rate case could approach several dollars per customer; and

WHEREAS, this Settlement Agreement represents an integrated set of trade-offs and compromises in order to achieve the goal of a fair resolution of the proceeding; and

WHEREAS, the Parties submit this Settlement Agreement to the Authority for its review and approval in its entirety in the Final Decision in Docket No. 13-01-19; and

WHEREAS, the Parties agree that the resolution of the matters covered by this Settlement Agreement are in the best interests of the Small Water Companies' customers and shareholders.

NOW THEREFORE, the Parties agree as follows:

A. **RETURN ON EQUITY FORMULA**

Effective upon approval of this Settlement Agreement by the Authority for rate cases filed through December 31, 2023, the Small Water Companies that are signatory to this Settlement Agreement will have their allowed return on equity level set based on the following formula:

Aquarion Water	Base Allowed ROE from most recent rate case. (i.e. currently 9.95%.)
Connecticut Water	Base Allowed ROE from most recent rate case. (i.e. currently 9.75%.)
Average	Allowed ROE average of Aquarion Water Company and Connecticut Water Company, currently 9.85% $[(9.95\%+9.75\%)/2]$.
Fixed Formula Adder	Fixed Adder of 0.50%.
Variable Performance Adder	Up to 0.50% based on exemplary performance in such areas as management efficiency, customer service and cost containment initiatives.
Total ROE	Final result allowed ROE of 10.35% - 10.85%. Example of (9.85% + 0.50% fixed adder + 0.00% to 0.50% Performance Adder)

4. Aquarion Water and Connecticut Water Base Allowed ROE. The Base Allowed ROE Average for Aquarion and Connecticut Water excludes any bonus, incentive or penalty adjustments made by PURA to the allowed ROE for the individual company.
5. Fixed Formula Adder. A 50 basis point formula adder is determined as reasonable by the Settling Parties.
6. Variable Performance Adder. The water company filing the rate application can request up to an additional 50 basis point adder based on exemplary performance in such areas as: management efficiency, customer service and cost containment initiatives. Applicant will be responsible for demonstrating these qualitative measures justifying the additional adder.

B. OTHER PROVISIONS

3. Capital Structure. Companies will attempt to manage capital structure so that common equity represents 40% – 60% of capital structure. Settlement does not preclude capital structure adjustments if equity weight is outside 40-60% of capital structure or to balance capitalization with rate base.
4. Regulatory Compliance, Management Prudence and Service Quality. The ROE Formula assumes compliance with PURA and DPH orders, prudent management and satisfactory service quality. The Settlement does not preclude ROE penalties for inferior customer service, management performance or imprudence.
5. Sufficient Record Evidence. The record in the proceeding provides sufficient evidence on which PURA can rely to make a determination that this Settlement Agreement is reasonable and in the public interest.
6. Best Interests of Ratepayers. The Parties agree that this Settlement Agreement is in the best interests of ratepayers.
7. Cooperative Advocacy. Without reservation or condition, the Parties agree to support this Settlement Agreement before the Authority during this proceeding, in any other public forum and before any court to which an appeal may be taken. The Parties will do nothing to undermine the integrity of this Settlement Agreement and will take all such action as is necessary on a cooperative basis to secure the expeditious approval and implementation of the provisions of this Settlement Agreement.
8. Integrated Settlement Agreement. This Amended Settlement Agreement is the product of settlement negotiations and will be deemed an integrated solution to the issues addressed herein. As such, the terms contained herein are interdependent and not severable, and they will not be binding upon, or deemed

to be an admission or concession by any Party, or to represent the positions of the Parties, if this Settlement Agreement is not fully approved without modification by the Authority.

9. Acceptance by PURA. If PURA does not approve this Settlement Agreement in its entirety without modification, it will be deemed withdrawn and null and void, it will not constitute a part of the record in this or any other administrative or judicial proceeding, will not be admissible as evidence or be used for any purpose whatsoever in this or any other administrative or judicial proceeding, and each Party will be free to advocate any position on any of the issues addressed by this Settlement Agreement in this or any other administrative or judicial proceeding, unless the Parties agree otherwise.
10. Confidential Settlement Discussions. The discussions that have produced this Settlement Agreement have been conducted on the explicit understanding that all offers of settlement and discussions relating thereto are and will be privileged and confidential, will be without prejudice to the position of any Party presenting such offer or participating in any such discussions, and are not to be used in any manner in connection with this or any other administrative or judicial proceeding involving any or all of the Parties or otherwise.
11. Reservation of Rights. This Settlement Agreement does not represent an admission or concession by the Parties as to the proper disposition of any issue not related to this Settlement Agreement in any future proceeding before the Department, any court or any other administrative agency. It does not signify the Parties' agreement with any claim or claims made by any Party in this case. This Settlement Agreement or any of its terms will not prejudice the positions that the Parties may take on any issue in any future proceeding not related to this Settlement Agreement before the Department, the courts or any other administrative agency, and will not be admissible as evidence therein or in any proceeding not related to the matters covered by this Settlement Agreement before the Department, the courts or any other administrative agency and will not be deemed an admission or concession by any of the Parties in regard to any claim or position taken by any other of the Parties in such proceedings. This Settlement Agreement is not intended to establish precedent in such proceedings and the formula contained herein for utilization for cases involving larger water companies or non-water industries. Nothing contained herein will be construed as a waiver of, or limitation upon, any Party's right to raise any issues contained herein in any subsequent docket not related to this Settlement Agreement.
12. Merger of Agreement. This Settlement Agreement constitutes the entire agreement between the Parties hereto and supersedes any other written or verbal agreements that may relate to any issue covered by this Settlement Agreement.

13. Captions. All titles, subject headings, section titles and similar items herein are provided for the purpose of reference and convenience only and are not intended to affect the meaning, the content or the scope of this Settlement Agreement.

IN WITNESS WHEREOF, each of the Parties has duly executed this Settlement Agreement as of the date set forth above.

ELIN SWANSON KATZ
CONSUMER COUNSEL

By _____
Richard E. Sobolewski
Supervisor of Technical Analysis

THE SMALL WATER COMPANIES:

Avon Water Company
Hazardville Water Company
Torrington Water Company
Valley Water Systems, Inc.

By _____
William Galske, III
Their Attorney

Exhibit JRW-1
NH Generic ROE

Value Line Water Companies

Company	Operating Revenue (\$mil)	Percent Water Revenue	Net Plant (\$mil)	S&P 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)	436.1	69%	1,172.9	A+	5.3	CA, AZ	54.6%	12.4%	3.34
American Water Works Co., Inc. (NYSE-AWK)	3,302.0	87%	14,992.0	A+	3.4	30 States	42.1%	9.1%	2.49
Aqua America, Inc. (NYSE-WTR)	819.9	98%	5,001.6	AA-	4.2	13 States	49.4%	13.1%	2.89
Artesian Resources Corp. (NDQ-ARTNA)	79.1	94%	425.5	NR	3.9	DE,MD,PA	55.6%	9.5%	2.13
California Water Service Group Inc. (NDQ-CWT)	609.4	100%	1,859.3	AA-	1.5	CA,WA,NM	50.2%	2.3%	2.47
Connecticut Water Service, Inc. (NDQ-CTWS)	28.2	95%	610.5	A/A-	4.2	CT	50.1%	10.2%	2.65
Middlesex Water Company (NDQ-MSEX)	132.9	89%	517.8	A	7.5	NJ, DE	56.0%	3.8%	3.11
SJW Corporation (NYSE-SJW)	339.7	96%	1,196.8	A	5.0	CA, TX	48.5%	13.1%	2.70
York Water Company (NDQ-YORW)	47.6	100%	271.7	A-	4.3	PA	57.4%	10.6%	4.34
Mean	643.9	92%	2894.2	A	4.4		51.5%	9.4%	2.90
Median	339.7	95%	1172.9	A	4.2		50.2%	10.2%	2.70

Data Source: Company 2017 SEC 10-K filings; *Value Line Investment Survey*, 2018.

Exhibit JRW-1

Value Line Risk Metrics

Value Line Water Companies

Company	Beta	Financial Strength	Safety	Earnings Predictability	Stock Price Stability
American States Water Co. (NYSE-AWR)	0.75	A	2	90	80
American Water Works Co., Inc. (NYSE-AWK)	0.65	B+	3	90	100
Aqua America, Inc. (NYSE-WTR)	0.70	A	2	90	95
Artesian Resources Corp. (NDQ-ARTNA)	0.60	B	3	75	70
California Water Service Group Inc. (NDQ-CWT)	0.75	B++	3	65	80
Connecticut Water Service, Inc. (NDQ-CTWS)	0.65	B+	3	85	90
Middlesex Water Company (NDQ-MSEX)	0.80	B++	2	80	70
SJW Corporation (NYSE-SJW)	0.70	B+	3	45	65
York Water Company (NDQ-YORW)	0.80	B+	3	90	60
Mean	0.71	B++	2.7	79	79

Data Source: *Value Line Investment Survey*, 2018.

Exhibit JRW-2

New Hampshire Water Company
 Discounted Cash Flow Analysis

Panel A

% VL Historic EPS/DPS Growth and 50% VL Projected EPS/DPS Growth

Water Proxy Group I

Dividend Yield*	2.23%
Adjustment Factor	<u>1.0312</u>
Adjusted Dividend Yield	2.30%
Growth Rate**	<u>6.25%</u>
Equity Cost Rate	8.55%

Water Proxy Group II - Exclu. SJW, CTWS

Dividend Yield*	2.22%
Adjustment Factor	<u>1.0373</u>
Adjusted Dividend Yield	2.30%
Growth Rate**	<u>7.46%</u>
Equity Cost Rate	9.77%

Water Proxy Group III - Exclu. SJW, CTWS,AWR,CWT

Dividend Yield*	2.29%
Adjustment Factor	<u>1.0318</u>
Adjusted Dividend Yield	2.36%
Growth Rate**	<u>6.35%</u>
Equity Cost Rate	8.71%

* Page 2 of Exhibit JRW-2

** Based on data provided on pages 3, 4, and 5
 of Exhibit JRW-2

Panel B

100% VL Projected EPS/DPS Growth

Water Proxy Group I

Dividend Yield*	2.23%
Adjustment Factor	<u>1.0382</u>
Adjusted Dividend Yield	2.31%
Growth Rate**	<u>7.64%</u>
Equity Cost Rate	9.95%

Water Proxy Group II - Exclu. SJW, CTWS

Dividend Yield*	2.22%
Adjustment Factor	<u>1.0398</u>
Adjusted Dividend Yield	2.31%
Growth Rate**	<u>7.96%</u>
Equity Cost Rate	10.27%

Water Proxy Group III - Exclu. SJW, CTWS,AWR,CWT

Dividend Yield*	2.29%
Adjustment Factor	<u>1.0413</u>
Adjusted Dividend Yield	2.39%
Growth Rate**	<u>8.25%</u>
Equity Cost Rate	10.64%

* Page 2 of Exhibit JRW-2

** Based on data provided on pages 3, 4, and 5
 of Exhibit JRW-2

Exhibit JRW-2

New Hampshire Water Company
 Monthly Dividend Yields

All Value Line Water Distribution Companies

Company	Annual Dividend	Dividend Yield 30 Day
American States Water Co. (NYSE-AWR)	\$1.10	2.15%
American Water Works Co., Inc. (NYSE-AWK)	\$1.82	2.20%
Aqua America, Inc. (NYSE-WTR)	\$0.88	2.59%
Artesian Resources Corp. (NDQ-ARTNA)	\$0.95	2.45%
California Water Service Group Inc. (NDQ-CWT)	\$0.75	1.92%
Connecticut Water Service, Inc. (NDQ-CTWS)	\$1.25	2.13%
Middlesex Water Company (NDQ-MSEX)	\$0.90	2.22%
SJW Corporation (NYSE-SJW)	\$1.12	1.93%
York Water Company (NDQ-YORW)	\$0.67	1.95%
Mean		2.17%
Median		2.15%

Data Sources: <http://quote.yahoo.com>, June 27, 2018.

Water Proxy Group I (Exclu ARTNA)	8	2.23%
Water Proxy Group II (Excl. SJW and CTWS)	6	2.22%
Water Proxy Group III (Excl. CTWS, SJW,AWR,CWT)	4	2.29%

Exhibit JRW-2

New Hampshire Water Company
 DCF Equity Cost Growth Rate Measures
 Value Line Historic Growth Rates

Value Line Water Companies

Company	Value Line Historic Growth					
	Past 10 Years			Past 5 Years		
	Earnings	Dividends	Book Value	Earnings	Dividends	Book Value
American States Water Company (NYSE-AWR)	9.0	7.0	5.0	7.0	10.5	4.5
American Water Works Co., Inc. (NYSE-AWK)			1.0	7.5	8.5	4.0
Aqua America, Inc. (NYSE-WTR)	8.5	7.5	6.5	9.5	8.0	7.5
Artesian Resources Corp. (NDQ-ARTNA)				7.0	3.0	3.0
California Water (NYSE-CWT)	4.5	2.0	4.5	4.0	2.5	5.0
Connecticut Water Service, Inc. (NDQ-CTWS)	8.5	2.5	6.5	10.5	3.5	6.5
Middlesex Water Company (NDQ-MSEX)	5.0	2.0	3.5	8.0	2.0	3.5
SIW Corp. (NYSE-SJW)	8.0	4.5	5.5	18.5	5.0	8.0
York Water Company (NDQ-YORW)	5.5	3.5	5.0	6.5	3.5	3.5
Mean	7.0	4.1	4.7	8.7	5.2	5.1
Median	8.0	3.5	5.0	7.5	3.5	4.5
	Average of Median Figures =			5.3		

Data Source: Value Line Investment Survey.

Exhibit JRW-2

New Hampshire Water Company
 DCF Equity Cost Growth Rate Measures
 Value Line Projected Growth Rates

Company	Water Proxy Group Value Line			Value Line		
	Projected Growth Est'd. '15-'17 to '21-'23			Sustainable Growth		
	Earnings	Dividends	Book Value	Return on Equity	Retention Rate	Internal Growth
American States Water Company (NYSE-AWR)	6.0	8.0	4.0	14.0%	41.0%	5.7%
American Water Works Co., Inc. (NYSE-AWK)	10.0	10.0	6.0	10.5%	42.0%	4.4%
Aqua America, Inc. (NYSE-WTR)	7.5	9.0	5.5	12.5%	38.0%	4.8%
Artesian Resources Corp. (NDQ-ARTNA)						
California Water (NYSE-CWT)	9.5	6.5	3.0	11.5%	46.0%	5.3%
Connecticut Water Service, Inc. (NDQ-CTWS)	5.5	5.5	3.5	11.0%	48.0%	5.3%
Middlesex Water Company (NDQ-MSEX)	8.0	5.5	4.0	12.5%	47.0%	5.9%
SJW Corp. (NYSE-SJW)	6.0	8.5	3.0	14.0%	58.0%	8.1%
York Water Company (NDQ-YORW)	9.0	8.0	5.0	13.5%	37.0%	5.0%
Mean	7.7	7.6	4.3	12.4%	44.6%	5.6%
Median	7.8	8.0	4.0	12.5%	44.0%	5.3%
Average of Median Figures =		6.6			Median =	5.3%

* 'Est'd. '15-'17 to '21-'23' is the estimated growth rate from the base period 2015 to 2017 until the future period 2021 to 2023.

Data Source: Value Line Investment Survey.

Exhibit JRW-2

New Hampshire Water Company
 DCF Growth Rate Indicators

Panel A
 50% Value Line Historic EPS/DPS Growth and 50% Value Line Projected EPS/DPS Growth

Growth Rate Indicator	Water Proxy Group I	Water Proxy Group II Excl. CTWS and SJW	Water Proxy Group III Excl. CTWS, SJW,AWR,CWT
Number of Water Companies	8	6	4
Value Line EPS Growth 50% * Historic + 50% * Projected - Means	7.3%	7.4%	5.9%
Value Line DPS Growth 50% * Historic + 50% * Projected - Means	5.9%	7.5%	6.5%
Projected DCF Growth - 75% (Value Line Mean DPS Growth) + 25% (Value Line Mean EPS Growth)	6.2%	7.5%	6.4%

Panel B
 100% Value Line Projected EPS/DPS Growth

Growth Rate Indicator	Water Proxy Group I	Water Proxy Group II Excl. CTWS and SJW	Water Proxy Group III Excl. CTWS, SJW,AWR,CWT
Number of Water Companies	8	6	4
Projected Value Line Growth in EPS - Mean	7.7%	8.3%	8.6%
Projected Value Line Growth in DPS - Mean	7.6%	7.8%	8.1%
Projected DCF Growth - 75% (Value Line Mean DPS Growth) + 25% (Projected EPS Growth)	7.6%	8.0%	8.3%

**Exhibit JRW-3
American Water Works ROEs**

Rate Base & Authorized Return on Equity

Last Rate Case Awarded - Largest Regulated Subsidiaries									
	 CALIFORNIA AMERICAN WATER		 ILLINOIS AMERICAN WATER		 INDIANA AMERICAN WATER		 KENTUCKY AMERICAN WATER		 MISSOURI AMERICAN WATER
Authorized Rate Base*	\$439,448		\$683,386		\$841,915	(b)	\$405,704		\$1,249,293
Authorized ROE	9.20%	(a)	9.79%		9.75%		9.70%	(e)	10.00%
Authorized Equity	55.39%	(a)	49.80%		41.55%	(c)	47.36%	(d)	52.80%
Effective Date of Rate Case	1/1/2018	(a)	1/1/2017		1/29/2015		8/28/2016		5/28/2018
	 NEW JERSEY AMERICAN WATER		 NEW YORK AMERICAN WATER		 PENNSYLVANIA AMERICAN WATER		 VIRGINIA AMERICAN WATER		 WEST VIRGINIA AMERICAN WATER
Authorized Rate Base*	\$2,386,790		\$275,463		\$3,162,597	(b)	\$155,747		\$529,212
Authorized ROE	9.75%		9.10%		10.00%	(e)	9.25%		9.75%
Authorized Equity	52.00%		46.00%		53.75%	(d)	46.09%		45.84%
Effective Date of Rate Case	9/21/2015		6/1/2017		1/1/2018		5/24/2017	(f)	2/25/2016

*Rate Base stated in \$000s

Notes:

- a) On March 22, 2018, Decision 18-03-035 set the authorized cost of capital for 2018 through 2020. CA has a separate Cost of Capital case which sets the rate of return outside of a general rate proceeding.
- b) The Rate Base listed is the Company's view of the Rate Base allowed in the case, the Rate Base was not disclosed in the Order or the applicable settlement agreement.
- c) Regulatory capital structure includes cost-free items or tax credit balances at the overall rate of return which lowers the equity percentage as an alternative to the common practice of deducting such items from rate base
- d) The equity ratio listed is the Company's view of the equity ratio allowed in the case, the actual equity ratio was not disclosed in the Order or the applicable settlement agreement.
- e) The ROE listed is the Company's view of the ROE allowed in the case, the ROE was not disclosed in the Order or the applicable settlement agreement.
- f) Interim rates were effective April 1, 2016 and received final Order May 24, 2017.

June 2018

Exhibit JRW-3

New Hampshire Water Company
 NH Risk Premium

Date	Docket	ROE	Company	Utility	Customers	Order
2/23/2018	DW 17-103	9.60%	West Swanzey	water	85	26,105
11/26/2016	DW 15-209	9.60%	Lakes Region	water	1,668	25,969
6/3/2016	DW 15-199	9.40%	Abenaki - Bow	water	95	25,905
6/3/2016	DW 15-199	9.40%	Abenaki - Belmont	sewer	156	25,905
1/14/2015	DW 14-176	9.60%	Mill Brook Village	water	37	
12/23/2013	DW 12-306	9.60%	Rosebrook	water	425	25,613
10/14/2013	DW 12-355	9.60%	Dockham	water	60	25,582
9/20/2013	DW 12-254	9.75%	Forest Edge	water	42	25,575
6/28/2013	DW 12-085	9.60%	Aquarion	water	9,100	25,539
6/7/2013	DW 12-170	9.75%	Hampstead	water	3,100	25,519

Exhibit JRW-4

New Hampshire Water Company

Panel A
 Implied Current Authorized ROE

	<u>Current</u> <u>7/31/2018</u>
30-Day Average Treasury Yield	3.01%
Average Risk Premium	<u>6.43%</u>
Implied Current Authorized ROE	9.43%

Panel B
 Risk Premium Calculation

West Swanzey	Lakes Region	Abenaki - Bow	Abenaki - Belmont	Mill Brook Village	Rosebrook	Dockham	Forest Edge	Aquarion	Hampstead
<u>2/23/2018</u>	<u>11/26/2016</u>	<u>6/3/2016</u>	<u>6/3/2016</u>	<u>1/14/2015</u>	<u>12/23/2013</u>	<u>10/14/2013</u>	<u>9/20/2013</u>	<u>6/28/2013</u>	<u>6/7/2013</u>
3.02%	2.72%	2.64%	2.64%	2.74%	3.85%	3.76%	3.80%	3.33%	3.12%
<u>9.60%</u>	<u>9.60%</u>	<u>9.40%</u>	<u>9.40%</u>	<u>9.60%</u>	<u>9.60%</u>	<u>9.60%</u>	<u>9.75%</u>	<u>9.60%</u>	<u>9.75%</u>
6.58%	6.88%	6.76%	6.76%	6.86%	5.75%	5.84%	5.95%	6.27%	6.63%

Abenaki Water Company	Low Size Risk Premium	High Size Risk Premium
Proposed generic ROE formula	13.30%	15.96%
Massachusetts' ROE formula		
Avg. 30-Year US Treasury Bond*	14.14%	16.77%
Proj. 30-Year US Treasury Bond	12.16%	14.79%
Connecticut's ROE formula	12.24%	14.87%
Hampstead Area Water Co., Inc.	Low Size Risk Premium	High Size Risk Premium
Proposed generic ROE formula	17.33%	21.06%
Massachusetts' ROE formula		
Avg. 30-Year US Treasury Bond*	13.80%	16.09%
Proj. 30-Year US Treas. Bond	11.82%	14.11%
Connecticut's ROE formula	11.90%	14.19%
Lakes Region Water Co., Inc.	Low Size Risk Premium	High Size Risk Premium
Proposed generic ROE formula	12.70%	14.93%
Massachusetts' ROE formula		
Avg. 30-Year US Treasury Bond*	13.79%	16.07%
Proj. 30-Year US Treasury Bond	11.81%	14.09%
Connecticut's ROE formula	11.83%	14.06%

Florida Water and Waste Water ROE Decisions
 2013-2018

Date	Docket	ROE	CE Ratio	# of Customers
8/2/2018	20170147-WS	9.01%	85.58%	197
8/7/2018	20170141-SU	10.39%	49.43%	1,865
11/7/2017	20160195-WS	8.85%	67.27%	356
11/30/2017	20160176-SU	9.96%	56.83%	1,645
10/4/2017	20160165-SU	11.16%	0.00%	320
4/27/2017	20160143-WU	10.04%	49.27%	66,546
9/21/2017	20160030-WS	9.22%	76.92%	3,502
3/24/2017	20150257-WS	11.16%	0.00%	195
7/28/2016	20550236-WU	8.74%	100.00%	77
6/30/2016	20150199-WU	8.74%	100.00%	110
9/14/2016	20150149-WS	10.58%	46.66%	62
12/29/2016	20150010-WS	11.16%	100.00%	607
12/16/2015	20140239-WS	6.38%	7.84%	310
3/28/2016	20140220-WU	8.74%	100.00%	247
3/29/2016	20140219-WU	8.74%	100.00%	61
11/19/2015	20140217-WU	8.74%	100.00%	319
10/3/2016	20140186-WU	8.74%	100.00%	237
2/1/2017	20140177-WU	11.16%	21.50%	456
2/1/2017	20140175-WU	11.16%	18.90%	614
7/8/2015	20140158-WS	9.52%	67.48%	1,226
8/20/2015	20140147-WS	8.74%	100.00%	43
5/26/2015	20140135-WS	10.43%	48.17%	1,721
6/3/2015	20140061-WS	10.53%	47.34%	18,654
10/29/2014	20130625-WU	11.16%	5.45%	371
6/30/2014	20130243-WS	10.45%	48.57%	242
5/1/2014	20130211-WS	8.74%	100.00%	729
5/1/2014	20130210-WS	11.16%	0.00%	1,767
1/2/2015	20130194-WS	8.74%	100.00%	363
3/26/2015	20130178-SU	11.16%	32.60%	324
11/19/2013	20130010-WS	9.42%	70.23%	3,327

NH Generic ROE
 Exhibit JRW-7
 MA Generic ROEs
 Page 1 of 1

Panel A
 Massachusetts Water Company ROE Cases
 2015-2018

Company	Case	Decision Date	ROE Authorized
Agawam Springs	D.P.U. 13-163	August 15, 2014	10.5%
Plymouth Water	D.P.U. 14-120	August 31, 2015	10.5%
Housatonic Water	D.P.U. 15-179-A	October 13, 2016	10.5%*

*as per settlement

Panel B
 Connecticut Water Company ROE Cases
 2015-2018

Docket No. 14-11-07, Decision dated April 29, 2015, Heritage Village Water Company (4,5000 water customers, 3,040 sewer customers), case settled, but utilized the "generic small company method":

Water Division	Amount	Ratio	Cost Rate	Weighted Cost
Long-Term Debt	\$ 0	0.0%	4.75%	0.00%
Common Equity	\$2,322,923	100.0%	10.19%*	10.19%

ROE	
Aquarion Water	Base Allowed ROE from the most recent rate case (9.13%).
Connecticut Water	Base Allowed ROE from most recent rate case (9.75%).
Average	Allowed ROE average of Aquarion Water and Connecticut Water, currently 9.44% [(9.13%+9.75%)/2].
Fixed Formula Adder	Fixed Adder of 0.50%
Variable Performance Adder	Parties agreed to effectively a 0.16% variable performance adder
Total ROE	Final result allowed ROE of 10.10% (9.44% + 0.50% fixed adder + 0.16% Performance Adder).

Settling Parties Response to Interrogatory FI-27.