STATE OF NEW HAMPSHIRE

BEFORE THE

PUBLIC UTILITIES COMMISSION

AQUARION WATER COMPANY OF NEW HAMPSHIRE, INC.
DOCKET NO. DW 20-184

PREFILED DIRECT TESTIMONY OF

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SCOTTMADDEN, INC.

ON BEHALF OF
AQUARION WATER COMPANY OF NEW HAMPSHIRE

December 18, 2020

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I. INTRODUCTION

A. WITNESS IDENTIFICATION

Q. Please state your name and business address.

A. My name is Dylan W. D'Ascendis. My business address is 3000 Atrium Way, Suite 241, Mount Laurel, NJ 08054.

Q. By whom are you employed and in what capacity?

A. I am a Director at ScottMadden, Inc.

B. BACKGROUND AND QUALIFICATIONS

Q. Please summarize your professional experience and educational background.

A. I have offered expert testimony on behalf of investor-owned utilities in over 20 state regulatory commissions in the United States, the Federal Energy Regulatory Commission, the Alberta Utility Commission, and one American Arbitration Association panel on issues including, but not limited to, common equity cost rate, rate of return, valuation, capital structure, class cost of service, and rate design.

On behalf of the American Gas Association ("AGA"), I calculate the AGA Gas Index, which serves as the benchmark against which the performance of the American Gas Index Fund ("AGIF") is measured on a monthly basis. The AGA Gas Index and AGIF are a market capitalization weighted index and mutual fund, respectively, comprised of the common stocks of the publicly traded corporate members of the AGA.

I am a member of the Society of Utility and Regulatory Financial Analysts ("SURFA"). In 2011, I was awarded the professional designation "Certified Rate of Return Analyst" by SURFA, which is based on education, experience, and the successful completion of a comprehensive written examination.

I am also a member of the National Association of Certified Valuation Analysts ("NACVA") and was awarded the professional designation "Certified Valuation Analyst" by the NACVA in 2015.

I am a graduate of the University of Pennsylvania, where I received a Bachelor of Arts degree in Economic History. I have also received a Master of Business Administration with high honors and concentrations in Finance and International Business from Rutgers University.

The details of my educational background and expert witness appearances are included in Appendix A.

II. PURPOSE OF TESTIMONY

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to present evidence on behalf of Aquarion Water Company of New Hampshire, Inc. ("AWNH" or the "Company") about the appropriate capital structure and corresponding cost rates the Company should be given the opportunity to earn on its jurisdictional rate base.

Q. Have you prepared Attachments in support of your recommendation?

A. Yes. Attachments DWD-1 through DWD-10 have been prepared by me or under my direct supervision.

Q. What is your recommended cost of capital for AWNH?

A. I recommend the New Hampshire Public Utilities Commission (the "Commission") authorize the Company the opportunity to earn an overall rate of return of 8.15% based on a test year ending December 31, 2019. The ratemaking capital structure consists of 43.85% long-term debt at an embedded cost rate of 6.14%, 3.78% short-term debt at an embedded cost rate of 2.42%, 0.01% preferred equity at a 6.00% cost rate and 52.36% common equity at my recommended common equity cost rate of 10.25%. The overall rate of return is summarized on page 1 of Attachment DWD-1 and in Table 1 below:

Table 1: Summary of Overall Rate of Return

Type of Capital	Ratios	Cost rate	Weighted Cost Rate
Long-Term Debt	43.85%	6.14%	2.69%
Short-Term Debt	3.78%	2.42%	0.09%
Preferred Equity	0.01%	6.00%	0.00%
Common Equity	52.36%	10.25%	5.37%
Total	100.00%		8.15%

III. SUMMARY

Q. Please summarize your recommended common equity cost rate.

A. My recommended common equity cost rate of 10.25% is summarized on page 2 of Attachment DWD-1. I have assessed the market-based common equity cost rates of companies of relatively similar, but not necessarily identical, risk to AWNH. Using companies of relatively comparable risk as proxies is consistent with the principles of fair rate of return established in the *Hope*[1] and *Bluefield*[2] cases. No proxy group can be identical in risk to any single company, so there must be an evaluation of relative risk between the company and the proxy group to see if it is appropriate to make adjustments to the proxy group's indicated rate of return.

[1] *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).
[2] *Bluefield Water Works Improvement Co. v. Public Serv. Comm'n*, 262 U.S. 679 (1922). ("*Bluefield*")

My recommendation results from the application of several cost of common equity models, specifically the Discounted Cash Flow ("DCF") model, the Risk Premium Model ("RPM"), and the Capital Asset Pricing Model ("CAPM"), to the market data of a proxy group of seven water companies ("Utility Proxy Group") whose selection criteria will be discussed below. In addition, I also applied the DCF, RPM, and CAPM to a proxy group of domestic, non-price regulated companies comparable in total risk to the Utility Proxy Group ("Non-Price Regulated Proxy Group").

The results derived from each are as follows:

Table 2: Summary of Common Equity Cost Rate

	Utility Proxy Group
Discounted Cash Flow Model	9.09%
Risk Premium Model	10.56%
Capital Asset Pricing Model	10.87%
Cost of Equity Models Applied to Comparable Risk, Non-Price Regulated Companies	10.76%
Range of Model Results	9.09% - 10.87%
Size Adjustment	1.00%
Flotation Cost Adjustment	0.04%
Indicated Range of Common Equity Cost Rates After Adjustments	10.13% - 11.91%
Recommended Common Equity Cost Rate After Adjustments	10.25%

After analyzing the indicated common equity cost rates derived through these models, the indicated range of common equity cost rates produced by the models are between 9.09% and 10.87%, which are applicable to the Utility Proxy

Group. In view of these model results, it is clear that the DCF model is a low side outlier when compared to the results of the other models.

The indicated range of common equity cost rates was then adjusted upward by 1.00% and 0.04% to reflect AWNH's smaller relative size and flotation costs, respectively. These adjustments result in a Company-specific range of common equity cost rates between 10.13% and 11.91%. From this range of results, I recommend the Commission consider a common equity cost rate of 10.25% for use in setting rates for the Company.

IV. GENERAL PRINCIPLES

Q. What general principles have you considered in arriving at your recommended common equity cost rate of 10.25%?

A. In unregulated industries, the competition of the marketplace is the principal determinant of the price of products or services. For regulated public utilities, regulation must act as a substitute for marketplace competition. Assuring that the utility can fulfill its obligations to the public, while providing safe and reliable service at all times, requires a level of earnings sufficient to maintain the integrity of presently invested capital. Sufficient earnings also permit the attraction of needed new capital at a reasonable cost, for which the utility must compete with other firms of comparable risk, consistent with the fair rate of return standards established by the U.S. Supreme Court in the previously cited *Hope* and *Bluefield* decisions. Consequently, marketplace data must be relied on in assessing a common equity cost rate appropriate for ratemaking purposes. Just as the use of the market data for the proxy group adds reliability to the informed expert's judgment used in arriving at a recommended common equity cost rate, the use of multiple generally accepted common equity cost rate models also adds reliability and accuracy when arriving at a recommended common equity cost rate.

Q. Can you please provide some examples from the financial literature which support the use of multiple cost of common equity models in determining the investor-required return?

A. Yes. In one example, Morin states:

> Each methodology requires the exercise of considerable judgment on the reasonableness of the assumptions underlying the methodology and on the reasonableness of the proxies used to validate a theory. The inability of the DCF model to account for changes in relative market valuation, discussed below, is a vivid example of the potential shortcomings of the DCF model when applied to a given company. Similarly, the inability of the CAPM to account for variables that affect security returns other than beta tarnishes its use.
>
> No one individual method provides the necessary level of precision for determining a fair return, but each method provides useful evidence to facilitate the exercise of an informed judgment. Reliance on any single method or preset formula is inappropriate when dealing with investor expectations because of possible measurement difficulties and vagaries in individual companies' market data. (emphasis added)
>
> * * *
>
> The financial literature supports the use of multiple methods. Professor Eugene Brigham, a widely respected scholar and finance academician, asserts(footnote omitted):
>
>> Three methods typically are used: (1) the Capital Asset Pricing Model (CAPM), (2) the discounted cash flow (DCF) method, and (3) the bond-yield-plus-risk-premium approach. **These methods are not mutually exclusive – no method dominates the others**, and all are subject to error when used in practice. Therefore, when faced with the task of estimating a company's cost of equity, we generally use all three methods and then choose among them on the basis of our confidence in the data used for each in the specific case at hand. (emphasis added)

Another prominent finance scholar, Professor Stewart Myers, in an early pioneering article on regulatory finance, stated(footnote omitted):

> Use more than one model when you can. Because estimating the opportunity cost of capital is difficult, **only a fool throws away useful information**. That means you should not use any one model or measure mechanically and exclusively. Beta is helpful as one tool in a kit, to be used in parallel with DCF models or other techniques for interpreting capital market data. (emphasis added)

Reliance on multiple tests recognizes that no single methodology produces a precise definitive estimate of the cost of equity. As stated in Bonbright, Danielsen, and Kamerschen (1988), '*no single or group test or technique is conclusive*.' Only a fool discards relevant evidence. (italics in original) (emphasis added)

* * *

While it is certainly appropriate to use the DCF methodology to estimate the cost of equity, there is no proof that the DCF produces a more accurate estimate of the cost of equity than other methodologies. Sole reliance on the DCF model ignores the capital market evidence and financial theory formalized in the CAPM and other risk premium methods. **The DCF model is one of many tools to be employed in conjunction with other methods to estimate the cost of equity.** It is not a superior methodology that supplants other financial theory and market evidence. The broad usage of the DCF methodology in regulatory proceedings in contrast to its virtual disappearance in academic textbooks does not make it superior to other methods. The same is true of the Risk Premium and CAPM methodologies. (emphasis added) [3]

Finally, Brigham and Gapenski note:

In practical work, *it is often best to use all three methods* – CAPM, bond yield plus risk premium, and DCF – and then apply judgment when the methods produce different results. People experienced in estimating equity capital costs recognize that both careful analysis and some very fine judgments are required. It would be nice to pretend that these judgments are unnecessary and to specify an easy, precise way of determining the exact cost of equity capital.

[3] Roger A. Morin, New Regulatory Finance, Public Utilities Reports, Inc., 2006, at 428-431. ("Morin")

> Unfortunately, this is not possible. Finance is in large part a matter of judgment, and we simply must face this fact. (italics in original)[4]

In the academic literature cited above, three methods are consistently mentioned: the DCF, CAPM, and the RPM, all of which I used in my analyses.

A. BUSINESS RISK

Q. Please define business risk and explain why it is important to the determination of a fair rate of return.

A. Business risk is the riskiness of a company's common stock without the use of debt and/or preferred capital. Examples of such general business risks faced by all utilities (*i.e.*, electric, natural gas distribution, and water) include size, the quality of management, the regulatory environment in which utilities operate, customer mix and concentration of customers, service territory growth, and capital intensity. All of these have a direct bearing on earnings.

Consistent with the basic financial principle of risk and return, business risk is important to the determination of a fair rate of return, because the higher the level of risk, the higher the rate of return investors demand.

Q. What business risks do the water and wastewater industries face in general?

A. Water and wastewater utilities have an ever-increasing responsibility to be stewards of the environment from which water supplies are drawn in order to preserve and protect essential natural resources of the United States. This increased environmental stewardship is a direct result of compliance with the Safe Water Drinking Act, as well as a response to continuous monitoring by the

4 Eugene F. Brigham and Louis C. Gapenski, Financial Management – Theory and Practice, 4th Ed. (The Dryden Press, 1985) at 256. ("Brigham and Gapenski")

Environmental Protection Agency ("EPA") and state and local governments, of the water supply for potential contaminants and their resultant regulations. This, plus aging infrastructure, necessitate additional capital investment in the distribution and treatment of water, exacerbating the pressure on free cash flows arising from increased capital expenditures for infrastructure repair and replacement. The significant amount of capital investment and, hence, high capital intensity, is a major risk factor for the water and wastewater utility industry.

Value Line Investment Survey ("*Value Line*") observes the following about the water utility industry:

> After decades of under investment, American utilities are now spending heavily to modernize and upgrade aging pipelines and wastewater facilities. Funding these projects requires significant amounts of capital, much of it coming from external financing.
>
> * * *
>
> Utilities understand that they are being granted a monopoly of a vital resource and must provide good service. The regulatory climate is much more favorable in the water industry compared to that of other the electric utility industry.[5]

The water and wastewater industry also experience low depreciation rates. Depreciation rates are one of the principal sources of internal cash flows for all utilities (through a utility's depreciation expense), and are vital for a company to fund ongoing replacements and repairs of water and wastewater systems. Water / wastewater utility assets have long lives, and therefore have

[5] *Value Line Investment Survey*, October 9, 2020.

long capital recovery periods. As such, they face greater risk due to inflation, which results in a higher replacement cost per dollar of net plant.

Substantial capital expenditures, as noted by *Value Line,* will require significant financing. The three sources of financing typically used are debt, equity (common and preferred), and cash flow. All three are intricately linked to the opportunity to earn a sufficient rate of return as well as the ability to achieve that return. Consistent with *Hope* and *Bluefield*, the return must be sufficient to maintain credit quality as well as enable the attraction of necessary new capital, be it debt or equity capital. If unable to raise debt or equity capital, the utility must turn to either retained earnings or free cash flow,[6] both of which are directly linked to earning a sufficient rate of return. The level of free cash flow represents a utility's ability to meet the needs of its debt and equity holders. If either retained earnings or free cash flow is inadequate, it will be nearly impossible for the utility to attract the needed capital for new infrastructure investment necessary to ensure quality service to its customers. An insufficient rate of return can be financially devastating for utilities as well as a public safety issue for their customers.

The water and wastewater utility industry's high degree of capital intensity and low depreciation rates, coupled with the need for substantial infrastructure capital spending, require regulatory support in the form of adequate and timely rate relief, and in particular, a sufficient authorized return on common equity, so that the industry can successfully meet the challenges it faces.

[6] Free Cash Flow = Operating Cash Flow (Funds From Operations) minus Capital Expenditures.

B. FINANCIAL RISK

Q. Please define financial risk and explain why it is important to the determination of a fair rate of return.

A. Financial risk is the additional risk created by the introduction of debt and preferred stock into the capital structure. The higher the proportion of debt and preferred stock in the capital structure, the higher the financial risk (*i.e.* likelihood of default). Therefore, consistent with the basic financial principle of risk and return, investors demand a higher common equity return as compensation for bearing higher default risk.

Q. Can bond and credit ratings be a proxy for the combined business and financial risk (*i.e.*, investment risk of an enterprise)?

A. Yes, similar bond ratings/issuer credit ratings reflect, and are representative of, similar combined business and financial risks (*i.e.*, total risk) faced by bond investors.[7] Although specific business or financial risks may differ between companies, the same bond/credit rating indicates that the combined risks are roughly similar, albeit not necessarily equal, as the purpose of the bond/credit rating process is to assess credit quality or credit risk, and not common equity risk.

[7] Risk distinctions within S&P's bond rating categories are recognized by a plus or minus, i.e., within the A category, an S&P rating can be at A+, A, or A-. Similarly, risk distinctions for Moody's ratings are distinguished by numerical rating gradations, i.e., within the A category, a Moody's rating can be A1, A2 and A3.

Q. That being said, do rating agencies reflect company size in their bond ratings?

A. No. Neither S&P nor Moody's have minimum company size requirements for any given rating level. This means, all else equal, a relative size analysis needs to be conducted for companies with similar bond ratings.

V. AQUARION WATER COMPANY OF NEW HAMPSHIRE AND THE UTILITY PROXY GROUP

Q. Are you familiar with the operations of AWNH?

A. Yes. AWNH's operations serve approximately 9,541 customers in three communities within Rockingham County in New Hampshire. As a wholly-owned subsidiary of Aquarion Water Company, which is a wholly-owned subsidiary of Eversource Energy, AWNH is not publicly-traded.

Q. Please explain how you chose your Utility Proxy Group.

A. The basis of selection for the Utility Proxy Group was to select those companies which meet the following criteria:

(i) They are included in the Water Utility Group of *Value Line's Standard Edition* (October 9, 2020);

(ii) They have 70% or greater of 2019 total operating income and 70% or greater of 2019 total assets attributable to regulated water operations;

(iii) At the time of preparation of this testimony, they had not publicly announced that they were involved in any major merger or acquisition activity (*i.e.*, one publicly-traded utility merging with or acquiring another);

(iv) They have not cut or omitted their common dividends during the five years ending 2019 or through the time of the preparation of this testimony;

(v) They have *Value Line* and Bloomberg Professional Services ("Bloomberg") adjusted betas;

(vi) They have a positive *Value Line* five-year dividends per share ("DPS") growth rate projection; and

(vii) They have *Value Line*, Zacks, Yahoo! Finance, or Bloomberg consensus five-year earnings per share ("EPS") growth rate projections.

The following seven companies met these criteria: American States Water Co., American Water Works Co., Inc., California Water Service Group, Essential Utilities, Inc., Middlesex Water Co., SJW Corp., and York Water Co.

Q. Please describe Attachment DWD-2, page 1.

A. Page 1 of Attachment DWD-2 contains comparative capitalization and financial statistics for the Utility Proxy Group identified above for the years 2015 to 2019. During the five-year period ending 2019, the historically achieved average earnings rate on book common equity for the group averaged 10.45%. The average common equity ratio based on total capital (including short-term debt) was 51.09%, and the average dividend payout ratio was 60.34%.

Total debt to earnings before interest, taxes, depreciation, and amortization for the years 2015 to 2019 ranges between 3.41 and 5.54, with an average of 4.00. Funds from operations to total debt range from 14.49% to 25.81%, with an average of 21.64%.

VI. CAPITAL STRUCTURE

Q. What capital structure ratios do you recommend be employed in developing an overall fair rate of return appropriate for the Company?

A. I recommend the use of the actual test year capital structure of AWNH at December 31, 2019, which consists of 43.85% long-term debt, 3.78% short-term debt, 0.01% preferred equity, and 52.36% common equity as shown on page 1 of Attachment DWD-1.

Q. How does your proposed ratemaking common equity ratio of 52.36% for AWNH compare with the equity ratios maintained by the companies in your Utility Proxy Group?

A. My proposed ratemaking common equity ratio of 52.36% for AWNH is reasonable and consistent with the range of common equity ratios maintained, on average, by the companies in the Utility Proxy Group on which I base my recommended common equity cost rate. As shown on page 2 of Attachment DWD-2, the common equity ratios of the Utility Proxy Group range from 38.48% to 57.05% in 2019. In my opinion, AWNH's actual capital structure consisting of 43.85% long-term debt, 3.78% short-term debt, 0.01% preferred equity, and 52.36% common equity is appropriate. This is how AWNH is actually financed, and is comparable to the range of capital structure ratios (based on total capital) maintained by the companies in the Utility Proxy Group, on whose market data I base my recommended common equity cost rate.

Q. What cost rates are most appropriate for use in a cost of capital determination for AWNH?

A. The Company's actual long- and short-term debt cost rates at December 31, 2019 of 6.14% and 2.42%, respectively, are reasonable and appropriate for use in the calculation of the overall cost of capital in this proceeding. Likewise, the actual preferred equity cost rate of 6.00% should be approved by the Commission.

VII. <u>COMMON EQUITY COST RATE MODELS</u>

Q. Are your cost of common equity models market-based models?

A. Yes. The DCF model is market-based because market prices are used in developing the dividend yield component of the model. The RPM is market-based because the bond ratings and expected bond yields used in the application of the RPM reflect the market's assessment of bond/credit risk. In addition, the use of beta coefficients (β) to determine the equity risk premium reflects the market's assessment of market/systematic risk, since beta coefficients are derived from regression analyses of market prices. The Predictive Risk Premium Model ("PRPM") uses monthly market returns in addition to expectations of the risk-free rate. The CAPM is market-based for many of the same reasons that the RPM is market-based (*i.e.*, the use of expected bond yields and beta coefficients). Selection of the comparable risk non-price regulated companies is market-based because it is based on statistics which result from regression analyses of market prices and reflect the market's assessment of total risk.

A. DISCOUNTED CASH FLOW MODEL

Q. What is the theoretical basis of the DCF model?

A. The theory underlying the DCF model is that the present value of an expected future stream of net cash flows during the investment holding period can be determined by discounting those cash flows at the cost of capital, or the investors' capitalization rate. DCF theory indicates that an investor buys a stock for an expected total return rate, which is derived from cash flows received in the form of dividends plus appreciation in market price (the expected growth rate). Mathematically, the dividend yield on market price plus a growth rate equals the capitalization rate, *i.e.*, the total common equity return rate expected by investors.

Q. Which version of the DCF model did you use?

A. I used the single-stage constant growth DCF model.

Q. Please describe the dividend yield you used in your application of the DCF model.

A. The unadjusted dividend yields are based on the proxy companies' dividends as of October 16, 2020, divided by the average of closing market prices for the 60 trading days ending October 16, 2020.[8]

Q. Please explain your adjustment to the dividend yield.

A. Because dividends are paid periodically (quarterly), as opposed to continuously (daily), an adjustment must be made to the dividend yield. This is often referred to as the discrete, or the Gordon Periodic, version of the DCF model.

DCF theory calls for the use of the full growth rate, or D_1, in calculating the dividend yield component of the model. Since the various companies in the

[8] See Attachment DWD-3, page 1, Column 1.

Utility Proxy Group increase their quarterly dividend at various times during the year, a reasonable assumption is to reflect one-half the annual dividend growth rate in the dividend yield component, or $D_{1/2}$. Because the dividend should be representative of the next 12-month period, my adjustment is a conservative approach that does not overstate the dividend yield. Therefore, the actual average dividend yields in Column 1 on page 1 of Attachment DWD-3 have been adjusted upward to reflect one-half the average projected growth rate shown in Column 6.

Q. Please explain the basis of the growth rates you applied to the Utility Proxy Group in your DCF model.

A. Investors with more limited resources than institutional investors are likely to rely on widely available financial information services, such as *Value Line*, Zacks, Yahoo! Finance, and Bloomberg. Investors realize that analysts have significant insight into the dynamics of the industries and individual companies they analyze, as well as companies' abilities to effectively manage the effects of changing laws and regulations, and ever-changing economic and market conditions. For these reasons, I used analysts' five-year forecasts of EPS growth in my DCF analysis.

Over the long run, there can be no growth in DPS without growth in EPS. Security analysts' earnings expectations have a more significant influence on market prices than dividend expectations. Thus, the use of earnings growth rates in a DCF analysis provides a better match between investors' market price appreciation expectations and the growth rate component of the DCF.

Q. Please summarize the DCF model results.

A. As shown on page 1 of Attachment DWD-3, the mean result of the application of the single-stage DCF model is 9.19%, the median result is 8.99%, and the average of the two is 9.09% for the Utility Proxy Group. In arriving at a conclusion for the DCF-indicated common equity cost rate for the Utility Proxy Group, I have relied on an average of the mean and the median results of the DCF. This approach takes into consideration all the proxy companies' results, while mitigating the high and low outliers of those individual results.

B. THE RISK PREMIUM MODEL

Q. Please describe the theoretical basis of the RPM.

A. The RPM is based on the fundamental financial principle of risk and return, namely, that investors require greater returns for bearing greater risk. The RPM recognizes that common equity capital has greater investment risk than debt capital, as common equity shareholders are behind debt holders in any claim on a company's assets and earnings. As a result, investors require higher returns from common stocks than from investment in bonds, to compensate them for bearing the additional risk.

While it is possible to directly observe bond returns and yields, investors' required common equity return cannot be directly determined or observed. According to RPM theory, one can estimate a common equity risk premium over bonds (either historically or prospectively), and use that premium to derive a cost rate of common equity. The cost of common equity equals the expected cost rate for long-term debt capital plus a risk premium over that cost rate to compensate common shareholders for the added risk of being unsecured and last-in-line for any claim on the corporation's assets and earnings in the event of a liquidation.

Q. Please explain how you derived your indicated cost of common equity based on the RPM.

A. I relied on the results of the application of two risk premium methods. The first method is the PRPM, while the second method is a risk premium model using a total market approach.

Q. Please explain the PRPM.

A. The PRPM, published in the *Journal of Regulatory Economics* and *The Electricity Journal*[9], was developed from the work of Robert F. Engle who shared the Nobel Prize in Economics in 2003 "for methods of analyzing economic time series with time-varying volatility ("ARCH")".[10] Engle found that volatility changes over time and is related from one period to the next, especially in financial markets. Engle discovered that the volatility in prices and returns clusters over time and is therefore highly predictable and can be used to predict future levels of risk and risk premiums.

The PRPM estimates the risk / return relationship directly, as the predicted equity risk premium is generated by the prediction of volatility or risk. The PRPM is not based on an estimate of investor behavior, but rather on the evaluation of the results of that behavior (*i.e.*, the variance of historical equity risk premiums).

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9 Autoregressive conditional heteroscedasticity. See "A New Approach for Estimating the Equity Risk Premium for Public Utilities", Pauline M. Ahern, Frank J. Hanley and Richard A. Michelfelder, Ph.D. The Journal of Regulatory Economics (December 2011), 40:261-278 and "Comparative Evaluation of the Predictive Risk Premium Model, the Discounted Cash Flow Model and the Capital Asset Pricing Model for Estimating the Cost of Common Equity", Richard A. Michelfelder, Ph.D, Pauline M. Ahern, Dylan W. D'Ascendis, and Frank J. Hanley, The Electricity Journal (May 2013), 84-89.

10 www.nobelprize.org.

The inputs to the model are the historical returns on the common shares of each company in the Utility Proxy Group minus the historical monthly yield on long-term U.S. Treasury securities through September 2020. Using a generalized form of ARCH, known as GARCH, I calculated each Utility Proxy Group company's projected equity risk premium using Eviews© statistical software. When the GARCH Model is applied to the historical return data, it produces a predicted GARCH variance series[11] and a GARCH coefficient[12]. Multiplying the predicted monthly variance by the GARCH coefficient, then annualizing it[13], produces the predicted annual equity risk premium. I then added the forecasted 30-year U.S. Treasury Bond yield, 2.11%[14], to each company's PRPM-derived equity risk premium to arrive at an indicated cost of common equity. The 30-year Treasury yield is a consensus forecast derived from the *Blue Chip Financial Forecasts ("Blue Chip")*[15]. The mean PRPM indicated common equity cost rate for the Utility Proxy Group is 11.20%, the median is 10.43%, and the average of the two is 10.82%. Consistent with my reliance on the average of the median and mean results of the DCF, I relied on the average of the mean and median results of the Utility Proxy Group PRPM to calculate a cost of common equity rate of 10.82%.

Q. Please explain the total market approach RPM.

A. The total market approach RPM adds a prospective public utility bond yield to an average of: 1) an equity risk premium that is derived from a beta-adjusted total

11 Illustrated on Columns 1 and 2 of page 2 of Attachment DWD-4.
12 Illustrated on Column 4 of page 2 of Attachment DWD-4.
13 Annualized Return = (1+Monthly Return)^12 - 1
14 *See*, Column 6 of page 2 of Attachment DWD-4.
15 *Blue Chip Financial Forecasts*, June 1, 2020 at p. 14 and October 1, 2020 at p. 2.

market equity risk premium, and 2) an equity risk premium based on the S&P Utilities Index.

Q. Please explain the basis of the expected bond yield of 3.56% applicable to the Utility Proxy Group.

A. The first step in the total market approach RPM analysis is to determine the expected bond yield. Because both ratemaking and the cost of capital, including common equity cost rate, are prospective in nature, a prospective yield on similarly-rated long-term debt is essential. I rely on a consensus forecast of about 50 economists of the expected yield on Aaa-rated corporate bonds for the six calendar quarters ending with the first calendar quarter of 2022 and the long-term projections for 2022 to 2026, and 2027 to 2031 from *Blue Chip*. As shown on line No. 1 of page 3 of Attachment DWD-4, the average expected yield on Moody's Aaa-rated corporate bonds is 2.96%. In order to derive an expected yield on A2-rated public utility bonds, I make an upward adjustment of 0.54%, which represents a recent spread between Aaa-rated corporate bonds and A2-rated public utility bonds, in order to adjust the expected Aaa-rated corporate bond yield to an equivalent Moody's A2-rated public utility bond.[16] Adding that recent 0.54% spread to the expected Aaa-rated corporate bond yield of 2.96% results in an expected A2 public utility bond of 3.50%.

Since the Utility Proxy Group's average Moody's long-term issuer rating is A2/A3, another adjustment to the expected A2-rated public utility bond yield is needed to reflect the difference in bond ratings. An upward adjustment of 0.06%, which represents one-sixth of a recent spread between A2- and Baa2-rated

[16] As shown on Line No. 2 and explained in Note 2 of page 3 of Attachment DWD-4.

public utility bond yields, is necessary to make the A2-rated prospective bond yield applicable to an A2/A3-rated public utility bond.[17] Adding the 0.06% to the 3.50% prospective A2-rated public utility bond yield results in a 3.56% expected bond yield for the Utility Proxy Group.

Q. Please explain how the beta-derived equity risk premium is determined.

A. The components of the beta-derived risk premium model are: 1) an expected market equity risk premium over corporate bonds, and 2) the beta coefficient. The derivation of the beta-derived equity risk premium that I applied to the Utility Proxy Group is shown on lines 1 through 9 of page 8 of Attachment DWD-4. The total beta-derived equity risk premium I applied was based on an average of: 1) Ibbotson-based equity risk premiums; 2) *Value Line*-based equity risk premiums; and 3) Bloomberg-based equity risk premium. Each of these is described in turn.

Q. How did you derive a market equity risk premium based on long-term historical data?

A. To derive a historical market equity risk premium, I used the most recent holding period returns for the large company common stocks from the Stocks, Bonds, Bills, and Inflation ("SBBI") 2020 Yearbook ("SBBI – 2020")[18] less the average historical yield on Moody's Aaa/Aa-rated corporate bonds for the period 1928 to 2019. The use of holding period returns over a very long period of time is appropriate because it is consistent with the long-term investment horizon presumed by investing in a going concern, *i.e.*, a company expected to operate in perpetuity.

[17] As shown on Line No. 4 and explained in Note 3 on page 3 of Attachment DWD-4.
[18] SBBI Appendix A Tables: Morningstar Stocks, Bonds, Bills, & Inflation 1926-2019.

SBBI's long-term arithmetic mean monthly total return rate on large company common stocks was 11.83% and the long-term arithmetic mean monthly yield on Moody's Aaa/Aa-rated corporate bonds was 6.05%.[19] As shown on line 1 of page 8 of Attachment DWD-4, subtracting the mean monthly bond yield from the total return on large company stocks results in a long-term historical equity risk premium of 5.78%.

I used the arithmetic mean monthly total return rates for the large company stocks and yields (income returns) for the Moody's Aaa/Aa corporate bonds, because they are appropriate for the purpose of estimating the cost of capital as noted in SBBI – 2020.[20] The use of the arithmetic mean return rates and yields is appropriate because historical total returns and equity risk premiums provide insight into the variance and standard deviation of returns needed by investors in estimating future risk when making a current investment. If investors relied on the geometric mean of historical equity risk premiums, they would have no insight into the potential variance of future returns because the geometric mean relates the change over many periods to a constant rate of change, thereby obviating the year-to-year fluctuations, or variance, which is critical to risk analysis.

Q. Please explain the derivation of the regression-based market equity risk premium.

A. To derive the regression analysis-derived market equity risk premium of 9.42%, shown on line 2 of page 8 of Attachment DWD-4, I used the same monthly annualized total returns on large company common stocks relative to the monthly

19 As explained in Note 1 on page 9 of Attachment DWD-4.
20 SBBI – 2020, at 10-22.

annualized yields on Moody's Aaa/Aa-rated corporate bonds as mentioned above. The relationship between interest rates and the market equity risk premium was modeled using the observed monthly market equity risk premium as the dependent variable, and the monthly yield on Moody's Aaa/Aa-rated corporate bonds as the independent variable. I used a linear Ordinary Least Squares ("OLS") regression, in which the market equity risk premium is expressed as a function of the Moody's Aaa/Aa-rated corporate bonds yield:

$$RP = \alpha + \beta\ (R_{Aaa/Aa})$$

Q. Please explain the derivation of a PRPM equity risk premium.

A. I used the same PRPM approach described previously to develop another equity risk premium estimate. The inputs to the model are the historical monthly returns on large company common stocks minus the monthly yields on Aaa/Aa-rated corporate bonds during the period from January 1928 through September 2020.[21] Using the previously discussed generalized form of ARCH, known as GARCH, the projected equity risk premium is determined using Eviews© statistical software. The resulting PRPM predicted market equity risk premium is 9.54%.[22]

Q. Please explain the derivation of a projected equity risk premium based on *Value Line* data for your RPM analysis.

A. As noted previously, because both ratemaking and the cost of capital are prospective, a prospective market equity risk premium is needed. The derivation of the forecasted or prospective market equity risk premium can be found in Note 4 on page 9 of Attachment DWD-4. Consistent with my calculation of the

[21] Data from January 1928-December 2019 is from SBBI – 2019. Data from January – September 2020 is from Bloomberg Professional Services.

[22] Shown on Line No. 3 on page 8 of Attachment DWD-4.

dividend yield component in my DCF analysis, this prospective market equity risk premium is derived from an average of the three- to five-year median market price appreciation potential by *Value Line* for the 13 weeks ending October 16, 2020, plus an average of the median estimated dividend yield for the common stocks of the 1,700 firms covered in *Value Line*'s Standard Edition.[23]

The average median expected price appreciation is 54%, which translates to an 11.40% annual appreciation, and when added to the average of *Value Line's* median expected dividend yields of 2.29%, equates to a forecasted annual total return rate on the market of 13.69%. The forecasted Aaa-rated bond yield of 2.96% is deducted from the total market return of 13.69%, resulting in an equity risk premium of 10.73%, shown on page 8, line 4 of Attachment DWD-4.

Q. Please explain the derivation of an equity risk premium based on the S&P 500 companies.

A. Using data from *Value Line*, I calculated an expected total return on the S&P 500 using expected dividend yields and long-term growth estimates as a proxy for capital appreciation. The expected total return for the S&P 500 is 13.95%. Subtracting the prospective yield on Aaa-rated Corporate bonds of 2.96% results in a 10.99% projected equity risk premium.

Q. Please explain the derivation of an equity risk premium based on Bloomberg data.

A. Using data from Bloomberg, I calculated an expected total return on the S&P 500 using expected dividend yields and long-term growth estimates as a proxy for capital appreciation, identical to the method described above. The expected total

[23] As explained in detail in page 2, Note 1 of Attachment DWD-5.

return for the S&P 500 is 13.70%. Subtracting the prospective yield on Aaa-rated Corporate bonds of 2.96% results in a 10.74% projected equity risk premium.

Q. What is your conclusion of a beta-derived equity risk premium for use in your RPM analysis?

A. I gave equal weight to the six equity risk premiums in arriving at my conclusion of 9.53%.[24]

After calculating the average market equity risk premium of 9.53%, I adjusted it by beta to account for the risk of the Utility Proxy Group. As discussed below, the beta coefficient is a meaningful measure of prospective relative risk to the market as a whole and is a logical means by which to allocate a company's, or proxy group's, share of the market's total equity risk premium relative to corporate bond yields. As shown on page 1 of Attachment DWD-5, the average of the mean and median beta coefficient for the Utility Proxy Group is 0.81. Multiplying the beta coefficient of the Utility Proxy Group of 0.81 by the market equity risk premium of 9.53% results in a beta-adjusted equity risk premium of 7.72% for the Utility Proxy Group.

Q. How did you derive the equity risk premium based on the S&P Utility Index and Moody's A-rated public utility bonds?

A. I estimated three equity risk premiums based on S&P Utility Index holding returns, and two equity risk premiums based on the expected returns of the S&P Utilities Index, using *Value Line* and Bloomberg data, respectively. Turning first to the S&P Utility Index holding period returns, I derived a long-term monthly arithmetic mean equity risk premium between the S&P Utility Index total returns

24 *See,* Line No. 7 on page 8 of Attachment DWD-4.

of 10.74% and monthly A-rated public utility bond yields of 6.53% from 1928 to 2019, to arrive at an equity risk premium of 4.21%.[25] I then used the same historical data to derive an equity risk premium of 6.88% based on a regression of the monthly equity risk premiums. The final S&P Utility Index holding period equity risk premium involved applying the PRPM using the historical monthly equity risk premiums from January 1928 to September 2020 to arrive at a PRPM-derived equity risk premium of 5.53% for the S&P Utility Index.

I then derived expected total returns on the S&P Utilities Index of 10.18% and 8.94% using data from *Value Line* and Bloomberg, respectively, and subtracted the prospective A2-rated public utility bond yield (3.50%[26]), which results in risk premiums of 6.68% and 5.44%, respectively. As with the market equity risk premiums, I averaged each risk premium to arrive at my utility-specific equity risk premium of 5.75%.

Q. What is your conclusion of an equity risk premium for use in your total market approach RPM analysis?

A. The equity risk premium I applied to the Utility Proxy Group is 6.74%, which is the average of the beta-derived and the S&P utility equity risk premiums of 7.72% and 5.75%, respectively.[27]

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[25] As shown on Line No. 1 on page 12 of Attachment DWD-4.
[26] Derived on Line No. 3 of page 3 of Attachment DWD-4.
[27] As shown on page 7 of Attachment DWD-4.

Q. What is the indicated RPM common equity cost rate based on the total market approach?

A. As shown on line No. 7 of Attachment DWD-4, page 3, I calculated a common equity cost rate of 10.30% for the Utility Proxy Group based on the total market approach of the RPM.

Q. What are the results of your application of the PRPM and the total market approach RPM?

A. As shown on page 1 of Attachment DWD-4, the indicated RPM-derived common equity cost rate is 10.56%, which gives equal weight to the PRPM (10.82%) and the adjusted market approach results (10.30%).

C. <u>THE CAPITAL ASSET PRICING MODEL</u>

Q. Please explain the theoretical basis of the CAPM.

A. CAPM theory defines risk as the co-variability of a security's returns with the market's returns as measured by the beta coefficient (β). A beta coefficient less than 1.0 indicates lower variability than the market as a whole, while a beta coefficient greater than 1.0 indicates greater variability than the market.

The CAPM assumes that all other risk (*i.e.*, all non-market or unsystematic risk) can be eliminated through diversification. The risk that cannot be eliminated through diversification is called market, or systematic, risk. In addition, the CAPM presumes that investors require compensation only for systematic risk, which is the result of macroeconomic and other events that affect the returns on all assets. The model is applied by adding a risk-free rate of return to a market risk premium, which is adjusted proportionately to reflect the systematic risk of the individual security relative to the total market as measured by the beta coefficient. The traditional CAPM model is expressed as:

$$R_s = R_f + \beta(R_m - R_f)$$

Where: R_s = Return rate on the common stock;

R_f = Risk-free rate of return;

R_m = Return rate on the market as a whole; and

β = Adjusted beta coefficient (volatility of the security relative to the market as a whole).

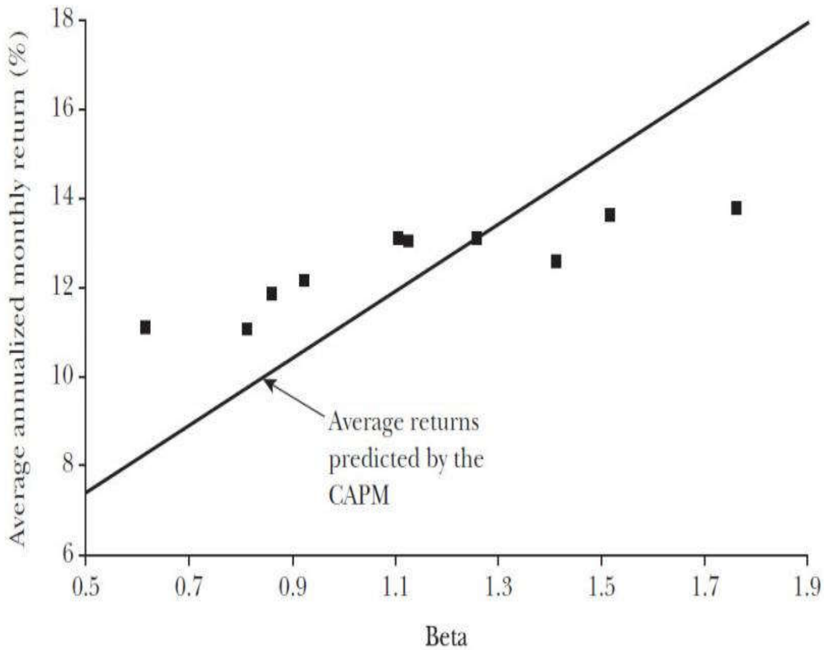
Numerous tests of the CAPM have measured the extent to which security returns and beta coefficients are related as predicted by the CAPM, confirming its validity. The empirical CAPM ("ECAPM") reflects the reality that while the results of these tests support the notion that the beta coefficient is related to security returns, the empirical Security Market Line ("SML") described by the CAPM formula is not as steeply sloped as the predicted SML.[28] The ECAPM reflects this empirical reality. Fama and French clearly state regarding Figure 2, below, that "[t]he returns on the low beta portfolios are too high, and the returns on the high beta portfolios are too low." [29]

[28] Morin, at 175.

[29] Eugene F. Fama and Kenneth R. French, "The Capital Asset Pricing Model: Theory and Evidence", *Journal of Economic Perspectives*, Vol. 18, No. 3, Summer 2004 at 33 ("Fama & French"). http://pubs.aeaweb.org/doi/pdfplus/10.1257/0895330042162430

Figure 2 http://pubs.aeaweb.org/doi/pdfplus/10.1257/0895330042162430

Average Annualized Monthly Return versus Beta for Value Weight Portfolios Formed on Prior Beta, 1928–2003



In addition, Morin observes that while the results of these tests support the notion that beta is related to security returns, the empirical SML described by the CAPM formula is not as steeply sloped as the predicted SML. Morin states:

> With few exceptions, the empirical studies agree that … low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted.[30]
>
> * * *
>
> Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:
>
> $$K = R_F + x\,\beta(R_M - R_F) + (1-x)\,\beta(R_M - R_F)$$
>
> where x is a fraction to be determined empirically. The value of x that best explains the observed relationship [is] Return = 0.0829 +

[30] Morin, at 175.

0.0520 β is between 0.25 and 0.30. If x = 0.25, the equation becomes:

$$K = R_F + 0.25(R_M - R_F) + 0.75\,\beta(R_M - R_F)$$ [31]

Fama and French provide similar support for the ECAPM when they state:

> The early tests firmly reject the Sharpe-Lintner version of the CAPM. There is a positive relation between beta and average return, but it is too 'flat.'… The regressions consistently find that the intercept is greater than the average risk-free rate… and the coefficient on beta is less than the average excess market return… This is true in the early tests… as well as in more recent cross-section regressions tests, like Fama and French (1992).[32]

Finally, Fama and French further note:

> Confirming earlier evidence, the relation between beta and average return for the ten portfolios is much flatter than the Sharpe-Linter CAPM predicts. The returns on low beta portfolios are too high, and the returns on the high beta portfolios are too low. For example, the predicted return on the portfolio with the lowest beta is 8.3 percent per year; the actual return as 11.1 percent. The predicted return on the portfolio with the t beta is 16.8 percent per year; the actual is 13.7 percent.[33]

Clearly, the justification from Morin, Fama, and French along with their reviews of other academic research on the CAPM, validate the use of the ECAPM. In view of theory and practical research, I have applied both the traditional CAPM and the ECAPM to the companies in the Utility Proxy Group and averaged the results.

Q. What beta coefficients did you use in your CAPM analysis?

A. With respect to the beta coefficient, I considered two methods of calculation: the average of the beta coefficients of the Utility Proxy Group companies reported by Bloomberg Professional Services and the average of the beta coefficients of the

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31 Morin, at 190.
32 Fama & French, at 32.
33 *Ibid.,* at 33.

Utility Proxy Group companies as reported by *Value Line*. While both of those services adjust their calculated (or "raw") beta coefficients to reflect the tendency of the beta coefficient to regress to the market mean of 1.00, *Value Line* calculates the beta coefficient over a five-year period, while Bloomberg's calculation is based on two years of data.

Q. Please describe your selection of a risk-free rate of return.

A. As shown in Column 5 on page 1 of Attachment DWD-5, the risk-free rate adopted for both applications of the CAPM is 2.11%. This risk-free rate of 2.11% is based on the average of the *Blue Chip* consensus forecast of the expected yields on 30-year U.S. Treasury bonds for the six quarters ending with the first calendar quarter of 2022, and long-term projections for the years 2022 to 2026 and 2027 to 2031.

Q. Why is the yield on long-term U.S. Treasury bonds appropriate for use as the risk-free rate?

A. The yield on long-term U.S. Treasury Bonds is almost risk-free and its term is consistent with the long-term cost of capital to public utilities measured by the yields on A-rated public utility bonds; the long-term investment horizon inherent in utilities' common stocks; and the long-term life of the jurisdictional rate base to which the allowed fair rate of return (*i.e.*, cost of capital) will be applied. In contrast, short-term U.S. Treasury yields are more volatile and largely a function of Federal Reserve monetary policy.

Q. Please explain the estimation of the expected risk premium for the market used in your CAPM analyses.

A. The basis of the market risk premium is explained in detail in note 1 on page 2 of Attachment DWD-5. As discussed previously, the market risk premium is derived from an average of:

(i) Ibbotson-based market risk premiums;

(ii) *Value Line* data-based market risk premiums; and

(iii) Bloomberg data-based market risk premium.

The long-term income return on U.S. Government Securities of 5.09% was deducted from the SBBI - 2020 monthly historical total market return of 12.10%, which results in an historical market equity risk premium of 7.01%.[34] I applied a linear OLS regression to the monthly annualized historical returns on the S&P 500 relative to historical yields on long-term U.S. Government Securities from SBBI - 2020. That regression analysis yielded a market equity risk premium of 10.18%. The PRPM market equity risk premium is 10.66% and is derived using the PRPM relative to the yields on long-term U.S. Treasury securities from January 1926 through September 2020.

The *Value Line*-derived forecasted total market equity risk premium is derived by deducting the forecasted risk-free rate of 2.11%, discussed above, from the *Value Line* projected total annual market return of 13.69%, resulting in a forecasted total market equity risk premium of 11.58%. The S&P 500 projected market equity risk premium using *Value Line* data is derived by subtracting the

34 SBBI – 2020, at Appendix A-1 (1) through .A-1 (3) and Appendix A-7 (19) through A-7 (21).

projected risk-free rate of 2.11% from the projected total return of the S&P 500 of 13.95%. The resulting market equity risk premium is 11.84%.

The S&P 500 projected market equity risk premium using Bloomberg data is derived by subtracting the projected risk-free rate of 2.11% from the projected total return of the S&P 500 of 13.70%. The resulting market equity risk premium is 11.59%.

These six market risk premiums, when averaged, result in an average total market equity risk premium of 10.48%.

Q. What are the results of your application of the traditional and empirical CAPM to the Utility Proxy Group?

A. As shown on page 1 of Attachment DWD-5, the mean result of my CAPM/ECAPM analyses is 10.61%, the median is 11.12%, and the average of the two is 10.87%. Consistent with my reliance on the average of mean and median DCF results discussed above, the indicated common equity cost rate using the CAPM/ECAPM is 10.87%.

D. <u>COMMON EQUITY COST RATES FOR A PROXY GROUP OF DOMESTIC, NON-PRICE REGULATED COMPANIES BASED ON THE DCF, RPM, AND CAPM</u>

Q. Why did you also consider a proxy group of domestic, non-price regulated companies?

A. In the *Hope* and *Bluefield* cases, the U.S. Supreme Court did not specify that comparable risk companies had to be utilities. Since the purpose of rate regulation is to be a substitute for the competition of the marketplace, non-price regulated firms operating in the competitive marketplace make an excellent proxy if they are comparable in total risk to the Utility Proxy Group being used to estimate the cost of common equity. The selection of such domestic, non-price regulated competitive firms theoretically and empirically results in a proxy group which is comparable in total risk to the Utility Proxy Group.

Q. How did you select non-price regulated companies that are comparable in total risk to the Utility Proxy Group?

A. In order to select a proxy group of domestic, non-price regulated companies similar in total risk to the Utility Proxy Group, I relied on the beta coefficients and related statistics derived from *Value Line* regression analyses of weekly market prices over the most recent 260 weeks (*i.e.*, five years). Using these selection criteria resulted in a proxy group of 23 domestic, non-price regulated firms comparable in total risk to the Utility Proxy Group. Total risk is the sum of non-diversifiable market risk and diversifiable company-specific risks. The criteria used in the selection of the domestic, non-price regulated firms was:

(i) They must be covered by *Value Line Investment Survey* (Standard Edition);

(ii) They must be domestic, non-price regulated companies, *i.e.*, non-utilities;

(iii) Their beta coefficients must lie within plus or minus two standard deviations of the average unadjusted beta coefficient of the Utility Proxy Group; and

(iv) The residual standard errors of the *Value Line* regressions which gave rise to the unadjusted beta coefficients must lie within plus or minus two standard deviations of the average residual standard error of the Utility Proxy Group.

Beta coefficients are a measure of market or systematic risk, which is not diversifiable. The residual standard errors of the regressions were used to measure each firm's company-specific, diversifiable risk. Companies that have similar beta coefficients and similar residual standard errors resulting from the same regression analyses have similar total investment risk.

Q. Have you prepared an attachment which shows the data from which you selected the 23 domestic, non-price regulated companies that are comparable in total risk to the Utility Proxy Group?

A. Yes, the basis of my selection, and both proxy groups' regression statistics, are shown in Attachment DWD-6.

Q. Did you calculate common equity cost rates using the DCF, RPM, and CAPM for the Non-Price Regulated Proxy Group?

A. Yes. Because the DCF, RPM, and CAPM have been applied in an identical manner as described above, I will not repeat the details of the rationale and application of each model. One exception is in the application of the RPM, where I did not use public utility-specific equity risk premiums, nor did I apply the PRPM to the individual companies.

Page 2 of Attachment DWD-7 contains the derivation of the DCF cost rates. As shown, the indicated common equity cost rate using the DCF for the Non-Price Regulated Proxy Group comparable in total risk to the Utility Proxy Group, is 10.26%.

Pages 3 through 5 contain the data and calculations that support the 11.50% RPM cost rate. As shown on Line No. 1 of page 3 of Attachment DWD-7, the consensus prospective yield on Moody's Baa-rated corporate bonds for the six quarters ending in the first quarter of 2022, and for the years 2022 to 2026 and 2027 to 2031, is 4.08%.[35] Because the Non-Price Regulated Proxy Group has an average Moody's bond rating of Baa1, a downward adjustment of 0.20% to the prospective Baa2-rated bond yield is necessary to reflect the difference in bond ratings.[36] Subtracting 0.20% from the prospective Baa2-rated bond yield of 4.08% is 3.88%.

When the beta-adjusted risk premium of 7.62%[37] relative to the Non-Price Regulated Proxy Group is added to the prospective Baa1-rated corporate bond yield of 3.88%, the indicated RPM cost rate is 11.50%.

Page 6 contains the inputs and calculations that support my indicated CAPM/ECAPM cost rate of 10.70%.

Q. What is the cost rate of common equity based on the Non-Price Regulated Proxy Group comparable in total risk to the Utility Proxy Group?

A. As shown on page 1 of Attachment DWD-7, the results of the DCF, RPM, and CAPM applied to the Non-Price Regulated Proxy Group comparable in total risk to the Utility Proxy Group are 10.26%, 11.50%, and 10.70%, respectively. The average of the mean and median of these models is 10.76%, which I used as the indicated common equity cost rate for the Non-Price Regulated Proxy Group.

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35 *Blue Chip Financial Forecasts*, June 1, 2020, at p. 14 and October 1, 2020, at p. 2.
36 As demonstrated on Attachment DWD-7, page 3, note 2.
37 Derived on page 5 of Attachment DWD-7.

VIII. CONCLUSION OF COMMON EQUITY COST RATE BEFORE ADJUSTMENT

Q. What is the indicated range of common equity cost rates before adjustment?

A. Based on the results of the application of multiple cost of common equity models to the Utility Proxy Group and the Non-Price Regulated Proxy Group, the indicated model results are between 9.09% and 10.87%. I used multiple cost of common equity models as primary tools in arriving at my recommended common equity cost rate, because no single model is so inherently precise that it can be relied on solely to the exclusion of other theoretically sound models. The use of multiple models adds reliability to the estimation of the common equity cost rate, and the prudence of using multiple cost of common equity models is supported in both the financial literature and regulatory precedent.

IX. ADJUSTMENTS TO THE COMMON EQUITY COST RATE

A. SIZE ADJUSTMENT

Q. Does AWNH's smaller size compared with the Utility Proxy Group increase its business risk?

A. Yes. AWNH's smaller size relative to the Utility Proxy Group companies indicates greater relative business risk for the Company because, all else being equal, size has a material bearing on risk.

Size affects business risk because smaller companies generally are less able to cope with significant events that affect sales, revenues, and earnings. For example, smaller companies face more risk exposure to business cycles and economic conditions, both nationally and locally. Additionally, the loss of revenues from a few larger customers would have a greater effect on a small company than on a bigger company with a larger, more diverse, customer base.

As further evidence illustrates that smaller firms are riskier, investors generally demand greater returns from smaller firms to compensate for less marketability and liquidity of their securities. Duff & Phelps' 2020 Valuation Handbook – U.S. Guide to Cost of Capital ("D&P - 2020") discusses the nature of the small-size phenomenon, providing an indication of the magnitude of the size premium based on several measures of size. In discussing "Size as a Predictor of Equity Premiums," D&P - 2020 states:

> The size effect is based on the empirical observation that companies of smaller size are associated with greater risk and, therefore, have greater cost of capital [sic]. The "size" of a company is one of the most important risk elements to consider when developing cost of equity capital estimates for use in valuing a business simply because size has been shown to be a *predictor* of equity returns. In other words, there is a significant (negative) relationship between size and historical equity returns - as size *decreases*, returns tend to *increase*, and vice versa. (footnote omitted) (emphasis in original)[38]

Furthermore, in "The Capital Asset Pricing Model: Theory and Evidence," Fama and French note size is indeed a risk factor which must be reflected when estimating the cost of common equity. On page 14, they note:

> **. . .** the higher average returns on small stocks and high book-to-market stocks reflect unidentified state variables that produce undiversifiable risks (covariances) in returns not captured in the market return and are priced separately from market betas.[39]

Based on this evidence, Fama and French proposed their three-factor model which includes a size variable in recognition of the effect size has on the cost of common equity.

Also, it is a basic financial principle that the use of funds invested, and not

38 Duff & Phelps 2020 Valuation Handbook – U.S. Guide to Cost of Capital, Wiley 2018, at 4-1.
39 Fama & French, at 25-43.

the source of funds, is what gives rise to the risk of any investment.[40] Eugene Brigham, a well-known authority, states:

> A number of researchers have observed that portfolios of small-firms (sic) have earned consistently higher average returns than those of large-firm stocks; this is called the "small-firm effect." On the surface, it would seem to be advantageous to the small firms to provide average returns in a stock market that are higher than those of larger firms. In reality, it is bad news for the small firm; **what the small-firm effect means is that the capital market demands higher returns on stocks of small firms than on otherwise similar stocks of the large firms.** (emphasis added)[41]

Consistent with the financial principle of risk and return discussed above, increased relative risk due to small size must be considered in the allowed rate of return on common equity. Therefore, the Commission's authorization of a cost rate of common equity in this proceeding must appropriately reflect the unique risks of AWNH, including its small size, which is justified and supported above by evidence in the financial literature.

Q. Should the Commission consider AWNH as a stand-alone company?

A. Yes, it should. Because it is AWNH's rate base to which the overall rates of return set forth in this proceeding will be applied, they should be evaluated as a stand-alone entity. To do otherwise would be discriminatory, confiscatory, and inaccurate. It is also a basic financial precept that the use of the funds invested give rise to the risk of the investment. As Brealey and Myers state:

> The true cost of capital depends on the use to which the capital is put.
>
> ***
>
> *Each project should be evaluated at its own opportunity cost of*

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[40] Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance (McGraw-Hill Book Company, 1996), at 204-205, 229.

[41] Eugene F. Brigham, Fundamentals of Financial Management, Fifth Edition (The Dryden Press, 1989), at 623.

> *capital; the true cost of capital depends on the use to which the capital is put*. (italics and bold in original) [42]

Morin confirms Brealey and Myers when he states:

> Financial theory clearly establishes that the cost of equity is the risk-adjusted opportunity cost of the investors and not the cost of the specific capital sources employed by the investors. The true cost of capital depends on the use to which the capital is put and not on its source. The Hope and Bluefield doctrines have made clear that the relevant considerations in calculating a company's cost of capital are the alternatives available to investors and the returns and risks associated with those alternatives.[43]

Additionally, Levy and Sarnat state:

> The firm's cost of capital is the discount rate employed to discount the firm's average cash flow, hence obtaining the value of the firm. It is also the weighted average cost of capital, as we shall see below. The weighted average cost of capital should be employed for project evaluation… only in cases where the risk profile of the new projects is a "carbon copy" of the risk profile of the firm[44]

Although Levy and Sarnat discuss a project's cost of capital relative to a firm's cost of capital, these principles apply equally to the use of a proxy group-based cost of capital. Each company must be viewed on its own merits, regardless of the source of its equity capital. As *Bluefield* clearly states:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; [45]

In other words, it is the "risks and uncertainties" surrounding the property employed for the "convenience of the public" which determines the appropriate

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42 Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, McGraw-Hill, Third Edition, 1988, at pp. 173, 198.
43 Morin, at 523.
44 Haim Levy & Marshall Sarnat, Capital Investment and Financial Decisions, Prentice/Hall International, 1986, at 465.
45 *Bluefield*, at 6.

level of rates. In this proceeding, the property employed "for the convenience of the public" is the rate base of AWNH. Thus, it is only the risk of investment in AWNH that is relevant to the determination of the cost of common equity to be applied to the common equity-financed portion of that rate base.

In addition, in the Fama and French article previously cited, the authors[46] proposed that their three-factor model include the SMB (Small Minus Big) factor, which indicates that small capitalization firms are more risky than large capitalization firms, confirming that size is a risk factor which must be taken into account in estimating the cost of common equity.

Consistent with the financial principle of risk and return discussed previously, and the stand-alone nature of ratemaking, an upward adjustment must be applied to the indicated cost of common equity derived from the cost of equity models of the proxy groups used in this proceeding.

Q. Is there a way to quantify a relative risk adjustment due to AWNH's small size relative to the Utility Proxy Group?

A. Yes. The Company has greater relative risk than the average company in the Utility Proxy Group because of its smaller size compared with the group, as measured by an estimated market capitalization of common equity for AWNH (whose common stock is not publicly-traded).

[46] Fama & French, at 39.

Table 5: Size as Measured by Market Capitalization for the Company and the Utility Proxy Group

	Market Capitalization* ($ Millions)	Times Greater than the Company
AWNH	$54.075	
Utility Proxy Group	$6,572.792	121.5x

*From page 1 of Attachment DWD-8.

The Company's estimated market capitalization was at $54.075 million as of October 16, 2020, compared with the market capitalization of the average water company in the Utility Proxy Group of $6.573 billion as of October 16, 2020. The Utility Proxy Group's market capitalization is 121.5 times the size of AWNH's estimated market capitalization.

As a result, it is necessary to upwardly adjust the indicated range of common equity cost rates to reflect AWNH's greater risk due to its smaller relative size. The determination is based on the size premiums for portfolios of New York Stock Exchange, American Stock Exchange, and NASDAQ listed companies ranked by deciles for the 1926 to 2019 period. The average size premium for the Utility Proxy Group with a market capitalization of $6.573 billion falls in the 4th decile, while AWNH's market capitalization of $54.075 million places the Company in the 10th decile. The size premium spread between the 4th decile and the 10th decile is 4.20%. Even though a 4.20% upward size adjustment is indicated, I apply a size premium of 1.00% to AWNH's indicated range of common equity cost rates.

Q. Since AWNH is a wholly-owned subsidiary of Aquarion Water Company, which is in turn a wholly-owned subsidiary of Eversource Energy, why is the size of Eversource Energy not more appropriate to use when determining the size adjustment?

A. As discussed above, the return derived in this proceeding will not apply to Eversource Energy as a whole, but only AWNH. Eversource Energy is the sum of its constituent parts, including those constituent parts' returns on common equity. Potential investors in Eversource Energy are aware that it is a combination of operations in each state, and that each state's operations experience the operating risks specific to their jurisdiction. The market's expectation of Eversource Energy's return is commensurate with the realities of its composite operations in each of the states in which it operates.

B. <u>CONSIDERATION OF REQUESTED MECHANISMS FOR AWNH</u>

Q. Does AWNH's requested revenue adjustment mechanism ("RAM") decrease its required return on common equity?

A. No. The cost of capital is a comparative exercise, so if the mechanism is common throughout the companies on which one bases their analyses on, the comparative risk is zero, because any impact of the perceived reduced risk of the mechanism(s) by investors would be reflected in the market data of the proxy group. To that point, as shown on Attachment DWD-9, every single one of the proxy companies has a Distribution Service Improvement Charge and five of seven of the Utility Proxy Group companies have a RAM-type mechanism in at least one of their jurisdictions.

Q. ARE YOU AWARE OF ANY STUDIES THAT HAVE ADDRESSED THE RELATIONSHIP BETWEEN DECOUPLING MECHANISMS, GENERALLY, AND the return on common equity?

A. Yes. I, along with Dr. Richard A. Michelfelder of Rutgers University, and my colleague at ScottMadden, Pauline M. Ahern, CRRA, examined the relationship between decoupling and return on common equity among electric, gas, and water utilities. Using the PRPM, we found decoupling to have no statistically significant effect on investor perceived risk, and hence, the return on common equity.[47]

Also, in March 2014, The Brattle Group ("Brattle") published a study addressing the effect of revenue decoupling structures on the cost of capital for electric utilities.[48] In its report, which extended a prior analysis focused on natural gas distribution utilities, Brattle pointed out that although decoupling structures may affect revenues, net income still can vary.[49] Brattle further noted that the distinction between diversifiable and non-diversifiable risk is important to equity investors, and the relationship between decoupling and return on common equity should be examined in that context. Further to that point, Brattle noted that although reductions in total risk may be important to bondholders, only reductions in non-diversifiable business risk would justify a reduction to the return

47 Dr. Richard A. Michelfelder, Pauline M. Ahern, Dylan W. D'Ascendis, *The Impact of Decoupling on The Cost of Capital of Public Utilities*, Energy Policy 130 (2019), at 311-319.

48 The Brattle Group, *The Impact of Revenue Decoupling on the Cost of Capital for Electric Utilities: An Empirical Investigation*, Prepared for the Energy Foundation, March 20, 2014.

49 *Ibid*., at 7.

on common equity.[50] In November 2016, the Brattle study was updated based on data through the fourth quarter of 2015.[51]

Brattle's empirical analysis examined the relationship between decoupling and the After-Tax weighted average cost of capital for a group of electric utilities that had implemented decoupling structures in various jurisdictions throughout the United States. As with Brattle's 2014 study, the updated study found no statistically significant link between the cost of capital and revenue decoupling structures.[52]

In view of all of the above, AWNH's return on common equity should not be reduced if the RAM is approved by the Commission in this Docket.

C. FLOTATION COST ADJUSTMENT

Q. What are flotation costs?

A. Flotation costs are those costs associated with the sale of new issuances of common stock. They include market pressure and the essential costs of issuance (*e.g.*, underwriting fees and out-of-pocket costs for printing, legal, registration, etc.).

Q. Why is it important to recognize flotation costs in the allowed common equity cost rate?

A. It is important because there is no other mechanism in the ratemaking paradigm through which such costs can be recovered. Because these costs are real and legitimate, recovery of these costs should be permitted. As noted by Morin:

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50 *Ibid*., at 8.

51 Michael J. Vilbert, Joseph B. Wharton, Shirley Zhang and James Hall, *Effect on the Cost of Capital of Innovative Ratemaking that Relaxes the Linkage between Revenue and kWh Sales – An Updated Empirical Investigation*, November 2016.

52 *Ibid.*

> The costs of issuing these securities are just as real as operating and maintenance expenses or costs incurred to build utility plants, and fair regulatory treatment must permit recovery of these costs….
>
> The simple fact of the matter is that common equity capital is not free….[Flotation costs] must be recovered through a rate of return adjustment.[53]

Q. Should flotation costs be recognized only when there has been an issuance during the test year or there is an imminent post-test year issuance of additional common stock?

A. No. As noted above, there is no mechanism to recapture such costs in the ratemaking paradigm other than an adjustment to the allowed common equity cost rate. Flotation costs are charged to capital accounts and are not expensed on a utility's income statement. As such, flotation costs are analogous to capital investments reflected on the balance sheet. Recovery of capital investments relates to the expected useful lives of the investment. Since common equity has a very long and indefinite life (assumed to be infinity in the standard regulatory DCF model), flotation costs should be recovered through an adjustment to common equity cost rate, even when there has not been an issuance during the test year or in the absence of an expected imminent issuance of additional shares of common stock.

Historical flotation costs are a permanent loss of investment to the utility and should be accounted for. When any company, including a utility, issues common stock, flotation costs are incurred for legal, accounting, printing fees and the like. For each dollar of issuing market price, a small percentage is expensed and is permanently unavailable for investment in utility rate base. Since these

53 Morin, at p. 321.

expenses are charged to capital accounts and not expensed on the income statement, the only way to restore the full value of that dollar of issuing price with an assumed investor required return of 10% is for the net investment, \$0.95, to earn more than 10% to net back to the investor a fair return on that dollar. In other words, if a company issues stock at \$1.00 with 5% in flotation costs, it will net \$0.95 in investment. Assuming the investor in that stock requires a 10% return on his or her invested \$1.00 (*i.e.*, a return of \$0.10), the company needs to earn approximately 10.5% on its invested \$0.95 to receive a \$0.10 return.

Q. Do the common equity cost rate models you have used already reflect investors' anticipation of flotation costs?

A. No. All of these models assume no transaction costs. The literature is quite clear that these costs are not reflected in market prices paid for common stocks. For example, Brigham and Daves confirm this and provide the methodology utilized to calculate the flotation adjustment.[54] In addition, Morin confirms the need for such an adjustment even when no new equity issuance is imminent.[55] Consequently, it is proper to include a flotation cost adjustment when using cost of common equity models to estimate the common equity cost rate.

Q. How did you calculate the flotation cost allowance?

A. I modified the DCF calculation to provide a dividend yield that would reimburse investors for issuance costs in accordance with the method cited in literature by Brigham and Daves, as well as by Morin. The flotation cost adjustment recognizes the costs of issuing equity that were incurred by Eversource Energy,

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[54] Eugene F. Brigham and Phillip R. Daves, Intermediate Financial Management, 9th Edition, Thomson/Southwestern, at p. 342.

[55] Morin, at pp. 327-330.

AWNH's parent company, since its acquisition of AWNH. Based upon the issuance costs shown on page 1 of Attachment DWD-10, an adjustment of 0.04% is required to reflect the flotation costs applicable to the Company.

Q. What is the indicated range of common equity cost rates after adjustments for size, credit risk, and flotation costs?

After applying the 1.00% size adjustment and 0.04% flotation cost adjustment to the indicated range of common equity cost rates between 9.09% and 10.87%, based on the Utility Proxy Group results, a range of common equity cost rates between 10.13% and 11.91% is applicable to AWNH.

X. <u>CONCLUSION OF COMMON EQUITY COST RATE</u>

Q. What is your recommended common equity cost rate for AWNH?

A. Given the indicated range of common equity cost rates between 9.09% and 10.87% applicable to the Utility Proxy Group and 10.13% and 11.91% applicable to AWNH, I conclude that a common equity cost rate of 10.25% for the Company is appropriate.

Q. In your opinion, is your proposed common equity cost rate of 10.25% fair and reasonable to AWNH, its shareholders, and its customers?

A. Yes, it is.

Q. Does this conclude your direct testimony?

A. Yes, it does.

Summary

Dylan is an experienced consultant and a Certified Rate of Return Analyst (CRRA) and Certified Valuation Analyst (CVA). He has served as a consultant for investor-owned and municipal utilities and authorities for 12 years. Dylan has extensive experience in rate of return analyses, class cost of service, rate design, and valuation for regulated public utilities. He has testified as an expert witness in the subjects of rate of return, cost of service, rate design, and valuation before 23 regulatory commissions in the U.S., one Canadian province, and an American Arbitration Association panel.

He also maintains the benchmark index against which the Hennessy Gas Utility Mutual Fund performance is measured.

Areas of Specialization

- Regulation and Rates
- Utilities
- Mutual Fund Benchmarking
- Capital Market Risk
- Financial Modeling
- Valuation
- Regulatory Strategy
- Rate Case Support
- Rate of Return
- Cost of Service
- Rate Design

Recent Expert Testimony Submission/Appearances

Jurisdiction	***Topic***
Massachusetts Department of Public Utilities	Rate of Return
New Jersey Board of Public Utilities	Rate of Return
Hawaii Public Utilities Commission	Cost of Service, Rate Design
South Carolina Public Service Commission	Return on Common Equity
American Arbitration Association	Valuation

Recent Assignments

- Provided expert testimony on the cost of capital for ratemaking purposes before numerous state utility regulatory agencies
- Maintains the benchmark index against which the Hennessy Gas Utility Mutual Fund performance is measured
- Sponsored valuation testimony for a large municipal water company in front of an American Arbitration Association Board to justify the reasonability of their lease payments to the City
- Co-authored a valuation report on behalf of a large investor-owned utility company in response to a new state regulation which allowed the appraised value of acquired assets into rate base

Recent Publications and Speeches

- Co-Author of: “Decoupling, Risk Impacts and the Cost of Capital”, co-authored with Richard A. Michelfelder, Ph.D., Rutgers University and Pauline M. Ahern. The Electricity Journal, March, 2020.
- Co-Author of: “Decoupling Impact and Public Utility Conservation Investment”, co-authored with Richard A. Michelfelder, Ph.D., Rutgers University and Pauline M. Ahern. Energy Policy Journal, 130 (2019), 311-319.
- “Establishing Alternative Proxy Groups”, before the Society of Utility and Regulatory Financial Analysts: 51st Financial Forum, April 4, 2019, New Orleans, LA.
- “Past is Prologue: Future Test Year”, Presentation before the National Association of Water Companies 2017 Southeast Water Infrastructure Summit, May 2, 2017, Savannah, GA.
- Co-author of: “Comparative Evaluation of the Predictive Risk Premium Model™, the Discounted Cash Flow Model and the Capital Asset Pricing Model”, co-authored with Richard A. Michelfelder, Ph.D., Rutgers University, Pauline M. Ahern, and Frank J. Hanley, The Electricity Journal, May, 2013.
- “Decoupling: Impact on the Risk and Cost of Common Equity of Public Utility Stocks”, before the Society of Utility and Regulatory Financial Analysts: 45th Financial Forum, April 17-18, 2013, Indianapolis, IN.

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Regulatory Commission of Alaska				
Alaska Power Company	09/20	Alaska Power Company; Goat Lake Hydro, Inc.; BBL Hydro, Inc.	Tariff Nos. TA886-2; TA6-521; TA4-573	Capital Structure
Alaska Power Company	07/16	Alaska Power Company	Docket No. TA857-2	Rate of Return
Alberta Utilities Commission				
AltaLink, L.P., and EPCOR Distribution & Transmission, Inc.	01/20	AltaLink, L.P., and EPCOR Distribution & Transmission, Inc.	2021 Generic Cost of Capital, Proceeding ID. 24110	Rate of Return
Arizona Corporation Commission				
EPCOR Water Arizona, Inc.	06/20	EPCOR Water Arizona, Inc.	Docket No. WS-01303A-20-0177	Rate of Return
Arizona Water Company	12/19	Arizona Water Company – Western Group	Docket No. W-01445A-19-0278	Rate of Return
Arizona Water Company	08/18	Arizona Water Company – Northern Group	Docket No. W-01445A-18-0164	Rate of Return
Colorado Public Utilities Commission				
Summit Utilities, Inc.	04/18	Colorado Natural Gas Company	Docket No. 18AL-0305G	Rate of Return
Atmos Energy Corporation	06/17	Atmos Energy Corporation	Docket No. 17AL-0429G	Rate of Return
Delaware Public Service Commission				
Delmarva Power & Light Co.	10/20	Delmarva Power & Light Co.	Docket No. 20-0150	Rate of Return
Tidewater Utilities, Inc.	11/13	Tidewater Utilities, Inc.	Docket No. 13-466	Capital Structure
Public Service Commission of the District of Columbia				
Washington Gas Light Company	09/20	Washington Gas Light Company	Formal Case No. 1162	Rate of Return
Federal Energy Regulatory Commission				
LS Power Grid California, LLC	10/20	LS Power Grid California, LLC	Docket No. ER21-195-000	Rate of Return
Florida Public Service Commission				
Peoples Gas System	09/20	Peoples Gas System	Docket No. 20200051-GU	Rate of Return
Utilities, Inc. of Florida	06/20	Utilities, Inc. of Florida	Docket No. 20200139-WS	Rate of Return
Hawaii Public Utilities Commission				
Lanai Water Company, Inc.	12/19	Lanai Water Company, Inc.	Docket No. 2019-0386	Cost of Service / Rate Design
Manele Water Resources, LLC	08/19	Manele Water Resources, LLC	Docket No. 2019-0311	Cost of Service / Rate Design
Kaupulehu Water Company	02/18	Kaupulehu Water Company	Docket No. 2016-0363	Rate of Return
Aqua Engineers, LLC	05/17	Puhi Sewer & Water Company	Docket No. 2017-0118	Cost of Service / Rate Design
Hawaii Resources, Inc.	09/16	Laie Water Company	Docket No. 2016-0229	Cost of Service / Rate Design
Illinois Commerce Commission				
Ameren Illinois Company d/b/a Ameren Illinois	07/20	Ameren Illinois Company d/b/a Ameren Illinois	Docket No. 20-0308	Return on Equity
Utility Services of Illinois, Inc.	11/17	Utility Services of Illinois, Inc.	Docket No. 17-1106	Cost of Service / Rate Design
Aqua Illinois, Inc.	04/17	Aqua Illinois, Inc.	Docket No. 17-0259	Rate of Return

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Utility Services of Illinois, Inc.	04/15	Utility Services of Illinois, Inc.	Docket No. 14-0741	Rate of Return
Indiana Utility Regulatory Commission				
Aqua Indiana, Inc.	03/16	Aqua Indiana, Inc. Aboite Wastewater Division	Docket No. 44752	Rate of Return
Twin Lakes, Utilities, Inc.	08/13	Twin Lakes, Utilities, Inc.	Docket No. 44388	Rate of Return
Kansas Corporation Commission				
Atmos Energy	07/19	Atmos Energy	19-ATMG-525-RTS	Rate of Return
Louisiana Public Service Commission				
Atmos Energy	04/20	Atmos Energy	Docket No. U-35535	Rate of Return
Louisiana Water Service, Inc.	06/13	Louisiana Water Service, Inc.	Docket No. U-32848	Rate of Return
Maryland Public Service Commission				
Washington Gas Light Company	08/20	Washington Gas Light Company	Case No. 9651	Rate of Return
FirstEnergy, Inc.	08/18	Potomac Edison Company	Case No. 9490	Rate of Return
Massachusetts Department of Public Utilities				
Unitil Corporation	12/19	Fitchburg Gas & Electric Co. (Elec.)	D.P.U. 19-130	Rate of Return
Unitil Corporation	12/19	Fitchburg Gas & Electric Co. (Gas)	D.P.U. 19-131	Rate of Return
Liberty Utilities	07/15	Liberty Utilities d/b/a New England Natural Gas Company	Docket No. 15-75	Rate of Return
Mississippi Public Service Commission				
Atmos Energy	03/19	Atmos Energy	Docket No. 2015-UN-049	Capital Structure
Atmos Energy	07/18	Atmos Energy	Docket No. 2015-UN-049	Capital Structure
Missouri Public Service Commission				
Indian Hills Utility Operating Company, Inc.	10/17	Indian Hills Utility Operating Company, Inc.	Case No. SR-2017-0259	Rate of Return
Raccoon Creek Utility Operating Company, Inc.	09/16	Raccoon Creek Utility Operating Company, Inc.	Docket No. SR-2016-0202	Rate of Return
Public Utilities Commission of Nevada				
Southwest Gas Corporation	08/20	Southwest Gas Corporation	Docket No. 20-02023	Return on Equity
New Jersey Board of Public Utilities				
FirstEnergy	02/20	Jersey Central Power & Light Co.	Docket No. ER20020146	Rate of Return
Aqua New Jersey, Inc.	12/18	Aqua New Jersey, Inc.	Docket No. WR18121351	Rate of Return
Middlesex Water Company	10/17	Middlesex Water Company	Docket No. WR17101049	Rate of Return
Middlesex Water Company	03/15	Middlesex Water Company	Docket No. WR15030391	Rate of Return
The Atlantic City Sewerage Company	10/14	The Atlantic City Sewerage Company	Docket No. WR14101263	Cost of Service / Rate Design
Middlesex Water Company	11/13	Middlesex Water Company	Docket No. WR1311059	Capital Structure
North Carolina Utilities Commission				
Duke Energy Carolinas, LLC	07/20	Duke Energy Carolinas, LLC	Docket No. E-7, Sub 1214	Return on Equity
Duke Energy Progress, LLC	07/20	Duke Energy Progress, LLC	Docket No. E-2, Sub 1219	Return on Equity
Aqua North Carolina, Inc.	12/19	Aqua North Carolina, Inc.	Docket No. W-218 Sub 526	Rate of Return
Carolina Water Service, Inc.	06/19	Carolina Water Service, Inc.	Docket No. W-354 Sub 364	Rate of Return
Carolina Water Service, Inc.	09/18	Carolina Water Service, Inc.	Docket No. W-354 Sub 360	Rate of Return

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Aqua North Carolina, Inc.	07/18	Aqua North Carolina, Inc.	Docket No. W-218 Sub 497	Rate of Return
Public Utilities Commission of Ohio				
Aqua Ohio, Inc.	05/16	Aqua Ohio, Inc.	Docket No. 16-0907-WW-AIR	Rate of Return
Pennsylvania Public Utility Commission				
Valley Energy, Inc.	07/19	C&T Enterprises	Docket No. R-2019-3008209	Rate of Return
Wellsboro Electric Company	07/19	C&T Enterprises	Docket No. R-2019-3008208	Rate of Return
Citizens' Electric Company of Lewisburg	07/19	C&T Enterprises	Docket No. R-2019-3008212	Rate of Return
Steelton Borough Authority	01/19	Steelton Borough Authority	Docket No. A-2019-3006880	Valuation
Mahoning Township, PA	08/18	Mahoning Township, PA	Docket No. A-2018-3003519	Valuation
SUEZ Water Pennsylvania Inc.	04/18	SUEZ Water Pennsylvania Inc.	Docket No. R-2018-000834	Rate of Return
Columbia Water Company	09/17	Columbia Water Company	Docket No. R-2017-2598203	Rate of Return
Veolia Energy Philadelphia, Inc.	06/17	Veolia Energy Philadelphia, Inc.	Docket No. R-2017-2593142	Rate of Return
Emporium Water Company	07/14	Emporium Water Company	Docket No. R-2014-2402324	Rate of Return
Columbia Water Company	07/13	Columbia Water Company	Docket No. R-2013-2360798	Rate of Return
Penn Estates Utilities, Inc.	12/11	Penn Estates, Utilities, Inc.	Docket No. R-2011-2255159	Capital Structure / Long-Term Debt Cost Rate
South Carolina Public Service Commission				
Blue Granite Water Co.	12/19	Blue Granite Water Company	Docket No. 2019-292-WS	Rate of Return
Carolina Water Service, Inc.	02/18	Carolina Water Service, Inc.	Docket No. 2017-292-WS	Rate of Return
Carolina Water Service, Inc.	06/15	Carolina Water Service, Inc.	Docket No. 2015-199-WS	Rate of Return
Carolina Water Service, Inc.	11/13	Carolina Water Service, Inc.	Docket No. 2013-275-WS	Rate of Return
United Utility Companies, Inc.	09/13	United Utility Companies, Inc.	Docket No. 2013-199-WS	Rate of Return
Utility Services of South Carolina, Inc.	09/13	Utility Services of South Carolina, Inc.	Docket No. 2013-201-WS	Rate of Return
Tega Cay Water Services, Inc.	11/12	Tega Cay Water Services, Inc.	Docket No. 2012-177-WS	Capital Structure
Tennessee Public Utility Commission				
Piedmont Natural Gas Company	07/20	Piedmont Natural Gas Company	Docket No. 20-00086	Return on Equity
Public Utility Commission of Texas				
Southwestern Electric Power Company	10/20	Southwestern Electric Power Company	Docket No. 51415	Rate of Return
Virginia State Corporation Commission				
Aqua Virginia, Inc.	07/20	Aqua Virginia, Inc.	PUR-2020-00106	Rate of Return
WGL Holdings, Inc.	07/18	Washington Gas Light Company	PUR-2018-00080	Rate of Return
Atmos Energy Corporation	05/18	Atmos Energy Corporation	PUR-2018-00014	Rate of Return
Aqua Virginia, Inc.	07/17	Aqua Virginia, Inc.	PUR-2017-00082	Rate of Return
Massanutten Public Service Corp.	08/14	Massanutten Public Service Corp.	PUE-2014-00035	Rate of Return / Rate Design

Aquarion Water Company of New Hampshire, Inc.
Table of Contents
Supporting Attachments Accompanying the Direct Testimony of
Dylan W. D'Ascendis, CRRA, CVA

Aquarion Water Company of New Hampshire, Inc.
Recommended Capital Structure and Cost Rates
for Ratemaking Purposes
at December 31, 2019

Type Of Capital	Ratios (1)	Cost Rate		Weighted Cost Rate
Long-Term Debt	43.85%	6.14%	(1)	2.69%
Short-Term Debt	3.78%	2.42%	(1)	0.09%
Preferred Equity	0.01%	6.00%	(1)	0.00%
Common Equity	52.36%	10.25%	(2)	5.37%
Total	100.00%			8.15%

Notes:

(1) Company-provided.
(2) From page 2 of this Attachment.

Aquarion Water Company of New Hampshire, Inc.
Brief Summary of Common Equity Cost Rate

Line No.	Principal Methods	Proxy Group of Seven Water Companies
1.	Discounted Cash Flow Model (DCF) (1)	9.09%
2.	Risk Premium Model (RPM) (2)	10.56%
3.	Capital Asset Pricing Model (CAPM) (3)	10.87%
4.	Market Models Applied to Comparable Risk, Non-Price Regulated Companies (4)	10.76%
5.	Indicated Range of Common Equity Cost Rates before Adjustment for Unique Risk	9.09% - 10.87%
6.	Business Risk Adjustment (5)	1.00%
7.	Flotation Cost Adjustment (6)	0.04%
8.	Indicated Range of Common Equity Cost Rates after Adjustment	10.13% - 11.91%
9.	Recommended Common Equity Cost Rate	10.25%

Notes:
(1) From Attachment DWD-3.
(2) From page 1 of Attachment DWD-4.
(3) From page 1 of Attachment DWD-5.
(4) From page 1 of Attachment DWD-7.
(5) Business risk adjustment to reflect AWNH's unique risk compared to the Utility Proxy Group as detailed in the accompanying direct testimony.
(6) From Attachment DWD-10.

Proxy Group of Seven Water Companies
CAPITALIZATION AND FINANCIAL STATISTICS (1)
2015 - 2019, Inclusive

	2019	2018	2017	2016	2015	5 YEAR AVERAGE
			(MILLIONS OF DOLLARS)			
Capitalization Statistics						
Amount of Capital Employed						
Total Permanent Capital	$3,888.223	$3,208.636	$2,837.657	$2,680.018	$2,535.795	
Short-Term Debt	$189.862	$184.221	$185.250	$152.691	$106.277	
Total Capital Employed	$4,078.085	$3,392.857	$3,022.907	$2,832.709	$2,642.072	
Indicated Average Capital Cost Rates (2)						
Total Debt	4.30 %	4.75 %	4.83 %	4.94 %	5.08 %	
Preferred Stock	5.84 %	5.92 %	5.91 %	5.91 %	5.91 %	
Capital Structure Ratios						
Based on Total Permanent Capital:						
Long-Term Debt	47.17 %	45.15 %	45.58 %	46.14 %	46.49 %	46.11 %
Preferred Stock	0.06	0.09	0.10	0.11	0.11	0.09
Common Eqity	52.77	54.76	54.32	53.75	53.40	53.80
Total	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Based on Total Capital:						
Total Debt, Including Short-Term Debt	50.61 %	48.37 %	48.93 %	48.42 %	47.77 %	48.82 %
Preferred Stock	0.06	0.08	0.09	0.10	0.11	0.09
Common Equity	49.34	51.54	50.98	51.47	52.12	51.09
Total	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Financial Statistics						
Financial Ratios - Market Based						
Earnings / Price Ratio	2.67 %	6.31 %	7.91 %	3.97 %	4.59 %	5.09 %
Market / Average Book Ratio	340.26	289.89	288.75	280.21	229.70	285.76
Dividend Yield	1.77	3.74	3.69	2.15	2.62	2.79
Dividend Payout Ratio	72.32	60.08	55.80	56.03	57.45	60.34
Rate of Return on Average Book Common Equity	9.49 %	10.12 %	11.31 %	10.93 %	10.39 %	10.45 %
Total Debt / EBITDA (3)	5.54 x	4.22 x	3.42 x	3.41 x	3.42 x	4.00 x
Funds from Operations / Total Debt (4)	14.49 %	21.37 %	22.87 %	23.65 %	25.81 %	21.64 %
Total Debt / Total Capital	50.61 %	48.37 %	48.93 %	48.42 %	47.77 %	48.82 %

Notes:
(1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group, and are based upon financial statements as originally reported in each year.
(2) Computed by relating actual total debt interest or preferred stock dividends booked to average of beginning and ending total debt or preferred stock reported to be outstanding.
(3) Total debt relative to EBITDA (Earnings before Interest, Income Taxes, Depreciation and Amortization).
(4) Funds from operations (sum of net income, depreciation, amortization, net deferred income tax and investment tax credits, less total AFUDC) plus interest charges as a percentage of total debt.

Source of Information: Company Annual Forms 10-K

Capital Structure Based upon Total Permanent Capital for the
Proxy Group of Seven Water Companies
2015 - 2019, Inclusive

	2019	2018	2017	2016	2015	5 YEAR AVERAGE
American States Water Company						
Long-Term Debt	25.86 %	32.96 %	35.30 %	35.48 %	39.75 %	33.87 %
Short-Term Debt	18.84	9.79	6.48	9.94	3.41	9.69
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	55.30	57.25	58.22	54.58	56.84	56.44
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
American Water Works Company, Inc.						
Long-Term Debt	55.63 %	52.78 %	51.96 %	50.99 %	50.98 %	52.47 %
Short-Term Debt	5.05	6.66	6.90	6.85	5.41	6.17
Preferred Stock	0.03	0.05	0.06	0.08	0.10	0.06
Common Equity	39.29	40.51	41.08	42.08	43.51	41.30
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
California Water Service Group						
Long-Term Debt	45.85 %	50.61 %	35.44 %	42.44 %	43.44 %	43.56 %
Short-Term Debt	9.93	4.04	18.34	7.39	2.81	8.50
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	44.22	45.35	46.22	50.17	53.75	47.94
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Essential Utilities, Inc.						
Long-Term Debt	44.06 %	55.87 %	52.21 %	50.72 %	50.52 %	50.67 %
Short-Term Debt	0.37	0.34	0.09	0.17	0.47	0.29
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	55.57	43.79	47.70	49.11	49.01	49.04
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Middlesex Water Company						
Long-Term Debt	40.76 %	34.83 %	35.98 %	37.66 %	40.10 %	37.87 %
Short-Term Debt	3.42	10.55	6.90	3.21	0.85	4.99
Preferred Stock	0.36	0.53	0.60	0.65	0.68	0.56
Common Equity	55.46	54.09	56.52	58.48	58.37	56.58
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
SJW Group						
Long-Term Debt	56.45 %	30.37 %	46.89 %	49.86 %	47.88 %	46.29 %
Short-Term Debt	5.07	7.04	2.72	1.63	4.31	4.15
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	38.48	62.59	50.39	48.51	47.81	49.56
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
York Water Company						
Long-Term Debt	42.95 %	42.33 %	42.81 %	42.60 %	44.46 %	43.03 %
Short-Term Debt	0.00	0.45	0.48	0.00	0.00	0.19
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	57.05	57.22	56.71	57.40	55.54	56.78
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Proxy Group of Seven Water Companies						
Long-Term Debt	44.51 %	42.82 %	42.94 %	44.25 %	45.30 %	43.97 %
Short-Term Debt	6.10	5.55	5.99	4.17	2.47	4.85
Preferred Stock	0.05	0.08	0.09	0.10	0.11	0.09
Common Equity	49.34	51.55	50.98	51.48	52.12	51.09
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

Source of Information
Annual Forms 10-K

Aquarion Water Company of New Hampshire, Inc.
Indicated Common Equity Cost Rate Using the Discounted Cash Flow Model for the
Proxy Group of Seven Water Companies

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Seven Water Companies	Average Dividend Yield (1)	Value Line Projected Five Year Growth in EPS (2)	Zack's Five Year Projected Growth Rate in EPS	Yahoo! Finance Projected Five Year Growth in EPS	Bloomberg Projected Five Year Growth in EPS	Average Projected Five Year Growth in EPS (3)	Adjusted Dividend Yield (4)	Indicated Common Equity Cost Rate (5)
American States Water Company	1.75 %	6.50 %	4.90 %	5.30 %	6.00 %	5.68 %	1.80 %	7.48 %
American Water Works Company, Inc.	1.51	8.50	8.10	8.30	8.00	8.23	1.57	9.80
California Water Service Group	1.86	6.50	NA	11.50	9.00	9.00	1.94	10.94
Essential Utilities, Inc.	2.36	7.00	6.00	6.70	6.52	6.55	2.44	8.99
Middlesex Water Company	1.59	6.00	NA	2.70	NA	4.35	1.62	5.97
SJW Group	2.03	10.50	14.00	14.10	7.00	11.40	2.15	13.55
York Water Company	1.61	7.00	NA	4.90	NA	5.95	1.66	7.61
							Average	9.19 %
							Median	8.99 %
							Average of Mean and Median	9.09 %

NA= Not Available

Notes:

(1) Indicated dividend at 10/16/2020 divided by the average closing price of the last 60 trading days ending 10/16/2020 for each company.

(2) From pages 2 through 8 of this Attachment.

(3) Average of columns 2 through 4 excluding negative growth rates.

(4) This reflects a growth rate component equal to one-half the conclusion of growth rate (from column 5) x column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for American States Water Company, 1.75% x (1+(1/2 x 5.68%)) = 1.80%.

(5) Column 5 + column 6.

Source of Information:

Value Line Investment Survey
www.zacks.com Downloaded on 10/16/2020
www.yahoo.com Downloaded on 10/16/2020
Bloomberg Professional Services

AMER. STATES WATER NYSE-AWR

RECENT PRICE 74.33 | P/E RATIO 31.6 (Trailing: 32.6 Median: 22.0) | RELATIVE P/E RATIO 1.51 | DIV'D YLD 1.8% | VALUE LINE

TIMELINESS 2 Lowered 10/9/20
SAFETY 2 Raised 7/20/12
TECHNICAL 4 Lowered 10/9/20
BETA .65 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$64-$121	$93 (25%)

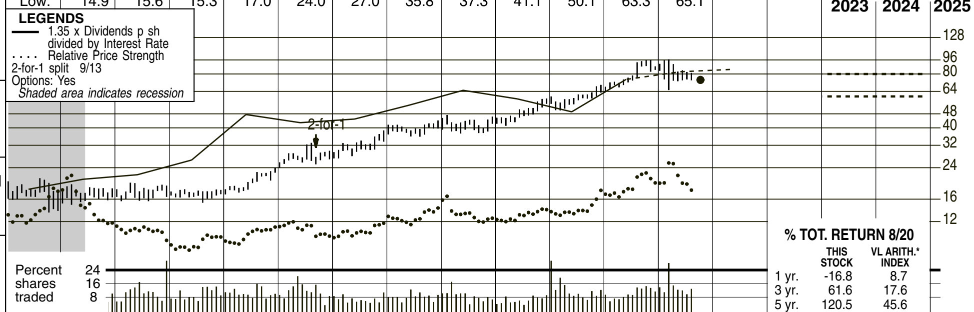
2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	80	(+10%)	4%
Low	60	(-20%)	-2%

Institutional Decisions

	4Q2019	1Q2020	2Q2020
to Buy	137	125	135
to Sell	145	166	129
Hld's(000)	26734	26162	25635

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
High:	19.4	19.8	18.2	24.1	33.1	38.7	44.1	47.2	58.4	69.6	96.0	96.6
Low:	14.9	15.6	15.3	17.0	24.0	27.0	35.8	37.3	41.1	50.1	63.3	65.1



% TOT. RETURN 8/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-16.8	8.7
3 yr.	61.6	17.6
5 yr.	120.5	45.6

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
6.81	7.03	7.88	8.75	9.21	9.74	10.71	11.12	12.12	12.19	12.17	12.56	11.92	12.01	11.88	12.86	**13.10**	**13.40**	Revenues per sh	**16.40**
1.11	1.32	1.45	1.65	1.69	1.70	2.11	2.13	2.48	2.65	2.67	2.81	2.70	2.96	2.84	3.26	**3.30**	**3.60**	"Cash Flow" per sh	**4.50**
.53	.66	.67	.81	.78	.81	1.11	1.12	1.41	1.61	1.57	1.61	1.62	1.88	1.72	2.28	**2.30**	**2.45**	Earnings per sh A	**2.90**
.44	.45	.46	.48	.50	.51	.52	.55	.64	.76	.83	.87	.91	.99	1.06	1.16	**1.28**	**1.40**	Div'd Decl'd per sh B■	**1.85**
2.51	2.12	1.95	1.45	2.23	2.09	2.12	2.13	1.77	2.52	1.89	2.39	3.55	3.08	3.44	4.12	**3.60**	**3.50**	Cap'l Spending per sh	**3.75**
7.51	7.86	8.32	8.77	8.97	9.70	10.13	10.84	11.80	12.72	13.24	12.77	13.52	14.45	15.19	16.33	**17.15**	**18.10**	Book Value per sh D	**21.35**
33.50	33.60	34.10	34.46	34.60	37.06	37.26	37.70	38.53	38.72	38.29	36.50	36.57	36.68	36.76	36.85	**37.00**	**37.25**	Common Shs Outst'g C	**37.50**
23.2	21.9	27.7	24.0	22.6	21.2	15.7	15.4	14.3	17.2	20.1	24.6	25.6	25.7	34.0	34.4	*Bold figures are*		Avg Ann'l P/E Ratio	**23.5**
1.23	1.17	1.50	1.27	1.36	1.41	1.00	.97	.91	.97	1.06	1.24	1.34	1.29	1.84	1.87	*Value Line*		Relative P/E Ratio	**1.30**
3.6%	3.1%	2.5%	2.5%	2.9%	2.9%	3.0%	3.2%	3.1%	2.7%	2.6%	2.2%	2.2%	2.0%	1.8%	1.5%	*estimates*		Avg Ann'l Div'd Yield	**2.6%**

CAPITAL STRUCTURE as of 6/30/20
Total Debt $330.3 mill. **Due in 5 Yrs** $6.9 mill.
LT Debt $280.9 mill. **LT Interest** $24.5 mill.
(31% of Cap'l)

Leases, Uncapitalized: Annual rentals $2.7 mill.
Pension Assets-12/19 $192.5 mill.
Oblig. $231.9 mill.
Pfd Stock None

Common Stock 36,883,874 shs.
as of 7/30/20

MARKET CAP: $2.7 billion (Mid Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
398.9	419.3	466.9	472.1	465.8	458.6	436.1	440.6	436.8	473.9	**485**	**500**	Revenues ($mill)	**615**
41.4	42.0	54.1	62.7	61.1	60.5	59.7	69.4	63.9	84.3	**85.0**	**90.0**	Net Profit ($mill)	**110**
43.2%	41.7%	39.9%	36.3%	38.4%	38.4%	36.8%	36.0%	22.0%	22.6%	**23.0%**	**23.0%**	Income Tax Rate	**23.0%**
5.8%	2.0%	2.5%	--	--	--	--	--	2.5%	--	**1.0%**	**1.0%**	AFUDC % to Net Profit	**1.0%**
44.3%	45.4%	42.2%	39.8%	39.1%	41.1%	39.4%	38.0%	40.5%	44.4%	**46.0%**	**47.0%**	Long-Term Debt Ratio	**49.5%**
55.7%	54.6%	57.8%	60.2%	60.9%	58.9%	60.6%	62.0%	59.5%	55.6%	**54.0%**	**53.0%**	Common Equity Ratio	**51.5%**
677.4	749.1	787.0	818.4	832.6	791.5	815.3	854.9	938.4	1082.5	**1180**	**1275**	Total Capital ($mill)	**1565**
855.0	896.5	917.8	981.5	1003.5	1060.8	1150.9	1205.0	1296.3	1415.7	**1485**	**1590**	Net Plant ($mill)	**1780**
7.6%	7.1%	8.3%	8.9%	8.6%	9.0%	8.6%	9.3%	7.9%	8.9%	**8.0%**	**8.0%**	Return on Total Cap'l	**8.5%**
11.0%	10.3%	11.9%	12.7%	12.0%	13.0%	12.1%	13.1%	11.4%	14.0%	**13.0%**	**13.5%**	Return on Shr. Equity	**14.0%**
11.0%	10.3%	11.9%	12.7%	12.0%	13.0%	12.1%	13.1%	11.4%	14.0%	**13.0%**	**13.5%**	Return on Com Equity	**14.0%**
5.8%	5.3%	6.6%	6.8%	5.7%	6.0%	5.3%	6.2%	4.5%	6.9%	**6.0%**	**6.0%**	Retained to Com Eq	**5.0%**
47%	49%	45%	47%	53%	54%	56%	52%	61%	51%	**56%**	**56%**	All Div'ds to Net Prof	**64%**

CURRENT POSITION ($MILL.)	2018	2019	6/30/20
Cash Assets	7.1	1.3	6.5
Accts Receivable	23.4	20.9	30.4
Other	101.0	100.3	100.1
Current Assets	131.5	122.5	137.0
Accts Payable	59.5	55.6	51.8
Debt Due	40.3	5.3	49.4
Other	46.8	55.1	57.5
Current Liab.	146.6	116.0	158.7

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	3.0%	--	5.0%
"Cash Flow"	6.0%	3.0%	7.0%
Earnings	9.5%	5.0%	6.5%
Dividends	8.0%	7.5%	9.5%
Book Value	5.5%	4.0%	5.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	98.8	113.2	124.4	104.2	440.6
2018	94.7	106.9	124.2	111.0	436.8
2019	101.7	124.7	134.5	113.0	473.9
2020	109.1	121.3	**139.6**	**115**	**485**
2021	**110**	**125**	**145**	**120**	**500**

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.34	.62	.57	.35	1.88
2018	.29	.44	.62	.37	1.72
2019	.35	.72	.76	.45	2.28
2020	.38	.69	**.73**	**.50**	**2.30**
2021	**.43**	**.72**	**.75**	**.55**	**2.45**

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.224	.224	.224	.242	.91
2017	.242	.242	.255	.255	.99
2018	.255	.255	.275	.275	1.06
2019	.275	.275	.305	.305	1.16
2020	.305	.305	.335		

BUSINESS: American States Water Co. operates as a holding company. Through its principal subsidiary, Golden State Water Co., it supplies water to 260,708 customers in 10 California counties. Service areas include the metropolitan areas of Los Angeles and Orange Counties. The company also provides electricity to 24,420 customers in Big Bear Lake and San Bernardino Cnty. Provides water & wastewater services to U.S. military bases through its ASUS subsidiary. Sold Chaparral City Wtr. of AZ. (6/11). Employs 841. BlackRock, Inc. owns 15.9% of out. shares; Vanguard, 11.9%; off. & dir. 1.0%. (4/20 Proxy). Chairman: Lloyd Ross. Pres. & CEO: Robert Sprowls. Inc: CA. Address: 630 East Foothill Blvd., San Dimas, CA 91773. Tel: 909-394-3600. Internet: www.aswater.com.

American States Water recently raised its dividend by more than we had anticipated. In the third quarter, the water utility hiked the quarterly payout almost 10%. This represented one of the largest increases in the entire industry. What's more, with a dividend-to-net profit ratio that is considered low for this group, there is ample room for growth in the distribution in the years ahead. We think annual increases of close to double digits are possible through mid-decade.

Golden State Water is doing well, despite problems in its home state. The second-quarter year-over-year earnings comparison was much better than it appeared, as the company recorded a large one-time gain in the 2019 period. As California deals with the impact of the coronavirus and wildfires, the utility is operating smoothly as the demand for water typically remains stable whether the economy is booming or in a recession, as is the case now.

Our earnings estimates are unchanged, once again. As we often point out, one of the main advantages of a water utility is the predictable nature of its income stream. Hence, we are still looking for share earnings of $2.30 and $2.45 for 2020 and 2021, respectively.

Nonregulated operations should be a key driver of long-term growth. Though its ASUS subsidiary, American States provides water services to U.S. Army bases around the country. As the military continues to privatize its water systems, we expect the company to win its fair share of the 50-year contracts. Responsible for over 17% of net profits last quarter, this percentage should continue to trend higher. Also, profitability in this sector is not capped like it is in the regulated business.

Short-term investors might find these shares attractive. For starters, the equity is expected to outperform the market averages in the year ahead. What's more, during this period of economic and political uncertainty, the utility has very well-defined prospects. As usual, a premium will have to be paid to own stock in this space. Also, as is the case with most utilities, AWR's total return prospects out to 2023-2025 are not impressive.

James A. Flood *October 9, 2020*

(A) Primary earnings. Excludes nonrecurring gains/(losses): '04, 7¢; '05, 13¢; '06, 3¢; '08, (14¢); '10, (23¢); '11, 10¢. Next earnings report due early November.
(B) Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available.
(C) In millions, adjusted for split.
(D) Includes intangibles. As of 12/31/19; $1.1 million/$0.04 a share.

Company's Financial Strength	A
Stock's Price Stability	100
Price Growth Persistence	85
Earnings Predictability	85

AMERICAN WATER NYSE-AWK

RECENT PRICE 144.55 | P/E RATIO 37.2 (Trailing: 41.1 Median: 22.0) | RELATIVE P/E RATIO 1.78 | DIV'D YLD 1.6% | VALUE LINE

TIMELINESS 1 Raised 10/9/20
SAFETY 3 New 7/25/08
TECHNICAL 3 Lowered 10/9/20
BETA .85 (1.00 = Market)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
High:	23.0	25.8	32.8	39.4	45.1	56.2	61.2	85.2	92.4	98.2	129.9	150.5
Low:	16.2	19.4	25.2	31.3	37.0	41.1	48.4	58.9	70.0	76.0	88.0	92.0

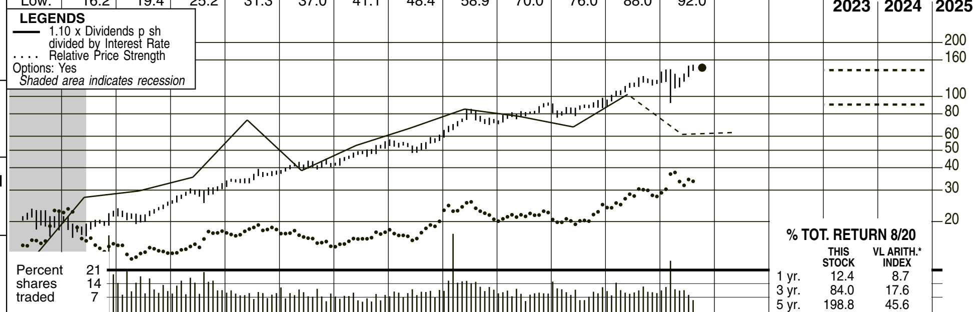
18-Month Target Price Range
Low-High $104-$236 — Midpoint (% to Mid) $170 (20%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	140	(-5%)	1%
Low	90	(-40%)	-9%

Institutional Decisions

	4Q2019	1Q2020	2Q2020
to Buy	393	333	363
to Sell	361	415	371
Hld's(000)	155435	151948	151102



% TOT. RETURN 8/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	12.4	8.7
3 yr.	84.0	17.6
5 yr.	198.8	45.6

2004	2005	2006E	2007E	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
--	--	13.08	13.84	14.61	13.98	15.49	15.18	16.25	16.28	16.78	17.72	18.54	18.81	19.04	19.97	20.95	21.85	Revenues per sh	24.75
--	--	.65	d.47	2.87	2.89	3.56	3.73	4.27	4.36	4.75	5.13	5.26	5.14	6.15	6.65	8.00	8.15	"Cash Flow" per sh	8.75
--	--	d.97	d2.14	1.10	1.25	1.53	1.72	2.11	2.06	2.39	2.64	2.62	2.38	3.15	3.43	3.85	4.20	Earnings per sh A	4.90
--	--	--	--	.40	.82	.86	.90	1.21	.84	1.21	1.33	1.47	1.62	1.78	1.96	2.15	2.35	Div'd Decl'd per sh B■	2.90
--	--	4.31	4.74	6.31	4.50	4.38	5.27	5.25	5.50	5.33	6.51	7.36	8.04	8.78	9.15	8.70	9.20	Cap'l Spending per sh	9.00
--	--	23.86	28.39	25.64	22.91	23.59	24.11	25.11	26.52	27.39	28.25	29.24	30.13	32.42	33.83	35.40	36.95	Book Value per sh D	42.50
--	--	160.00	160.00	160.00	174.63	175.00	175.66	176.99	178.25	179.46	178.28	178.10	178.44	180.68	180.81	181.50	182.00	Common Shs Outst'g C	189.00
--	--	--	--	18.9	15.6	14.6	16.8	16.7	19.9	20.0	20.5	27.7	33.8	27.3	32.9	Bold figures are	Value Line	Avg Ann'l P/E Ratio	23.5
--	--	--	--	1.14	1.04	.93	1.05	1.06	1.12	1.05	1.03	1.45	1.70	1.47	1.79	estimates		Relative P/E Ratio	1.30
--	--	--	--	1.9%	4.2%	3.8%	3.1%	3.4%	2.0%	2.5%	2.5%	2.0%	2.0%	2.1%	1.7%			Avg Ann'l Div'd Yield	2.5%

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
2710.7	2666.2	2876.9	2901.9	3011.3	3159.0	3302.0	3357.0	3440.0	3610.0	3800	3975	Revenues ($mill)	4675
267.8	304.9	374.3	369.3	429.8	476.0	468.0	426.0	567.0	621.0	700	765	Net Profit ($mill)	925
40.4%	39.5%	40.7%	39.1%	39.4%	39.1%	39.2%	53.3%	28.2%	25.5%	21.0%	21.0%	Income Tax Rate	21.0%
--	--	6.2%	5.1%	--	--	--	--	5.1%	4.0%	5.0%	5.0%	AFUDC % to Net Profit	5.0%
56.8%	55.7%	53.9%	52.4%	52.4%	53.7%	52.4%	54.7%	56.3%	58.5%	61.0%	60.5%	Long-Term Debt Ratio	59.0%
43.2%	44.2%	46.1%	47.6%	47.4%	46.2%	47.5%	45.3%	43.6%	41.4%	39.0%	39.5%	Common Equity Ratio	41.0%
9561.3	9580.3	9635.5	9940.7	10364	10911	10967	11875	13433	14760	15800	17050	Total Capital ($mill)	20000
11059	11021	11739	12391	12900	13933	14992	16246	17409	18232	19100	20000	Net Plant ($mill)	22200
4.4%	4.8%	5.4%	5.1%	5.5%	5.7%	5.6%	4.9%	5.4%	5.4%	5.5%	5.5%	Return on Total Cap'l	6.0%
6.5%	7.2%	8.4%	7.8%	8.7%	9.4%	9.0%	7.9%	9.7%	10.1%	11.0%	11.5%	Return on Shr. Equity	11.5%
6.5%	7.2%	8.4%	7.8%	8.7%	9.4%	9.0%	7.9%	9.7%	10.1%	11.9%	11.5%	Return on Com Equity	11.5%
2.8%	3.5%	3.6%	4.7%	4.3%	4.7%	4.0%	2.5%	4.2%	4.4%	5.0%	4.5%	Retained to Com Eq	4.5%
56%	52%	57%	40%	50%	50%	56%	68%	56%	57%	56%	59%	All Div'ds to Net Prof	59%

CAPITAL STRUCTURE as of 6/30/20
Total Debt $10578 mil. **Due in 5 Yrs** $2500 mil.
LT Debt $9589 mil. **LT Interest** $354 mil.
(60% of Cap'l)

Leases, Uncapitalized: Annual rentals $14.0 mill.
Pension Assets12/19 $1747.0 mill
Oblig. $2161.0 mill.
Pfd Stock $5.0 mill. **Pfd Div'd** $.4 mill

Common Stock 181,204,068 shares
as of 7/31/20

MARKET CAP: $26.2 billion (Large Cap)

CURRENT POSITION ($MILL.)	2018	2019	6/30/20
Cash Assets	158	91	569
Accts Receivable	301	294	298
Other	322	900	1029
Current Assets	781	1285	1896
Accts Payable	175	203	169
Debt Due	1035	814	989
Other	884	1028	955
Current Liab.	2094	2045	2113

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	3.0%	3.0%	4.5%
"Cash Flow"	13.0%	6.0%	6.5%
Earnings	45.5%	6.5%	8.5%
Dividends	16.0%	10.5%	8.5%
Book Value	2.5%	4.0%	5.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	756	844	936	821	3357
2018	761	853	976	850	3440
2019	813	882	1013	902	3610
2020	844	931	1090	935	3800
2021	885	970	1120	1000	3975

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.52	.73	1.12	.01	2.38
2018	.59	.91	1.03	.62	3.15
2019	.62	.94	1.33	.54	3.43
2020	.68	.97	1.40	.80	3.85
2021	.72	1.05	1.60	.83	4.20

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.34	.375	.375	.375	1.47
2017	.375	.415	.415	.415	1.62
2018	.415	.455	.455	.455	1.78
2019	.455	.50	.50	.50	1.96
2020	.50	.55	.55		

BUSINESS: American Water Works Company, Inc. is the largest investor-owned water and wastewater utility in the U.S., providing services to approximately 15 million people in 46 states. Nonregulated business assists municipalities and military bases with the maintenance and upkeep as well. Regulated operations made up 86% of 2019 revenues. New Jersey is its largest market accounting for 24.6% of regulated revenues; Pennsylvania, 22.3%; Missouri, 10.5%. Has 6,800 employees. The Vanguard Grp, owns 12.4% of outstanding shares; BlackRock, Inc., 8.7%; officers & directors, less than 1.0%. (3/20 Proxy). President & CEO: Susan N. Story. Chairman: George MacKenzie. Address: 1 Water Street, Camden, NJ 08102. Tel.: 856-346-8200. Internet: www.amwater.com.

Shares of American Water Works continue to outperform the broader market, as well as that of its peers. Since our last report three months ago, the equity has increased nearly 14% in value, versus about a 6% rise in the S&P 500 Index. In addition, most of the other stocks in this group have actually posted negative returns averaging in the double digits over the same time span.

Earnings and dividend growth prospects are bright. Due to its bolt-on acquisition strategy, a constructive relationship with its many different state regulators, and the ability to cut costs, we estimate that American Water's share-net and annual payout may well rise 9%-11% in 2020 and 2021. This is far superior to most others in the industry. Much of the expense control is related to its merger policy. Because the water industry is very fragmented, significant economies of scale are very attainable. So, American Water can purchase other water districts and increase the margins on the purchased assets. Through July of this year, more than 60,000 new customers were added, with another 43,600 under agreement.

The construction budget remain massive. As is the case with most water utilities, the company is investing heavily to upgrade and modernize its pipeline and water treatment assets. Approximately $28 billion has been spent over the past decade, with about another $20 billion projected to be used over the next decade. Still, we expect American Water's balance sheet to remain in decent shape even though a fair amount of new debt will probably be needed to finance the building program.

Investors will likely have to continue to pay a hefty premium for these timely shares. As we have pointed out in previous reports, by a metric such as the Price/Earnings ratio, AWK is trading at levels well above the market averages and its group. We attribute this to the company's well-defined earnings and dividend growth prospects. The equity also seems to benefit from it large size, as well as the lack of options in this space for institutions seeking to take large positions. Over the pull to 2023-2025, these shares have subpar total return prospects.

James A. Flood — *October 9, 2020*

(A) Diluted earnings. Excludes nonrecur. losses: '08, $4.62; '09, $2.63; '11, $0.07. Disc. oper.: '06, ($0.04); '11, $0.03; '12, ($0.10); '13,($0.01). GAAP used as of 2014. Next earnings report due early Nov.
(B) Dividends paid in March, June, September, and December. ■ Div. reinvestment available.
(C) In millions. (D) Includes intangibles. On 6/30/20: $1.567 billion, $8.65/share.
(E) Pro forma numbers for '06 & '07.

Company's Financial Strength	B++
Stock's Price Stability	85
Price Growth Persistence	100
Earnings Predictability	85

CALIFORNIA WATER NYSE-CWT

RECENT PRICE 43.55 | P/E RATIO 33.0 (Trailing: 53.8 Median: 23.0) | RELATIVE P/E RATIO 1.58 | DIV'D YLD 2.0% | VALUE LINE

TIMELINESS 3 Lowered 3/6/20
SAFETY 3 Lowered 7/27/07
TECHNICAL 3 Lowered 6/12/20
BETA .65 (1.00 = Market)

High:	24.1	19.8	19.4	19.3	23.4	26.4	26.0	36.8	46.2	49.1	57.5	57.4
Low:	16.7	16.9	16.7	16.8	18.4	20.3	19.5	22.5	32.4	35.3	44.6	39.7

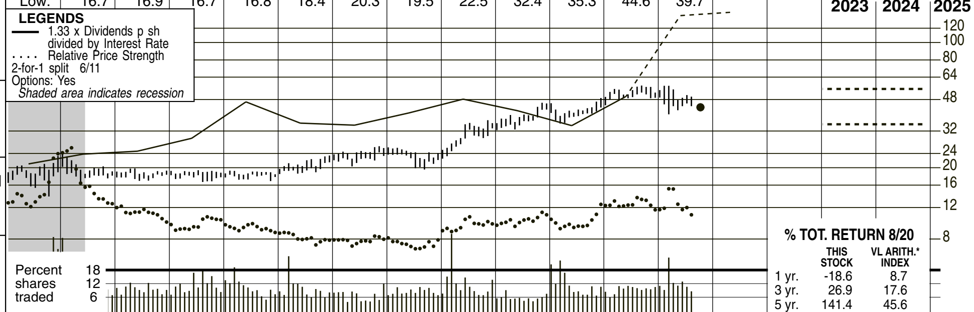
18-Month Target Price Range
Low-High $36-$71 | Midpoint (% to Mid) $54 (25%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	55	(+25%)	8%
Low	35	(-20%)	-3%

Institutional Decisions

	4Q2019	1Q2020	2Q2020
to Buy	115	104	109
to Sell	101	118	107
Hld's(000)	36624	35792	35580



% TOT. RETURN 8/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-18.6	8.7
3 yr.	26.9	17.6
5 yr.	141.4	45.6

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
8.59	8.72	8.10	8.88	9.90	10.82	11.05	12.00	13.34	12.23	12.50	12.29	12.70	13.89	14.53	14.72	**14.60**	**15.20**	Revenues per sh	**15.00**
1.42	1.52	1.36	1.56	1.86	1.93	1.93	2.07	2.32	2.21	2.47	2.22	2.34	3.00	3.11	3.14	**2.45**	**3.30**	"Cash Flow" per sh	**3.50**
.73	.74	.67	.75	.95	.98	.91	.86	1.02	1.02	1.19	.94	1.01	1.40	1.36	1.31	**.85**	**1.75**	Earnings per sh A	**2.00**
.57	.57	.58	.58	.59	.59	.60	.62	.63	.64	.65	.67	.69	.72	.75	.79	**.85**	**.89**	Div'd Decl'd per sh B ■	**1.05**
1.87	2.01	2.14	1.84	2.41	2.66	2.97	2.83	3.04	2.58	2.76	3.69	4.77	5.40	5.65	5.64	**4.85**	**4.75**	Cap'l Spending per sh	**4.25**
7.83	7.90	9.07	9.25	9.72	10.13	10.45	10.76	11.28	12.54	13.11	13.41	13.75	14.44	15.19	16.07	**15.70**	**15.90**	Book Value per sh C	**16.05**
36.73	36.78	41.31	41.33	41.45	41.53	41.67	41.82	41.98	47.74	47.81	47.88	47.97	48.01	48.07	48.53	**50.00**	**51.00**	Common Shs Outst'g D	**53.00**
20.1	24.9	29.2	26.1	19.8	19.7	20.3	21.3	17.9	20.1	19.7	24.8	29.6	26.9	30.3	39.3	*Bold figures are*	*Value Line estimates*	Avg Ann'l P/E Ratio	**23.0**
1.06	1.33	1.58	1.39	1.19	1.31	1.29	1.34	1.14	1.13	1.04	1.25	1.55	1.35	1.64	2.13			Relative P/E Ratio	**1.25**
3.9%	3.1%	2.9%	3.0%	3.1%	3.1%	3.2%	3.4%	3.5%	3.1%	2.8%	2.9%	2.3%	1.9%	1.8%	1.5%			Avg Ann'l Div'd Yield	**2.3%**

CAPITAL STRUCTURE as of 6/30/20
Total Debt $1182.3 mill. **Due in 5 Yrs** $357.0 mill.
LT Debt $785.3 mill. **LT Interest** $40.0 mill.
(Total interest coverage: 3.2x) (50% of Cap'l)

Pension Assets-12/19 $573.6 mill. **Oblig.** $812.0 mill.

Pfd Stock None

Common Stock 49,398,000 shs.

MARKET CAP: $2.2 billion (Mid Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
460.4	501.8	560.0	584.1	597.5	588.4	609.4	666.9	698.2	714.6	**730**	**775**	Revenues ($mill) E	**795**
37.7	36.1	42.6	47.3	56.7	45.0	48.7	67.2	65.6	63.1	**43.0**	**90.0**	Net Profit ($mill)	**105**
39.5%	40.5%	37.5%	30.3%	33.0%	36.0%	35.5%	30.1%	24.5%	19.1%	**21.0%**	**21.0%**	Income Tax Rate	**21.0%**
4.2%	7.6%	8.0%	4.3%	2.7%	4.3%	6.1%	3.5%	3.1%	5.8%	**5.0%**	**5.0%**	AFUDC % to Net Profit	**5.0%**
52.4%	51.7%	47.8%	41.6%	40.1%	44.4%	44.6%	42.7%	49.3%	50.2%	**49.0%**	**47.0%**	Long-Term Debt Ratio	**43.5%**
47.6%	48.3%	52.2%	58.4%	59.9%	55.6%	55.4%	57.3%	50.7%	49.8%	**51.0%**	**53.0%**	Common Equity Ratio	**56.5%**
914.7	931.5	908.2	1024.9	1045.9	1154.4	1191.2	1209.3	1440.2	1566.7	**1535**	**1525**	Total Capital ($mill)	**1500**
1294.3	1381.1	1457.1	1515.8	1590.4	1701.8	1859.3	2048.0	2232.7	2406.4	**2550**	**2575**	Net Plant ($mill)	**2500**
5.5%	5.5%	6.3%	6.0%	6.3%	5.2%	5.5%	7.1%	5.9%	5.5%	**3.5%**	**6.5%**	Return on Total Cap'l	**8.0%**
8.6%	8.0%	9.0%	7.9%	9.1%	7.0%	7.4%	9.7%	9.0%	8.1%	**5.5%**	**11.0%**	Return on Shr. Equity	**12.5%**
8.6%	8.0%	9.0%	7.9%	9.1%	7.0%	7.4%	9.7%	9.0%	8.1%	**5.5%**	**11.0%**	Return on Com Equity	**12.5%**
3.0%	2.3%	3.4%	3.4%	4.1%	2.0%	2.4%	4.7%	4.0%	3.2%	**NMF**	**5.5%**	Retained to Com Eq	**6.0%**
66%	71%	62%	56%	55%	71%	68%	51%	55%	60%	**100%**	**51%**	All Div'ds to Net Prof	**53%**

CURRENT POSITION ($MILL.)	2018	2019	6/30/20
Cash Assets	47.2	42.7	114.4
Other	141.5	142.0	152.5
Current Assets	188.7	184.7	266.9
Accts Payable	95.6	108.5	128.2
Debt Due	170.0	197.0	397.0
Other	55.6	53.2	132.4
Current Liab.	321.2	358.7	557.6

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	4.0%	2.5%	.5%
"Cash Flow"	5.5%	5.5%	2.0%
Earnings	4.5%	4.5%	6.5%
Dividends	2.5%	3.5%	5.5%
Book Value	4.5%	4.5%	1.0%

Cal-endar	QUARTERLY REVENUES ($ mill.)E Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	122.1	171.1	211.7	162.0	666.9
2018	134.6	174.9	221.3	167.4	698.2
2019	126.1	179.0	232.6	176.9	714.6
2020	125.6	175.5	**247**	**181.9**	**730**
2021	**147**	**195**	**248**	**185**	**775**

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.02	.39	.70	.29	1.40
2018	d.02	.31	.75	.32	1.36
2019	d.16	.35	.88	.24	1.31
2020	d.42	.11	**.79**	**.37**	**.85**
2021	**.05**	**.42**	**.90**	**.38**	**1.75**

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.1725	.1725	.1725	.1725	.69
2017	.18	.18	.18	.18	.72
2018	.1875	.1875	.1875	.1875	.75
2019	.1975	.1975	.1975	.1975	.79
2020	.2125	.2125	.2125		

BUSINESS: California Water Service Group provides regulated and nonregulated water service to 489,600 customers in 100 communities in the state of California. Accounts for over 94% of total customers. Also operates in Washington, New Mexico, and Hawaii. Main service areas: San Francisco Bay area, Sacramento Valley, Salinas Valley, San Joaquin Valley & parts of Los Angeles. Acquired Rio Grande Corp; West Hawaii Utilities (9/08). Revenue breakdown, '19: residential, 67%; business, 20%; industrial, 5%; public authorities, 5%; other 3%. Off. and dir. own 1% of common stock (4/20 proxy). Has 1,184 employees. Pres. and CEO: Martin A. Kropelnicki. Inc.: DE. Addr.: 1720 North First St., San Jose, CA 95112-4598. Tel.: 408-367-8200. Internet: www.calwatergroup.com.

California Water's financial results continue to be hampered by a lack of resolution on the rate case front. Specifically, the California Public Utilities Commission has yet to officially approve the settlement filed in October of 2019 that would provide general rate relief and other cost recovery methods. The new rates would be effective from January 1, 2020 and would be recouped via customer surcharges. In fact, if they had been approved, management estimates an additional $30 million in revenues would have been generated in the June period. Moreover, water production costs, another metric that would have benefited from a rate case approval, increased significantly from the previous-year figure. All told, CWT drastically underperformed expectations in the first half of 2020. Second-quarter revenues of $176 million fell modestly, year over year, while share net declined sharply from $0.35, to $0.11.

We are tempering our 2020 profit forecast for the second time this year. Due largely to a weak first-half showing, we now expect California Water to earn $0.85 a share this year, down from our previous call of $1.20 a share.

Financials should rebound sharply next year. We are cautiously optimistic that the general rate case situation will be resolved in the near future. In addition, operating headwinds, such as rising production expenses and purchased water costs, may begin to ease. Too, an expanded footprint in Washington State, thanks to its recent acquisition of Rainier View Water Company, augurs well. In sum, we are leaving unchanged our 2021 top- and bottom-line estimates at $775 million and $1.75 a share, respectively.

Interested subscribers with a holding period out to mid-decade would be wise to wait for a better entry point. Overall, we think California Water's long-term business prospects are bright, and operating conditions should smooth out once regulatory matters are in the rear-view mirror. That said, the stock price has been on a tear since early 2016 and, as a result, total return potential over the pull to 2023-2025 is subpar at the recent quotation. The equity is only an average selection for the year ahead, too.

Nicholas P. Patrikis *October 9, 2020*

(A) Basic EPS. Excl. nonrecurring gain (loss): '11, 4¢. Next earnings report due early Nov.
(B) Dividends historically paid in late Feb., May, Aug., and Nov. ■ Div'd reinvestment plan available.
(C) Incl. intangible assets. In '19 : $24.9 mill., $0.51/sh.
(D) In millions, adjusted for split.
(E) Excludes non-reg. rev.

Company's Financial Strength	B++
Stock's Price Stability	95
Price Growth Persistence	60
Earnings Predictability	65

ESSENTIAL UTIL. NYSE-WTRG

RECENT PRICE 39.93 | P/E RATIO 39.1 (Trailing: 34.7 Median: 23.0) | RELATIVE P/E RATIO 1.87 | DIV'D YLD 2.6% | VALUE LINE

TIMELINESS 2 Lowered 4/24/20
SAFETY 2 Raised 4/20/12
TECHNICAL 2 Lowered 6/12/20
BETA .90 (1.00 = Market)

18-Month Target Price Range
Low-High $31-$80 | Midpoint (% to Mid) $56 (40%)

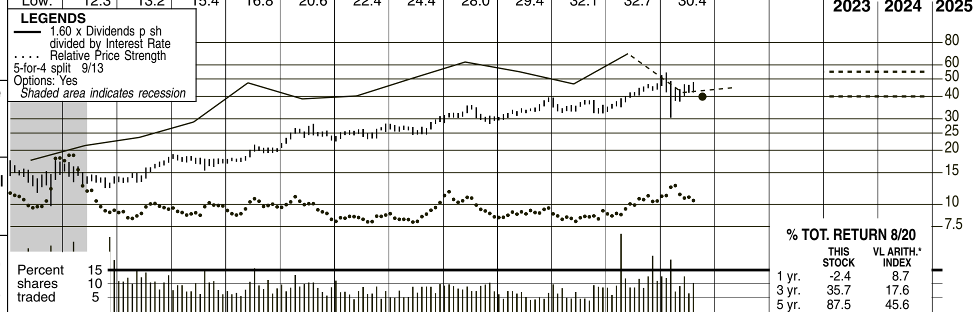
2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	55	(+40%)	11%
Low	40	(Nil)	3%

Institutional Decisions

	4Q2019	1Q2020	2Q2020
to Buy	274	252	250
to Sell	242	292	235
Hld's(000)	149836	161407	161504

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
High:	17.2	18.4	19.0	21.5	28.1	28.2	31.1	35.8	39.6	39.4	47.3	54.5
Low:	12.3	13.2	15.4	16.8	20.6	22.4	24.4	28.0	29.4	32.1	32.7	30.4



Target Price Range 2023 | 2024 | 2025

% TOT. RETURN 8/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-2.4	8.7
3 yr.	35.7	17.6
5 yr.	87.5	45.6

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
2.78	3.08	3.23	3.61	3.71	3.93	4.21	4.10	4.32	4.32	4.37	4.61	4.62	4.56	4.71	4.03	**6.35**	**7.55**	Revenues per sh	**8.45**
.87	.97	1.01	1.10	1.14	1.29	1.42	1.45	1.51	1.82	1.89	1.87	2.07	2.12	1.90	1.73	**1.95**	**2.30**	"Cash Flow" per sh	**2.65**
.51	.57	.56	.57	.58	.62	.72	.83	.87	1.16	1.20	1.14	1.32	1.35	1.08	1.04	**1.00**	**1.20**	Earnings per sh A	**1.75**
.29	.32	.35	.38	.41	.44	.47	.50	.54	.58	.63	.69	.74	.79	.85	.91	**.97**	**1.04**	Div'd Decl'd per sh B■	**1.30**
1.23	1.47	1.64	1.43	1.58	1.66	1.89	1.90	1.98	1.73	1.84	2.07	2.16	2.69	2.78	2.49	**2.20**	**3.80**	Cap'l Spending per sh	**4.75**
4.71	5.04	5.57	5.85	6.26	6.50	6.81	7.21	7.90	8.63	9.27	9.78	10.43	11.02	11.28	17.58	**19.00**	**19.05**	Book Value per sh	**20.00**
158.97	161.21	165.41	166.75	169.21	170.61	172.46	173.60	175.43	177.93	178.59	176.54	177.39	177.71	178.09	220.76	**251.25**	**252.00**	Common Shs Outst'g C	**260.00**
25.1	31.8	34.7	32.0	24.9	23.1	21.1	21.3	21.9	21.2	20.8	23.5	23.9	24.7	32.6	39.1	*Bold figures are*	*Value Line*	Avg Ann'l P/E Ratio	**27.0**
1.33	1.69	1.87	1.70	1.50	1.54	1.34	1.34	1.39	1.19	1.09	1.18	1.25	1.24	1.76	2.12	*estimates*		Relative P/E Ratio	**1.50**
2.3%	1.8%	1.8%	2.1%	2.8%	3.1%	3.1%	2.8%	2.8%	2.4%	2.5%	2.6%	2.3%	2.4%	2.4%	2.2%			Avg Ann'l Div'd Yield	**2.7%**

CAPITAL STRUCTURE as of 6/30/20
Total Debt $5277.4 mill. **Due in 5 Yrs** $496.0 mill.
LT Debt $5174.6 mill. **LT Interest** $200.0 mill.
(53% of Cap'l)

Pension Assets-12/19 $266.4 mill. **Oblig.** $310.5 mill.

Pfd Stock None
Common Stock 245,151,093 shares as of 7/27/20

MARKET CAP: $9.8 billion (Large Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
726.1	712.0	757.8	768.6	779.9	814.2	819.9	809.5	838.1	889.7	**1600**	**1900**	Revenues ($mill)	**2200**
124.0	144.8	153.1	205.0	213.9	201.8	234.2	239.7	192.0	224.5	**250**	**300**	Net Profit ($mill)	**455**
39.2%	32.9%	39.0%	10.0%	10.5%	6.9%	8.2%	6.6%	6.6%	6.6%	**2.0%**	**3.5%**	Income Tax Rate	**8.0%**
--	--	--	1.1%	2.4%	3.1%	3.8%	6.3%	6.8%	7.2%	**7.0%**	**7.0%**	AFUDC % to Net Profit	**7.0%**
56.6%	52.7%	52.7%	48.9%	48.5%	50.3%	48.4%	50.6%	54.4%	43.1%	**53.5%**	**57.0%**	Long-Term Debt Ratio	**40.5%**
43.4%	47.3%	47.3%	51.1%	51.5%	49.7%	51.6%	49.4%	45.6%	56.9%	**46.5%**	**43.0%**	Common Equity Ratio	**59.5%**
2706.2	2646.8	2929.7	3003.6	3216.0	3469.5	3587.7	3965.4	4407.8	6824.2	**10300**	**11000**	Total Capital ($mill)	**12800**
3469.3	3612.9	3936.2	4167.3	4402.0	4688.9	5001.6	5399.9	5930.3	6345.8	**9500**	**10150**	Net Plant ($mill)	**12000**
5.9%	6.9%	6.6%	8.0%	7.8%	6.9%	7.6%	7.1%	5.5%	4.2%	**3.0%**	**4.0%**	Return on Total Cap'l	**4.5%**
10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	**5.0%**	**6.5%**	Return on Shr. Equity	**9.0%**
10.6%	11.6%	11.0%	13.4%	12.9%	11.7%	12.7%	12.2%	9.6%	5.8%	**5.0%**	**6.5%**	Return on Com Equity	**9.0%**
3.7%	4.6%	4.3%	6.7%	6.1%	4.7%	5.6%	5.1%	2.1%	.9%	**NMF**	**1.0%**	Retained to Com Eq	**2.5%**
65%	60%	61%	50%	52%	60%	56%	59%	79%	84%	**97%**	**87%**	All Div'ds to Net Prof	**74%**

CURRENT POSITION ($MILL.)	2018	2019	6/30/20
Cash Assets	3.6	1868.9	7.3
Receivables	101.2	67.1	152.9
Inventory (AvgCst)	15.8	18.4	50.1
Other	26.6	58.3	102.2
Current Assets	147.2	2012.7	312.5
Accts Payable	77.3	74.9	124.1
Debt Due	160.0	130.8	102.8
Other	161.7	113.1	221.3
Current Liab.	399.0	318.8	448.2

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	1.5%	.5%	11.5%
"Cash Flow"	5.0%	2.0%	5.5%
Earnings	7.0%	1.5%	7.0%
Dividends	7.5%	8.0%	7.5%
Book Value	8.0%	9.0%	7.0%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	187.8	203.4	215.0	203.3	809.5
2018	194.3	211.9	226.2	205.7	838.1
2019	201.1	218.9	243.6	226.1	889.7
2020	255.6	384.5	**395**	**564.9**	**1600**
2021	**395**	**450**	**430**	**625**	**1900**

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.28	.34	.43	.30	1.35
2018	.29	.37	.44	d.02	1.08
2019	.09	.25	.38	.28	1.04
2020	.20	.29	**.23**	**.28**	**1.00**
2021	**.22**	**.33**	**.33**	**.32**	**1.20**

Cal-endar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.178	.178	.1913	.1913	.74
2017	.1913	.1913	.2047	.2047	.79
2018	.2047	.2047	.219	.219	.85
2019	.219	.219	.2343	.2343	.91
2020	.2343	.2343	.2507		

BUSINESS: Essential Utilities, Inc. became the new name for Aqua America on Feb. 3, 2020, to reflect the acquisition of Peoples, a natural gas utility, which occurred in 3/20. In 2019, Aqua Amer. provided water and wastewater services to about three million people in PA, OH, TX, IL, NC, NJ, IN, and VA. Employed 1,583. Acquired AquaSource, 7/13; North Maine Utilities, 7/15; and others. Water supply revenues 2019: residential, 58%; commercial, 16%; industrial, wastewater & other, 26%. Off. & dir. own less than 1% of the common stock; BlackRock, 10.5%; Vanguard, 10.4%; (4/20 proxy). Canadian Pension Plan about 8.8%. Pres. & CEO: Christopher Franklin. Inc.: PA Addr.: 762 West Lancaster Ave., Bryn Mawr, PA 19010. Tel.: 610-525-1400. Int.: www.essential.co.

Essential Utilities raised its dividend a solid 7% last quarter. The company increased the share payout from $0.2343 to $0.2507. This rate of increase ought to be maintained to mid-decade.

Earnings comparisons should be flat in 2020. Even though the second quarter surpassed our expectations, the company will probably be hindered by the costs associated with the large acquisition it made earlier this year. Recall that it (then known as Aqua America), paid $4.3 billion and assumed over $1 billion in debt to purchase Peoples gas utility. All told, Essential's share net should to be around $1.00, which isn't bad considering the amount of unusual charges. It also should be noted that both of the company's two key segments are much less vulnerable to the economic slowdown caused by the coronavirus. With the exception of industrial customers, the demand for water and gas is relatively inelastic.

In 2021, we expect the bottom line to get back on track. Management is estimating that the regulated water and segments will grow 6% to 7.0%, and 8% to 10%, annually through 2022. This, along with some rate relief and cost savings, should enable Essential's share net to reach $1.20.

The construction budget is large. This year, the company plans on spending only $550 million to upgrade its water pipelines and other assets. However, capital expenditures have been projected to total about $2.8 billion through 2022. Thus, spending ought to average over a $1 billion annually in 2021 and 2020.

Finances are more than decent. True, debt levels have increased as a result of the Peoples merger. In addition, external funds will be required to fund the massive building program discussed above. Nevertheless, the balance sheet is still better than average, and will likely remain so.

These shares are ranked 2 (Above Average) for year-ahead performance. So short-term investors looking for well-defined prospects should find the stock of interest. For those looking out to 2023-2025, however, total return potential remains well below the *Value Line* median, as is the case with most members in this group.

James A. Flood *October 9, 2020*

(A) Diluted egs. Excl. nonrec. gains: '12, 18¢. Excl. gain from disc. operations: '12, 7¢; '13, 9¢; '14, 11¢. Quarterly EPS do not add in '19 due to a large change in the number of shares outstanding in the Dec. period. Next earnings report early Nov. (B) Dividends historically paid in early March, June, Sept., & Dec. ■ Div'd. reinvestment plan available (5% discount). (C) In millions, adjusted for stock splits. (D) Includes intangibles: 6/30/20, $2.342 bill./$9.55 a share.

Company's Financial Strength	A
Stock's Price Stability	90
Price Growth Persistence	95
Earnings Predictability	60

MIDDLESEX WATER NDQ-MSEX

RECENT PRICE **62.37** | P/E RATIO **28.9** (Trailing: 29.4 Median: 21.0) | RELATIVE P/E RATIO **1.38** | DIV'D YLD **1.7%** | VALUE LINE

TIMELINESS 2 Raised 5/15/20
SAFETY 2 New 10/21/11
TECHNICAL 2 Raised 5/1/20
BETA .70 (1.00 = Market)

High:	17.9	19.3	19.4	19.6	22.5	23.7	28.0	44.5	46.7	60.3	67.7	72.4
Low:	11.6	14.7	16.5	17.5	18.6	19.1	21.2	25.0	32.2	34.0	51.0	48.8

18-Month Target Price Range
Low-High $53-$99 Midpoint (% to Mid) $76 (20%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	65	(+5%)	3%
Low	50	(-20%)	-3%

Institutional Decisions

	4Q2019	1Q2020	2Q2020
to Buy	68	55	68
to Sell	68	70	55
Hld's(000)	10433	10280	10359

% TOT. RETURN 8/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	6.4	8.7
3 yr.	77.7	17.6
5 yr.	211.4	45.6

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
6.25	6.44	6.16	6.50	6.79	6.75	6.60	6.50	6.98	7.19	7.26	7.77	8.16	8.00	8.42	7.72	8.20	8.45	Revenues per sh	9.15
1.28	1.33	1.33	1.49	1.53	1.40	1.55	1.46	1.56	1.72	1.84	1.97	2.17	2.24	2.89	2.90	3.00	3.15	"Cash Flow" per sh	3.50
.73	.71	.82	.87	.89	.72	.96	.84	.90	1.03	1.13	1.22	1.38	1.38	1.96	2.01	2.15	2.25	Earnings per sh A	2.50
.66	.67	.68	.69	.70	.71	.72	.73	.74	.75	.76	.78	.81	.86	.91	.98	1.04	1.10	Div'd Decl'd per sh B■	1.25
2.54	2.18	2.31	1.66	2.12	1.49	1.90	1.50	1.36	1.26	1.40	1.59	2.91	3.08	4.40	5.11	3.95	4.50	Cap'l Spending per sh	5.00
8.02	8.26	9.52	10.05	10.03	10.33	11.13	11.27	11.48	11.82	12.24	12.74	13.40	14.02	15.17	18.57	16.15	16.50	Book Value per sh	17.35
11.36	11.58	13.17	13.25	13.40	13.52	15.57	15.70	15.82	15.96	16.12	16.23	16.30	16.35	16.40	17.43	17.65	17.75	Common Shs Outst'g C	18.00
26.4	27.4	22.7	21.6	19.8	21.0	17.8	21.7	20.8	19.7	18.5	19.1	25.6	28.4	22.2	29.7	Bold figures are		Avg Ann'l P/E Ratio	23.0
1.39	1.46	1.23	1.15	1.19	1.40	1.13	1.36	1.32	1.11	.97	.96	1.34	1.43	1.20	1.61	Value Line		Relative P/E Ratio	1.30
3.4%	3.5%	3.7%	3.7%	4.0%	4.7%	4.2%	4.0%	4.0%	3.7%	3.7%	3.3%	2.3%	2.2%	2.1%	1.6%	estimates		Avg Ann'l Div'd Yield	2.2%

CAPITAL STRUCTURE as of 6/30/20
Total Debt $282.7 mill. **Due in 5 Yrs** $33.3 mill.
LT Debt $237.9 mill. **LT Interest** $7.2 mill.
(Total interest coverage: 7.4x)
(42% of Cap'l)

Pension Assets-12/19 $80.4 mill.
Oblig. $100.9 mill.
Pfd Stock $2.4 mill. **Pfd Div'd:** $.1 mill.

Common Stock 17,464,795 shs.
as of 7/31/20

MARKET CAP: $1.1 billion (Mid-Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
102.7	102.1	110.4	114.8	117.1	126.0	132.9	130.8	138.1	134.6	145	150	Revenues ($mill)	165
14.3	13.4	14.4	16.6	18.4	20.0	22.7	22.8	32.5	33.9	38.0	40.0	Net Profit ($mill)	45.0
32.1%	32.7%	33.9%	34.1%	35.0%	34.5%	34.0%	32.7%	2.8%	2.8%	21.0%	21.0%	Income Tax Rate	21.0%
6.8%	6.1%	3.4%	1.9%	1.7%	1.9%	2.7%	3.1%	1.4%	3.4%	2.0%	2.0%	AFUDC % to Net Profit	2.5%
43.1%	42.3%	41.5%	40.4%	40.5%	39.4%	37.9%	37.5%	37.8%	41.5%	42.5%	41.5%	Long-Term Debt Ratio	39.0%
55.8%	56.6%	57.4%	58.7%	58.8%	59.8%	61.5%	61.8%	61.6%	58.2%	57.0%	58.0%	Common Equity Ratio	60.5%
310.5	312.5	316.5	321.4	335.8	345.4	355.4	370.7	404.1	556.7	500	505	Total Capital ($mill)	515
405.9	422.2	435.2	446.5	465.4	481.9	517.8	557.2	618.5	705.7	720	735	Net Plant ($mill)	775
5.7%	5.2%	5.4%	5.9%	6.3%	6.6%	7.1%	6.9%	8.9%	6.7%	8.0%	8.5%	Return on Total Cap'l	9.0%
8.1%	7.5%	7.8%	8.7%	9.2%	9.6%	10.3%	9.8%	12.9%	10.4%	13.0%	13.5%	Return on Shr. Equity	14.5%
8.2%	7.5%	7.8%	8.7%	9.3%	9.6%	10.3%	9.9%	13.0%	10.4%	13.5%	13.5%	Return on Com Equity	14.5%
2.1%	1.0%	1.4%	2.4%	3.1%	3.5%	4.3%	3.8%	7.0%	5.4%	7.0%	7.0%	Retained to Com Eq	7.0%
75%	87%	83%	73%	67%	63%	58%	62%	46%	48%	48%	49%	All Div'ds to Net Prof	50%

CURRENT POSITION ($MILL.)	2018	2019	6/30/20
Cash Assets	3.7	2.2	13.2
Other	27.1	26.9	30.8
Current Assets	30.8	29.1	44.0
Accts Payable	19.3	23.3	22.8
Debt Due	55.8	27.2	44.8
Other	19.3	14.5	16.7
Current Liab.	94.4	65.0	84.3

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	2.0%	2.5%	2.0%
"Cash Flow"	6.0%	9.5%	4.5%
Earnings	8.0%	12.0%	6.0%
Dividends	2.5%	4.0%	5.5%
Book Value	4.5%	6.0%	1.5%

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	30.1	33.0	36.2	31.5	130.8
2018	31.2	34.9	38.7	33.3	138.1
2019	30.7	33.4	37.8	32.7	134.6
2020	31.8	35.3	42.0	35.9	145
2021	33.0	37.0	44.0	36.0	150

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.27	.33	.46	.32	1.38
2018	.27	.52	.74	.43	1.96
2019	.39	.49	.66	.46	2.01
2020	.44	.55	.69	.47	2.15
2021	.45	.55	.73	.52	2.25

Cal-endar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.19875	.19875	.19875	.21125	.81
2017	.21125	.21125	.21125	.22375	.86
2018	.22375	.22375	.22375	.24	.91
2019	.24	.24	.24	.2562	.98
2020	.2562	.2562	.2562		

BUSINESS: Middlesex Water Company engages in the ownership and operation of regulated water utility systems in New Jersey, Delaware, and Pennsylvania. It also operates water and wastewater systems under contract on behalf of municipal and private clients in NJ and DE. Its Middlesex System provides water services to 61,000 retail customers, primarily in Middlesex County, New Jersey. In 2019, the Middlesex System accounted for 60% of operating revenues. At 12/31/19, the company had 352 employees. Incorporated: NJ. President, CEO, and Chairman: Dennis W. Doll. Officers & directors own 3.1% of the com. stock; BlackRock Inst. Trust Co., 7.7% (4/20 proxy). Add.: 485 C Route 1 South, Suite 400, Iselin, NJ 08830. Tel.: 732-634-1500. Int.: www.middlesexwater.com.

Middlesex Water's bottom line surged in the June period. The regulated water utility posted second-quarter profits of $0.55 a share, a nickel better than we had expected. Driving the outperformance was healthier operating margins and an income tax benefit related to recently adopted tangible property regulations. Revenues rose nicely, as well, thanks to an expanding customer base in its Delaware system and higher water consumption. Accordingly, we are adding $0.05 to our earnings-per-share forecasts for this year and next, to $2.15 and $2.25, respectively. We are leaving unchanged our top-line estimates at this time. Plenty of tailwinds, such as higher rates, increasing customers, and a heighten approach to personal hygiene, are likely to persist. However, we are keeping an eye on residential water consumption levels as stay-at-home restrictions fade and members of the household slowly return to the office and classroom.

The company recently wrapped up a major infrastructure project. Middlesex completed construction of a two-year, $50 million supplemental transmission pipeline in its New Jersey system. Subsequent to this accomplishment, we do not expect leadership to take its foot off the gas in terms of infrastructure improvement spending. To reiterate, the company's long-term program, Water For Tomorrow, boasts a $300 million budget, and ought to be used to replace and improve aging infrastructure such as watermains, pipelines, and wastewater treatment facilities.

At recent levels, Middlesex stock is suited primarily for subscribers with a short-term investment horizon. The equity is presently in the good graces of our Timeliness Ranking System. That said, the stock's multiyear price ascent (MSEX shares recently traded at an all-time high) has limited some of its long-term appeal. To this point, capital appreciation potential over the 3- to 5-year time frame is below average, and the current dividend yield is dwarfed by the *Value Line* median. All told, we recommend buy-and-hold accounts defer capital commitments until a more attractive entry point is available.

Nicholas P. Patrikis *October 9, 2020*

(A) Diluted earnings. Next earnings report due late October.
(B) Dividends historically paid in mid-Feb., May, Aug., and November.■ Div'd reinvestment plan available.
(C) In millions.

Company's Financial Strength	B++
Stock's Price Stability	80
Price Growth Persistence	60
Earnings Predictability	80

Docket No. DW 20-184
Exhibit 12

SJW GROUP NYSE-SJW

RECENT PRICE 61.23 | P/E RATIO 28.2 (Trailing: 42.5 Median: 21.0) | RELATIVE P/E RATIO 1.35 | DIV'D YLD 2.1% | VALUE LINE

TIMELINESS – Suspended 5/4/18
SAFETY 3 New 4/22/11
TECHNICAL – Suspended 5/4/18
BETA .80 (1.00 = Market)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
High:	30.4	28.2	26.8	26.9	30.1	33.7	35.7	56.9	69.3	68.4	74.5	75.0	
Low:	18.2	21.6	20.9	22.6	24.5	25.5	27.5	28.6	45.4	51.3	53.9	45.6	

18-Month Target Price Range

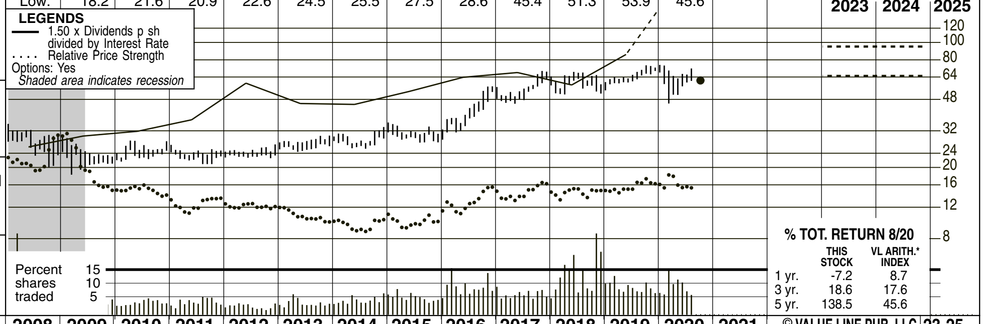
Low-High	Midpoint (% to Mid)
$54-$128	$91 (50%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	95	(+55%)	13%
Low	65	(+5%)	4%

Institutional Decisions

	4Q2019	1Q2020	2Q2020
to Buy	93	72	78
to Sell	76	95	75
Hld's(000)	19650	19448	19939



% TOT. RETURN 8/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-7.2	8.7
3 yr.	18.6	17.6
5 yr.	138.5	45.6

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
9.14	9.86	10.35	11.25	12.12	11.68	11.62	12.85	14.01	13.73	15.76	14.97	16.61	18.97	14.00	14.78	**19.15**	**19.85**	Revenues per sh	**21.65**
1.89	2.21	2.38	2.30	2.44	2.21	2.38	2.80	2.97	2.90	4.42	3.86	4.76	5.24	3.29	3.67	**3.80**	**4.20**	"Cash Flow" per sh	**5.30**
.87	1.12	1.19	1.04	1.08	.81	.84	1.11	1.18	1.12	2.54	1.85	2.57	2.86	1.82	1.35	**2.05**	**2.50**	Earnings per sh A	**3.65**
.51	.53	.57	.61	.65	.66	.68	.69	.71	.73	.75	.78	.81	1.04	1.12	1.20	**1.28**	**1.36**	Div'd Decl'd per sh B■	**1.66**
2.31	2.83	3.87	6.62	3.79	3.17	5.65	3.75	5.67	4.68	5.02	5.24	6.95	7.26	5.08	6.25	**5.25**	**5.75**	Cap'l Spending per sh	**6.50**
10.11	10.72	12.48	12.90	13.99	13.66	13.75	14.20	14.71	15.92	17.75	18.83	20.61	22.57	31.31	31.27	**32.25**	**35.60**	Book Value per sh	**39.15**
18.27	18.27	18.28	18.36	18.18	18.50	18.55	18.59	18.67	20.17	20.29	20.38	20.46	20.52	28.40	28.46	**29.00**	**29.50**	Common Shs Outst'g C	**30.00**
19.6	19.7	23.5	33.4	26.2	28.7	29.1	21.2	20.4	24.3	11.2	16.6	15.7	18.8	32.7	47.8	*Bold figures are*		Avg Ann'l P/E Ratio	**22.0**
1.04	1.05	1.27	1.77	1.58	1.91	1.85	1.33	1.30	1.37	.59	.84	.82	.95	1.77	2.58	*Value Line*		Relative P/E Ratio	**1.20**
3.0%	2.4%	2.0%	1.7%	2.3%	2.8%	2.8%	2.9%	3.0%	2.7%	2.6%	2.5%	2.0%	1.9%	1.9%	1.9%	*estimates*		Avg Ann'l Div'd Yield	**2.1%**

CAPITAL STRUCTURE as of 6/30/20
Total Debt $1338.4 mill. **Due in 5 Yrs** $22.4 mill.
LT Debt $1316.0 mill. **LT Interest** $50.0 mill.
(LT Interest Coverage: 4.5x)
(60% of Cap'l)

Pension Assets-12/19 $243.5 mill.
Oblig. $338.2 mill.
Pfd Stock None.
Common Stock 28,516,705 shs.

MARKET CAP: $1.7 billion (Mid Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
215.6	239.0	261.5	276.9	319.7	305.1	339.7	389.2	397.7	420.5	**555**	**585**	Revenues ($mill)	**650**
15.8	20.9	22.3	23.5	51.8	37.9	52.8	59.2	38.8	38.7	**59.5**	**73.5**	Net Profit ($mill)	**110**
38.8%	41.1%	41.1%	38.7%	32.5%	38.1%	38.8%	36.7%	20.6%	25.3%	**21.0%**	**21.0%**	Income Tax Rate	**21.0%**
--	--	--	--	--	--	--	--	2.0%	1.5%	**1.5%**	**1.5%**	AFUDC % to Net Profit	**1.5%**
53.7%	56.6%	55.0%	51.1%	51.6%	49.8%	50.7%	48.2%	32.7%	59.1%	**58.0%**	**53.5%**	Long-Term Debt Ratio	**39.0%**
46.3%	43.4%	45.0%	48.9%	48.4%	50.2%	49.3%	51.8%	67.3%	40.9%	**42.0%**	**46.5%**	Common Equity Ratio	**61.0%**
550.7	607.9	610.2	656.2	744.5	764.6	855.0	894.3	1320.7	2173.6	**2235**	**2250**	Total Capital ($mill)	**1925**
785.5	756.2	831.6	898.7	963.0	1036.8	1146.4	1239.3	1328.8	2206.5	**2300**	**2450**	Net Plant ($mill)	**2775**
4.3%	4.9%	5.0%	5.0%	8.3%	6.3%	7.4%	7.9%	3.9%	2.5%	**3.0%**	**4.0%**	Return on Total Cap'l	**6.5%**
6.2%	7.9%	8.1%	7.3%	14.4%	9.9%	12.5%	12.8%	4.4%	4.3%	**6.5%**	**7.0%**	Return on Shr. Equity	**9.5%**
6.2%	7.9%	8.1%	7.3%	14.4%	9.9%	12.5%	12.8%	4.4%	4.3%	**6.5%**	**7.0%**	Return on Com Equity	**9.5%**
1.2%	3.1%	3.3%	2.8%	10.2%	5.7%	8.6%	8.2%	1.8%	.5%	**2.5%**	**3.0%**	Retained to Com Eq	**5.0%**
80%	61%	59%	62%	29%	42%	31%	36%	60%	88%	**62%**	**54%**	All Div'ds to Net Prof	**45%**

CURRENT POSITION ($MILL.)	2018	2019	6/30/20
Cash Assets	420.7	17.9	23.3
Accts Receivable	19.2	36.3	44.9
Other	62.8	67.8	77.3
Current Assets	502.7	122.0	145.5
Accts Payable	24.9	34.9	24.3
Debt Due	- -	22.3	22.4
Other	139.1	177.4	211.3
Current Liab.	164.0	234.6	258.0

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	3.0%	2.0%	*5.5%*
"Cash Flow"	6.0%	3.5%	*4.5%*
Earnings	7.5%	4.5%	*10.5%*
Dividends	6.0%	9.0%	*7.0%*
Book Value	7.5%	12.0%	*5.5%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	69.0	102.1	124.6	93.5	389.2
2018	75.0	99.1	124.9	98.7	397.7
2019	77.7	103.0	114.0	126.0	420.5
2020	115.8	147.2	***160***	***132***	***555***
2021	***120***	***150***	***170***	***145***	***585***

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.18	.90	.94	.84	2.86
2018	.06	.62	.76	.38	1.82
2019	.21	.47	.33	.34	1.35
2020	.08	.69	***.85***	***.43***	***2.05***
2021	***.20***	***.75***	***.90***	***.65***	***2.50***

Cal-endar	QUARTERLY DIVIDENDS PAID BD■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.2025	.2025	.2025	.2025	.81
2017	.2175	.2175	.2175	.3875	1.04
2018	.28	.28	.28	.28	1.12
2019	.30	.30	.30	.30	1.20
2020	.32	.32	.32		

BUSINESS: SJW Group engages in the production, purchase, storage, purification, distribution, and retail sale of water. It provides water service to approximately 231,000 connections with a total population of roughly one million people in the San Jose area and 16,000 connections that reach about 49,000 residents in the region between San Antonio and Austin, Texas. The company merged with Connecticut Water (10/19) which provides service to approx. 138,000 connections with a total population of 450,000 people. Has 361 employees. Officers and directors own 8.3% of outstanding shares (3/20 proxy). Chairman & CEO: Richard Roth. Incorporated: California. Address: 110 West Taylor Street, San Jose, CA 95110. Telephone: (408) 279-7800. Internet: www.sjwater.com.

Shares of SJW traded above $70 per share in mid-August before pulling back to levels seen three months prior. The East and West coasts (post CTWS merger) regulated water utility found some market support following the release of better-than-expected second-quarter financial results. Earlier this year, the company had been on shaky ground stemming from a combination of COVID-19-related disruptions and the ongoing integration of Connecticut Water. Even so, SJW delivered a relatively inspiring June-period performance. Revenues of $147 million exceeded our $135 million call, while earnings came in $0.09 better than expected, at $0.69 a share. However, the stock was unable to hold its gains, likely due to recent broader market turbulence amidst an uncertain economic backdrop.

We are lifting our profit forecasts for this year and next. Specifically, we are adding $0.10 and $0.05 to our 2020 and 2021 share-net estimates, to $2.05 and $2.50, respectively. In regard to the latter, our call for healthy double-digit bottom-line expansion is underpinned by the assumption of subsiding integration-related operating expenses, as well as lower production and water purchase costs.

Despite slightly lagging the *Value Line* median, SJW is currently one of the more-attractive income-generating options in the Water Utility industry. The current yield is hovering just above 2.0%, while many of its peers fall below that metric. Additionally, a reasonable payout ratio and prospects for increased profitability suggest that annual dividend hikes are likely on tap over the coming years.

We are fans of the long-term story here; however, at the recent quotation, we are not presently recommending the stock. From a business perspective, SJW is well positioned to benefit from increased hygiene awareness, a rapidly expanding customer base, and periodic rate hikes. Nevertheless, unranked SJW shares have risen considerably in price over the past few years, thus rendering 3- to 5-year total return potential subpar. All told, subscribers interested in adding a noncyclical water utility to their portfolios should hold off, for now.

Nicholas P. Patrikis *October 9, 2020*

(A) Diluted earnings. Excludes nonrecurring losses: '04, $3.78; '05, $1.09; '06, $16.36; '08, $1.22; '10, $0.46. GAAP accounting as of 2013. Next earnings report due early Nov. Quarterly egs. may not add due to rounding.
(B) Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available.
(C) In millions.
(D) Paid special dividend of $0.17 per share on 11/17.
(E) Suspended due to recent CTWS merger.

Company's Financial Strength	B+
Stock's Price Stability	75
Price Growth Persistence	65
Earnings Predictability	45

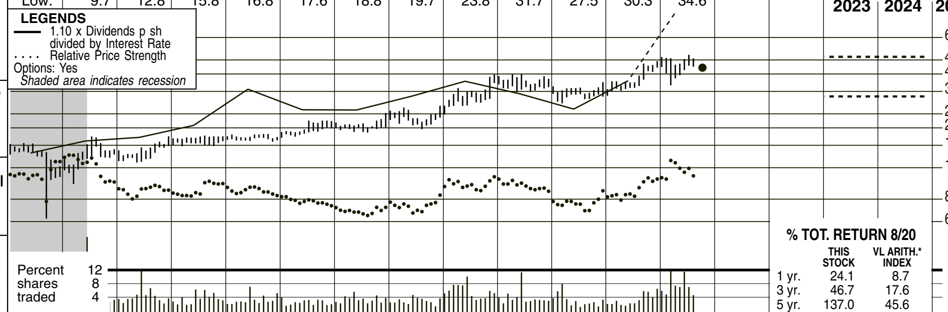
YORK WATER NDQ-YORW

RECENT PRICE 43.39 | P/E RATIO 34.2 (Trailing: 35.0 Median: 26.0) | RELATIVE P/E RATIO 1.64 | DIV'D YLD 1.7% | VALUE LINE

TIMELINESS 2 Raised 5/29/20
SAFETY 3 Lowered 7/17/15
TECHNICAL 2 Lowered 5/29/20
BETA .80 (1.00 = Market)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
High:	18.0	18.0	18.1	18.5	22.0	24.3	26.7	39.8	39.9	36.1	47.3	51.3
Low:	9.7	12.8	15.8	16.8	17.6	18.8	19.7	23.8	31.7	27.5	30.3	34.6

LEGENDS
—— 1.10 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
Options: Yes
Shaded area indicates recession



18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$34-$74	$54 (25%)

2023-25 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	50	(+15%)	6%
Low	30	(-30%)	-6%

Institutional Decisions

	4Q2019	1Q2020	2Q2020
to Buy	52	61	59
to Sell	39	52	48
Hld's(000)	5387	5387	5479

Percent shares traded 12 8 4

Target Price Range 2023 | 2024 | 2025

64 48 40 32 24 20 16 12 8 6

% TOT. RETURN 8/20

	THIS STOCK	VL ARITH.* INDEX
1 yr.	24.1	8.7
3 yr.	46.7	17.6
5 yr.	137.0	45.6

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	© VALUE LINE PUB. LLC	23-25
2.18	2.58	2.56	2.79	2.89	2.95	3.07	3.18	3.21	3.27	3.58	3.68	3.70	3.77	3.74	3.96	*4.10*	*4.20*	Revenues per sh	*5.10*
.65	.79	.77	.86	.88	.95	1.07	1.09	1.12	1.19	1.36	1.45	1.42	1.53	1.58	1.70	*1.90*	*1.95*	"Cash Flow" per sh	*2.40*
.49	.56	.58	.57	.57	.64	.71	.71	.72	.75	.89	.97	.92	1.01	1.04	1.11	*1.30*	*1.35*	Earnings per sh A	*1.60*
.39	.42	.45	.48	.49	.51	.52	.53	.54	.55	.57	.60	.63	.65	.67	.70	*.73*	*.78*	Div'd Decl'd per sh B	*.95*
2.50	1.69	1.85	1.69	2.17	1.18	.83	.74	.94	.76	1.10	1.11	1.03	1.95	1.95	.16	*.85*	*1.35*	Cap'l Spending per sh	*1.85*
4.65	4.85	5.84	5.97	6.14	6.92	7.19	7.45	7.73	7.98	8.15	8.51	8.88	9.28	9.75	10.31	*11.15*	*11.60*	Book Value per sh	*12.50*
10.33	10.40	11.20	11.27	11.37	12.56	12.69	12.79	12.92	12.98	12.83	12.81	12.85	12.87	12.94	13.02	*13.00*	*12.95*	Common Shs Outst'g C	*12.80*
25.7	26.3	31.2	30.3	24.6	21.9	20.7	23.9	24.4	26.3	23.1	23.5	32.8	34.6	30.3	33.8	*Bold figures are*		Avg Ann'l P/E Ratio	*25.0*
1.36	1.40	1.68	1.61	1.48	1.46	1.32	1.50	1.55	1.48	1.22	1.18	1.72	1.74	1.64	1.83	*Value Line*		Relative P/E Ratio	*1.40*
3.1%	2.9%	2.5%	2.8%	3.5%	3.6%	3.5%	3.1%	3.1%	2.8%	2.8%	2.6%	2.1%	1.9%	2.1%	1.9%	*estimates*		Avg Ann'l Div'd Yield	*2.4%*

CAPITAL STRUCTURE as of 6/30/20
Total Debt $103.1 mill. **Due in 5 Yrs** $42.5 mill.
LT Debt $96.6 mill. **LT Interest** $5.5 mill.
(41% of Cap'l)

Pension Assets12/19 $49.3 mill.
Oblig. $47.3 mill.

Pfd Stock None

Common Stock 13,033,999 shs.

MARKET CAP: $575 million (Small Cap)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021		23-25
39.0	40.6	41.4	42.4	45.9	47.1	47.6	48.6	48.4	51.6	*53.5*	*54.5*	Revenues ($mill)	*65.0*
8.9	9.1	9.3	9.7	11.5	12.5	11.8	13.0	13.4	14.4	*17.0*	*17.5*	Net Profit ($mill)	*20.5*
38.5%	35.3%	37.6%	37.6%	29.8%	27.5%	31.3%	25.9%	15.7%	13.5%	*18.5%*	*21.0%*	Income Tax Rate	*21.0%*
1.2%	1.1%	1.1%	.8%	1.8%	1.6%	1.9%	6.7%	1.7%	2.5%	*1.5%*	*1.5%*	AFUDC % to Net Profit	*1.5%*
48.3%	47.1%	46.0%	45.1%	44.8%	44.4%	42.6%	43.0%	42.5%	41.3%	*38.5%*	*37.5%*	Long-Term Debt Ratio	*36.0%*
51.7%	52.9%	54.0%	54.9%	55.2%	55.6%	57.4%	57.0%	57.5%	58.7%	*61.5%*	*62.5%*	Common Equity Ratio	*64.0%*
176.4	180.2	184.8	188.4	189.4	196.3	198.7	209.5	219.5	228.7	*235*	*240*	Total Capital ($mill)	*250*
228.4	233.0	240.3	244.2	253.2	261.4	270.9	288.8	299.2	313.2	*315*	*320*	Net Plant ($mill)	*335*
6.5%	6.4%	6.4%	6.5%	7.4%	7.6%	7.2%	7.5%	7.3%	7.4%	*8.5%*	*8.5%*	Return on Total Cap'l	*9.0%*
9.8%	9.5%	9.3%	9.3%	11.0%	11.5%	10.4%	10.9%	10.6%	10.7%	*11.5%*	*11.5%*	Return on Shr. Equity	*13.0%*
9.8%	9.5%	9.3%	9.3%	11.0%	11.5%	10.4%	10.9%	10.6%	10.7%	*11.5%*	*11.5%*	Return on Com Equity	*13.0%*
2.7%	2.5%	2.4%	2.4%	3.9%	4.4%	3.4%	4.0%	3.8%	4.0%	*5.0%*	*5.0%*	Retained to Com Eq	*5.0%*
72%	73%	74%	74%	64%	62%	67%	63%	64%	62%	*56%*	*58%*	All Div'ds to Net Prof	*59%*

CURRENT POSITION ($MILL.)	2018	2019	6/30/20
Cash Assets	- -	- -	- -
Accounts Receivable	4.8	4.4	5.0
Inventory (Avg. Cost)	.9	1.0	1.1
Other	3.3	4.0	4.1
Current Assets	9.0	9.4	10.2
Accts Payable	3.0	3.4	4.0
Debt Due	1.0	6.5	6.5
Other	6.8	5.3	5.7
Current Liab.	10.8	15.2	16.2

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '17-'19 to '23-'25
Revenues	3.0%	2.5%	*5.0%*
"Cash Flow"	6.0%	5.5%	*7.0%*
Earnings	6.0%	6.0%	*7.0%*
Dividends	3.0%	4.0%	*6.0%*
Book Value	4.5%	4.0%	*4.0%*

Cal-endar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	11.3	12.3	12.7	12.3	48.6
2018	11.6	12.0	12.7	12.1	48.4
2019	11.8	13.0	13.7	13.1	51.6
2020	12.9	13.3	*14.0*	*13.3*	*53.5*
2021	*13.0*	*13.5*	*14.5*	*13.5*	*54.5*

Cal-endar	EARNINGS PER SHARE A Mar.31	Jun. 30	Sep. 30	Dec. 31	Full Year
2017	.20	.23	.31	.27	1.01
2018	.20	.26	.29	.29	1.04
2019	.22	.28	.35	.26	1.11
2020	.31	.32	*.35*	*.32*	*1.30*
2021	*.28*	*.35*	*.37*	*.35*	*1.35*

Cal-endar	QUARTERLY DIVIDENDS PAID B Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.1555	.1555	.1555	.1602	.627
2017	.1602	.1602	.1602	.1666	.647
2018	.1666	.1666	.1666	.1733	.673
2019	.1733	.1733	.1733	.1802	.70
2020	.1802	.1802	.1802		

BUSINESS: The York Water Company is the oldest investor-owned regulated water utility in the United States. It has operated continuously since 1816. As of December 31, 2019, the company's average daily availability was 35.4 million gallons and its service territory had an estimated population of 201,000. Has more than 71,400 customers. Residential customers accounted for 65% of 2019 revenues; commercial and industrial (28%); other (7%). It also provides sewer billing services. Incorporated: PA. York had 106 full-time employees at 12/31/19. President/Chief Executive Officer: J.T. Hand. Officers/directors own 1.2% of the common stock (3/20 proxy). Address: 130 East Market Street, York, Pennsylvania 17401. Telephone: (717) 845-3601. Internet: www.yorkwater.com.

York Water delivered strong top- and bottom-line performances in the second quarter. Indeed, the Pennsylvania-based regulated water utility held up considerably well during the height of the pandemic, and should continue to thrive as the economy appears to be entering recovery mode. The company generated $13.3 million in revenues in the June period, up 21% from the previous-year figure, while earnings clocked in at $0.32 a share, up about 14% year over year. Underpinning the advances was a combination of recent rate hikes, increased water consumption per residential customers (largely due to more people staying and working from home amidst lingering health concerns), as well as growth in its customer base (both acquisition and homebuying related). Moreover, share profits were boosted by lower taxes tied to greater tangible property deductions and a declining interest expense.

We think modest financial growth is in the cards next year. Revenues are expected to increase to about $55 million, while earnings may edge up a nickel, to $1.35 a share. Our somewhat conservative projections stem partly from periodically rising operation and maintenance expenses. On top of that, as much of the population slowly returns to work and school, household water consumption could take a slight step back, despite an increase in general hygiene practices.

True to form, infrastructure upgrades are on tap over the pull to mid-decade. York invested $9.0 million year to date on various replacements and water system improvements, and expects to spend an additional $12.0 million over the next six months on main extensions, wastewater treatment plant expansions, and broad pipe and service line upgrades. Infrastructure spending ought to considerably ramp up over the coming years, as the company focuses on delivering safe water to its growing customer base.

The equity is favorably ranked (2) for relative year-ahead price performance. That said, although York shares have slipped modestly in price since our mid-July review, total return potential out to 2023-2025 still leaves much to be desired at the recent quotation.

Nicholas P. Patrikis *October 9, 2020*

(A) Diluted earnings. Next earnings report due late October.
(B) Dividends historically paid in late February, June, September, and December.
(C) In millions, adjusted for split.

Company's Financial Strength	B+
Stock's Price Stability	75
Price Growth Persistence	75
Earnings Predictability	100

Aquarion Water Company of New Hampshire, Inc.
Summary of Risk Premium Models for the
Proxy Group of Seven Water Companies

	Proxy Group of Seven Water Companies
Predictive Risk Premium Model (PRPM) (1)	10.82 %
Risk Premium Using an Adjusted Total Market Approach (2)	10.30 %
Average	10.56 %

Notes:
(1) From page 2 of this Attachment.
(2) From page 3 of this Attachment.

Aquarion Water Company of New Hampshire, Inc.
Indicated ROE
Derived by the Predictive Risk Premium Model (1)

Proxy Group of Seven Water Companies	[1] LT Average Predicted Variance	[2] Spot Predicted Variance	[3] Recommended Variance	[4] GARCH Coefficient	[5] Predicted Risk Premium (2)	[6] Risk-Free Rate (3)	[7] Indicated ROE (4)
American States Water Company	0.38%	0.37%	0.38%	1.8583	8.73%	2.11%	10.84%
American Water Works Company, Inc.	0.23%	0.15%	0.19%	5.9529	14.28%	2.11%	NMF
California Water Service Group	0.32%	0.29%	0.30%	1.8743	7.05%	2.11%	9.16%
Essential Utilities, Inc.	0.44%	0.44%	0.44%	2.2287	12.45%	2.11%	14.56%
Middlesex Water Company	0.30%	0.30%	0.30%	2.1314	7.91%	2.11%	10.02%
SJW Group	0.42%	0.37%	0.39%	1.5198	7.44%	2.11%	9.55%
York Water Company	0.45%	0.37%	0.41%	2.1147	10.95%	2.11%	13.06%
						Average	11.20%
						Median	10.43%
						Average of Mean and Median	10.82%

NMF = Not Meaningful Figure

Notes:

(1) The Predictive Risk Premium Model uses historical data to generate a predicted variance and a GARCH coefficient. The historical data used are the equity risk premiums for the first available trading month as reported by Bloomberg Professional Service.

(2) (1+(Column [3] * Column [4]))^{12}) - 1.

(3) From note 2 on page 2 of Attachment DWD-5.

(4) Column [5] + Column [6].

Aquarion Water Company of New Hampshire, Inc.
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		Proxy Group of Seven Water Companies	
1.	Prospective Yield on Aaa Rated Corporate Bonds (1)	2.96	%
2.	Adjustment to Reflect Yield Spread Between Aaa Rated Corporate Bonds and A2 Rated Public Utility Bonds	0.54	(2)
3.	Adjusted Prospective Yield on A2 Rated Public Utility Bonds	3.50	%
4.	Adjustment to Reflect Bond Rating Difference of Proxy Group	0.06	(3)
5.	Adjusted Prospective Bond Yield	3.56	%
6.	Equity Risk Premium (4)	6.74	
7.	Risk Premium Derived Common Equity Cost Rate	10.30	%

Notes:
(1) Consensus forecast of Moody's Aaa Rated Corporate bonds from Blue Chip Financial Forecasts (see pages 10-11 of this Attachment).
(2) The average yield spread of A2 rated public utility bonds over Aaa rated corporate bonds of 0.54% from page 4 of this Attachment.
(3) Adjustment to reflect the A2/A3 Moody's LT issuer rating of the Utility Proxy Group as shown on page 5 of this Attachment. The 0.06% upward adjustment is derived by taking 1/6 of the spread between A2 and Baa2 Public Utility Bonds (1/6 * 0.34% = 0.06%) as derived from page 4 of this Attachment.
(4) From page 7 of this Attachment.

Aquarion Water Company of New Hampshire, Inc.
Interest Rates and Bond Spreads for
Moody's Corporate and Public Utility Bonds

Selected Bond Yields

	[1]	[2]	[3]
	Aaa Rated Corporate Bond	A2 Rated Public Utility Bond	Baa2 Rated Public Utility Bond
Sep-2020	2.31 %	2.84 %	3.17 %
Aug-2020	2.25	2.73	3.06
Jul-2020	2.14	2.74	3.09
Average	2.23 %	2.77 %	3.11 %

Selected Bond Spreads

A2 Rated Public Utility Bonds Over Aaa Rated Corporate Bonds: 0.54 % (1)

Baa2 Rated Public Utility Bonds Over A2 Rated Public Utility Bonds: 0.34 % (2)

Notes:
(1) Column [2] - Column [1].
(2) Column [3] - Column [2].

Source of Information:
Bloomberg Professional Service

Aquarion Water Company of New Hampshire, Inc.
Comparison of Long-Term Issuer Ratings for
Proxy Group of Seven Water Companies

	Moody's Long-Term Issuer Rating October 2020		Standard & Poor's Long-Term Issuer Rating October 2020	
Proxy Group of Seven Water Companies	Long-Term Issuer Rating	Numerical Weighting (1)	Long-Term Issuer Rating	Numerical Weighting(1)
American States Water Company (2)	A2	6.0	A+	5.0
American Water Works Company Inc (3)	A3	7.0	A	6.0
California Water Service Group (4)	NR	- -	A+	5.0
Essential Utilities, Inc. (5)	NR	- -	A	6.0
Middlesex Water Company	NR	- -	A	6.0
SJW Corp. (6)	NR	- -	A/A-	6.5
York Water Company	NR	- -	A-	7.0
Average	A2/A3	6.5	A	5.9

Notes:

(1) From page 6 of this Attachment.
(2) Ratings that of Golden State Water Company.
(3) Ratings that of New Jersey and Pennsylvania American Water Companies.
(4) Ratings that of California Water Service Company.
(5) Ratings that of Aqua Pennsylvania, Inc.
(6) Ratings that of San Jose Water Company and The Connecticut Water Company

Source Information: Moody's Investors Service
Standard & Poor's Global Utilities Rating Service

Numerical Assignment for
Moody's and Standard & Poor's Bond Ratings

Moody's Bond Rating	Numerical Bond Weighting	Standard & Poor's Bond Rating
Aaa	1	AAA
Aa1	2	AA+
Aa2	3	AA
Aa3	4	AA-
A1	5	A+
A2	6	A
A3	7	A-
Baa1	8	BBB+
Baa2	9	BBB
Baa3	10	BBB-
Ba1	11	BB+
Ba2	12	BB
Ba3	13	BB-
B1	14	B+
B2	15	B
B3	16	B-

Aquarion Water Company of New Hampshire, Inc.
Judgment of Equity Risk Premium for the
Proxy Group of Seven Water Companies

Line No.		Proxy Group of Seven Water Companies
1.	Calculated equity risk premium based on the total market using the beta approach (1)	7.72 %
2.	Mean equity risk premium based on a study using the holding period returns of public utilities with A2 rated bonds (2)	5.75
3.	Average equity risk premium	6.74 %

Notes: (1) From page 8 of this Attachment.
(2) From page 12 of this Attachment.

Aquarion Water Company of New Hampshire, Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Seven Water Companies

Line No.	Equity Risk Premium Measure	Proxy Group of Seven Water Companies
	Ibbotson-Based Equity Risk Premiums:	
1.	Ibbotson Equity Risk Premium (1)	5.78 %
2.	Regression on Ibbotson Risk Premium Data (2)	9.42
3.	Ibbotson Equity Risk Premium based on PRPM (3)	9.54
4.	Equity Risk Premium Based on Value Line Summary and Index (4)	10.73
5.	Equity Risk Premium Based on Value Line S&P 500 Companies (5)	10.99
6.	Equity Risk Premium Based on Bloomberg S&P 500 Companies (6)	10.74
7.	Conclusion of Equity Risk Premium	9.53 %
8.	Adjusted Beta (7)	0.81
9.	Forecasted Equity Risk Premium	7.72 %

Notes provided on page 9 of this Attachment.

Aquarion Water Company of New Hampshire, Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Seven Water Companies

Notes:

(1) Based on the arithmetic mean historical monthly returns on large company common stocks from Ibbotson® SBBI® 2020 Market Report minus the arithmetic mean monthly yield of Moody's average Aaa and Aa2 corporate bonds from 1926-2019.

(2) This equity risk premium is based on a regression of the monthly equity risk premiums of large company common stocks relative to Moody's average Aaa and Aa rated corporate bond yields from 1928-2019 referenced in Note 1 above.

(3) The Predictive Risk Premium Model (PRPM) is discussed in the accompanying direct testimony. The Ibbotson equity risk premium based on the PRPM is derived by applying the PRPM to the monthly risk premiums between Ibbotson large company common stock monthly returns and average Aaa and Aa2 corporate monthly bond yields, from January 1928 through September 2020.

(4) The equity risk premium based on the Value Line Summary and Index is derived by subtracting the average consensus forecast of Aaa corporate bonds of 2.96% (from page 3 of this Attachment) from the projected 3-5 year total annual market return of 13.69% (described fully in note 1 on page 2 of Attachment DWD-5).

(5) Using data from Value Line for the S&P 500, an expected total return of 13.95% was derived based upon expected dividend yields and long-term earnings growth estimates as a proxy for capital appreciation. Subtracting the average consensus forecast of Aaa corporate bonds of 2.96% results in an expected equity risk premium of 10.99%.

(6) Using data from the Bloomberg Professional Service for the S&P 500, an expected total return of 13.70% was derived based upon expected dividend yields and long-term earnings growth estimates as a proxy for capital appreciation. Subtracting the average consensus forecast of Aaa corporate bonds of 2.96% results in an expected equity risk premium of 10.74%.

(7) Average of mean and median beta from Attachment DWD-5.

Sources of Information:

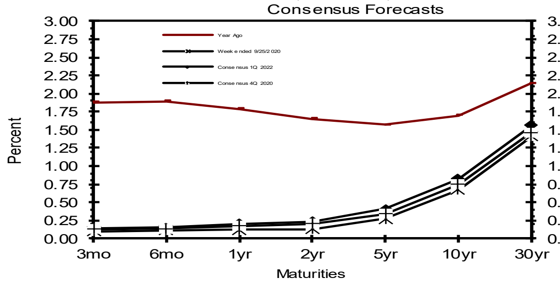
Stocks, Bonds, Bills, and Inflation - 2020 SBBI Yearbook, John Wiley & Sons, Inc.
Industrial Manual and Mergent Bond Record Monthly Update.
Value Line Summary and Index
Blue Chip Financial Forecasts, October 1, 2020 and June 1, 2020
Bloomberg Professional Service

Consensus Forecasts of U.S. Interest Rates and Key Assumptions

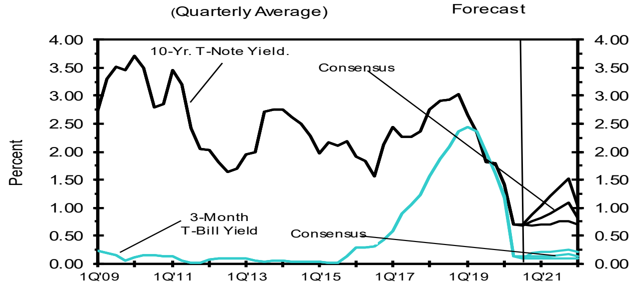
	History								Consensus Forecasts-Quarterly Avg.					
	Average For Week Ending				Average For Month			*Latest Qtr*	4Q	1Q	2Q	3Q	4Q	1Q
Interest Rates	Sep 25	Sep 18	Sep 11	Sep 4	Aug	Jul	Jun	3Q 2020*	**2020**	**2021**	**2021**	**2021**	**2021**	**2022**
Federal Funds Rate	0.09	0.09	0.09	0.09	0.10	0.09	0.08	0.09	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Prime Rate	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	**3.3**	**3.3**	**3.3**	**3.3**	**3.3**	**3.3**
LIBOR, 3-mo.	0.22	0.23	0.25	0.25	0.25	0.27	0.31	0.26	**0.3**	**0.3**	**0.3**	**0.3**	**0.4**	**0.4**
Commercial Paper, 1-mo.	0.10	0.10	0.09	0.09	0.09	0.11	0.12	0.10	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Treasury bill, 3-mo.	0.10	0.11	0.12	0.11	0.10	0.13	0.16	0.12	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**
Treasury bill, 6-mo.	0.11	0.12	0.13	0.12	0.12	0.14	0.18	0.13	**0.1**	**0.2**	**0.2**	**0.2**	**0.2**	**0.2**
Treasury bill, 1 yr.	0.12	0.13	0.14	0.12	0.13	0.15	0.18	0.14	**0.2**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**
Treasury note, 2 yr.	0.13	0.14	0.14	0.14	0.14	0.15	0.19	0.14	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**	**0.4**
Treasury note, 5 yr.	0.27	0.28	0.27	0.27	0.27	0.28	0.34	0.27	**0.3**	**0.4**	**0.5**	**0.5**	**0.6**	**0.7**
Treasury note, 10 yr.	0.67	0.69	0.69	0.68	0.65	0.62	0.73	0.65	**0.8**	**0.8**	**0.9**	**1.0**	**1.1**	**1.1**
Treasury note, 30 yr.	1.41	1.44	1.43	1.42	1.36	1.31	1.49	1.36	**1.5**	**1.6**	**1.6**	**1.7**	**1.8**	**1.9**
Corporate Aaa bond	2.56	2.55	2.57	2.54	2.48	2.43	2.73	2.49	**2.3**	**2.4**	**2.5**	**2.6**	**2.7**	**2.7**
Corporate Baa bond	3.20	3.18	3.21	3.17	3.09	3.12	3.44	3.14	**3.5**	**3.6**	**3.6**	**3.7**	**3.7**	**3.8**
State & Local bonds	2.91	2.92	2.92	2.93	2.88	2.99	3.10	2.94	**2.4**	**2.4**	**2.5**	**2.6**	**2.6**	**2.6**
Home mortgage rate	2.90	2.87	2.86	2.93	2.94	3.02	3.16	2.95	**3.0**	**3.0**	**3.1**	**3.1**	**3.2**	**3.2**
	History								**Consensus Forecasts-Quarterly**					
	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	**4Q**	**1Q**	**2Q**	**3Q**	**4Q**	**1Q**
Key Assumptions	2018	2019	2019	2019	2019	2020	2020	2020**	**2020**	**2021**	**2021**	**2021**	**2021**	**2022**
Fed's AFE $ Index	109.4	109.4	110.3	110.5	110.3	111.2	112.4	107.2	**107.2**	**107.1**	**106.9**	**106.3**	**106.2**	**106.5**
Real GDP	1.3	2.9	1.5	2.6	2.4	-5.0	-31.7	21.5	**4.6**	**4.3**	**4.0**	**3.8**	**3.4**	**3.1**
GDP Price Index	1.8	1.2	2.5	1.5	1.4	1.4	-2.0	1.9	**1.5**	**1.7**	**1.5**	**1.7**	**1.7**	**1.8**
Consumer Price Index	1.3	0.9	3.0	1.8	2.4	1.2	-3.5	3.2	**2.1**	**1.9**	**1.8**	**2.0**	**2.0**	**2.0**

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data: Treasury rates from the Federal Reserve Board's H.15; AAA-AA and A-BBB corporate bond yields from Bank of America-Merrill Lynch and are 15+ years, yield to maturity; State and local bond yields from Bank of America-Merrill Lynch, A-rated, yield to maturity; Mortgage rates from Freddie Mac, 30-year, fixed; LIBOR quotes from Intercontinental Exchange. All interest rate data are sourced from Haver Analytics. Historical data for Fed's Major Currency Index are from FRSR H.10. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS). *Interest rate data for 3Q 2020 based on historical data through the week ended September 23. **Data for 3Q 2020 for the Fed's AFE $ Index based on data through the week ended September 25. Figures for 3Q 2020 Real GDP, GDP Chained Price Index and Consumer Price Index are consensus forecasts from the September 2020 survey.

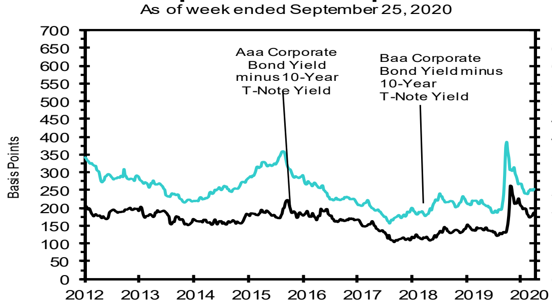
U.S. Treasury Yield Curve
Week ended September 25, 2020 & Year Ago vs.
4Q 2020 & 1Q 2022
Consensus Forecasts



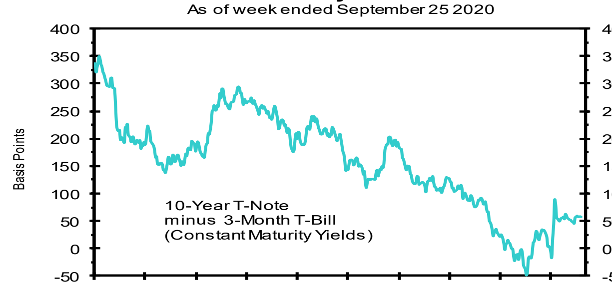
U.S. 3-Mo. T-Bills & 10-Yr. T-Note Yield
(Quarterly Average) Forecast



Corporate Bond Spreads
As of week ended September 25, 2020



U.S. Treasury Yield Curve
As of week ended September 25 2020



Long-Range Survey:

The table below contains the results of our twice-annual long-range CONSENSUS survey. There are also Top 10 and Bottom 10 averages for each variable. Shown are consensus estimates for the years 2021 through 2026 and averages for the five-year periods 2022-2026 and 2027-2031. Apply these projections cautiously. Few if any economic, demographic and political forces can be evaluated accurately over such long time spans.

		Average For The Year						Five-Year Averages	
		2021	2022	2023	2024	2025	2026	2022-2026	2027-2031
1. Federal Funds Rate	CONSENSUS	**0.2**	**0.4**	**1.0**	**1.6**	**1.9**	**2.1**	**1.4**	**2.3**
	Top 10 Average	0.4	0.8	1.6	2.2	2.5	2.7	1.9	2.8
	Bottom 10 Average	0.1	0.1	0.4	1.0	1.3	1.5	0.9	1.7
2. Prime Rate	CONSENSUS	**3.4**	**3.6**	**4.1**	**4.7**	**5.0**	**5.2**	**4.5**	**5.4**
	Top 10 Average	3.5	3.9	4.6	5.3	5.5	5.7	5.0	5.9
	Bottom 10 Average	3.3	3.3	3.7	4.2	4.5	4.7	4.1	4.9
3. LIBOR, 3-Mo.	CONSENSUS	**0.6**	**0.9**	**1.4**	**2.0**	**2.3**	**2.4**	**1.8**	**2.6**
	Top 10 Average	0.8	1.3	1.9	2.5	2.7	3.0	2.3	3.1
	Bottom 10 Average	0.4	0.5	0.9	1.6	1.9	2.0	1.4	2.1
4. Commercial Paper, 1-Mo	CONSENSUS	**0.6**	**0.9**	**1.4**	**2.0**	**2.2**	**2.3**	**1.7**	**2.6**
	Top 10 Average	0.7	1.2	1.8	2.3	2.6	2.8	2.1	3.0
	Bottom 10 Average	0.3	0.5	1.1	1.6	1.9	2.0	1.4	2.2
5. Treasury Bill Yield, 3-Mo	CONSENSUS	**0.2**	**0.5**	**1.1**	**1.6**	**1.9**	**2.1**	**1.4**	**2.3**
	Top 10 Average	0.4	0.9	1.6	2.2	2.4	2.6	1.9	2.8
	Bottom 10 Average	0.1	0.2	0.5	1.1	1.4	1.6	0.9	1.8
6. Treasury Bill Yield, 6-Mo	CONSENSUS	**0.3**	**0.6**	**1.1**	**1.7**	**2.0**	**2.2**	**1.5**	**2.5**
	Top 10 Average	0.4	0.9	1.7	2.3	2.6	2.7	2.0	3.0
	Bottom 10 Average	0.2	0.2	0.6	1.2	1.5	1.7	1.1	1.9
7. Treasury Bill Yield, 1-Yr	CONSENSUS	**0.4**	**0.7**	**1.3**	**1.8**	**2.1**	**2.3**	**1.7**	**2.6**
	Top 10 Average	0.5	1.1	1.8	2.4	2.7	2.9	2.2	3.1
	Bottom 10 Average	0.2	0.3	0.7	1.3	1.6	1.8	1.1	2.0
8. Treasury Note Yield, 2-Yr	CONSENSUS	**0.5**	**0.9**	**1.5**	**2.0**	**2.3**	**2.5**	**1.8**	**2.7**
	Top 10 Average	0.8	1.3	2.0	2.5	2.9	3.0	2.4	3.3
	Bottom 10 Average	0.3	0.4	0.9	1.4	1.7	2.0	1.3	2.2
9. Treasury Note Yield, 5-Yr	CONSENSUS	**0.7**	**1.1**	**1.7**	**2.2**	**2.5**	**2.7**	**2.0**	**2.9**
	Top 10 Average	1.1	1.6	2.3	2.8	3.1	3.3	2.6	3.5
	Bottom 10 Average	0.5	0.7	1.2	1.6	1.8	2.1	1.5	2.3
10. Treasury Note Yield, 10-Yr	CONSENSUS	**1.2**	**1.5**	**2.1**	**2.5**	**2.7**	**2.9**	**2.3**	**3.1**
	Top 10 Average	1.5	2.0	2.6	3.1	3.3	3.5	2.9	3.8
	Bottom 10 Average	0.8	1.1	1.6	1.9	2.1	2.2	1.8	2.5
11. Treasury Bond Yield, 30-Yr	CONSENSUS	**1.8**	**2.2**	**2.7**	**3.1**	**3.3**	**3.5**	**3.0**	**3.8**
	Top 10 Average	2.2	2.7	3.3	3.7	3.9	4.1	3.5	4.4
	Bottom 10 Average	1.4	1.7	2.2	2.6	2.8	2.9	2.4	3.1
12. Corporate Aaa Bond Yield	CONSENSUS	**2.8**	**3.2**	**3.6**	**4.0**	**4.2**	**4.3**	**3.9**	**4.6**
	Top 10 Average	3.1	3.6	4.2	4.6	4.7	4.8	4.4	5.1
	Bottom 10 Average	2.4	2.7	3.1	3.5	3.7	3.8	3.4	4.2
13. Corporate Baa Bond Yield	CONSENSUS	**4.1**	**4.5**	**4.9**	**5.2**	**5.3**	**5.4**	**5.0**	**5.7**
	Top 10 Average	4.6	5.0	5.4	5.7	5.8	6.0	5.6	6.2
	Bottom 10 Average	3.6	3.9	4.3	4.6	4.7	4.8	4.4	5.2
14. State & Local Bonds Yield	CONSENSUS	**2.6**	**3.0**	**3.5**	**3.7**	**3.8**	**3.8**	**3.6**	**4.1**
	Top 10 Average	3.0	3.3	3.9	4.2	4.3	4.4	4.0	4.6
	Bottom 10 Average	2.3	2.6	2.9	3.2	3.2	3.3	3.0	3.7
15. Home Mortgage Rate	CONSENSUS	**3.4**	**3.6**	**4.0**	**4.4**	**4.5**	**4.7**	**4.2**	**4.9**
	Top 10 Average	3.8	4.0	4.5	4.8	5.0	5.2	4.7	5.5
	Bottom 10 Average	3.0	3.2	3.5	3.9	4.1	4.1	3.7	4.4
A. Fed's AFE Nominal $ Index	CONSENSUS	**112.8**	**112.6**	**112.5**	**111.8**	**111.4**	**111.0**	**111.9**	**110.6**
	Top 10 Average	114.1	114.5	114.1	113.8	113.5	113.4	113.9	113.9
	Bottom 10 Average	111.7	110.7	110.7	110.2	109.5	108.7	110.0	107.6
		Year-Over-Year, % Change						Five-Year Averages	
		2021	2022	2023	2024	2025	2026	2022-2026	2027-2031
B. Real GDP	CONSENSUS	**3.2**	**3.2**	**2.4**	**2.2**	**2.1**	**2.0**	**2.4**	**2.1**
	Top 10 Average	5.7	4.3	2.9	2.5	2.3	2.3	2.9	2.4
	Bottom 10 Average	0.5	2.2	1.9	1.9	1.8	1.8	1.9	1.8
C. GDP Chained Price Index	CONSENSUS	**1.1**	**1.7**	**1.9**	**2.0**	**2.0**	**2.0**	**1.9**	**2.0**
	Top 10 Average	1.8	2.2	2.2	2.2	2.3	2.2	2.2	2.2
	Bottom 10 Average	0.3	1.3	1.6	1.8	1.8	1.8	1.7	1.9
D. Consumer Price Index	CONSENSUS	**1.3**	**2.0**	**2.1**	**2.1**	**2.1**	**2.1**	**2.1**	**2.2**
	Top 10 Average	2.2	2.5	2.3	2.3	2.4	2.3	2.4	2.4
	Bottom 10 Average	0.4	1.5	1.8	1.8	1.9	1.9	1.8	2.0

Aquarion Water Company of New Hampshire, Inc.
Derivation of Mean Equity Risk Premium Based Studies
Using Holding Period Returns and
Projected Market Appreciation of the S&P Utility Index

Line No.		Implied Equity Risk Premium
	Equity Risk Premium based on S&P Utility Index Holding Period Returns (1):	
1.	Historical Equity Risk Premium	4.21 %
2.	Regression of Historical Equity Risk Premium (2)	6.88
3.	Forecasted Equity Risk Premium Based on PRPM (3)	5.53
4.	Forecasted Equity Risk Premium based on Projected Total Return on the S&P Utilities Index (Value Line Data) (4)	6.68
5.	Forecasted Equity Risk Premium based on Projected Total Return on the S&P Utilities Index (Bloomberg Data) (5)	5.44
6.	Average Equity Risk Premium (6)	5.75 %

Notes: (1) Based on S&P Public Utility Index monthly total returns and Moody's Public Utility Bond average monthly yields from 1928-2019. Holding period returns are calculated based upon income received (dividends and interest) plus the relative change in the market value of a security over a one-year holding period.

(2) This equity risk premium is based on a regression of the monthly equity risk premiums of the S&P Utility Index relative to Moody's A2 rated public utility bond yields from 1928 - 2019 referenced in note 1 above.

(3) The Predictive Risk Premium Model (PRPM) is applied to the risk premium of the monthly total returns of the S&P Utility Index and the monthly yields on Moody's A2 rated public utility bonds from January 1928 - September 2020.

(4) Using data from Value Line for the S&P Utilities Index, an expected return of 10.18% was derived based on expected dividend yields and long-term growth estimates as a proxy for market appreciation. Subtracting the expected A2 rated public utility bond yield of 3.50%, calculated on line 3 of page 3 of this Attachment results in an equity risk premium of 6.68%. (10.18% - 3.50% = 6.68%)

(5) Using data from Bloomberg Professional Service for the S&P Utilities Index, an expected return of 8.94% was derived based on expected dividend yields and long-term growth estimates as a proxy for market appreciation. Subtracting the expected A2 rated public utility bond yield of 3.50%, calculated on line 3 of page 3 of this Attachment results in an equity risk premium of 5.44%. (8.94% - 3.50% = 5.44%)

(6) Average of lines 1 through 5.

Aquarion Water Company of New Hampshire, Inc.
Indicated Common Equity Cost Rate Through Use
of the Traditional Capital Asset Pricing Model (CAPM) and Empirical Capital Asset Pricing Model (ECAPM)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Seven Water Companies	Value Line Adjusted Beta	Bloomberg Adjusted Beta	Average Beta	Market Risk Premium (1)	Risk-Free Rate (2)	Traditional CAPM Cost Rate	ECAPM Cost Rate	Indicated Common Equity Cost Rate (3)
American States Water Company	0.65	0.56	0.60	10.48 %	2.11 %	8.40 %	9.44 %	8.92 %
American Water Works Company, Inc.	0.85	0.99	0.92	10.48	2.11	11.75	11.96	11.85
California Water Service Group	0.65	0.56	0.60	10.48	2.11	8.40	9.44	8.92
Essential Utilities, Inc.	0.90	0.97	0.93	10.48	2.11	11.85	12.04	11.95
Middlesex Water Company	0.70	0.77	0.74	10.48	2.11	9.86	10.54	10.20
SJW Group	0.80	0.88	0.84	10.48	2.11	10.91	11.33	11.12
York Water Company	0.80	0.92	0.86	10.48	2.11	11.12	11.49	11.30
Mean			0.78			10.33 %	10.89 %	10.61 %
Median			0.84			10.91 %	11.33 %	11.12 %
Average of Mean and Median			0.81			10.62	11.11	10.87 %

Notes on page 2 of this Attachment.

Aquarion Water Company of New Hampshire, Inc.
Notes to Accompany the Application of the CAPM and ECAPM

Notes:

(1) The market risk premium (MRP) is derived by using six different measures from three sources: Ibbotson, Value Line, and Bloomberg as illustrated below:

Historical Data MRP Estimates:

Measure 1: Ibbotson Arithmetic Mean MRP (1926-2019)

Arithmetic Mean Monthly Returns for Large Stocks 1926-2019:	12.10	%
Arithmetic Mean Income Returns on Long-Term Government Bonds:	5.09	
MRP based on Ibbotson Historical Data:	7.01	%

Measure 2: Application of a Regression Analysis to Ibbotson Historical Data (1926-2019) — 10.18 %

Measure 3: Application of the PRPM to Ibbotson Historical Data: (January 1926 - September 2020) — 10.66 %

Value Line MRP Estimates:

Measure 4: Value Line Projected MRP (Thirteen weeks ending October 16, 2020)

Total projected return on the market 3-5 years hence*:	13.69	%
Projected Risk-Free Rate (see note 2):	2.11	
MRP based on Value Line Summary & Index:	11.58	%

*Forcasted 3-5 year capital appreciation plus expected dividend yield

Measure 5: Value Line Projected Return on the Market based on the S&P 500

Total return on the Market based on the S&P 500:	13.95	%
Projected Risk-Free Rate (see note 2):	2.11	
MRP based on Value Line data	11.84	%

Measure 6: Bloomberg Projected MRP

Total return on the Market based on the S&P 500:	13.70	%
Projected Risk-Free Rate (see note 2):	2.11	
MRP based on Bloomberg data	11.59	%

Average of Value Line, Ibbotson, and Bloomberg MRP:	10.48	%

(2) For reasons explained in the direct testimony, the appropriate risk-free rate for cost of capital purposes is the average forecast of 30 year Treasury Bonds per the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts. (See pages 10-11 of Attachment DWD-4.) The projection of the risk-free rate is illustrated below:

Fourth Quarter 2020	1.50	%
First Quarter 2021	1.60	
Second Quarter 2021	1.60	
Third Quarter 2021	1.70	
Fourth Quarter 2021	1.80	
First Quarter 2022	1.90	
2022-2026	3.00	
2027-2031	3.80	
	2.11	%

(3) Average of Column 6 and Column 7.

Sources of Information:
Value Line Summary and Index
Blue Chip Financial Forecasts, October 1, 2020 and June 1, 2020
Stocks, Bonds, Bills, and Inflation - 2020 SBBI Yearbook, John Wiley & Sons, Inc.
Bloomberg Professional Services

Aquarion Water Company of New Hampshire, Inc.
Basis of Selection of the Group of Non-Price Regulated Companies
Comparable in Total Risk to the Utility Proxy Group

The criteria for selection of the Non-Price Regulated Proxy Group was that the non-price regulated companies be domestic and reported in Value Line Investment Survey (Standard Edition).

The Non-Price Regulated Proxy Group was then selected based on the unadjusted beta range of 0.45 – 0.75 and residual standard error of the regression range of 2.9166 – 3.4786 of the Utility Proxy Group.

These ranges are based upon plus or minus two standard deviations of the unadjusted beta and standard error of the regression. Plus or minus two standard deviations captures 95.50% of the distribution of unadjusted betas and residual standard errors of the regression.

The standard deviation of the Utility Proxy Group's residual standard error of the regression is 0.1405. The standard deviation of the standard error of the regression is calculated as follows:

$$\text{Standard Deviation of the Std. Err. of the Regr.} = \frac{\text{Standard Error of the Regression}}{\sqrt{2N}}$$

where: N = number of observations. Since Value Line betas are derived from weekly price change observations over a period of five years, N = 259

$$\text{Thus, } 0.1405 = \frac{3.1976}{\sqrt{518}} = \frac{3.1976}{22.7596}$$

Source of Information: Value Line, Inc., September 2020
Value Line Investment Survey (Standard Edition)

Aquarion Water Company of New Hampshire, Inc.
Basis of Selection of Comparable Risk
Domestic Non-Price Regulated Companies

	[1]	[2]	[3]	[4]
Proxy Group of Seven Water Companies	Value Line Adjusted Beta	Unadjusted Beta	Residual Standard Error of the Regression	Standard Deviation of Beta
American States Water Company	0.65	0.42	2.7018	0.0652
American Water Works Company, Inc.	0.85	0.70	3.1629	0.0763
California Water Service Group	0.65	0.40	3.1081	0.0750
Essential Utilities, Inc.	0.90	0.83	2.7162	0.0655
Middlesex Water Company	0.70	0.52	3.4887	0.0841
SJW Group	0.80	0.67	3.5594	0.0858
York Water Company	0.80	0.64	3.6461	0.0879
Average	0.76	0.60	3.1976	0.0771
Beta Range (+/- 2 std. Devs. of Beta)	0.45	0.75		
2 std. Devs. of Beta	0.15			
Residual Std. Err. Range (+/- 2 std. Devs. of the Residual Std. Err.)	2.9166	3.4786		
Std. dev. of the Res. Std. Err.	0.1405			
2 std. devs. of the Res. Std. Err.	0.2810			

Source of Information: Valueline Proprietary Database, September 2020

Aquarion Water Company of New Hampshire, Inc.
Proxy Group of Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Seven Water Companies

	[1]	[2]	[3]	[4]
Proxy Group of Twenty-Three Non-Price Regulated Companies	VL Adjusted Beta	Unadjusted Beta	Residual Standard Error of the Regression	Standard Deviation of Beta
Adobe Inc.	0.80	0.68	3.2135	0.0775
Bio-Rad Labs. 'A'	0.80	0.64	3.0465	0.0735
Casey's Gen'l Stores	0.80	0.69	3.2699	0.0789
C.H. Robinson	0.70	0.49	2.9211	0.0704
salesforce.com	0.85	0.74	3.3139	0.0799
CSG Systems Int'l	0.75	0.60	3.1939	0.0770
Citrix Sys.	0.75	0.58	3.3490	0.0808
Dollar General	0.70	0.47	3.2817	0.0791
Ennis, Inc.	0.80	0.63	3.3760	0.0814
FirstCash, Inc.	0.80	0.67	3.2660	0.0788
Gen'l Mills	0.65	0.45	2.9700	0.0716
Heartland Express	0.75	0.56	3.1152	0.0751
St. Joe Corp.	0.85	0.72	2.9838	0.0720
Lancaster Colony	0.70	0.50	3.1119	0.0751
Lilly (Eli)	0.75	0.56	2.9987	0.0723
ManTech Int'l 'A'	0.85	0.71	3.1009	0.0748
MAXIMUS Inc.	0.80	0.67	3.3500	0.0808
Smucker (J.M.)	0.65	0.45	3.0513	0.0736
Standard Motor Prod.	0.80	0.68	3.3622	0.0811
Bio-Techne Corp.	0.80	0.66	3.1657	0.0763
Tyler Technologies	0.75	0.61	3.1722	0.0765
Walgreens Boots	0.80	0.67	3.2476	0.0783
West Pharmac. Svcs.	0.80	0.68	3.1016	0.0748
Average	0.77	0.61	3.1700	0.0800
Proxy Group of Seven Water Companies	0.76	0.60	3.1976	0.0771

Source of Information: Valueline Proprietary Database, September 2020

Aquarion Water Company of New Hampshire, Inc.
Summary of Cost of Equity Models Applied to
Proxy Group of Twenty-Three Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Seven Water Companies

Principal Methods	Proxy Group of Twenty-Three Non-Price Regulated Companies	
Discounted Cash Flow Model (DCF) (1)	10.26	%
Risk Premium Model (RPM) (2)	11.50	
Capital Asset Pricing Model (CAPM) (3)	10.70	
Mean	10.82	%
Median	10.70	%
Average of Mean and Median	10.76	%

Notes:
(1) From page 2 of this Attachment.
(2) From page 3 of this Attachment.
(3) From page 6 of this Attachment.

Aquarion Water Company of New Hampshire, Inc.
DCF Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Seven Water Companies

Proxy Group of Twenty-Three Non-Price Regulated Companies	[1] Average Dividend Yield	[2] Value Line Projected Five Year Growth in EPS	[3] Zack's Five Year Projected Growth Rate in EPS	[4] Yahoo! Finance Projected Five Year Growth in EPS	[5] Bloomberg Projected Five Year Growth in EPS	[6] Average Projected Five Year Growth Rate in EPS	[7] Adjusted Dividend Yield	[8] Indicated Common Equity Cost Rate (1)
Adobe Inc.	- %	19.50 %	19.00 %	17.42 %	16.27 %	18.05 %	- %	NA %
Bio-Rad Labs. 'A'	-	11.50	NA	17.80	21.75	17.02	-	NA
Casey's Gen'l Stores	0.73	6.50	NA	5.56	16.31	9.46	0.76	10.22
C.H. Robinson	2.06	8.00	9.00	4.12	8.63	7.44	2.14	9.58
salesforce.com	-	34.50	15.70	16.72	18.85	21.44	-	NA
CSG Systems Int'l	2.25	10.00	NA	(5.00)	8.00	9.00	2.35	11.35
Citrix Sys.	1.01	9.00	7.00	9.37	9.63	8.75	1.05	9.80
Dollar General	0.71	12.00	11.10	14.79	12.89	12.70	0.76	13.46
Ennis, Inc.	5.08	3.00	NA	5.00	NA	4.00	5.18	9.18
FirstCash, Inc.	1.81	9.00	NA	(0.93)	NA	9.00	1.89	10.89
Gen'l Mills	3.28	3.00	7.50	5.05	4.37	4.98	3.36	8.34
Heartland Express	0.40	8.50	NA	5.80	NA	7.15	0.41	7.56
St. Joe Corp.	-	15.00	NA	(28.10)	NA	15.00	-	NA
Lancaster Colony	1.63	5.00	NA	3.00	NA	4.00	1.66	5.66
Lilly (Eli)	1.96	10.00	16.10	13.16	19.33	14.65	2.10	16.75
ManTech Int'l 'A'	1.78	12.00	7.40	7.02	7.36	8.45	1.86	10.31
MAXIMUS Inc.	1.53	10.00	NA	12.50	7.50	10.00	1.61	11.61
Smucker (J.M.)	3.15	3.00	2.20	0.68	(0.13)	1.96	3.18	5.14
Standard Motor Prod.	-	7.50	NA	7.00	NA	7.25	-	NA
Bio-Techne Corp.	0.50	14.00	7.00	7.00	10.45	9.61	0.52	10.13
Tyler Technologies	-	10.50	15.00	10.00	13.25	12.19	-	NA
Walgreens Boots	4.91	6.00	5.00	(5.18)	3.58	4.86	5.03	9.89
West Pharmac. Svcs.	0.23	16.00	17.40	17.40	14.94	16.43	0.25	16.68
							Mean	10.39 %
							Median	10.13 %
							Average of Mean and Median	10.26 %

NA= Not Available
NMF= Not Meaningful Figure

(1) The application of the DCF model to the domestic, non-price regluated comparable risk companies is identical to the application of the DCF to the utility proxy group. The dividend yield is derived by using the 60 day average price and the spot indicated dividend as of October 16, 2020. The dividend yield is then adjusted by 1/2 the average projected growth rate in EPS, which is calculated by averaging the 5 year projected growth in EPS provided by Value Line, Bloomberg, www.zacks.com, and www.yahoo.com (excluding any negative growth rates) and then adding that growth rate to the adjusted dividend yield.

Source of Information: Value Line Investment Survey
www.zacks.com Downloaded on 10/16/2020
www.yahoo.com Downloaded on 10/16/2020
Bloomberg Professional Services

Aquarion Water Company of New Hampshire, Inc.
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		Proxy Group of Twenty-Three Non-Price Regulated Companies
1.	Prospective Yield on Baa2 Rated Corporate Bonds (1)	4.08 %
2.	Adjustment to Reflect Proxy Group Bond Rating (2)	(0.20)
3.	Prospective Bond Yield Applicable to the Non-Price Regulated Proxy Group	3.88
4.	Equity Risk Premium (3)	7.62
5.	Risk Premium Derived Common Equity Cost Rate	11.50 %

Notes: (1) Average forecast of Baa2 corporate bonds based upon the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts dated October 1, 2020 and June 1, 2020 (see pages 10 and 11 of Attachment DWD-4). The estimates are detailed below.

Fourth Quarter 2020	3.50 %
First Quarter 2021	3.60
Second Quarter 2021	3.60
Third Quarter 2021	3.70
Fourth Quarter 2021	3.70
First Quarter 2022	3.80
2022-2026	5.00
2027-2031	5.70
Average	4.08 %

(2) To reflect the Baa1 average rating of the Non-Price Regulated Proxy Group, the prosepctive yield on Baa2 corporate bonds must be adjusted downward by 1/3 of the spread between A2 and Baa2 corporate bond yields as shown below:

	A2 Corp. Bond Yield	Baa2 Corp. Bond Yield	Spread
Sep-2020	2.79 %	3.36 %	0.57 %
Aug-2020	2.68	3.27	0.59
Jul-2020	2.69	3.31	0.62
		Average yield spread	0.59 %
		1/3 of spread	0.20 %

(3) From page 5 of this Attachment.

Aquarion Water Company of New Hampshire, Inc.
Comparison of Long-Term Issuer Ratings for the
Proxy Group of Twenty-Three Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Seven Water Companies

	Moody's Long-Term Issuer Rating October 2020		Standard & Poor's Long-Term Issuer Rating October 2020	
Proxy Group of Twenty-Three Non-Price Regulated Companies	Long-Term Issuer Rating	Numerical Weighting (1)	Long-Term Issuer Rating	Numerical Weighting (1)
Adobe Inc.	A2	6.0	A	6.0
Bio-Rad Labs. 'A'	Baa2	9.0	BBB	9.0
Casey's Gen'l Stores	NR	--	NR	--
C.H. Robinson	Baa2	9.0	BBB+	8.0
salesforce.com	A2	6.0	A	6.0
CSG Systems Int'l	NR	--	BB+	11.0
Citrix Sys.	NR	--	BBB	9.0
Dollar General	Baa2	9.0	BBB	9.0
Ennis, Inc.	NR	--	NR	--
FirstCash, Inc.	Ba1	11.0	BB	12.0
Gen'l Mills	Baa2	9.0	BBB	9.0
Heartland Express	NR	--	NR	--
St. Joe Corp.	NR	--	NR	--
Lancaster Colony	NR	--	NR	--
Lilly (Eli)	A2	6.0	A+	5.0
ManTech Int'l 'A'	WR	--	BB+	11.0
MAXIMUS Inc.	NR	--	NR	--
Smucker (J.M.)	Baa2	9.0	BBB	9.0
Standard Motor Prod.	NR	--	NR	--
Bio-Techne Corp.	NR	--	NR	--
Tyler Technologies	NR	--	NR	--
Walgreens Boots	Baa2	9.0	BBB	9.0
West Pharmac. Svcs.	NR	--	NR	--
Average	Baa1	8.3	BBB	8.7

Notes:
(1) From page 6 of Attachment DWD-4.

Source of Information:
Bloomberg Professional Services

Aquarion Water Company of New Hampshire, Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for
Proxy Group of Twenty-Three Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Seven Water Companies

Line No.	Equity Risk Premium Measure	Proxy Group of Twenty-Three Non-Price Regulated Companies
	Ibbotson-Based Equity Risk Premiums:	
1.	Ibbotson Equity Risk Premium (1)	5.78 %
2.	Regression on Ibbotson Risk Premium Data (2)	9.42
3.	Ibbotson Equity Risk Premium based on PRPM (3)	9.54
4.	Equity Risk Premium Based on Value Line Summary and Index (4)	10.73
5	Equity Risk Premium Based on Value Line S&P 500 Companies (5)	10.99
6.	Equity Risk Premium Based on Bloomberg S&P 500 Companies (6)	10.74
7.	Conclusion of Equity Risk Premium	9.53 %
8.	Adjusted Beta (7)	0.80
9.	Forecasted Equity Risk Premium	7.62 %

Notes:
(1) From note 1 of page 9 of Attachment DWD-4.
(2) From note 2 of page 9 of Attachment DWD-4.
(3) From note 3 of page 9 of Attachment DWD-4.
(4) From note 4 of page 9 of Attachment DWD-4.
(5) From note 5 of page 9 of Attachment DWD-4.
(6) From note 6 of page 9 of Attachment DWD-4.
(7) Average of mean and median beta from page 6 of this Attachment.

Sources of Information:
Stocks, Bonds, Bills, and Inflation - 2020 SBBI Yearbook, John Wiley & Sons, Inc.
Value Line Summary and Index
Blue Chip Financial Forecasts, October 1, 2020 and June 1, 2020
Bloomberg Professional Services

Aquarion Water Company of New Hampshire, Inc.
Traditional CAPM and ECAPM Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Seven Water Companies

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Twenty-Three Non-Price Regulated Companies	Value Line Adjusted Beta	Bloomberg Beta	Average Beta	Market Risk Premium (1)	Risk-Free Rate (2)	Traditional CAPM Cost Rate	ECAPM Cost Rate	Indicated Common Equity Cost Rate (3)
Adobe Inc.	0.85	0.86	0.86	10.48 %	2.11 %	11.12 %	11.49 %	11.30 %
Bio-Rad Labs. 'A'	0.80	0.72	0.76	10.48	2.11	10.07	10.70	10.39
Casey's Gen'l Stores	0.80	0.86	0.83	10.48	2.11	10.81	11.25	11.03
C.H. Robinson	0.70	0.64	0.67	10.48	2.11	9.13	9.99	9.56
salesforce.com	0.85	1.05	0.95	10.48	2.11	12.06	12.19	12.13
CSG Systems Int'l	0.75	0.89	0.82	10.48	2.11	10.70	11.17	10.94
Citrix Sys.	0.80	0.64	0.72	10.48	2.11	9.65	10.39	10.02
Dollar General	0.70	0.68	0.69	10.48	2.11	9.34	10.15	9.75
Ennis, Inc.	0.80	0.79	0.79	10.48	2.11	10.39	10.94	10.66
FirstCash, Inc.	0.80	0.98	0.89	10.48	2.11	11.44	11.72	11.58
Gen'l Mills	0.70	0.50	0.60	10.48	2.11	8.40	9.44	8.92
Heartland Express	0.75	0.81	0.78	10.48	2.11	10.28	10.86	10.57
St. Joe Corp.	0.85	1.01	0.93	10.48	2.11	11.85	12.04	11.95
Lancaster Colony	0.65	0.64	0.64	10.48	2.11	8.82	9.76	9.29
Lilly (Eli)	0.75	0.73	0.74	10.48	2.11	9.86	10.54	10.20
ManTech Int'l 'A'	0.85	1.09	0.97	10.48	2.11	12.27	12.35	12.31
MAXIMUS Inc.	0.80	0.90	0.85	10.48	2.11	11.02	11.41	11.21
Smucker (J.M.)	0.65	0.52	0.58	10.48	2.11	8.19	9.29	8.74
Standard Motor Prod.	0.80	0.94	0.87	10.48	2.11	11.23	11.57	11.40
Bio-Techne Corp.	0.80	0.81	0.81	10.48	2.11	10.60	11.09	10.85
Tyler Technologies	0.80	0.75	0.78	10.48	2.11	10.28	10.86	10.57
Walgreens Boots	0.80	0.79	0.80	10.48	2.11	10.49	11.02	10.75
West Pharmac. Svcs.	0.80	0.83	0.81	10.48	2.11	10.60	11.09	10.85
Mean			0.79			10.37 %	10.93 %	10.65 %
Median			0.80			10.49 %	11.02 %	10.75 %
Average of Mean and Median			0.80			10.43 %	10.98 %	10.70 %

Notes:
(1) From Attachment DWD-5, note 1.
(2) From Attachment DWD-5, note 2.
(3) Average of CAPM and ECAPM cost rates.

Aquarion Water Company of New Hampshire, Inc.
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE/AMEX/NASDAQ

		[1]		[2]	[3]	[4]
Line No.		Market Capitalization on September 30, 2020 (1) (millions)	(times larger)	Applicable Decile of the NYSE/AMEX/ NASDAQ (2)	Applicable Size Premium (3)	Spread from Applicable Size Premium (4)
1.	Aquarion Water Company of New Hampshire, Inc.	$ 54.075		10	4.99%	
2.	Proxy Group of Seven Water Companies	$ 6,572.792	121.5 x	4	0.79%	4.20%

	[A]	[B]	[C]	[D]
	Decile	Market Capitalization of Smallest Company (millions)	Market Capitalization of Largest Company (millions)	Size Premium (Return in Excess of CAPM)*
Largest	1	$ 31,090.379	$ 1,061,355.011	-0.28%
	2	13,142.606	30,542.936	0.50%
	3	6,618.604	13,100.225	0.73%
	4	4,312.546	6,614.962	0.79%
	5	2,688.889	4,311.252	1.10%
	6	1,669.856	2,685.865	1.34%
	7	993.855	1,668.282	1.47%
	8	515.621	993.847	1.59%
	9	230.024	515.602	2.22%
Smallest	10	1.973	229.748	4.99%

*From 2020 Duff & Phelps Cost of Capital Navigator

Notes:

(1) From page 2 of this Attachment.

(2) Gleaned from Columns [B] and [C] on the bottom of this page. The appropriate decile (Column [A]) corresponds to the market capitalization of the proxy group, which is found in Column [1].

(3) Corresponding risk premium to the decile is provided in Column [D] on the bottom of this page.

(4) Line No. 1 Column [3] – Line No. 2 Column [3]. For example, the 4.20% in Column [4], Line No. 2 is derived as follows 4.20% = 4.99% - 0.79%.

Docket No. DW 20-184
Exhibit 12

Aquarion Water Company of New Hampshire, Inc.
Market Capitalization of Aquarion Water Company of New Hampshire, Inc. and the
Proxy Group of Seven Water Companies

Company	Exchange	[1] Common Stock Shares Outstanding at Fiscal Year End 2019 (millions)	[2] Book Value per Share at Fiscal Year End 2019 (1)	[3] Total Common Equity at Fiscal Year End 2019 (millions)	[4] Closing Stock Market Price on October 16, 2020	[5] Market-to-Book Ratio on October 16, 2020 (2)	[6] Market Capitalization on October 16, 2020 (3) (millions)
Aquarion Water Company of New Hampshire, Inc.		NA	NA	$ 15.402 (4)	NA		
Based upon Proxy Group of Seven Water Companies						351.1 (5)	$ 54.075 (6)
Proxy Group of Seven Water Companies							
American States Water Company	NYSE	36.847	$ 16.325	$ 601.530	$ 77.620	475.5 %	$ 2,860.034
American Water Works Company, Inc.	NYSE	180.813	33.853	6,121.000	155.720	460.0	$ 28,156.180
California Water Service Group	NYSE	48.532	16.070	779.906	46.270	287.9	$ 2,245.585
Essential Utilities, Inc.	NYSE	220.759	17.580	3,880.860	41.850	238.1	$ 9,238.752
Middlesex Water Company	NASDAQ	17.434	18.572	323.792	66.880	360.1	$ 1,165.986
SJW Group	NYSE	28.457	31.275	889.984	61.650	197.1	$ 1,754.344
York Water Company	NASDAQ	13.015	10.310	134.185	45.230	438.7	$ 588.664
Average		77.979	$ 20.569	$ 1,818.751	$ 70.746	351.1 %	$ 6,572.792

NA= Not Available

Notes: (1) Column 3 / Column 1.
(2) Column 4 / Column 2.
(3) Column 1 * Column 4.
(4) Company requested rate base multiplied by Company requested equity ratio.
(5) The market-to-book ratio of Aquarion Water Company of New Hampshire, Inc. on October 16, 2020 is assumed to be equal to the market-to-book ratio of Proxy Group of Seven Water Companies on October 16, 2020 as appropriate.
(6) Column [3] multiplied by Column [5].

Source of Information: 2019 Annual Forms 10K
Bloomberg Financial Services

Docket No. DW 20-184
Exhibit 12

Aquarion Water Company of New Hampshire, Inc.
Rate Mechanisms In Place at Proxy Group Operating Subsidiaries

Ticker	Company (bold if parent)	State	Decoupling?	Mechanism Name	Type of Mechanism	Source
AWR	**American States Water Company**					
	Golden State Water Company	CA	Yes	Water Revenue Adjustment Mechanism (WRAM)	Full Decoupling (Actual to Target Revenues)	Annual Report, tariff
AWK	**American Water**					
	California American Water	CA	Yes	Water Revenue Adjustment Mechanism (WRAM); Modifidied Cost Balancing Adjustment (MCBA)	Full Decoupling (Actual to Target Revenues)	Annual Report, tariff
	Hawaii American Water	HI	No			Annual Report
	Illinois American Water	IL	Yes	Volume Balancing Adjustment Rider (VBA); Qualifying Infrastructure Plant (QIP) Surcharge	Full Decoupling (Actual to Target Revenues); Capital Recovery	Annual Report; tariff; Commission Order dated December 13, 2016, Docket No. 16-0093
	Indiana American Water	IN	No	Distribution System Improvement Charge (DSIC)	Capital Recovery	Annual Report, tariff
	Iowa American Water	IA	No			Annual Report, tariff
	Kentucky American Water	KY	No			Annual Report, tariff
	Maryland American Water	MD	No			Annual Report, tariff
	Michigan American Water	MI	No			Annual Report
	Missouri American Water	MO	No	Infrastructure System Replacement Surcharge	Capital Recovery	Annual Report, tariff
	New Jersey American Water	NJ	No			Annual Report, tariff
	New York American Water	NY	Yes	Revenue And Production Cost Reconciliation Adjustment Clause and Property Tax Clause (RAC/PTC)	Full Decoupling (Actual to Target Revenues)	Annual Report; tariff; Commission Order in Case 07-W-0508 and Case 16-W-0259
	Pennsylvania American Water	PA	No	Distribution System Improvement Charge (DSIC)	Capital Recovery	Annual Report, tariff
	Tennessee American Water	TN	No			Annual Report, tariff
	Virginia American Water	VA	No	Water & Wastewater Infrastructure Service Charge "WWISC" Rider	Capital Recovery	Annual Report, tariff
	West Virginia American Water	WV	No	Distribution System Improvement Charge (DSIC)	Capital Recovery	Annual Report, tariff
CWT	**California Water Service Group**					
	California Water Service Co.	CA	Yes	Water Revenue Adjustment Mechanism (WRAM); Modifidied Cost Balancing Adjustment (MCBA); and Sales Reconciliation Mechanism (SRM)	Full Decoupling (Actual to Target Revenues)	Annual Report, tariff
	New Mexico Water Service Co.	NM	No			Annual Report, tariff
	Washington Water Service Co.	WA	No			Annual Report, tariff
	Hawaii Water Service Co.	HI	No			Annual Report, tariff
WTRG	**Essential Utilities, Inc.**					
	Aqua Illinois, Inc.	IL	Yes	Volume Balancing Adjustment Rider (VBA)	Full Decoupling (Actual to Target Revenues)	Order in Docket No. 17-0259
	Aqua Indiana, Inc.	IN	No			Annual Report, tariff
	Aqua New Jersey, Inc.	NJ	No	Distribution System Improvement Charge (DSIC)	Capital Recovery	Annual Report, tariff
	Aqua North Carolina, Inc.	NC	No			Annual Report
	Aqua Ohio, Inc.	OH	No			Annual Report
	Aqua Pennsylvania, Inc.	PA	No	Distribution System Improvement Charge (DSIC)	Capital Recovery	Annual Report; tariff
	Aqua Texas, Inc.	TX	No			Annual Report
	Aqua Virginia, Inc.	VA	No			Annual Report
MSEX	**Middlesex Water Company**					
	Middlesex Water Company (NJ)	NJ	No			Annual Report; tariff
	Southern Shores Water Company (DE)	DE	No			Annual Report
	Tidewater Utlities, Inc. (DE)	DE	No	Distribution System Improvement Charge (DSIC)	Capital Recovery	Annual Report; tariff
	Pinelands Water Company (NJ)	NJ	No			Annual Report; tariff
	Twin Lakes Utilities, Inc. (PA)	PA	No			Annual Report; tariff
SJW	**SJW Group**					
	San Jose Water Company (CA)	CA	No			
	SJWTX, Inc.	TX	No			
	The Connecticut Water Company	CT	Yes	Water Revenue Adjustment (WRA); Water Infrastructure and Conservation Adjustment (WICA)	Full Decoupling (Actual to Target Revenues); Capital Recovery	Annual Report ; tariff
	The Heritage Village Water Company	CT	Yes	Water Revenue Adjustment (WRA); Water Infrastructure and Conservation Adjustment (WICA)	Full Decoupling (Actual to Target Revenues); Capital Recovery	Annual Report ; tariff
	The Avon Water Company	CT	No			
	The Maine Water Company	ME	No	Water Infrastructure Charge (WISC)	Capital Recovery	Annual Report ; tariff
YORW	**York Water Company**	PA	No	Distribution System Improvement Charge (DSIC)	Capital Recovery	

Aquarion Water Company of New Hampshire, Inc.
Derivation of the Flotation Cost Adjustment to the Cost of Common Equity

Equity Issuances and Flotation Costs of the Parent Since Aquarion Acquisition

		[Column 1]	[Column 2]	[Column 3]	[Column 4]	[Column 5]	[Column 6]	[Column 7]	[Column 8]	[Column 9]	[Column 10]
Date	Transaction (1)	Shares Issued	Market Price per Share	Offering Price per Share	Market Pressure (2)	Total Offering Expense per Share	Net Proceeds per Share (3)	Gross Equity Issue before Costs (4)	Total Net Proceeds (5)	Total Flotation Costs (6)	Flotation Cost Percentage (7)
05/30/19	Equity Offering	17,940,000	$ 73.1700	$ 71.4800	$ 1.6900	$ 0.0343	$ 71.4457	$ 1,312,669,800	$ 1,281,736,200	$ 30,933,600	2.36%
06/11/20	Equity Offering	6,900,000	$ 86.2600	$ 84.9100	$ 1.3500	$ 0.0870	$ 84.8230	$ 595,194,000	$ 585,279,000	$ 9,915,000	1.67%
								$ 1,907,863,800	$ 1,867,015,200	$ 40,848,600	2.14%

Flotation Cost Adjustment

	Average Dividend Yield	Average Projected EPS Growth Rate	Adjusted Dividend Yield	Average DCF Cost Rate Unadjusted for Flotation (8)	DCF Cost Rate Adjusted for Flotation (9)	Flotation Cost Adjustment (10)
Proxy Group of Seven Water Companies	1.82 %	7.31 %	1.89 %	9.20 %	9.24 %	0.04 %

See page 2 of this Attachment for notes.

Aquarion Water Company of New Hampshire, Inc.
Notes to Accompany the
Derivation of the Flotation Cost Adjustment to the Cost of Common Equity

(1) Company-provided.

(2) Column 2 – Column 3.

(3) Column 2 – the sum of Columns 4 and 5.

(4) Column 1 * Column 2.

(5) Column1 * Column 6.

(6) Column 1 * the sum of Columns 4 and 5.

(7) (Column 7 – Column 8)/ Column 7.

(8) Using the average growth rate and average dividend yield on page 1 of Attachment DWD-3.

(9) Adjustment for flotation costs based on adjusting the average DCF constant growth cost rate in accordance with the following:

$$K = \frac{D(1+0.5g)}{P(1-F)} + g,$$

where g is the growth factor and F is the percentage of flotation costs.

(10) Flotation cost adjustment of 0.04% equals the difference between the flotation adjusted average DCF cost rate of 9.24% and the unadjusted average DCF cost rate of 9.20% of the Utility Proxy Group.

Source of Information:

Company SEC filings