

**BEFORE
THE PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application of Aqua Ohio,
Inc. and Aqua Ohio Wastewater, Inc. to Increase
Its Rates and Charges for its Waterworks Service
And Wastewater Service

Case No. 21-0595-WW-AIR
Case No. 21-0596-ST-AIR

**DIRECT TESTIMONY
OF
DYLAN W. D'ASCENDIS, CRRA, CVA
PARTNER
SCOTTMADDEN, INC.**

- ☐ Management policies, practice and organization
- ☐ Operating income
- ☐ Rate base
- ☐ Allocations
- ☒ Rate of return
- ☐ Rates and tariffs
- ☐ Other

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1 **I. INTRODUCTION**

2 **A. WITNESS IDENTIFICATION**

3 **Q1. Please state your name and business address.**

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

6 **Q2. By whom are you employed and in what capacity?**

7 A. I am a Partner at ScottMadden, Inc.

8 **B. BACKGROUND AND QUALIFICATIONS**

9 **Q3. Please summarize your professional experience and educational background.**

10 A. I have offered expert testimony on behalf of investor-owned utilities in over 25 state
11 regulatory commissions in the United States, the Federal Energy Regulatory Commission,
12 the Alberta Utility Commission, and one American Arbitration Association panel on issues
13 including, but not limited to, common equity cost rate, rate of return, valuation, capital
14 structure, class cost of service, and rate design.

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

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

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

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

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

10 **II. PURPOSE OF TESTIMONY**

11 **Q4. What is the purpose of your testimony in this proceeding?**

12 A. The purpose of my testimony is to present evidence on behalf of Aqua Ohio, Inc. (“Aqua
13 OH” or the “Company”) about the appropriate capital structure and corresponding cost
14 rates the Company should be given the opportunity to earn on its jurisdictional rate base.

15 **Q5. Have you prepared an Exhibit in support of your recommendation?**

16 A. Yes. I prepared an exhibit, which contains Schedules DWD-1 through DWD-9, and has
17 been prepared by me or under my direct supervision and control.

18 **Q6. What is your recommended cost of capital for Aqua OH?**

19 A. I recommend the Public Utilities Commission of Ohio (“PUCO” or the “Commission”)
20 authorize the Company the opportunity to earn an overall rate of return of 7.42% based on
21 the expected capital structure of Aqua OH as of December 31, 2021. The ratemaking
22 capital structure consists of 48.11% long-term debt at an embedded cost rate of 3.82% and

51.89% common equity at my recommended common equity cost rate of 10.75%. The overall rate of return is summarized on page 1 of Schedule DWD-1 and in Table 1 below:

Table 1: Summary of Overall Rate of Return

<u>Type of Capital</u>	<u>Ratios</u>	<u>Cost Rate</u>	<u>Weighted Cost Rate</u>
Long-Term Debt	48.11%	3.82%	1.84%
Common Equity	<u>51.89%</u>	10.75%	<u>5.58%</u>
Total	<u>100.00%</u>		<u>7.42%</u>

III. SUMMARY

Q7. Please summarize your recommended common equity cost rate.

A. My recommended common equity cost rate of 10.75% is summarized on page 2 of Schedule DWD-1. I have assessed the market-based common equity cost rates of companies of relatively similar, but not necessarily identical, risk to Aqua OH. 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.

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 eight 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

¹ *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944). ("*Hope*")

² *Bluefield Water Works Improvement Co. v. Public Serv. Comm'n*, 262 U.S. 679 (1922). ("*Bluefield*")

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

Discounted Cash Flow Model	8.63%
Risk Premium Model	11.11%
Capital Asset Pricing Model	10.45%
Market Models Applied to Comparable Risk, Non-Price Regulated Companies	<u>10.87%</u>
Indicated Range of Common Equity Cost Rates Before Adjustments for Company-Specific Risk	10.27% - 10.66%
Size Adjustment	0.25%
Flotation Cost Adjustment	0.05%
Indicated Range of Common Equity Cost Rates after Adjustment	<u>10.57% – 10.96%</u>
Recommended Cost of Common Equity	<u>10.75%</u>

After analyzing the indicated common equity cost rates derived through these models, the indicated range of common equity cost rates applicable to the Utility Proxy Group is between 10.27% and 10.66%. This range is set by using the average model result (10.27%) and the median model result (10.66%).

The indicated range of common equity cost rates applicable to the Utility Proxy Group was then adjusted upward by 0.25% to reflect Aqua OH’s smaller size relative to the Utility Proxy Group and by 0.05% to reflect flotation costs. These adjustments result in a Company-specific range of common equity cost rates between 10.57% and 10.96%.

1 From this range of results, I recommend the Commission consider a common equity cost
2 rate of 10.75%, or the approximate midpoint, for use in setting rates for the Company.

3 **IV. GENERAL PRINCIPLES**

4 **Q8. What general principles have you considered in arriving at your recommended**
5 **common equity cost rate of 10.75%?**

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

1 **A. BUSINESS RISK**

2 **Q9. Please define business risk and explain why it is important to the determination of a**
3 **fair rate of return.**

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

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

13 **Q10. What business risks do the water and wastewater industries face in general?**

14 A. Water and wastewater utilities have an ever-increasing responsibility to be stewards of the
15 environment from which water supplies are drawn in order to preserve and protect essential
16 natural resources of the United States. This increased environmental stewardship is a direct
17 result of compliance with the Safe Drinking Water Act, as well as a response to continuous
18 monitoring by the Environmental Protection Agency ("EPA") and state and local
19 governments, of the water supply for potential contaminants and their resultant regulations.
20 This, plus aging infrastructure, necessitate additional capital investment in the distribution
21 and treatment of water, exacerbating the pressure on free cash flows arising from increased
22 capital expenditures for infrastructure repair and replacement. The significant amount of
23 capital investment and, hence, high capital intensity, is a major risk factor for the water and
24 wastewater utility industry.

1 *Value Line Investment Survey* (“*Value Line*”) observes the following about the
2 water utility industry:

3 Following years and years of underinvestment, the nation found
4 itself with an aging water infrastructure that is in poor condition.
5 Many pipelines were installed 50 to 75 years ago. Badly in need of
6 replacement, water utilities have been spending heavily to replace
7 old assets. This high level of expenditures will have to be
8 maintained for decades.

9 * * *

10 As we have highlighted in the past, one of the most significant
11 factors in determining the profitability of a utility is the regulatory
12 climate where it operates. Fortunately for the Water Utility
13 Industry, state authorities and water utilities both realize what needs
14 to be done and are working constructively to address the issues.
15 Regulators agree that the outlays being made to upgrade the
16 country’s infrastructure are required, so they are allowing fair return
17 on investment to be made. Having a positive relationship may seem
18 reasonable, but this is not the case for gas and electric utilities.
19 Conflicts are not unusual.³

20 The water and wastewater industry also experiences low depreciation rates.
21 Depreciation rates are one of the principal sources of internal cash flows for all utilities
22 (through a utility’s depreciation expense) and are vital for a company to fund ongoing
23 replacements and repairs of water and wastewater systems. Water / wastewater utility
24 assets have long lives, and therefore have long capital recovery periods. As such, they face
25 greater risk due to inflation, which results in a higher replacement cost per dollar of net
26 plant.

27 Substantial capital expenditures, as noted by *Value Line*, will require significant
28 financing. The three sources of financing typically used are debt, equity (common and
29 preferred), and cash flow. All three are intricately linked to the opportunity to earn a

³ *Value Line Investment Survey*, April 9, 2021.

1 sufficient rate of return as well as the ability to achieve that return. Consistent with *Hope*
2 and *Bluefield*, the return must be sufficient to maintain credit quality as well as enable the
3 attraction of necessary new capital, be it debt or equity capital. If unable to raise debt or
4 equity capital, the utility must turn to either retained earnings or free cash flow,⁴ both of
5 which are directly linked to earning a sufficient rate of return. The level of free cash flow
6 represents a utility's ability to meet the needs of its debt and equity holders. If either
7 retained earnings or free cash flow is inadequate, it will be nearly impossible for the utility
8 to attract the needed capital for new infrastructure investment necessary to ensure quality
9 service to its customers. An insufficient rate of return can be financially devastating for
10 utilities as well as a public safety issue for their customers.

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

16 **B. FINANCIAL RISK**

17 **Q11. Please define financial risk and explain why it is important to the determination of a**
18 **fair rate of return.**

19 A. Financial risk is the additional risk created by the introduction of debt and preferred stock
20 into the capital structure. The higher the proportion of debt and preferred stock in the
21 capital structure, the higher the financial risk (*i.e.*, likelihood of default). Therefore,

⁴ Free Cash Flow = Operating Cash Flow (Funds From Operations) minus Capital Expenditures.

consistent with the basic financial principle of risk and return, investors demand a higher common equity return as compensation for bearing higher default risk.

Q12. 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.⁵ 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.

Q13. 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 being equal, a relative size analysis needs to be conducted for companies with similar bond ratings.

V. AQUA OH AND THE UTILITY PROXY GROUP

Q14. Are you familiar with the operations of Aqua OH?

A. Yes. Aqua OH is a subsidiary of Essential Utilities, Inc. ("Essential"). The Company serves approximately 157,486 customers in Ohio. Aqua OH's common stock is not publicly traded.

⁵ 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.

Q15. 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 or Small & Midcap Edition (April 9, 2021);
- (ii) They have 70% or greater of 2020 total operating income and 70% or greater of 2020 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 2020 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 eight companies met these criteria: American States Water Co., American Water Works Co., Inc., Artesian Resources Corporation, California Water Service Group, Global Water Resources, Inc., Middlesex Water Co., SJW Corp., and The York Water Co.

1 **Q16. Please describe Schedule DWD-2, page 1.**

2 A. Page 1 of Schedule DWD-2 contains comparative capitalization and financial statistics for
3 the Utility Proxy Group identified above for the years 2016 to 2020. During the five-year
4 period ending 2020, the historically achieved earnings rate on book common equity for the
5 group averaged 10.23%. The average common equity ratio based on total permanent
6 capital (excluding short-term debt) was 49.39%, and the average dividend payout ratio was
7 58.61%.

8 Total debt to earnings before interest, taxes, depreciation, and amortization for the
9 years 2016 to 2020 ranges between 3.73x and 5.32x, with an average of 4.44x. Funds from
10 operations to total debt range from 12.38% to 23.06%, with an average of 18.33%.

11 **VI. CAPITAL STRUCTURE**

12 **Q17. What capital structure ratios do you recommend be employed in developing an**
13 **overall fair rate of return appropriate for the Company?**

14 A. I recommend the use of Aqua OH's actual expected capital structure for the test year ending
15 December 31, 2021, which consists of 48.11% long-term debt and 51.89% common equity
16 as shown on page 1 of Schedule DWD-1.

17 **Q18. How does Aqua OH's ratemaking common equity ratio of 51.89% compare with the**
18 **equity ratios maintained by the companies in your Utility Proxy Group?**

19 A. Aqua OH's ratemaking common equity ratio of 51.89% is reasonable and consistent with
20 the range of common equity ratios maintained, on average, by the companies in the Utility
21 Proxy Group on which I base my recommended common equity cost rate. As shown on
22 page 2 of Schedule DWD-2, the common equity ratios of the Utility Proxy Group range
23 from 21.91% to 59.28% in 2020.

1 **Q19. What long-term debt cost rate is most appropriate for Aqua OH in this proceeding?**

2 A. Aqua OH's actual expected long-term debt cost rate on December 31, 2021 of 3.82% is
3 reasonable and appropriate as Aqua OH's cost of long-term debt in this proceeding.

4 **VII. COMMON EQUITY COST RATE MODELS**

5 **Q20. Is it important that cost of common equity models be market based?**

6 A. Yes. A public utility must compete for equity in capital markets along with all other
7 companies of comparable risk, which includes non-utilities. The cost of common equity is
8 thus determined based on equity market expectations for the returns of those comparable
9 risk companies. If individual investors are choosing to invest their capital among
10 companies of comparable risk, they will choose a company providing a higher return over
11 a company providing a lower return.

12 **Q21. Are your cost of common equity models market-based models?**

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

1 it is based on statistics which result from regression analyses of market prices and reflect
2 the market's assessment of total risk.

3 **A. DISCOUNTED CASH FLOW MODEL**

4 **Q22. What is the theoretical basis of the DCF model?**

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

13 **Q23. Which version of the DCF model did you use?**

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

15 **Q24. Please describe the dividend yield you used in your application of the DCF model.**

16 A. The unadjusted dividend yields are based on the proxy companies' dividends as of April
17 5, 2021, divided by the average of closing market prices for the 60 trading days ending
18 April 5, 2021.⁶

19 **Q25. Please explain your adjustment to the dividend yield.**

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

⁶ See, Schedule DWD-3, page 1, Column 1.

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 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 Schedule DWD-3 have been adjusted upward to reflect one-half the average projected growth rate shown in Column 6.

Q26. 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.

1 **Q27. Please summarize the DCF model results.**

2 A. As shown on page 1 of Schedule DWD-3, the mean result of the application of the single-
3 stage DCF model is 9.11%, the median result is 8.14%, and the average of the two is 8.63%
4 for the Utility Proxy Group. In arriving at a conclusion for the DCF-indicated common
5 equity cost rate for the Utility Proxy Group, I have relied on an average of the mean and
6 the median results of the DCF. This approach takes into consideration all the proxy
7 companies' results, while mitigating the high and low outliers of those individual results.

8 **B. THE RISK PREMIUM MODEL**

9 **Q28. Please describe the theoretical basis of the RPM.**

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

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

1 **Q29. Please explain how you derived your indicated cost of common equity based on the**
2 **RPM.**

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

5 **Q30. Please explain the PRPM.**

6 A. The PRPM, published in the *Journal of Regulatory Economics* and *The Electricity*
7 *Journal*⁷, was developed from the work of Robert F. Engle, who shared the Nobel Prize in
8 Economics in 2003 “for methods of analyzing economic time series with time-varying
9 volatility (“ARCH”)”.⁸ Engle found that volatility changes over time and is related from
10 one period to the next, especially in financial markets. Engle discovered that the volatility
11 in prices and returns clusters over time and is therefore highly predictable and can be used
12 to predict future levels of risk and risk premiums.

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

17 The inputs to the model are the historical returns on the common shares of each
18 company in the Utility Proxy Group minus the historical monthly yield on long-term U.S.
19 Treasury securities through March 2021. Using a generalized form of ARCH, known as
20 GARCH, I calculated each Utility Proxy Group company’s projected equity risk premium

⁷ 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, *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, Pauline M. Ahern, Dylan W. D’Ascendis, and Frank J. Hanley, *The Electricity Journal* (May 2013), 84-89.

⁸ www.nobelprize.org.

1 using Eviews[®] statistical software. When the GARCH Model is applied to the historical
2 return data, it produces a predicted GARCH variance series⁹ and a GARCH coefficient¹⁰.
3 Multiplying the predicted monthly variance by the GARCH coefficient, then annualizing
4 it¹¹, produces the predicted annual equity risk premium. I then added the forecasted 30-
5 year U.S. Treasury Bond yield, 2.73%¹², to each company's PRPM-derived equity risk
6 premium to arrive at an indicated cost of common equity. The 30-year Treasury yield is a
7 consensus forecast derived from the Blue Chip Financial Forecasts ("Blue Chip")¹³. The
8 mean PRPM indicated common equity cost rate for the Utility Proxy Group is 12.72%, the
9 median is 11.53%, and the average of the two is 12.13%. Consistent with my reliance on
10 the average of the median and mean results of the DCF, I relied on the average of the mean
11 and median results of the Utility Proxy Group PRPM to calculate a cost of common equity
12 rate of 12.13%.

13 **Q31. Please explain the total market approach RPM.**

14 A. The total market approach RPM adds a prospective public utility bond yield to an average
15 of: 1) an equity risk premium that is derived from a beta-adjusted total market equity risk
16 premium; and 2) an equity risk premium based on the S&P Utilities Index.

17 **Q32. Please explain the basis of the expected bond yield of 3.91% applicable to the Utility**
18 **Proxy Group.**

19 A. The first step in the total market approach RPM analysis is to determine the expected bond
20 yield. Because both ratemaking and the cost of capital, including common equity cost rate,

⁹ Illustrated on Columns 1 and 2 of page 2 of Schedule DWD-4.

¹⁰ Illustrated on Column 4 of page 2 of Schedule DWD-4.

¹¹ Annualized Return = $(1 + \text{Monthly Return})^{12} - 1$.

¹² See, Column 6 of page 2 of Schedule DWD-4.

¹³ *Blue Chip Financial Forecasts*, December 1, 2020 at p. 14 and April 1, 2021 at p. 2.

1 are prospective in nature, a prospective yield on similarly-rated long-term debt is essential.
2 I rely on a consensus forecast of about 50 economists of the expected yield on Aaa-rated
3 corporate bonds for the six calendar quarters ending with the third calendar quarter of 2022,
4 and the long-term projections for 2022 to 2026, and 2027 to 2031 from *Blue Chip*. As
5 shown on Line No. 1 of page 3 of Schedule DWD-4, the average expected yield on
6 Moody's Aaa-rated corporate bonds is 3.44%. In order to derive an expected yield on A2-
7 rated public utility bonds, I make an upward adjustment of 0.42%, which represents a
8 recent spread between Aaa-rated corporate bonds and A2-rated public utility bonds, in
9 order to adjust the expected Aaa-rated corporate bond yield to an equivalent Moody's A2-
10 rated public utility bond.¹⁴ Adding that recent 0.42% spread to the expected Aaa-rated
11 corporate bond yield of 3.44% results in an expected A2-rated public utility bond of 3.86%.

12 Since the Utility Proxy Group's average Moody's long-term issuer rating is A2/A3,
13 another adjustment to the expected A2-rated public utility bond yield is needed to reflect
14 the difference in bond ratings. An upward adjustment of 0.05%, which represents one-
15 sixth of a recent spread between A2- and Baa2-rated public utility bond yields, is necessary
16 to make the A2-rated prospective bond yield applicable to an A2/A3-rated public utility
17 bond.¹⁵ Adding the 0.05% to the 3.86% prospective A2-rated public utility bond yield
18 results in a 3.91% expected bond yield for the Utility Proxy Group.

¹⁴ As shown on Line No. 2 and explained in Note 2 of page 3 of Schedule DWD-4.

¹⁵ As shown on Line 4 and explained in note 3, page 3 of Schedule DWD-4. Moody's does not provide public utility bond yields for A2/A3-rated bonds. As such, it was necessary to estimate the difference between A2-rated and A2/A3-rated public utility bonds. Because there are three steps between Baa2 and A2 (Baa2 to Baa1, Baa1 to A3, and A3 to A2) I assumed an adjustment of one-sixth of the difference between the A2-rated and Baa2-rated public utility bond yield was appropriate.

Table 3: Summary of the Calculation of the Utility Proxy Group Projected Bond Yield¹⁶

Prospective Yield on Moody's Aaa-Rated Corporate Bonds (<i>Blue Chip</i>)	3.44%
Adjustment to Reflect Yield Spread Between Moody's Aaa-Rated Corporate Bonds and Moody's A2-Rated Utility Bonds	0.42%
Adjustment to Reflect the Utility Proxy Group's Average Moody's Bond Rating of A2/A3	<u>0.05%</u>
Prospective Bond Yield Applicable to the Utility Proxy Group	<u>3.91%</u>

To develop the indicated ROE using the total market approach RPM, this prospective bond yield is then added to the average of the three different equity risk premiums described below.

Q33. 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 Schedule 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.

Q34. 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

¹⁶ As shown on page 3 of Attachment DWD-4.

1 (“SBBI”) 2021 Yearbook (“SBBI – 2021”)¹⁷ less the average historical yield on Moody’s
2 Aaa/Aa-rated corporate bonds for the period 1928 to 2020. The use of holding period
3 returns over a very long period of time is appropriate because it is consistent with the long-
4 term investment horizon presumed by investing in a going concern, *i.e.*, a company
5 expected to operate in perpetuity.

6 SBBI’s long-term arithmetic mean monthly total return rate on large company
7 common stocks was 11.94% and the long-term arithmetic mean monthly yield on Moody’s
8 Aaa/Aa-rated corporate bonds was 6.02% from 1928 to 2020.¹⁸ As shown on Line 1 of
9 page 8 of Schedule DWD-4, subtracting the mean monthly bond yield from the total return
10 on large company stocks results in a long-term historical equity risk premium of 5.92%.

11 I used the arithmetic mean monthly total return rates for the large company stocks
12 and yields (income returns) for the Moody’s Aaa/Aa-rated corporate bonds, because they
13 are appropriate for the purpose of estimating the cost of capital as noted in SBBI – 2021.¹⁹
14 The use of the arithmetic mean return rates and yields is appropriate because historical total
15 returns and equity risk premiums provide insight into the variance and standard deviation
16 of returns needed by investors in estimating future risk when making a current investment.
17 If investors relied on the geometric mean of historical equity risk premiums, they would
18 have no insight into the potential variance of future returns because the geometric mean
19 relates to the change over many periods to a constant rate of change, thereby obviating the
20 year-to-year fluctuations, or variance, which is critical to risk analysis.

¹⁷ SBBI Appendix A Tables: Morningstar Stocks, Bonds, Bills, & Inflation 1926-2020.
¹⁸ As explained in Note 1 on page 9 of Schedule DWD-4.
¹⁹ SBBI – 2021, at 10-22 – 10-23.

Q35. Please explain the derivation of the regression-based market equity risk premium.

A. To derive the regression analysis-derived market equity risk premium of 8.83%, shown on Line 2 of page 8 of Schedule DWD-4, I used the same monthly annualized total returns on large company common stocks relative to the monthly 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:

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

Q36. 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 March 2021.²⁰ 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 9.40%.²¹

²⁰ Data from January 1928-December 2020 is from SBBI – 2021. Data from January – March 2021 is from Bloomberg Professional Services.

²¹ Shown on Line No. 3 on page 8 of Schedule DWD-4.

1 **Q37. Please explain the derivation of a projected equity risk premium based on *Value Line***
2 **data for your RPM analysis.**

3 A. As noted previously, because both ratemaking and the cost of capital are prospective, a
4 prospective market equity risk premium is needed. The derivation of the forecasted or
5 prospective market equity risk premium can be found in note 4 on page 9 of Schedule
6 DWD-4. Consistent with my calculation of the dividend yield component in my DCF
7 analysis, this prospective market equity risk premium is derived from an average of the
8 three to five-year median market price appreciation potential by *Value Line* for the 13
9 weeks ending April 9, 2021, plus an average of the median estimated dividend yield for
10 the common stocks of the 1,700 firms covered in *Value Line*'s Standard Edition.²²

11 The average median expected price appreciation is 29%, which translates to an
12 6.57% annual appreciation, and when added to the average of *Value Line*'s median
13 expected dividend yields of 1.88%, equates to a forecasted annual total return rate on the
14 market of 8.45%. The forecasted Aaa-rated bond yield of 3.44% is deducted from the total
15 market return of 8.45%, resulting in an equity risk premium of 5.01%, shown on page 8,
16 Line 4 of Schedule DWD-4.

17 **Q38. Please explain the derivation of an equity risk premium based on the S&P 500**
18 **companies.**

19 A. Using data from *Value Line*, I calculated an expected total return on the S&P 500 using
20 expected dividend yields and long-term growth estimates as a proxy for capital
21 appreciation. The expected total return for the S&P 500 is 14.16%. Subtracting the

²² As explained in detail in page 2, note 1 of Schedule DWD-5.

prospective yield on Aaa-rated Corporate bonds of 3.44% results in a 10.72% projected equity risk premium.

Q39. 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 return for the S&P 500 is 15.81%. Subtracting the prospective yield on Aaa-rated Corporate bonds of 3.44% results in a 12.37% projected equity risk premium.

Q40. 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 8.71%.²³

Table 4: Summary of the Calculation of the Equity Risk Premium Using Total Market Returns²⁴

Historical Spread Between Total Returns of Large Stocks and Aaa and Aa2-Rated Corporate Bond Yields (1928 – 2020)	5.92%
Regression Analysis on Historical Data	8.83%
PRPM Analysis on Historical Data	9.40%
Prospective Equity Risk Premium using Total Market Returns from <i>Value Line</i> Summary & Index less Projected Aaa Corporate Bond Yields	5.01%
Prospective Equity Risk Premium using Measures of Capital Appreciation and Income Returns from <i>Value Line</i> for the S&P 500 less Projected Aaa Corporate Bond Yields	10.72%
Prospective Equity Risk Premium using Measures of Capital Appreciation and Income Returns from Bloomberg Professional Services for the S&P 500 less Projected Aaa Corporate Bond Yields	<u>12.37%</u>
Average	<u><u>8.71%</u></u>

²³ See, Line No. 7 on page 8 of Schedule DWD-4.

²⁴ As shown on page 8 of Attachment DWD-4.

1 After calculating the average market equity risk premium of 8.71%, I adjusted it by
2 beta to account for the risk of the Utility Proxy Group. As discussed below, the Beta
3 coefficient is a meaningful measure of prospective relative risk to the market as a whole
4 and is a logical means by which to allocate a company's, or proxy group's, share of the
5 market's total equity risk premium relative to corporate bond yields. As shown on page 1
6 of Schedule DWD-5, the average of the mean and median Beta coefficient for the Utility
7 Proxy Group is 0.78. Multiplying the Beta coefficient of the Utility Proxy Group of 0.78
8 by the market equity risk premium of 8.71% results in a beta-adjusted equity risk premium
9 of 6.79% for the Utility Proxy Group.

10 **Q41. How did you derive the equity risk premium based on the S&P Utility Index and**
11 **Moody's A-rated public utility bonds?**

12 A. I estimated three equity risk premiums based on S&P Utility Index holding returns, and
13 two equity risk premiums based on the expected returns of the S&P Utilities Index, using
14 *Value Line* and Bloomberg data, respectively. Turning first to the S&P Utility Index
15 holding period returns, I derived a long-term monthly arithmetic mean equity risk premium
16 between the S&P Utility Index total returns of 10.65% and monthly A-rated public utility
17 bond yields of 6.49% from 1928 to 2020, to arrive at an equity risk premium of 4.16%.²⁵
18 I then used the same historical data to derive an equity risk premium of 6.45% based on a
19 regression of the monthly equity risk premiums. The final S&P Utility Index holding
20 period equity risk premium involved applying the PRPM using the historical monthly
21 equity risk premiums from January 1928 to March 2021 to arrive at a PRPM-derived equity
22 risk premium of 4.77% for the S&P Utility Index.

²⁵ As shown on Line No. 1 on page 12 of Schedule DWD-4.

I then derived expected total returns on the S&P Utilities Index of 10.54% and 9.56% using data from *Value Line* and Bloomberg, respectively, and subtracted the prospective A2-rated public utility bond yield (3.86%²⁶), which results in risk premiums of 6.68% and 5.70%, respectively. As with the market equity risk premiums, I averaged each risk premium to arrive at my utility-specific equity risk premium of 5.55%.

Table 5: Summary of the Calculation of the Equity Risk Premium Using S&P Utility Index Holding Returns²⁷

Historical Spread Between Total Returns of the S&P Utilities Index and A2-Rated Utility Bond Yields (1928 – 2020)	4.16%
Regression Analysis on Historical Data	6.45%
PRPM Analysis on Historical Data	4.77%
Prospective Equity Risk Premium using Measures of Capital Appreciation and Income Returns from <i>Value Line</i> for the S&P Utilities Index less Projected A2 Utility Bond Yields	6.68%
Prospective Equity Risk Premium using Measures of Capital Appreciation and Income Returns from Bloomberg Professional Services for the S&P Utilities Index less Projected A2 Utility Bond Yields	<u>5.70%</u>
Average	<u>5.55%</u>

Q42. 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 6.17%, which is the average of the beta-derived and the S&P utility equity risk premiums of 6.79% and 5.55%, respectively.²⁸

²⁶ Derived on Line No. 3 of page 3 of Schedule DWD-4.

²⁷ As shown on page 12 of Attachment DWD-4.

²⁸ As shown on page 7 of Schedule DWD-4.

Q43. What is the indicated RPM common equity cost rate based on the total market approach?

A. As shown on Line No. 7 of Schedule DWD-4, page 3, I calculated a common equity cost rate of 10.08% for the Utility Proxy Group based on the total market approach of the RPM.

Table 6: Summary of the Total Market Return Risk Premium Model²⁹

Prospective Moody's A2/A3-Rated Utility Bond Applicable to the Utility Proxy Group	3.91%
Prospective Equity Risk Premium	<u>6.17%</u>
Indicated Cost of Common Equity	<u>10.08%</u>

Q44. What are the results of your application of the PRPM and the total market approach RPM?

A. As shown on page 1 of Schedule DWD-4, the indicated RPM-derived common equity cost rate is 11.11%, which gives equal weight to the PRPM (12.13%) and the adjusted market approach results (10.08%).

C. THE CAPITAL ASSET PRICING MODEL

Q45. 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

²⁹ As shown on page 3 of Attachment DWD-4.

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;

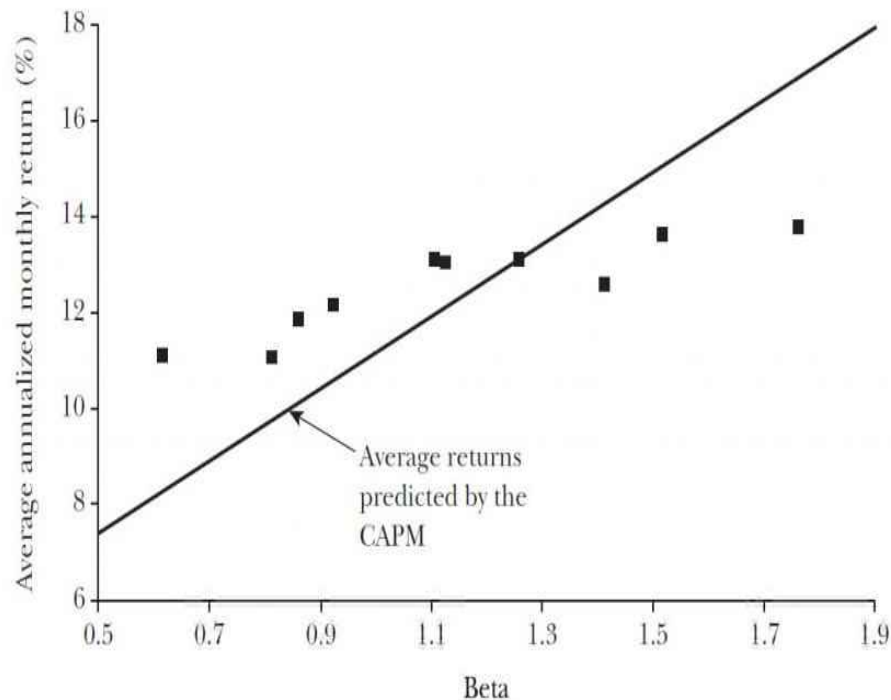
R_m = Return rate on the market as a whole; and

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.³⁰ 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."³¹

³⁰ Roger A. Morin, New Regulatory Finance, (Public Utilities Reports, Inc., 2006) at 175. ("Morin")
³¹ 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>.

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.³²

* * *

Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:

$$K = R_F + x \beta(R_M - R_F) + (1-x) \beta(R_M - R_F)$$

³² Morin, at 175.

where x is a fraction to be determined empirically. The value of x that best explains the observed relationship [is] $\text{Return} = 0.0829 + 0.0520 \beta$ is between 0.25 and 0.30. If $x = 0.25$, the equation becomes:

$$K = R_F + 0.25(R_M - R_F) + 0.75 \beta(R_M - R_F)^{33}$$

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).³⁴

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 is 11.1 percent. The predicted return on the portfolio with the highest beta is 16.8 percent per year; the actual is 13.7 percent.³⁵

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.

Q46. What Beta coefficients did you use in your CAPM analysis?

A. With respect to the Beta coefficient, I considered two methods of calculation: 1) the average of the Beta coefficients of the Utility Proxy Group companies reported by Bloomberg Professional Services; and 2) the average of the Beta coefficients of the Utility Proxy Group companies as reported by *Value Line*. While both of those services adjust

³³ Morin, at 190.

³⁴ Fama & French, at 32.

³⁵ *Ibid.*, at 33.

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.

Q47. Please describe your selection of a risk-free rate of return.

A. As shown in Column 5 on page 1 of Schedule DWD-5, the risk-free rate adopted for both applications of the CAPM is 2.73%. This risk-free rate of 2.73% 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 third calendar quarter of 2022, and long-term projections for the years 2022 to 2026 and 2027 to 2031.

Q48. 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 A2-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.

Q49. 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 Schedule 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 premiums.

1 The long-term income return on U.S. Government Securities of 5.05% was
2 deducted from the SBBI - 2021 monthly historical total market return of 12.20%, which
3 results in an historical market equity risk premium of 7.15%.³⁶ I applied a linear OLS
4 regression to the monthly annualized historical returns on the S&P 500 relative to historical
5 yields on long-term U.S. Government Securities from SBBI - 2021. That regression
6 analysis yielded a market equity risk premium of 9.54%. The PRPM market equity risk
7 premium is 10.46% and is derived using the PRPM relative to the yields on long-term U.S.
8 Treasury securities from January 1926 through March 2021.

9 The *Value Line*-derived forecasted total market equity risk premium is derived by
10 deducting the forecasted risk-free rate of 2.73%, discussed above, from the *Value Line*
11 projected total annual market return of 8.45%, resulting in a forecasted total market equity
12 risk premium of 5.72%. The S&P 500 projected market equity risk premium using *Value*
13 *Line* data is derived by subtracting the projected risk-free rate of 2.73% from the projected
14 total return of the S&P 500 of 14.16%. The resulting market equity risk premium is
15 11.43%.

16 The S&P 500 projected market equity risk premium using Bloomberg data is
17 derived by subtracting the projected risk-free rate of 2.73% from the projected total return
18 of the S&P 500 of 15.81%. The resulting market equity risk premium is 13.08%.

19 These six market risk premiums, when averaged, result in an average total market
20 equity risk premium of 9.56%.

21 **Table 7: Summary of the Calculation of the Market Risk Premium**
22 **for use in the CAPM³⁷**

³⁶ SBBI – 2021, at Appendix A-1 (1) through A-1 (3) and Appendix A-7 (19) through A-7 (21).

³⁷ As shown on page 2 of Schedule DWD-5.

Historical Spread Between Total Returns of Large Stocks and Long-Term Government Bond Yields (1926 – 2020)	7.15%
Regression Analysis on Historical Data	9.54%
PRPM Analysis on Historical Data	10.46%
Prospective Equity Risk Premium using Total Market Returns from <i>Value Line</i> Summary & Index less Projected 30-Year Treasury Bond Yields	5.72%
Prospective Equity Risk Premium using Measures of Capital Appreciation and Income Returns from <i>Value Line</i> for the S&P 500 less Projected 30-Year Treasury Bond Yields	11.43%
Prospective Equity Risk Premium using Measures of Capital Appreciation and Income Returns from Bloomberg Professional Services for the S&P 500 less Projected 30-Year Treasury Bond Yields	<u>13.08%</u>
Average	<u>9.56%</u>

Q50. 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 Schedule DWD-5, the mean result of my CAPM/ECAPM analysis is 10.45%, the median is 10.45%, and the average of the two is 10.45%. 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 10.45%.

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

Q51. 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

1 such domestic, non-price regulated competitive firms theoretically and empirically results
2 in a proxy group which is comparable in total risk to the Utility Proxy Group.

3 **Q52. How did you select non-price regulated companies that are comparable in total risk**
4 **to the Utility Proxy Group?**

5 A. In order to select a proxy group of domestic, non-price regulated companies similar in total
6 risk to the Utility Proxy Group, I relied on the Beta coefficients and related statistics
7 derived from *Value Line* regression analyses of weekly market prices over the most recent
8 260 weeks (*i.e.*, five years). Using these selection criteria resulted in a proxy group of 20
9 domestic, non-price regulated firms comparable in total risk to the Utility Proxy Group.
10 Total risk is the sum of non-diversifiable market risk and diversifiable company-specific
11 risks. The criteria used in the selection of the domestic, non-price regulated firms was:

- 12 (i) They must be covered by *Value Line Investment Survey* (Standard Edition);
- 13 (ii) They must be domestic, non-price regulated companies, *i.e.*, non-utilities;
- 14 (iii) Their Beta coefficients must lie within plus or minus two standard deviations of the
15 average unadjusted Beta coefficient of the Utility Proxy Group; and
- 16 (iv) The residual standard errors of the *Value Line* regressions which gave rise to the
17 unadjusted Beta coefficients must lie within plus or minus two standard deviations
18 of the average residual standard error of the Utility Proxy Group.

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

1 **Q53. Have you prepared a schedule which shows the data from which you selected the 20**
2 **domestic, non-price regulated companies that are comparable in total risk to the**
3 **Utility Proxy Group?**

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

6 **Q54. Did you calculate common equity cost rates using the DCF, RPM, and CAPM for the**
7 **Non-Price Regulated Proxy Group?**

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

12 Page 2 of Schedule DWD-7 contains the derivation of the DCF cost rates. As
13 shown, the indicated common equity cost rate using the DCF for the Non-Price Regulated
14 Proxy Group comparable in total risk to the Utility Proxy Group, is 11.51%.

15 Pages 3 through 5 of DWD-7 contain the data and calculations that support the
16 10.85% RPM cost rate. As shown on Line No. 1 of page 3 of Schedule DWD-7, the
17 consensus prospective yield on Moody's Baa-rated corporate bonds for the six quarters
18 ending in the third quarter of 2022, and for the years 2022 to 2026 and 2027 to 2031, is
19 4.36%.³⁸ Because the Non-Price Regulated Proxy Group has an average Moody's bond
20 rating of Baa1, a downward adjustment of 0.13% to the prospective Baa2-rated bond yield
21 is necessary to reflect the difference in bond ratings.³⁹ Subtracting 0.13% from the
22 prospective Baa2-rated bond yield of 4.36% is 4.23%.

³⁸ *Blue Chip Financial Forecasts*, December 1, 2020, at p. 14 and April 1, 2021, at p. 2.
³⁹ As demonstrated on Schedule DWD-7, page 3, note 2.

1 When the beta-adjusted risk premium of 6.62%⁴⁰ relative to the Non-Price
2 Regulated Proxy Group is added to the prospective Baa1-rated corporate bond yield of
3 4.23%, the indicated RPM cost rate is 10.85%.

4 Page 6 contains the inputs and calculations that support my indicated
5 CAPM/ECAPM cost rate of 10.30%.

6 **Q55. What is the cost rate of common equity based on the Non-Price Regulated Proxy**
7 **Group comparable in total risk to the Utility Proxy Group?**

8 A. As shown on page 1 of Schedule DWD-7, the results of the DCF, RPM, and CAPM applied
9 to the Non-Price Regulated Proxy Group comparable in total risk to the Utility Proxy
10 Group are 11.51%, 10.85%, and 10.30%, respectively. The average of the mean and
11 median of these models is 10.87%, which I used as the indicated common equity cost rate
12 for the Non-Price Regulated Proxy Group.

13 **VIII. CONCLUSION OF COMMON EQUITY COST RATE BEFORE ADJUSTMENT**

14 **Q56. What is the indicated range of common equity cost rates before adjustments?**

15 A. Based on the results of the application of multiple cost of common equity models to the
16 Utility Proxy Group, my recommended range of ROEs attributable to the Utility Proxy
17 Group is between 10.27% (average of all model results) and 10.66% (median of model
18 results).

19 I used multiple cost of common equity models as primary tools in arriving at my
20 recommended common equity cost rate, because no single model is so inherently precise
21 that it can be relied on solely to the exclusion of other theoretically sound models. The use
22 of multiple models adds reliability to the estimation of the common equity cost rate, and

⁴⁰ Derived on page 5 of Schedule DWD-7.

1 the prudence of using multiple cost of common equity models is supported in both the
2 financial literature and regulatory precedent.

3 As discussed previously, after determining the indicated range of ROE attributable
4 to a comparable group, there must be an evaluation of relative risk between that group and
5 the target company to determine whether it is appropriate to apply adjustments to the
6 comparable group's indicated ROE to better reflect the target company's specific risks.

7 **IX. ADJUSTMENTS TO THE COMMON EQUITY COST RATE**

8 **A. SIZE ADJUSTMENT**

9 **Q57. Does Aqua OH's smaller size compared with the Utility Proxy Group increase its
10 business risk?**

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

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

20 As further evidence illustrates that smaller firms are riskier, investors generally
21 demand greater returns from smaller firms to compensate for less marketability and
22 liquidity of their securities. Duff & Phelps' 2020 Valuation Handbook – U.S. Guide to
23 Cost of Capital ("D&P - 2020") discusses the nature of the small-size phenomenon,

1 providing an indication of the magnitude of the size premium based on several measures
2 of size. In discussing “Size as a Predictor of Equity Premiums,” D&P - 2020 states:

3 The size effect is based on the empirical observation that companies of
4 smaller size are associated with greater risk and, therefore, have greater cost
5 of capital [sic]. The “size” of a company is one of the most important risk
6 elements to consider when developing cost of equity capital estimates for
7 use in valuing a business simply because size has been shown to be a
8 *predictor* of equity returns. In other words, there is a significant (negative)
9 relationship between size and historical equity returns - as size *decreases*,
10 returns tend to *increase*, and vice versa. (footnote omitted) (emphasis in
11 original)⁴¹

12 Furthermore, in “The Capital Asset Pricing Model: Theory and Evidence,” Fama
13 and French note size is indeed a risk factor which must be reflected when estimating the
14 cost of common equity. On page 38, they note:

15 . . . the higher average returns on small stocks and high book-to-market
16 stocks reflect unidentified state variables that produce undiversifiable risks
17 (covariances) in returns not captured in the market return and are priced
18 separately from market betas.⁴²

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

21 Also, it is a basic financial principle that the use of funds invested, and not the
22 source of funds, is what gives rise to the risk of any investment.⁴³ Eugene Brigham, a well-
23 known authority, states:

24 A number of researchers have observed that portfolios of small-firms (sic)
25 have earned consistently higher average returns than those of large-firm
26 stocks; this is called the “small-firm effect.” On the surface, it would seem
27 to be advantageous to the small firms to provide average returns in a stock
28 market that are higher than those of larger firms. In reality, it is bad news
29 for the small firm; **what the small-firm effect means is that the capital**

⁴¹ Duff & Phelps 2020 Valuation Handbook – U.S. Guide to Cost of Capital, Wiley 2018, at 4-1.

⁴² Fama & French, at 25-43.

⁴³ Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance (McGraw-Hill Book Company, 1996), at 204-205, 229.

market demands higher returns on stocks of small firms than on otherwise similar stocks of the large firms. (emphasis added)⁴⁴

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 Aqua OH, including its small size, which is justified and supported above by evidence in the financial literature.

Q58. Should the Commission consider Aqua OH as a stand-alone company?

A. Yes, it should. Because it is Aqua OHs 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 capital; the true cost of capital depends on the use to which the capital is put. (italics and bold in original) ⁴⁵

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

⁴⁴ Eugene F. Brigham, Fundamentals of Financial Management, Fifth Edition (The Dryden Press, 1989), at 623.

⁴⁵ Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, McGraw-Hill, Third Edition, 1988, at pp. 173, 198.

investors and the returns and risks associated with those alternatives.⁴⁶

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 firm⁴⁷

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;⁴⁸

In other words, it is the "risks and uncertainties" surrounding the property employed for the "convenience of the public" which determines the appropriate level of rates. In this proceeding, the property employed "for the convenience of the public" is the rate base of Aqua OH. Thus, it is only the risk of investment in Aqua OH 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 authors⁴⁹ proposed that their three-factor model include the SMB (Small Minus Big) factor, which indicates

⁴⁶ Morin, at 523.

⁴⁷ Haim Levy & Marshall Sarnat, Capital Investment and Financial Decisions, Prentice/Hall International, 1986, at 465.

⁴⁸ *Bluefield*, at 6.

⁴⁹ Fama & French, at 39.

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.

Q59. Is there a way to quantify a relative risk adjustment due to Aqua OH'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 Aqua OH (whose common stock is not publicly traded).

Table 8: Size as Measured by Market Capitalization for the Company and the Utility Proxy Group

	Market Capitalization* (\$ Millions)	Times Greater Than the Company
Aqua OH	\$447.841	
Utility Proxy Group Median	\$1,610.897	3.6x
*From page 1 of Schedule DWD-8.		

The Company's estimated market capitalization was at \$447.841 million as of April 5, 2021, compared with the median market capitalization of the Utility Proxy Group of \$1.6 billion as of April 5, 2021. The Utility Proxy Group's market capitalization is 3.6 times the size of Aqua OH's estimated market capitalization.

As a result, it is necessary to upwardly adjust the indicated range of common equity cost rates to reflect Aqua OH'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 2020 period. The average size premium for the Utility Proxy Group with a market capitalization of \$1.6 billion falls in the 6th decile, while Aqua OH's market capitalization of \$447.841 million places the Company in the 9th decile. The size premium spread between the 6th decile and the 9th decile is 0.92%. Even though a 0.92% upward size adjustment is indicated, I apply a size premium of 0.25% to Aqua OH's indicated range of common equity cost rates.

Q60. Since Aqua OH is a wholly-owned subsidiary of Essential, why is the size of Essential not more appropriate to use when determining the size adjustment?

A. As discussed above, the return derived in this proceeding will not apply to Essential as a whole, but only Aqua OH. Essential is the sum of its constituent parts, including those constituent parts' returns on common equity. Potential investors in Essential 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 Essential's return is commensurate with the realities of its composite operations in each of the states in which it operates.

B. FLOTATION COST ADJUSTMENT

Q61. 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.).

Q62. 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 with which such costs can be recovered. Because these costs are real and legitimate, recovery of these costs should be permitted. As noted by Morin:

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 adjustment⁵⁰

Q63. Should flotation costs be recognized only when there was 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

⁵⁰ Morin 321.

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 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.

Q64. 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.⁵¹ In addition, Morin confirms the need for such an adjustment even when no new equity issuance is imminent.⁵² Consequently, it is proper to include a flotation cost adjustment when using cost of common equity models to estimate the common equity cost rate.

⁵¹ Brigham and Daves 342.

⁵² Morin 327-30.

1 **Q65. How did you calculate the flotation cost allowance?**

2 A. I modified the DCF calculation to provide a dividend yield that would reimburse investors
3 for issuance costs in accordance with the method cited in literature by Brigham and Daves
4 as well as Morin. The flotation cost adjustment recognizes the costs of issuing equity that
5 were incurred by Essential since January 2019. Based upon the issuance costs shown on
6 page 1 of Schedule DWD-9, an adjustment of 0.05% is required to reflect the flotation
7 costs applicable to the Utility Proxy Group.

8 **Q66. What is the indicated cost of common equity after adjustments for size and flotation**
9 **costs?**

10 A. After applying the 0.25% upward adjustment for Aqua OH's smaller size and the 0.05%
11 flotation cost adjustment to the indicated range of equity cost rates between 10.27% and
12 10.66% applicable to the Utility Proxy Group, an adjusted range of common equity cost
13 rates between 10.57% and 10.96% applicable to Aqua OH results. From that range, I
14 recommend the Commission approve an ROE of 10.75%.

15 **X. CONCLUSION**

16 **Q67. What is your recommended return on investor-supplied capital for Aqua OH?**

17 A. Given the expected actual capital structure ending December 31, 2021 which consists of
18 48.11% long-term debt at an embedded debt cost rate of 3.82% and 51.89% common equity
19 at my recommended ROE of 10.75%, I conclude that an appropriate return on investor-
20 supplied capital for the Company is 7.42%. A common equity cost rate of 10.75% is
21 consistent with the *Hope* and *Bluefield* standard of a just and reasonable return which
22 ensures the integrity of presently invested capital and enables the attraction of needed new
23 capital on reasonable terms. It also ensures that Aqua OH will be able to continue

1 providing safe, adequate, and reliable service to the benefit of its customers. Thus, it
2 balances the interests of both customers and the Company.

3 **Q68. In your opinion, is your proposed common equity cost rate of 10.75% fair and**
4 **reasonable to Aqua OH, its shareholders, and its customers?**

5 A. Yes, it is.

6 **Q69. Does this conclude your direct testimony?**

7 A. Yes, it does.

CERTIFICATE OF SERVICE

I hereby certify that a copy of the Direct Testimony of Dylan W. D'Ascendis, CRRA, CVA Partner Scottmadden, Inc. was served by electronic mail to the following persons on this 12th of July, 2021:

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/s Christopher L. Miller _____

Christopher L. Miller
One of the Attorneys for Aqua Ohio, Inc. and Aqua
Ohio Wastewater, Inc.

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 13 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 30 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 | ■ Financial Modeling | ■ Rate of Return |
| ■ Utilities | ■ Valuation | ■ Cost of Service |
| ■ Mutual Fund Benchmarking | ■ Regulatory Strategy | ■ Rate Design |
| ■ Capital Market Risk | ■ Rate Case Support | |

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.	11/20	Delmarva Power & Light Co.	Docket No. 20-0149 (Electric)	Return on Equity
Delmarva Power & Light Co.	10/20	Delmarva Power & Light Co.	Docket No. 20-0150 (Gas)	Return on Equity
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				
Tampa Electric Company	04/21	Tampa Electric Company	Docket No. 20210034-EI	Return on Equity
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				
Launiupoko Irrigation Company, Inc.	12/20	Launiupoko Irrigation Company, Inc.	Docket No. 2020-0217 / Transferred to 2020-0089	Capital Structure
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				
Utility Services of Illinois, Inc.	02/21	Utility Services of Illinois, Inc.	Docket No. 21-0198	Rate of Return

SPONSOR	DATE	CASE/APPLICANT	DOCKET No.	SUBJECT
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
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
Kentucky Public Service Commission				
Bluegrass Water Utility Operating Company	10/20	Bluegrass Water Utility Operating Company	2020-00290	Return on Equity
Louisiana Public Service Commission				
Southwestern Electric Power Company	12/20	Southwestern Electric Power Company	Docket No. U-35441	Return on Equity
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
Minnesota Public Utilities Commission				
Northern States Power Company	11/20	Northern States Power Company	Docket No. E002/GR-20-723	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				
Spire Missouri, Inc.	12/20	Spire Missouri, Inc.	Case No. GR-2021-0108	Return on Equity
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 Hampshire Public Utilities Commission				

SPONSOR	DATE	CASE/APPLICANT	DOCKET No.	SUBJECT
Aquarion Water Company of New Hampshire, Inc.	12/20	Aquarion Water Company of New Hampshire, Inc.	Docket No. DW 20-184	Rate of Return
New Jersey Board of Public Utilities				
Atlantic City Electric Company	12/20	Atlantic City Electric Company	Docket No. ER20120746	Return on Equity
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
New Mexico Public Regulation Commission				
Southwestern Public Service Company	01/21	Southwestern Public Service Company	Case No. 20-00238-UT	Return on Equity
North Carolina Utilities Commission				
Piedmont Natural Gas Co.Inc.	03/21	Piedmont Natural Gas Co., Inc.	Docket No. G-9, Sub 781	Return on Equity
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
Aqua North Carolina, Inc.	07/18	Aqua North Carolina, Inc.	Docket No. W-218 Sub 497	Rate of Return
North Dakota Public Service Commission				
Northern States Power Company	11/20	Northern States Power Company	Case No. PU-20-441	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

SPONSOR	DATE	CASE/APPLICANT	DOCKET No.	SUBJECT
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 Public Service Company	02/21	Southwestern Public Service Company	Docket No. 51802	Return on Equity
Southwestern Electric Power Company	10/20	Southwestern Electric Power Company	Docket No. 51415	Rate of Return
Virginia State Corporation Commission				
Virginia Natural Gas, Inc.	04/21	Virginia Natural Gas, Inc.	PUR-2020-00095	Return on Equity
Massanutten Public Service Corporation	12/20	Massanutten Public Service Corporation	PUE-2020-00039	Return on Equity
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

Aqua Ohio, Inc.
Table of Contents

of Dylan RRA, CVA

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Aqua Ohio, Inc.
Recommended Capital Structure and Cost Rates
for Ratemaking Purposes
at December 31, 2021

<u>Type Of Capital</u>	<u>Ratios (1)</u>	<u>Cost Rate</u>	<u>Weighted Cost Rate</u>
Long-Term Debt	48.11%	3.82% (1)	1.84%
Common Equity	<u>51.89%</u>	10.75% (2)	<u>5.58%</u>
Total	<u>100.00%</u>		<u>7.42%</u>

Notes:

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

Aqua Ohio, Inc.
Brief Summary of Common Equity Cost Rate

<u>Line No.</u>	<u>Principal Methods</u>	<u>Proxy Group of Eight Water Companies</u>
1.	Discounted Cash Flow Model (DCF) (1)	8.63%
2.	Risk Premium Model (RPM) (2)	11.11%
3.	Capital Asset Pricing Model (CAPM) (3)	10.45%
4.	Market Models Applied to Comparable Risk, Non-Price Regulated Companies (4)	<u>10.87%</u>
5.	Indicated Common Equity Cost Rate before Adjustment for Unique Risk	10.27% - 10.66%
6.	Business Risk Adjustment (5)	0.25%
7.	Flotation Cost Adjustment (6)	<u>0.05%</u>
8.	Indicated Common Equity Cost Rate after Adjustment	<u><u>10.57% - 10.96%</u></u>
9.	Recommended Common Equity Cost Rate	<u><u>10.75%</u></u>

- Notes: (1) From Schedule DWD-3.
(2) From page 1 of Schedule DWD-4.
(3) From page 1 of Schedule DWD-5.
(4) From page 1 of Schedule DWD-7.
(5) Business risk adjustment to reflect Aqua OH's unique risk compared to the Utility Proxy Group as detailed in the accompanying direct testimony.
(6) From page 1 of Schedule DWD-9.

Proxy Group of Eight Water Companies
CAPITALIZATION AND FINANCIAL STATISTICS (1)
2016 - 2020, Inclusive

	2020	2019	2018	2017	2016	
	(MILLIONS OF DOLLARS)					
<u>Capitalization Statistics</u>						
<u>Amount of Capital Employed</u>						
Total Permanent Capital	\$2,817.868	\$2,585.327	\$2,287.586	\$2,018.207	\$1,921.453	
Short-Term Debt	\$248.763	\$163.226	\$161.255	\$162.839	\$133.679	
Total Capital Employed	<u>\$3,066.631</u>	<u>\$2,748.553</u>	<u>\$2,448.841</u>	<u>\$2,181.046</u>	<u>\$2,055.132</u>	
<u>Indicated Average Capital Cost Rates (2)</u>						
Total Debt	4.01 %	4.42 %	4.83 %	4.92 %	5.81 %	
Preferred Stock	5.76 %	5.84 %	5.92 %	5.91 %	5.91 %	
						5 YEAR
						AVERAGE
<u>Capital Structure Ratios</u>						
Based on Total Permanent Capital:						
Long-Term Debt	52.68 %	51.94 %	47.98 %	49.69 %	50.39 %	50.54 %
Preferred Stock	0.04	0.05	0.08	0.09	0.10	0.07
Common Equity	<u>47.28</u>	<u>48.01</u>	<u>51.94</u>	<u>50.22</u>	<u>49.51</u>	<u>49.39</u>
Total	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
Based on Total Capital:						
Total Debt, Including Short-Term Debt	55.98 %	55.05 %	51.17 %	52.87 %	52.59 %	53.53 %
Preferred Stock	0.04	0.05	0.07	0.08	0.09	0.07
Common Equity	<u>43.97</u>	<u>44.90</u>	<u>48.75</u>	<u>47.04</u>	<u>47.32</u>	<u>46.40</u>
Total	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Financial Statistics</u>						
<u>Financial Ratios - Market Based</u>						
Earnings / Price Ratio	3.16 %	2.66 %	3.24 %	3.54 %	3.30 %	3.18 %
Market / Average Book Ratio	323.29	331.95	295.35	298.06	263.80	302.49
Dividend Yield	1.95	1.92	2.12	2.16	2.38	2.11
Dividend Payout Ratio	53.11	69.08	57.69	56.10	57.06	58.61
<u>Rate of Return on Average Book Common Equity</u>	10.11 %	9.60 %	10.10 %	10.91 %	10.42 %	10.23 %
<u>Total Debt / EBITDA (3)</u>	5.06 x	5.32 x	4.21 x	3.73 x	3.88 x	4.44 x
<u>Funds from Operations / Total Debt (4)</u>	12.38 %	13.75 %	21.05 %	23.06 %	21.42 %	18.33 %
<u>Total Debt / Total Capital</u>	55.98 %	55.05 %	51.17 %	52.87 %	52.59 %	53.53 %

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 Eight Water Companies
2016 - 2020, Inclusive

	<u>2020</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>5 YEAR AVERAGE</u>
<u>American States Water Company</u>						
Long-Term Debt	40.72 %	31.87 %	36.54 %	37.75 %	39.40 %	37.26 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	59.28	68.13	63.46	62.25	60.60	62.74
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>American Water Works Company, Inc.</u>						
Long-Term Debt	59.93 %	58.59 %	56.55 %	55.81 %	54.74 %	57.12 %
Preferred Stock	0.02	0.03	0.05	0.07	0.09	0.05
Common Equity	40.05	41.38	43.40	44.12	45.17	42.83
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Artesian Resources Corporation</u>						
Long-Term Debt	45.96 %	47.65 %	43.42 %	42.17 %	42.71 %	44.38 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	54.04	52.35	56.58	57.83	57.29	55.62
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>California Water Service Group</u>						
Long-Term Debt	46.04 %	50.90 %	52.74 %	43.40 %	45.83 %	47.78 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	53.96	49.10	47.26	56.60	54.17	52.22
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Global Water Resources, Inc.</u>						
Long-Term Debt	78.09 %	82.31 %	80.43 %	88.50 %	88.27 %	83.52 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	21.91	17.69	19.57	11.50	11.73	16.48
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Middlesex Water Company</u>						
Long-Term Debt	44.61 %	42.20 %	38.94 %	38.65 %	38.91 %	40.66 %
Preferred Stock	0.33	0.37	0.59	0.64	0.68	0.52
Common Equity	55.06	57.43	60.47	60.71	60.41	58.82
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>SIW Group</u>						
Long-Term Debt	59.79 %	59.05 %	32.67 %	48.20 %	50.69 %	50.08 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	40.21	40.95	67.33	51.80	49.31	49.92
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>The York Water Company</u>						
Long-Term Debt	46.31 %	42.95 %	42.52 %	43.02 %	42.60 %	43.48 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	53.69	57.05	57.48	56.98	57.40	56.52
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>
<u>Proxy Group of Eight Water Companies</u>						
Long-Term Debt	52.68 %	51.94 %	47.98 %	49.69 %	50.39 %	50.54 %
Preferred Stock	0.04	0.05	0.08	0.09	0.10	0.07
Common Equity	47.28	48.01	51.94	50.22	49.51	49.39
Total Capital	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>	<u>100.00 %</u>

Source of Information
Annual Forms 10-K

Aqua Ohio, Inc.
Indicated Common Equity Cost Rate Using the Discounted Cash Flow Model for the
Proxy Group of Eight Water Companies

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
			Yahoo!	Bloomberg	Average		Indicated
	Value Line	Zack's Five	Finance	Projected Five	Projected Five Year	Adjusted	Common
	Projected	Year	Projected	Year Growth	Growth in	Dividend	Equity Cost
	Five Year	Projected	Five Year	in EPS	EPS (3)	Yield (4)	Rate (5)
	Growth in	Growth Rate	Growth in				
	EPS (2)	in EPS	EPS				
Proxy Group of Eight Water Companies	Average Dividend Yield (1)						
American States Water Company	1.74 %	NA %	4.60 %	6.00 %	5.70 %	1.79 %	7.49 %
American Water Works Company, Inc.	1.45	8.10	8.60	8.54	8.44	1.51	9.95
Artesian Resources Corporation	2.62	NA	4.00	NA	4.00	2.67	6.67
California Water Service Group	1.66	NA	10.75	4.00	7.08	1.72	8.80
Global Water Resources, Inc.	1.73	15.00	15.00	NA	15.00	1.86	16.86
Middlesex Water Company	1.43	NA	2.70	NA	3.60	1.46	5.06
SIW Group	2.09	NA	5.50	7.00	8.50	2.18	10.68
The York Water Company	1.64	NA	4.90	NA	5.70	1.69	7.39
						Average	9.11 %
						Median	8.14 %
						Average of Mean and Median	8.63 %

NA = Not Available

Notes:

- (1) Indicated dividend at 04/05/2021 divided by the average closing price of the last 60 trading days ending 04/05/2021 for each company.
- (2) From pages 2 through 9 of this Schedule.
- (3) Average of columns 2 through 5 excluding negative growth rates.
- (4) This reflects a growth rate component equal to one-half the conclusion of growth rate (from column 6) x column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for American States Water Company, $1.74\% \times (1 + (1/2 \times 5.70\%)) = 1.79\%$.
- (5) Column 6 + column 7.

Source of Information:

Value Line Investment Survey
www.zacks.com Downloaded on 04/05/2021
www.yahoo.com Downloaded on 04/05/2021
Bloomberg Professional Services

AMER. STATES WATER

NYSE-AWR

RECENT PRICE

75.91

P/E RATIO

31.5

(Trailing: 32.6)

RELATIVE P/E RATIO

1.44

DIV YLD

1.9%

VALUE LINE

TIMELINESS

3

Raised 3/5/21

SAFETY

2

Raised 7/20/12

TECHNICAL

4

Lowered 4/9/21

BETA

.65

(1.00 = Market)

18-Month Target Price Range

Low-High

Midpoint (% to Mid)

\$62-\$108

\$85 (10%)

2024-26 PROJECTIONS

High

Price

Gain

Ann'l Total Return

5%

-3%

Institutional Decisions

2020

3020

4020

To Buy

135

121

121

To Sell

129

135

142

Hid's(000)

25635

25731

25483

Percent shares traded

24

16

8

2005

2006

2007

2008

2009

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

2021

2022

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24-26

CAPITAL STRUCTURE as of 12/31/20

Total Debt

\$575.0 mill.

Due in 5 Yrs

\$136.0 mill.

LT Debt

\$574.6 mill.

LT Interest

\$22.5 mill.

(47% of Cap'l)

Leases, Uncapitalized:

Annual rentals

\$2.6 mill.

Pension Assets-12/19

\$213.1 mill.

Oblig.

\$272.8 mill.

Pfd Stock

None

Common Stock

36,898,213 shs.

as of 2/19/20

MARKET CAP:

\$2.8 billion (Mid Cap)

CURRENT POSITION (SMILL.)

2018

2019

12/31/20

Cash Assets

7.1

1.3

36.7

Accts Receivable

23.4

20.9

29.2

Other

101.0

100.3

91.2

Current Assets

131.5

122.5

157.1

Accts Payable

59.5

55.6

63.8

Debt Due

40.3

5.3

.4

Other

46.8

55.1

54.4

Current Liab.

146.6

116.0

118.6

ANNUAL RATES of change (per sh)

Past 10 Yrs.

Past 5 Yrs.

Est'd '18-'20 to '24-'26

Revenues

2.5%

.5%

5.0%

"Cash Flow"

5.5%

3.0%

7.0%

Earnings

9.0%

5.5%

6.5%

Dividends

8.5%

7.5%

9.5%

Book Value

5.5%

5.0%

5.5%

Cal-endar

QUARTERLY REVENUES (\$ mill.)

Mar.31

Jun.30

Sep.30

Dec.31

Full Year

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

133.6

124.2

468.2

2021

115

125

145

120

505

2022

118

127

148

122

515

Cal-endar

EARNINGS PER SHARE ^

Mar.31

Jun.30

Sep.30

Dec.31

Full Year

2018

.29

.44

.62

.37

1.72

2019

.35

.72

.76

.45

2.28

2020

.38

.69

.72

.54

2.33

2021

.45

.67

.75

.53

2.40

2022

.48

.72

.78

.57

2.55

Cal-endar

QUARTERLY DIVIDENDS PAID ^

Mar.31

Jun.30

Sep.30

Dec.31

Full Year

2017

.242

.242

.255

.255

.99

2018

.255

.255

.275

.275

1.06

2019

.275

.275

.305

.305

1.16

2020

.305

.305

.335

.335

1.28

2021

.335

BUSINESS:

American States Water Co. operates as a holding company. Through its principal subsidiary, Golden State Water Co., it supplies water to 261,976 customers in 10 California counties. Service areas include the metropolitan areas of Los Angeles and Orange Counties. The company also provides electricity to 24,545 customers in Big Bear Lake and San Bernardino Cnty. Provides

Shares of American States Water have not performed well lately.

Over the past three-month period, the price of the stock has declined about 2%. By comparison, the S&P 500 Index has increased 7%, a difference of nearly 900 basis points.

Meanwhile, a major rate case is pending.

California is a state where water utilities file a petition to raise prices once every three years. Last summer, the Golden States Water Company (GSWC) submitted the papers for rate hikes that would cover the years 2022 to 2024. The final decision on the case is not expected until late this year, at the earliest. Our earnings assumptions are based upon a reasonable ruling, as relations with the regulators has been mostly positive. An unexpectedly harsh decision would have a negative impact on the bottom line.

Earnings should advance at a decent clip both this year and next.

The company's year-over-year share net will likely only increase 3% in 2021. (Utilities often see earnings growth slow in the year before new rates are determined.) In 2022, with the assistance of higher rates, we are estimating that earnings per share will

climb 6%.

Dividend growth prospects seem to be somewhat brighter.

At the company's August board meeting, we think the distribution per share will be raised \$0.03, a 9% increase. This is near the very high end of the range for water utilities.

The company's nonregulated operations offer some potential upside.

Through its ASUS business, the company operates water systems at U.S. Army installations. ASUS has been reasonably successful in winning its share of the many contracts the military has put out for bid. With more privatizations of these facilities planned, this segment could provide higher-margined revenues. That's because returns here are not capped, so there isn't a limit on profitability.

These neutrally ranked shares do not have appeal, at this time.

Despite lagging the market, AWR is only ranked to perform in line with the major indexes in the year ahead. Moreover, over the pull to 2024-2026, total return potential is well-below the Value Line median, as the equity is already in its Target Price Range.

James A. Flood

April 9, 2021

(A) Primary earnings. Excludes nonrecurring gains/(losses): '05, 13¢; '06, 3¢; '08, (14¢); '10, (23¢); '11, 10¢. Next earnings report due mid-May.

(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 12/31/20; \$1.1 million/\$0.03 a share.

Company's Financial Strength	A
Stock's Price Stability	100
Price Growth Persistence	95
Earnings Predictability	85

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AMERICAN WATER NYSE-AWK				RECENT PRICE	147.91	P/E RATIO	35.4	(Trailing: 37.8 Median: 24.0)	RELATIVE P/E RATIO	1.62	DIV'D YLD	1.6%	VALUE LINE	
TIMELINESS	2	Lowered 11/13/20	High: 25.8 32.8 39.4 45.1 56.2 61.2 85.2 92.4 98.2 129.9 172.6 166.1	Low: 19.4 25.2 31.3 37.0 41.1 48.4 58.9 70.0 76.0 88.0 92.0 131.0										

ARTESIAN RES. CORP. NDQ--ARTNA				RECENT PRICE	39.71	TRAILING P/E RATIO	22.1	RELATIVE P/E RATIO	1.02	DIV'D YLD	2.6%	VALUE LINE
RANKS		24.43 18.20	24.27 21.52	23.82 19.85	29.16 20.00	35.00 25.17	43.22 29.37	41.92 32.00	40.97 33.14	40.26 30.00	42.70 36.70	High Low
PERFORMANCE	3	<div>LEGENDS</div> <div>— 12 Mos Mov Avg</div> <div>..... Rel Price Strength</div> <div>Shaded area indicates recession</div> <div>45</div>										
Technical	3	<div>30</div>										
SAFETY	3	<div>22.5</div>										
BETA	.75	<div>(1.00 = Market)</div> <div>13</div>										
Financial Strength	B+	<div>9</div>										
Price Stability	85	<div>6</div>										
Price Growth Persistence	60	<div>4</div>										
Earnings Predictability	95	<div>3</div>										
© VALUE LINE PUBLISHING LLC												
2012201320142015201620172018201920202021/2022												
SALES PER SH8.107.828.138.508.678.928.699.009.42												
"CASH FLOW" PER SH2.041.872.042.222.432.552.662.772.99												
EARNINGS PER SH1.13.941.071.261.411.511.541.601.79												
DIV'DS DECL'D PER SH.79.82.85.87.90.93.96.981.01												
CAP'L SPENDING PER SH2.362.402.662.283.104.465.304.383.66												
BOOK VALUE PER SH13.5713.8014.0914.6115.2315.9116.5717.2518.11												
COMMON SHS OUTST'G (MILL)8.718.838.919.069.139.229.259.299.36												
AVG ANN'L P/E RATIO18.323.920.518.020.924.223.922.820.2												
RELATIVE P/E RATIO1.171.341.08.931.141.211.351.321.19												
AVG ANN'L DIV'D YIELD3.8%3.7%3.9%3.8%3.1%2.5%2.6%2.7%2.8%												
SALES (\$MILL)70.669.172.577.079.182.280.483.688.1												
OPERATING MARGIN48.7%47.0%48.8%43.0%44.4%44.6%46.1%43.0%47.8%												
DEPRECIATION (\$MILL)7.98.38.78.89.29.610.310.811.1												
NET PROFIT (\$MILL)9.88.39.511.313.014.014.314.916.8												
INCOME TAX RATE40.2%40.2%40.1%-- -- -- --												
NET PROFIT MARGIN14.0%12.0%13.1%14.7%16.4%17.0%17.8%17.9%19.1%												
WORKING CAP'L (\$MILL)d11.4d12.3d13.5d8.8d4.7d9.5d21.6d11.4d26.1												
LONG-TERM DEBT (\$MILL)106.3105.5105.0103.6102.3105.6115.9144.2142.3												
SHR. EQUITY (\$MILL)118.2121.8125.6132.3139.0146.6153.3160.3169.4												
RETURN ON TOTAL CAP'L5.9%5.1%5.5%6.3%6.7%6.8%6.5%6.1%6.6%												
RETURN ON SHR. EQUITY8.3%6.8%7.6%8.5%9.3%9.5%9.3%9.3%9.9%												
RETAINED TO COM EQ2.5%.9%1.6%2.6%3.4%3.7%3.6%3.6%4.4%												
ALL DIV'DS TO NET PROF70%87%79%69%63%61%62%61%56%												
Note: No analyst estimates available.												
ANNUAL RATES						INDUSTRY: Water Utility						
of change (per share)						BUSINESS: Artesian Resources Corp. operates as the parent holding company of five regulated public utilities: Artesian Water Company, Inc., Artesian Water Pennsylvania, Inc., Artesian Water Maryland, Inc., Artesian Wastewater Management, Inc., and Artesian Wastewater Maryland, Inc.; and three non-regulated subsidiaries: Artesian Utility Development, Inc., Artesian Development Corp., and Artesian Storm Water Services, Inc. Its principal subsidiary, Artesian Water Company, Inc., distributes and sells water, including water for public and private fire protection, to residential, commercial, industrial, municipal, and utility customers in Delaware, Maryland, and Pennsylvania. It provides wastewater services to customers in Delaware. In addition, it provides contract water and wastewater operations, and water, sewer and internal Service Line Protection Plans. Artesian Water produced approximately 86% of 2020 consolidated operating revenues. Has 235 employees. Chairman, C.E.O. & President: Dian C. Taylor Address: 664 Churchmans Rd., Newark, DE 19702. Tel.: (302) 453-6900. Internet: www.artesianresources.com.						
5 Yrs. 1 Yr.						E.B.						
Sales 2.0% 4.5%						April 9, 2021						
"Cash Flow" 6.5% 8.0%						TOTAL SHAREHOLDER RETURN						
Earnings 8.5% 12.0%						Dividends plus appreciation as of 2/28/2021						
Dividends 3.0% 2.5%						3 Mos. 6 Mos. 1 Yr. 3 Yrs. 5 Yrs.						
Book Value 4.0% 5.0%						0.73% 6.58% 10.82% 20.40% 49.21%						
Fiscal Year												
1Q 2Q 3Q 4Q												
Full Year												
12/31/18 18.9 20.2 21.9 19.4 80.4												
12/31/19 19.4 20.7 22.5 21.0 83.6												
12/31/20 19.9 21.8 24.7 21.7 88.1												
12/31/21												
Fiscal Year												
1Q 2Q 3Q 4Q												
Full Year												
12/31/17 .34 .35 .42 .40 1.51												
12/31/18 .38 .42 .42 .32 1.54												
12/31/19 .38 .41 .48 .33 1.60												
12/31/20 .44 .49 .54 .32 1.79												
12/31/21												
Cal-endar												
1Q 2Q 3Q 4Q												
Full Year												
2018 .235 .239 .239 .242 .96												
2019 .242 .246 .246 .25 .98												
2020 .25 .25 .25 .26 1.01												
2021 .257												
INSTITUTIONAL DECISIONS												
2Q'20 3Q'20 4Q'20												
to Buy 42 31 39												
to Sell 29 41 30												
Hld's(000) 4382 4328 4472												
Pfd Stock None												
Pfd Div'd Paid None												
Common Stock 9,357,000 shares												
(54% of Cap'l)												

CALIFORNIA WATER

NYSE-CWT

RECENT PRICE

56.17

P/E RATIO

31.4

(Trailing: 29.0)
(Median: 24.0)

RELATIVE P/E RATIO

1.43

DIV'D YLD

1.6%

VALUE LINE

TIMELINESS

1

Raised 3/19/21

SAFETY

3

Lowered 7/27/07

TECHNICAL

2

Lowered 4/9/21

BETA

.65

(1.00 = Market)

18-Month Target Price Range

Low-High

Midpoint (% to Mid)

\$43-\$81

\$62 (10%)

2024-26 PROJECTIONS

Price

Gain

Ann'l Total Return

High 65

Low 45

65 (+15%)

45 (-20%)

6%

3%

Institutional Decisions

202020

3Q2020

4Q2020

to Buy

109

101

122

to Sell

107

106

91

Hold's(000)

35580

36492

37534

Percent shares traded

18

12

6

2005

2006

2007

2008

2009

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

2021

2022

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24-26

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

15.78

16.00

15.95

Revenues per sh

16.30

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

3.88

3.45

3.55

"Cash Flow" per sh

3.75

.74

.67

.75

.95

.98

.91

.86

1.02

1.02

1.19

.94

1.01

1.40

1.36

1.31

1.97

1.90

2.00

Earnings per sh ^A

2.25

.57

.58

.58

.59

.59

.60

.62

.63

.64

.65

.67

.69

.72

.75

.79

.85

.92

.98

Div'd Decl'd per sh ^B

1.15

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

5.93

5.25

5.50

Cap'l Spending per sh

5.85

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

18.30

18.35

18.25

Book Value per sh ^C

19.80

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

50.33

51.00

52.00

Common Shs Outstg ^D

53.00

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

24.9

Bold figures are Value Line estimates

Avg Ann'l P/E Ratio

24.0

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

2.09

1.29

Relative P/E Ratio

1.30

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%

1.7%

Avg Ann'l Div'd Yield

2.1%

CAPITAL STRUCTURE as of 12/31/20

Total Debt \$1156.2 mill. Due in 5 Yrs \$357.0 mill.

LT Debt \$781.1 mill. LT Interest \$40.0 mill.

(Total interest coverage: 5.2x) (46% of Cap'l)

501.8

560.0

584.1

597.5

588.4

609.4

666.9

698.2

714.6

794.3

815

830

Revenues (\$mill) ^E

865

36.1

42.6

47.3

56.7

45.0

48.7

67.2

65.6

63.1

96.8

97.0

105

Net Profit (\$mill)

120

40.5%

37.5%

30.3%

33.0%

36.0%

35.5%

30.1%

24.5%

19.1%

11.1%

21.0%

Income Tax Rate

21.0%

7.6%

8.0%

4.3%

2.7%

4.3%

6.1%

3.5%

3.1%

5.8%

3.3%

5.0%

AFUDC % to Net Profit

5.0%

51.7%

47.8%

41.6%

40.1%

44.4%

44.6%

42.7%

49.3%

50.2%

45.9%

44.5%

43.5%

Long-Term Debt Ratio

38.0%

48.3%

52.2%

58.4%

59.9%

55.6%

55.4%

57.3%

50.7%

49.8%

51.1%

55.5%

56.5%

Common Equity Ratio

62.0%

931.5

908.2

1024.9

1045.9

1154.4

1191.2

1209.3

1440.2

1566.7

1702.4

1685

1675

Total Capital (\$mill)

1700

1381.1

1457.1

1515.8

1590.4

1701.8

1859.3

2048.0

2232.7

2406.4

2650.6

2675

2700

Net Plant (\$mill)

2850

5.5%

6.3%

6.0%

6.3%

5.2%

5.5%

7.1%

5.9%

5.5%

7.0%

6.5%

7.0%

Return on Total Cap'l

8.0%

8.0%

9.0%

7.9%

9.1%

7.0%

7.4%

9.7%

9.0%

8.1%

10.5%

10.5%

11.0%

Return on Shr. Equity

11.5%

8.0%

9.0%

7.9%

9.1%

7.0%

7.4%

9.7%

9.0%

8.1%

10.5%

10.5%

11.0%

Return on Com Equity

11.5%

2.3%

3.4%

3.4%

4.1%

2.0%

2.4%

4.7%

4.0%

3.2%

6.0%

5.5%

5.5%

Retained to Com Eq

5.5%

71%

62%

56%

55%

71%

68%

51%

55%

60%

43%

48%

49%

All Div'ds to Net Prof

51%

BUSINESS:

California Water Service Group provides regulated and nonregulated water service to 492,600 customers in 100 communities in the state of California. Accounts for about 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, '20: residential, 70%; business, 18%; industrial, 4%; 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 Service Group

reported solid financial results to wrap up 2020.

The West Coast water service provider generated revenues of \$189 million in the December period, or a 7% annual increase, thanks largely to rate hikes associated with the recently approved general rate case. Meanwhile, fourth-quarter share profits of \$0.31, which were also buoyed by benefits from the general rate case decision, specifically higher operating income and lower taxes, logged a healthy 29% advance compared to the year-earlier tally.

California Water is on a buying spree.

The company's subsidiary, Hawaii Water Service, announced that it has received approval to acquire the assets of Kapalua Water and Kapalua Waste Treatment Company, which will add roughly 1,000 service connections in the area. In addition, a deal has been inked to purchase the water system assets of Skylanda Mutual Water Company. Pending regulatory approval, the transaction, which would add almost 19,000 service connection in California, is expected to be finalized early next year. Overall, tuck-in acquisitions

will probably be a staple in the company's long-term growth strategy.

The company is in the early innings of a massive infrastructure improvement program.

Indeed, management is taking an aggressive approach to upgrading and revamping its aging water delivery, transportation, and treatment facilities. For this year, its capital spending budget for infrastructure-related projects is approximately \$285 million. Over the pull to 2025, the company is likely to invest upwards of \$700 million. Lastly, California Water has already been given the green light by the California Public Utilities Commission to tap the debt and equity markets.

We continue to like this issue for subscribers with a short-term investment horizon.

The stock has been raised one notch on our Timeliness Ranking Scale, to 1 (Highest) and, thus is slated to outpace the broader market averages over the coming six to 12 months. On the other hand, buy-and-hold accounts should turn the page, as total return potential out to 2024-2026 is unenticing at recent levels.

Nicholas P. Patrikis

April 9, 2021

(A) Basic EPS. Excl. nonrecurring gain (loss): '11, 4¢. Next earnings report due early May.

(B) Dividends historically paid in late Feb., May, Aug., and Nov. ■ Div'd reinvestment plan available.

(C) Incl. intangible assets. In '20 : \$27.6 mill., \$0.55/sh.

(D) In millions, adjusted for split.

(E) Excludes non-regulated revenues

Company's Financial Strength

Stock's Price Stability

Price Growth Persistence

Earnings Predictability

B++

95

70

65

GLOBAL WATER RES. NDQ--GWRS					RECENT PRICE	16.28	TRAILING P/E RATIO	NMF	RELATIVE P/E RATIO	NMF	DIV'D YLD	1.8%	VALUE LINE						
RANKS							9.29 6.23	10.00 7.90	11.61 8.40	14.99 9.00	16.20 8.50	18.13 14.40	High Low						
PERFORMANCE	2	Above Average	<div>LEGENDS</div> <div>— 12 Mos Mov Avg</div> <div>..... Rel Price Strength</div> <div>Shaded area indicates recession</div>																
Technical	2	Above Average																	
SAFETY	3	Average																	
BETA	.75	(1.00 = Market)																	
Financial Strength	B																		
Price Stability	80																		
Price Growth Persistence	NMF																		
Earnings Predictability	NMF																		
© VALUE LINE PUBLISHING LLC					2012	2013	2014	2015	2016	2017	2018	2019	2020	2021/2022					
REVENUES PER SH					--	--	--	--	1.52	1.59	1.65	1.65	1.71	.11 A,B/18 C					
"CASH FLOW" PER SH					--	--	--	--	.18	.58	.49	.49	.45						
EARNINGS PER SH					--	--	--	--	d.15	.23	.15	.10	.05						
DIV'DS DECL'D PER SH					--	--	--	--	.17	.28	.28	.29	.29						
CAP'L SPENDING PER SH					--	--	--	--	.44	1.06	.22	.52	.40	NMF/90.4					
BOOK VALUE PER SH					--	--	--	--	.78	.76	1.30	1.15	1.43						
COMMON SHS OUTST'G (MILL)					--	--	--	--	19.58	19.63	21.47	21.54	22.59						
AVG ANN'L P/E RATIO					--	--	--	--	--	40.1	63.9	NMF	NMF						
RELATIVE P/E RATIO					--	--	--	--	--	2.01	3.61	NMF	NMF	and, using the recent prices, P/E ratios.					
AVG ANN'L DIV'D YIELD					--	--	--	--	2.2%	3.0%	3.0%	2.6%	2.5%						
REVENUES (\$MILL)					--	--	--	32.0	29.8	31.2	35.5	35.5	38.6						
OPERATING MARGIN					--	--	--	75.1%	38.8%	45.7%	47.1%	43.2%	42.4%						
DEPRECIATION (\$MILL)					--	--	--	8.2	6.3	6.9	7.5	8.4	9.0	and, using the recent prices, P/E ratios.					
NET PROFIT (\$MILL)					--	--	--	21.4	d2.9	4.6	3.1	2.2	1.1						
INCOME TAX RATE					--	--	--	49.1%	--	--	36.5%	34.3%	41.1%						
NET PROFIT MARGIN					--	--	--	66.9%	NMF	14.6%	8.7%	6.3%	2.9%						
WORKING CAP'L (\$MILL)					--	--	--	8.0	13.8	.7	7.7	2.2	11.1	and, using the recent prices, P/E ratios.					
LONG-TERM DEBT (\$MILL)					--	--	--	104.7	114.3	114.4	114.5	114.7	112.7						
SHR. EQUITY (\$MILL)					--	--	--	20.1	15.2	14.9	27.9	24.7	32.2						
RETURN ON TOTAL CAP'L					--	--	--	20.5%	2.4%	5.5%	4.0%	3.5%	2.6%						
RETURN ON SHR. EQUITY					--	--	--	106.5%	NMF	30.6%	11.1%	9.0%	3.4%	and, using the recent prices, P/E ratios.					
RETAINED TO COM EQ					--	--	--	106.5%	NMF	NMF	11.1%	NMF	NMF						
ALL DIV'DS TO NET PROF					--	--	--	--	NMF	119%	--	NMF	NMF						
ALL DIV'DS TO NET PROF					--	--	--	--	NMF	119%	--	NMF	NMF						
A No. of analysts changing earn. est. in last 29 days: 0 up, 0 down, consensus 5-year earnings growth 15.0% per year. B Based upon one analyst's estimate. C Based upon one analyst's estimate.																			
ANNUAL RATES					ASSETS (\$mill.)					INDUSTRY: Water Utility									
of change (per share)					2018 2019 12/31/20					BUSINESS: Global Water Resources, Inc. is a water resource management company that owns, operates, and manages 16 water, wastewater, and recycled water utilities in strategically located communities, principally in metropolitan Phoenix, Arizona. It seeks to deploy its integrated approach, Total Water Management, a term used to mean managing the entire water cycle by owning and operating the water, wastewater, and recycled water utilities within the same geographic areas in order to both conserve water and maximize its total economic and social value. The company uses Total Water Management to promote sustainable communities in areas where growth outpaces the existing potable water supply. Global Water recycles nearly one billion gallons of water annually. In February 2021, Global Water agreed to acquire two small water utility companies, Twin Hawks Utility, Inc. and Rincon Water Company. The acquisitions will add approximately 93 water connections. Has 79 employees. Chairman, C.E.O. & President: Ron L. Fleming Address: 21410 N. 19th Avenue #220, Phoenix, AZ 85027. Tel.: (480) 360-7775. Internet: www.gwresources.com. E.B. April 9, 2021									
5 Yrs.					Cash Assets														
1 Yr.					Receivables														
Sales					Inventory														
"Cash Flow"					Other														
Earnings					Current Assets														
Dividends					Property, Plant & Equip, at cost														
Book Value					Accum Depreciation														
Fiscal Year					Net Property														
1Q					Other														
2Q					Total Assets														
3Q					LIABILITIES (\$mill.)														
4Q					Accts Payable														
Full Year					Debt Due														
12/31/17					Other														
12/31/18					Current Liab														
12/31/19					LONG-TERM DEBT AND EQUITY as of 12/31/20														
12/31/20					Total Debt \$114.7 mill. Due in 5 Yrs. \$17.4 mill.														
12/31/21					LT Debt \$112.7 mill. Including Cap. Leases \$.1 mill. (78% of Cap'l)														
Fiscal Year					Leases, Uncapitalized Annual rentals None														
1Q					Pension Liability None in '20 vs. None in '19														
2Q					Pfd Stock None Pfd Div'd Paid None														
3Q					Common Stock 22,588,000 shares (22% of Cap'l)														
4Q					TOTAL SHAREHOLDER RETURN Dividends plus appreciation as of 2/28/2021														
Full Year					3 Mos.														
2018					6 Mos.														
2019					1 Yr.														
2020					3 Yrs.														
2021					5 Yrs.														
INSTITUTIONAL DECISIONS					35.15%														
2Q'20					58.52%														
3Q'20					48.56%														
4Q'20					118.55%														
to Buy					--														
to Sell																			
Hld's(000)																			
8849																			
7844																			
7595																			

MIDDLESEX WATER NDQ-MSEX				RECENT PRICE	80.66	P/E RATIO	36.7 (Trailing: 37.0, Median: 23.0)	RELATIVE P/E RATIO	1.68	DIV'D YLD	1.4%	VALUE LINE							
TIMELINESS 1	Raised 11/13/20	High: 19.3 19.4 19.6 22.5 23.7 28.0 44.5 46.7 60.3 67.7 76.1 85.9	Low: 14.7 16.5 17.5 18.6 19.1 21.2 25.0 32.2 34.0 51.0 48.8 67.1	Target Price Range 2024 2025 2026															
SAFETY 2	New 10/21/11	LEGENDS 120 x Dividends p sh divided by Interest Rate Relative Price Strength Options: Yes Shaded area indicates recession																	
TECHNICAL 4	Lowered 4/9/21	18-Month Target Price Range																	
BETA .70	(1.00 = Market)	Low-High Midpoint (% to Mid)																	
\$58-\$106 \$82 (0%)																			
2024-26 PROJECTIONS																			
High	Price	Gain	Ann'l Total																
Low	75	(-5%)	Return																
	55	(-30%)	N/I																
	68	-7%	-7%																
Institutional Decisions																			
to Buy	2Q2020	3Q2020	4Q2020																
to Sell	68	52	69																
Hld's(000)	10359	10357	10675																
Percent shares traded																			
12 8 4																			
2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC 24-26	
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	8.10	8.45	8.70	Revenues per sh	9.15
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	3.25	3.15	3.25	"Cash Flow" per sh	3.70
.71	.82	.87	.89	.72	.96	.84	.90	1.03	1.13	1.22	1.38	1.38	1.96	2.01	2.18	2.25	2.35	Earnings per sh A	2.70
.67	.68	.69	.70	.71	.72	.73	.74	.75	.76	.78	.81	.86	.91	.98	1.04	1.10	1.15	Div'd Decl'd per sh B	1.35
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	6.04	5.50	5.50	Cap'l Spending per sh	6.25
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	19.81	19.45	19.60	Book Value per sh	20.85
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	17.47	17.75	17.85	Common Shs Outst'g C	18.00
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	30.1	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	24.0
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	1.58	1.56			Relative P/E Ratio	1.30
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%	1.6%			Avg Ann'l Div'd Yield	2.1%
CAPITAL STRUCTURE as of 12/31/20				102.1	110.4	114.8	117.1	126.0	132.9	130.8	138.1	134.6	141.6	150	155	Revenues (\$mill)	165		
Total Debt \$282.5 mill. Due in 5 Yrs \$43.7 mill.				13.4	14.4	16.6	18.4	20.0	22.7	22.8	32.5	33.9	38.4	40.0	42.0	Net Profit (\$mill)	49.0		
LT Debt \$273.2 mill. LT Interest \$7.5 mill.				32.7%	33.9%	34.1%	35.0%	34.5%	34.0%	32.7%	2.8%	2.8%	2.8%	21.0%	21.0%	Income Tax Rate	21.0%		
(Total interest coverage: 7.3x)				6.1%	3.4%	1.9%	1.7%	1.9%	2.7%	3.1%	1.4%	3.4%	3.9%	2.5%	2.5%	AFUDC % to Net Profit	2.5%		
(44% of Cap'l)				42.3%	41.5%	40.4%	40.5%	39.4%	37.9%	37.5%	37.8%	41.5%	44.0%	42.5%	41.5%	Long-Term Debt Ratio	40.0%		
Pension Assets-12/20 \$88.9 mill.				56.6%	57.4%	58.7%	58.8%	59.8%	61.5%	61.8%	61.6%	58.2%	55.7%	57.0%	58.0%	Common Equity Ratio	60.0%		
Oblig. \$115.9 mill.				312.5	316.5	321.4	335.8	345.4	355.4	370.7	404.1	556.7	621.5	610	600	Total Capital (\$mill)	630		
Pfd Stock \$2.4 mill. Pfd Div'd: \$.1 mill.				422.2	435.2	446.5	465.4	481.9	517.8	557.2	618.5	705.7	796.6	800	815	Net Plant (\$mill)	835		
Common Stock 17,473,000 shs.				5.2%	5.4%	5.9%	6.3%	6.6%	7.1%	6.9%	8.9%	6.7%	6.8%	7.0%	7.5%	Return on Total Cap'l	8.0%		
MARKET CAP: \$1.4 billion (Mid-Cap)				7.5%	7.8%	8.7%	9.2%	9.6%	10.3%	9.8%	12.9%	10.4%	11.0%	11.5%	12.0%	Return on Shr. Equity	13.0%		
CURRENT POSITION (SMILL.)				7.5%	7.8%	8.7%	9.3%	9.6%	10.3%	9.9%	13.0%	10.4%	11.1%	11.5%	12.0%	Return on Com Equity	13.0%		
Cash Assets 3.7 2.2 4.5				1.0%	1.4%	2.4%	3.1%	3.5%	4.3%	3.8%	7.0%	5.4%	5.8%	6.0%	6.0%	Retained to Com Eq	6.5%		
Other 27.1 26.9 29.6				87%	83%	73%	67%	63%	58%	62%	46%	48%	48%	49%	49%	All Div'ds to Net Prof	50%		
Current Assets 30.8 29.1 34.1				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 2020, the Middlesex System accounted for 59% of operating revenues. At 12/31/20, the company had 348 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.															
Accts Payable 19.3 23.3 30.4																			
Debt Due 55.8 27.2 9.3																			
Other 19.3 14.5 17.1																			
Current Liab. 94.4 65.0 56.8																			
ANNUAL RATES of change (per sh)				Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26	Shares of Middlesex Water continue to march higher. The equity established yet another all-time high in early February, but has since retracted modestly to slightly above \$80 per share. Still, the stock is up about 10% in price since our early-January review, keeping intact its enviable multiyear price ascent. Based on our Timeliness ranking scale, MSEX shares are slated to outperform (1: Highest) the broader market over the coming six to 12 months. Thus, they may pique the interest of near-term accounts. The stage is set for respectable top- and bottom-line growth this year. Favorable operating trends, which were evident in the fourth quarter, are likely to persist over the near- to intermediate-terms. These include increased residential and wholesale water consumption owing to more people staying at home and greater handwashing frequency, as well as an expanding customer base in its Delaware water system. A recently inked contract with Highland Park in its New Jersey system is a positive, too. Adding it all up, revenues are poised to expand 6%, to \$150 million, and will likely be accompanied by a 3% earnings advance, to \$2.25 per share. From a financial perspective, the company ought to be a stable performer over the pull to mid-decade. Modest revenue and earnings growth is likely on tap for 2022. Meanwhile, significant infrastructure spending may well overflow into the 3- to 5-year time frame. Management has laid out a budget of nearly \$300 million through its Water For Tomorrow program, which aims to upgrade watermain, piping, and wastewater treatment facilities. Most recently, the company announced a \$10 million investment to improve its drinking water infrastructure in New Jersey. Overall, aggressive spending ought to eventually curb unnecessary operating costs, and may well facilitate additional rate hikes going forward. Shares of Middlesex Water are currently trading beyond the upper end of our 3- to 5-year Target Price parameters. This is so even after modestly lifting our P/E multiple to 24x. All in all, subscribers with an investment horizon of 18 months or longer can find more-attractive options elsewhere, at this juncture. Nicholas P. Patrikis April 9, 2021												
Revenues 2.0% 2.0% 2.0%																			
"Cash Flow" 7.5% 10.5% 3.5%																			
Earnings 9.0% 12.5% 4.5%																			
Dividends 3.0% 5.0% 5.5%																			
Book Value 5.5% 8.0% 2.5%																			
Cal-endar	QUARTERLY REVENUES (\$ mill.)				Full Year		Shares of Middlesex Water are currently trading beyond the upper end of our 3- to 5-year Target Price parameters. This is so even after modestly lifting our P/E multiple to 24x. All in all, subscribers with an investment horizon of 18 months or longer can find more-attractive options elsewhere, at this juncture. Nicholas P. Patrikis April 9, 2021												
	Mar.31	Jun. 30	Sep. 30	Dec. 31															
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	39.9	34.6	141.6														
2021	33.0	37.0	44.0	36.0	150														
2022	34.0	38.0	45.0	38.0	155														
Cal-endar	EARNINGS PER SHARE A				Full Year		Shares of Middlesex Water are currently trading beyond the upper end of our 3- to 5-year Target Price parameters. This is so even after modestly lifting our P/E multiple to 24x. All in all, subscribers with an investment horizon of 18 months or longer can find more-attractive options elsewhere, at this juncture. Nicholas P. Patrikis April 9, 2021												
	Mar.31	Jun. 30	Sep. 30	Dec. 31															
2018	.27	.52	.74	.43	1.96														
2019	.39	.49	.66	.46	2.01														
2020	.44	.55	.72	.47	2.18														
2021	.45	.55	.73	.52	2.25														
2022	.47	.57	.76	.55	2.35														
Cal-endar	QUARTERLY DIVIDENDS PAID B=				Full Year		Shares of Middlesex Water are currently trading beyond the upper end of our 3- to 5-year Target Price parameters. This is so even after modestly lifting our P/E multiple to 24x. All in all, subscribers with an investment horizon of 18 months or longer can find more-attractive options elsewhere, at this juncture. Nicholas P. Patrikis April 9, 2021												
	Mar.31	Jun. 30	Sep. 30	Dec. 31															
2017	.2125	.2125	.2125	.22375	.86														
2018	.22375	.22375	.22375	.24	.91														
2019	.24	.24	.24375	.2562	.98														
2020	.2562	.2562	.2562	.2725	1.04														
2021	.2725																		

SJW GROUP NYSE-SJW				RECENT PRICE	63.42	P/E RATIO	26.9	(Trailing: 29.6)	RELATIVE P/E RATIO	1.23	DIV'D YLD	2.1%	VALUE LINE						
TIMELINESS	— E	High: 28.2	26.8	26.9	30.1	33.7	35.7	56.9	69.3	68.4	74.5	75.0	71.7	Target Price Range 2024 2025 2026					
SAFETY	3 New 4/22/11	Low: 21.6	20.9	22.6	24.5	25.5	27.5	28.6	45.4	51.3	53.9	45.6	58.0						
TECHNICAL	— E	LEGENDS 1.50 x Dividends p sh divided by Interest Rate Relative Price Strength Options: Yes Shaded area indicates recession																	
BETA	.85 (1.00 = Market)																		
18-Month Target Price Range														48					
Low-High Midpoint (% to Mid)														32					
\$53-\$123 \$88 (40%)														24					
2024-26 PROJECTIONS														20					
High	Price	Gain	Ann'l Total											12					
Low	100	(+60%)	Return											8					
	65	(Nil)	14%																
Institutional Decisions														% TOT. RETURN 2/21					
to Buy	202020	3Q2020	4Q2020	Percent											THIS STOCK INDEX				
to Sell	75	62	80	shares											1 yr. 4.5 50.1				
Hld's(000)	19939	19827	19850	traded											3 yr. 24.8 45.4				
				5											5 yr. 89.0 108.8				
2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
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	19.77	20.00	20.65	Revenues per sh	22.15
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	5.28	4.25	4.40	"Cash Flow" per sh	5.30
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	2.14	2.55	2.70	Earnings per sh ^A	3.65
.53	.57	.61	.65	.66	.68	.69	.71	.73	.75	.78	.81	1.04	1.12	1.20	1.28	1.36	1.44	Div'd Decl'd per sh ^B	1.72
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	7.44	6.75	7.00	Cap'l Spending per sh	7.50
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	32.12	35.60	36.95	Book Value per sh	40.85
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	28.56	29.50	29.75	Common Shs Outst'g ^C	30.00
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	30.0	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	23.0
1.05	1.27	1.77	1.58	1.91	1.85	1.33	1.30	1.37	.59	.84	.82	.95	1.77	2.55	1.56			Relative P/E Ratio	1.30
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%	2.0%			Avg Ann'l Div'd Yield	2.1%
CAPITAL STRUCTURE as of 12/31/20				239.0	261.5	276.9	319.7	305.1	339.7	389.2	397.7	420.5	564.5	590	615	Revenues (\$mill)	665		
Total Debt \$1363.8 mill. Due in 5 Yrs \$22.4 mill.				20.9	22.3	23.5	51.8	37.9	52.8	59.2	38.8	38.7	61.5	75.0	80.0	Net Profit (\$mill)	110		
LT Debt \$1287.6 mill. LT Interest \$50.0 mill.				41.1%	41.1%	38.7%	32.5%	38.1%	38.8%	36.7%	20.6%	25.3%	12.0%	21.0%	21.5%	Income Tax Rate	21.0%		
(LT Interest Coverage: 3.8x)				--	--	--	--	--	--	--	--	2.0%	1.5%	1.5%	1.5%	AFUDC % to Net Profit	1.5%		
(58% of Cap'l)				56.6%	55.0%	51.1%	51.6%	49.8%	50.7%	48.2%	32.7%	59.1%	58.4%	53.5%	51.0%	Long-Term Debt Ratio	38.0%		
				43.4%	45.0%	48.9%	48.4%	50.2%	49.3%	51.8%	67.3%	40.9%	41.6%	46.5%	49.0%	Common Equity Ratio	62.0%		
Pension Assets-12/20 \$278.1 mill.				607.9	610.2	656.2	744.5	764.6	855.0	894.3	1320.7	2173.6	2204.7	2250	2250	Total Capital (\$mill)	1975		
Oblig. \$386.1 mill.				756.2	831.6	898.7	963.0	1036.8	1146.4	1239.3	1328.8	2206.5	2334.9	2450	2565	Net Plant (\$mill)	2775		
Pfd Stock None.				4.9%	5.0%	5.0%	8.3%	6.3%	7.4%	7.9%	3.9%	2.5%	4.0%	4.0%	4.0%	Return on Total Cap'l	6.0%		
Common Stock 28,560,000 shs.				7.9%	8.1%	7.3%	14.4%	9.9%	12.5%	12.8%	4.4%	4.3%	6.7%	7.0%	7.5%	Return on Shr. Equity	9.0%		
MARKET CAP: \$1.8 billion (Mid Cap)				7.9%	8.1%	7.3%	14.4%	9.9%	12.5%	12.8%	4.4%	4.3%	6.7%	7.0%	7.5%	Return on Com Equity	9.0%		
CURRENT POSITION				3.1%	3.3%	2.8%	10.2%	5.7%	8.6%	8.2%	1.8%	.5%	2.7%	3.5%	3.5%	Retained to Com Eq	4.5%		
(SMILL.)				61%	59%	62%	29%	42%	31%	36%	60%	88%	59%	53%	53%	All Div'ds to Net Prof	47%		
Cash Assets				420.7	17.9	9.3													
Accts Receivable				19.2	36.3	58.1													
Other				62.8	67.8	59.9													
Current Assets				502.7	122.0	127.3													
Accts Payable				24.9	34.9	34.2													
Debt Due				--	22.3	76.2													
Other				139.1	177.4	240.4													
Current Liab.				164.0	234.6	350.8													
ANNUAL RATES				Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20													
of change (per sh)				3.0%	2.0%	5.5%													
Revenues				5.5%	2.0%	4.5%													
"Cash Flow"				7.0%	-5%	13.0%													
Earnings				6.0%	10.0%	6.0%													
Dividends				8.5%	12.5%	4.5%													
Book Value																			
Cal-endar	QUARTERLY REVENUES (\$ mill.)					Full Year													
	Mar.31	Jun.30	Sep.30	Dec.31															
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	165.9	135.6		564.5													
2021	120	150	175	145		590													
2022	125	155	185	150		615													
Cal-endar	EARNINGS PER SHARE ^A					Full Year													
	Mar.31	Jun.30	Sep.30	Dec.31															
2018	.06	.62	.76	.38		1.82													
2019	.21	.47	.33	.34		1.35													
2020	.08	.69	.91	.46		2.14													
2021	.20	.75	.95	.65		2.55													
2022	.23	.77	1.00	.70		2.70													
Cal-endar	QUARTERLY DIVIDENDS PAID ^{B,D}					Full Year													
	Mar.31	Jun.30	Sep.30	Dec.31															
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	.32		1.28													
2021	.34																		

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 (3/21 proxy). Chairman & CEO: Eric Thornburg. Incorporated: California. Address: 110 West Taylor Street, San Jose, CA 95110. Telephone: (408) 279-7800. Internet: www.sjwater.com.

SJW Group posted better-than-expected top- and bottom-line results to close 2020. December-period revenues of \$136 million came in about \$5 million above our call, while earnings of \$0.46 a share exceeded our \$0.42 expectation. The overall outperformance was driven primarily by greater customer usage, cumulative water rate increases, slimmer operating expenses due to lower merger-related costs, and a decline in general & administrative expenses.

Noteworthy share-profit expansion is likely in the cards this year and next. Water production costs are apt to rise in conjunction with increased water consumption and a widening customer base, but operating expenses may well trend lower. Not to mention, we think significant merger synergies are likely to develop. All told, we think SJW will earn \$2.55 a share this year, and \$2.70 a share in 2022.

The coast-to-coast regulated water utility has tapped the equity markets. Specifically, the company recently closed a public offering of over one million shares, netting proceeds of almost \$61 million. Management's plan for the raised funds include paying down outstanding obligations, various capital expenditures, and general corporate purposes.

The long-term growth narrative remains largely unaltered. Increased residential and wholesale water consumption, alongside periodic rate hikes, ought to keep revenues moving in the right direction. SJW Group's diverse geographical footprint is advantageous, and should expand further down the road. From an operational standpoint, robust capital spending on infrastructure upgrades ought to boost efficiency, as much of these costs can eventually be passed along to the consumer.

Unranked SJW shares are a bit more appealing for patient accounts following their recent step back in price. At recent levels, capital appreciation potential out to mid-decade is slightly above average, thus presenting a decent entry point for interested subscribers to start building a position. What's more, the dividend yield is now comfortably above the Value Line median, and ranks among the top payers in the Water Utilities Industry.

Nicholas P. Patrikis
April 9, 2021

YORK WATER

NDQ:YORW

RECENT PRICE

48.74

P/E RATIO

38.1

(Trailing: 38.4
Median: 26.0)

RELATIVE P/E RATIO

1.74

DIV/YLD

1.5%

VALUE LINE

TIMELINESS

3

Lowered 1/15/21

SAFETY

3

Lowered 7/17/15

TECHNICAL

3

Lowered 4/2/21

BETA

.80

(1.00 = Market)

18-Month Target Price Range

Low-High

Midpoint (to Mid)

\$36-\$76

\$56 (15%)

2024-26 PROJECTIONS

High

Price

Gain

Ann'l Total

Low

50

(+5%)

2%

(-30%)

-6%

Institutional Decisions

202020

302020

402020

To Buy

59

46

56

To Sell

48

53

46

Hld's(000)

5479

5302

5341

Percent shares traded

12

8

4

2005

2006

2007

2008

2009

2010

2011

2012

2013

2014

2015

2016

2017

2018

2019

2020

2021

2022

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

4.13

4.20

4.35

.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

1.88

1.95

2.10

.56

.58

.57

.57

.64

.71

.71

.72

.75

.89

.97

.92

1.01

1.04

1.11

1.27

1.35

1.40

.42

.45

.48

.49

.51

.52

.53

.54

.55

.57

.60

.63

.65

.67

.70

.73

.78

.83

1.69

1.85

1.69

2.17

1.18

.83

.74

.94

.76

1.10

1.11

1.03

1.95

--

.16

.85

1.35

1.45

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

10.97

11.55

12.00

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

13.06

13.00

12.90

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

35.7

37.0

35.7

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

1.80

1.85

1.85

1.85

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%

1.6%

CAPITAL STRUCTURE as of 12/31/20

Total Debt \$123.6 mill.

Due in 5 Yrs \$42.5 mill.

LT Debt \$123.6 mill.

LT Interest \$5.5 mill.

(46% of Cap'l)

Pension Assets 12/20 \$56.3 mill.

Oblig. \$54.1 mill.

Pfd Stock None

Common Stock 13,060,817 shs.

MARKET CAP: \$625 million (Small Cap)

CURRENT POSITION

2018

2019

12/31/20

(SMILL.)

Cash Assets

--

--

5.0

Accounts Receivable

4.8

4.4

5.2

Inventory (Avg. Cost)

.9

1.0

1.0

Other

3.3

4.0

5.1

Current Assets

9.0

9.4

16.3

Accts Payable

3.0

3.4

6.5

Debt Due

1.0

6.5

Other

6.8

5.3

5.5

Current Liab.

10.8

15.2

12.0

ANNUAL RATES

Past

Past

Est'd '17-'19

of change (per sh)

10 Yrs.

5 Yrs.

to '24-'26

Revenues

3.0%

2.5%

4.0%

"Cash Flow"

6.0%

5.5%

6.5%

Earnings

6.0%

6.0%

6.5%

Dividends

3.0%

4.0%

6.0%

Book Value

4.5%

4.0%

4.0%

QUARTERLY REVENUES (\$ mill.)

Cal-endar

Mar.31

Jun.30

Sep.30

Dec.31

Full Year

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

14.3

13.4

53.9

2021

13.0

13.5

14.5

13.5

54.5

2022

13.5

13.7

15.0

13.8

56.0

EARNINGS PER SHARE A

Cal-endar

Mar.31

Jun.30

Sep.30

Dec.31

Full Year

2018

.20

.26

.29

.29

1.04

2019

.22

.28

.35

.26

1.11

2020

.31

.32

.36

.28

1.27

2021

.28

.35

.37

.35

1.35

2022

.30

.36

.38

.36

1.40

QUARTERLY DIVIDENDS PAID B

Cal-endar

Mar.31

Jun.30

Sep.30

Dec.31

Full Year

2017

.1602

.1602

.1602

.1666

.647

2018

.1666

.1666

.1666

.1733

.673

2019

.1733

.1733

.1733

.1802

.70

2020

.1802

.1802

.1802

.1874

.73

2021

.1874

LEGENDS

1.10 x Dividends p sh
divided by Interest Rate

Relative Price Strength

Options: Yes

Shaded area indicates recession

Target Price Range

2024

2025

2026

64

48

40

32

24

20

16

12

8

6

% TOT. RETURN 2/21

THIS STOCK

VL ARITH.

1 yr.

0.0

50.1

3 yr.

56.3

45.4

5 yr.

64.3

108.8

© VALUE LINE PUB. LLC

24-26

Revenues per sh

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

"Cash Flow" per sh

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Earnings per sh A

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Div'd Decl'd per sh B

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Cap'l Spending per sh

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Book Value per sh

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Common Shs Outst'g C

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Revenues (\$mill)

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Net Profit (\$mill)

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Income Tax Rate

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

AFUDC % to Net Profit

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Long-Term Debt Ratio

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Common Equity Ratio

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Total Capital (\$mill)

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Net Plant (\$mill)

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Return on Total Cap'l

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Return on Shr. Equity

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Return on Com Equity

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

Retained to Com Eq

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

All Div'ds to Net Prof

2.10

2.45

1.65

1.00

1.85

12.90

12.80

25.0

1.40

2.4%

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, 2020, the company's average daily availability was 35.6 million gallons and its service territory had an estimated population of 202,000. Has more than 72,600 customers. Residential customers accounted for 66% of 2020 reve-

nues; commercial and industrial (26%); other (8%). It also provides sewer billing services. Incorporated: PA. York had 108 full-time employees at 12/31/20. President/Chief Executive Officer: J.T. Hand. Officers/directors own 1.3% of the common stock (3/21 proxy). Address: 130 East Market Street, York, Pennsylvania 17401. Telephone: (717) 845-3601. Internet: www.yorkwater.com.

York Water delivered decent top- and bottom-line results to conclude 2020.

In the December period, revenues of \$13.4 million rose 2%, year over year, while earnings of \$0.28 advanced 8%. For the full year, the regulated water utility benefited from rate increases, higher residential water consumption due to more people staying at home, and strong customer base expansion. Capital investment was robust in 2020, as the company spent more than \$30 million on infrastructure upgrades such as standpipe replacements and raw water pumping station and wastewater treatment improvements.

Our preliminary 2022 financial projections suggest modest expansion is likely to persist. For the current year, we are maintaining our revenue call of \$54.5 million, but are adding a nickel to our earnings forecast, to \$1.35 per share. For next year, we anticipate low single-digit top- and bottom-line growth of 3% and 4%, respectively.

The long-term outlook is bright, as well. Water consumption ought to remain stable, and possibly trend higher, as York's customer base expands further. In

addition, the company is likely to keep its foot on the gas in terms of capital investments, as its aging infrastructure demands increased attention. This ought to precipitate periodic rate hikes, which help to alleviate some of these expenses.

The stock is trading around recently minted all-time high territory. Underpinning the investment community's notable enthusiasm of late, in our view, is a combination of strong quarterly operating performances and a broad-based flight-to-safety approach amidst an uncertain, albeit improving economic backdrop. York Water is indeed a noncyclical, conservative security, as its water utility operations stand at the core of everyday life, and are largely immune to economic shocks.

We do not recommend starting a position at the recent quotation. On the contrary, committed investors may want to consider locking in some profits following the multiyear price ascent. Moreover, the equity is pegged as a year-ahead market performer, and offers limited price upside over the pull to 2024-2026. The dividend yield leaves much to be desired, too.

Nicholas P. Patrikis

April 9, 2021

(A) Diluted earnings. Next earnings report due early May.
(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	65
Earnings Predictability	100

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Aqua Ohio, Inc.
Summary of Risk Premium Models for the
Proxy Group of Eight Water Companies

	<u>Proxy Group of Eight Water Companies</u>
Predictive Risk Premium Model (PRPM) (1)	12.13 %
Risk Premium Using an Adjusted Total Market Approach (2)	<u>10.08 %</u>
Average	<u><u>11.11 %</u></u>

Notes:

- (1) From page 2 of this Schedule.
- (2) From page 3 of this Schedule.

Aqua Ohio, Inc.
Indicated ROE
Derived by the Predictive Risk Premium Model (1)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Proxy Group of Eight Water Companies	LT Average Predicted Variance	Spot Predicted Variance	Recommended Variance	GARCH Coefficient	Predicted Risk Premium (2)	Risk-Free Rate (3)	Indicated ROE (4)
American States Water Company	0.38%	0.35%	0.36%	1.8535	8.37%	2.73%	11.10%
American Water Works Company, Inc.	0.23%	0.17%	0.20%	5.8359	15.13%	2.73%	NMF
Artesian Resources Corporation	0.32%	0.35%	0.34%	2.0979	8.80%	2.73%	11.53%
California Water Service Group	0.32%	0.31%	0.31%	2.0227	7.85%	2.73%	10.58%
Global Water Resources, Inc.	0.57%	0.53%	0.55%	1.9704	13.80%	2.73%	16.53%
Middlesex Water Company	0.31%	0.58%	0.45%	2.1701	12.25%	2.73%	14.98%
SJW Group	0.41%	0.37%	0.39%	1.5296	7.40%	2.73%	10.13%
The York Water Company	0.45%	0.37%	0.41%	2.2144	11.49%	2.73%	14.22%
						Average	12.72%
						Median	11.53%
						Average of Mean and Median	12.13%

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) $(1 + (\text{Column [3]} * \text{Column [4]})^{12}) - 1$.
- (3) From note 2 on page 2 of Schedule DWD-5.
- (4) Column [5] + Column [6].

Aqua Ohio, Inc.
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

<u>Line No.</u>		<u>Proxy Group of Eight Water Companies</u>
1.	Prospective Yield on Aaa Rated Corporate Bonds (1)	3.44 %
2.	Adjustment to Reflect Yield Spread Between Aaa Rated Corporate Bonds and A2 Rated Public Utility Bonds	<u>0.42</u> (2)
3.	Adjusted Prospective Yield on A2 Rated Public Utility Bonds	3.86 %
4.	Adjustment to Reflect Bond Rating Difference of Proxy Group	<u>0.05</u> (3)
5.	Adjusted Prospective Bond Yield	3.91 %
6.	Equity Risk Premium (4)	<u>6.17</u>
7.	Risk Premium Derived Common Equity Cost Rate	<u><u>10.08</u></u> %

Notes: (1) Consensus forecast of Moody's Aaa Rated Corporate bonds from Blue Chip Financial Forecasts (see pages 10 and 11 of this Schedule).

(2) The average yield spread of A2 rated public utility bonds over Aaa rated corporate bonds of 0.42% from page 4 of this Schedule.

(3) Adjustment to reflect the A2/A3 Moody's LT issuer rating of the Utility Proxy Group as shown on page 5 of this Schedule. The 0.05% upward adjustment is derived by taking 1/6 of the spread between A2 and Baa2 Public Utility Bonds ($1/6 * 0.27\% = 0.05\%$) as derived from page 4 of this Schedule.

(4) From page 7 of this Schedule.

Aqua Ohio, 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
Mar-2021	3.04 %	3.44 %	3.72 %
Feb-2021	2.70	3.09	3.37
Jan-2021	2.45	2.91	3.18
Average	2.73 %	3.15 %	3.42 %

Selected Bond Spreads

A2 Rated Public Utility Bonds Over Aaa Rated Corporate Bonds:

0.42 % (1)

Baa2 Rated Public Utility Bonds Over A2 Rated Public Utility Bonds:

0.27 % (2)

Notes:

(1) Column [2] - Column [1].

(2) Column [3] - Column [2].

Source of Information:

Bloomberg Professional Service

Aqua Ohio, Inc.
Comparison of Long-Term Issuer Ratings for
Proxy Group of Eight Water Companies

Proxy Group of Eight Water Companies	Moody's		Standard & Poor's	
	Long-Term Issuer Rating		Long-Term Issuer Rating	
	April 2021		April 2021	
	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
Artesian Resources Corporation	NR	--	NR	--
California Water Service Group	NR	--	A+	5.0
Global Water Resources, Inc.	NR	--	NR	--
Middlesex Water Company	NR	--	A	6.0
SJW Group (4)	NR	--	A/A-	6.5
The York Water Company	NR	--	A-	7.0
Average	<u>A2/A3</u>	<u>6.5</u>	<u>A</u>	<u>5.9</u>

Notes:

- (1) From page 6 of this Schedule.
- (2) Ratings that of Golden State Water Company.
- (3) Ratings that of New Jersey and Pennsylvania American Water Companies.
- (4) 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-

Aqua Ohio, Inc.
Judgment of Equity Risk Premium for the
Proxy Group of Eight Water Companies

<u>Line No.</u>		<u>Proxy Group of Eight Water Companies</u>
1.	Calculated equity risk premium based on the total market using the beta approach (1)	6.79 %
2.	Mean equity risk premium based on a study using the holding period returns of public utilities with A2 rated bonds (2)	<u>5.55</u>
3.	Average equity risk premium	<u><u>6.17 %</u></u>

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

Aqua Ohio, Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Eight Water Companies

<u>Line No.</u>	<u>Equity Risk Premium Measure</u>	<u>Proxy Group of Eight Water Companies</u>
<u>Ibbotson-Based Equity Risk Premiums:</u>		
1.	Ibbotson Equity Risk Premium (1)	5.92 %
2.	Regression on Ibbotson Risk Premium Data (2)	8.83
3.	Ibbotson Equity Risk Premium based on PRPM (3)	9.40
4.	Equity Risk Premium Based on Value Line Summary and Index (4)	5.01
5.	Equity Risk Premium Based on Value Line S&P 500 Companies (5)	10.72
6.	Equity Risk Premium Based on Bloomberg S&P 500 Companies (6)	<u>12.37</u>
7.	Conclusion of Equity Risk Premium	8.71 %
8.	Adjusted Beta (7)	<u>0.78</u>
9.	Forecasted Equity Risk Premium	<u><u>6.79 %</u></u>

Notes provided on page 9 of this Schedule.

Aqua Ohio, Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Eight Water Companies

Notes:

- (1) Based on the arithmetic mean historical monthly returns on large company common stocks from Ibbotson® SBBI® 2021 Market Report minus the arithmetic mean monthly yield of Moody's average Aaa and Aa2 corporate bonds from 1928-2020.
- (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 Aa2 rated corporate bond yields from 1928-2020 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 March 2021.
- (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 3.44% (from page 3 of this Schedule) from the projected 3-5 year total annual market return of 8.45% (described fully in note 1 on page 2 of Schedule DWD-5).
- (5) Using data from Value Line for the S&P 500, an expected total return of 14.16% 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 3.44% results in an expected equity risk premium of 10.72%.
- (6) Using data from the Bloomberg Professional Service for the S&P 500, an expected total return of 15.81% 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 3.44% results in an expected equity risk premium of 12.37%.
- (7) Average of mean and median beta from Schedule DWD-5.

Sources of Information:

Stocks, Bonds, Bills, and Inflation - 2021 SBBI Yearbook, John Wiley & Sons, Inc.
Industrial Manual and Mergent Bond Record Monthly Update.
Value Line Summary and Index
Blue Chip Financial Forecasts, April 1, 2021 and December 1, 2020
Bloomberg Professional Service

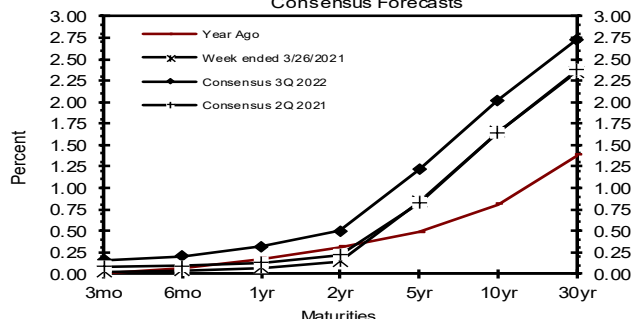
Consensus Forecasts of U.S. Interest Rates and Key Assumptions

Interest Rates	History								Consensus Forecasts-Quarterly Avg.					
	Average For Week Ending				Average For Month			Latest Qtr	2Q	3Q	4Q	1Q	2Q	3Q
	Mar 26	Mar 19	Mar 12	Mar 5	Feb	Jan	Dec	1Q 2021*	2021	2021	2021	2022	2022	2022
Federal Funds Rate	0.07	0.07	0.07	0.07	0.08	0.09	0.09	0.08	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.	0.20	0.19	0.18	0.18	0.19	0.22	0.23	0.20	0.2	0.3	0.3	0.3	0.3	0.3
Commercial Paper, 1-mo.	0.07	0.07	0.07	0.06	0.06	0.08	0.09	0.07	0.1	0.1	0.1	0.1	0.2	0.2
Treasury bill, 3-mo.	0.02	0.02	0.04	0.04	0.04	0.08	0.09	0.05	0.1	0.1	0.1	0.1	0.1	0.2
Treasury bill, 6-mo.	0.04	0.05	0.06	0.07	0.06	0.09	0.09	0.07	0.1	0.1	0.1	0.1	0.2	0.2
Treasury bill, 1 yr.	0.07	0.07	0.09	0.08	0.07	0.10	0.10	0.08	0.1	0.2	0.2	0.2	0.3	0.3
Treasury note, 2 yr.	0.14	0.15	0.16	0.14	0.12	0.13	0.14	0.13	0.2	0.3	0.3	0.4	0.4	0.5
Treasury note, 5 yr.	0.84	0.85	0.82	0.73	0.54	0.45	0.39	0.61	0.8	0.9	1.0	1.1	1.1	1.2
Treasury note, 10 yr.	1.65	1.66	1.57	1.49	1.26	1.08	0.93	1.32	1.6	1.7	1.8	1.9	2.0	2.0
Treasury note, 30 yr.	2.35	2.41	2.30	2.25	2.04	1.82	1.67	2.08	2.4	2.5	2.5	2.6	2.7	2.7
Corporate Aaa bond	3.15	3.23	3.13	3.06	2.84	2.64	2.52	2.88	3.0	3.1	3.2	3.3	3.4	3.4
Corporate Baa bond	3.63	3.71	3.62	3.52	3.30	3.14	3.03	3.36	3.9	4.0	4.1	4.2	4.3	4.4
State & Local bonds	2.75	2.74	2.72	2.77	2.63	2.65	2.70	2.68	2.7	2.9	3.0	3.0	3.1	3.2
Home mortgage rate	3.17	3.09	3.05	3.02	2.81	2.74	2.68	2.88	3.2	3.3	3.4	3.5	3.6	3.7

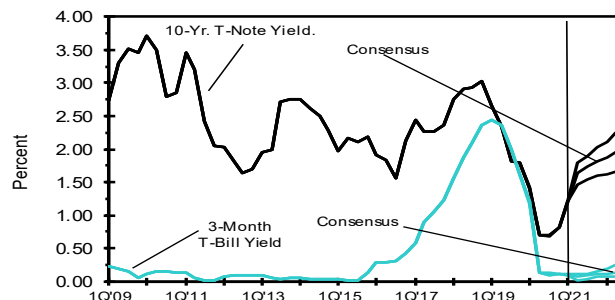
Key Assumptions	History								Consensus Forecasts-Quarterly					
	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q
	2019	2019	2019	2020	2020	2020	2020	2021**	2021	2021	2021	2022	2022	2022
Fed's AFE \$ Index	110.4	110.6	110.5	111.4	112.4	107.3	105.2	103.4	104.0	103.9	103.9	103.6	103.5	103.4
Real GDP	1.5	2.6	2.4	-5.0	-31.4	33.4	4.3	4.3	8.1	6.9	4.8	3.5	3.0	2.7
GDP Price Index	2.5	1.5	1.4	1.4	-1.8	3.5	2.0	2.2	2.1	2.1	2.0	1.9	2.1	2.2
Consumer Price Index	3.5	1.3	2.6	1.0	-3.1	4.7	2.4	2.8	2.4	2.1	2.0	2.0	2.1	2.2
PCE Price Index	2.5	1.4	1.5	1.3	-1.6	3.7	1.5	2.7	2.2	2.0	1.9	1.9	2.0	2.1

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 1Q 2021 based on historical data through the week ended March 26. **Data for 1Q 2021 for the Fed's AFE \$ Index based on data through the week ended March 26. Figures for 1Q 2021 Real GDP, GDP Chained Price Index and CPI and PCE Price Index are consensus forecasts from the March 2021 survey.

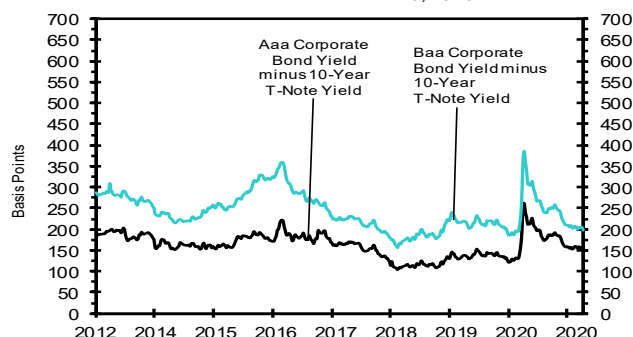
U.S. Treasury Yield Curve
Week ended March 26, 2021 & Year Ago vs.
2Q 2021 & 3Q 2022
Consensus Forecasts



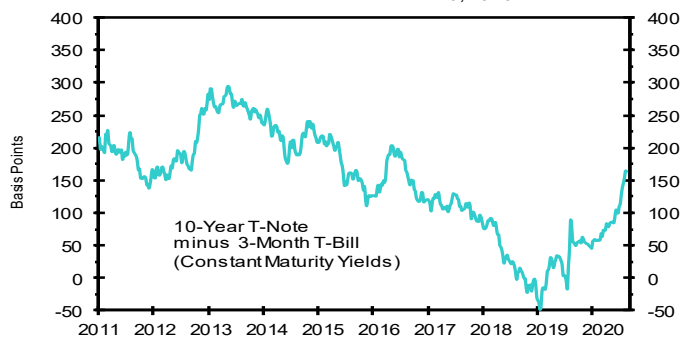
U.S. 3-Mo. T-Bills & 10-Yr. T-Note Yield
(Quarterly Average) Forecast



Corporate Bond Spreads
As of week ended March 26, 2020



U.S. Treasury Yield Curve
As of week ended March 26, 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 2022 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	
		2022	2023	2024	2025	2026	2022-2026	2027-2031
1. Federal Funds Rate	CONSENSUS	0.1	0.3	0.7	1.2	1.5	0.8	1.8
	Top 10 Average	0.2	0.7	1.4	2.0	2.4	1.3	2.5
	Bottom 10 Average	0.1	0.1	0.2	0.4	0.6	0.3	1.2
2. Prime Rate	CONSENSUS	3.3	3.5	3.9	4.3	4.6	3.9	4.9
	Top 10 Average	3.4	3.7	4.4	5.0	5.4	4.4	5.4
	Bottom 10 Average	3.2	3.2	3.3	3.5	3.8	3.4	4.5
3. LIBOR, 3-Mo.	CONSENSUS	0.4	0.6	1.1	1.5	1.8	1.1	2.2
	Top 10 Average	0.5	1.0	1.7	2.2	2.6	1.6	2.7
	Bottom 10 Average	0.3	0.3	0.5	0.8	1.1	0.6	1.6
4. Commercial Paper, 1-Mo	CONSENSUS	0.3	0.7	1.2	1.6	1.9	1.1	2.1
	Top 10 Average	0.4	0.9	1.6	2.1	2.4	1.5	2.5
	Bottom 10 Average	0.2	0.4	0.8	1.2	1.5	0.8	1.7
5. Treasury Bill Yield, 3-Mo	CONSENSUS	0.2	0.4	0.8	1.2	1.5	0.8	1.9
	Top 10 Average	0.3	0.7	1.5	2.0	2.4	1.4	2.5
	Bottom 10 Average	0.1	0.1	0.2	0.5	0.7	0.3	1.3
6. Treasury Bill Yield, 6-Mo	CONSENSUS	0.2	0.5	0.9	1.3	1.6	0.9	2.0
	Top 10 Average	0.3	0.8	1.6	2.1	2.5	1.5	2.6
	Bottom 10 Average	0.1	0.2	0.3	0.5	0.8	0.4	1.4
7. Treasury Bill Yield, 1-Yr	CONSENSUS	0.3	0.6	1.0	1.4	1.8	1.0	2.1
	Top 10 Average	0.5	1.0	1.7	2.3	2.6	1.6	2.7
	Bottom 10 Average	0.2	0.3	0.4	0.7	0.9	0.5	1.6
8. Treasury Note Yield, 2-Yr	CONSENSUS	0.4	0.8	1.2	1.6	1.9	1.2	2.3
	Top 10 Average	0.7	1.2	1.9	2.4	2.8	1.8	2.9
	Bottom 10 Average	0.2	0.3	0.6	0.8	1.1	0.6	1.7
9. Treasury Note Yield, 5-Yr	CONSENSUS	0.8	1.2	1.6	2.0	2.3	1.5	2.5
	Top 10 Average	1.1	1.6	2.3	2.8	3.1	2.1	3.1
	Bottom 10 Average	0.5	0.7	1.0	1.2	1.4	1.0	1.9
10. Treasury Note Yield, 10-Yr	CONSENSUS	1.3	1.7	2.0	2.4	2.6	2.0	2.8
	Top 10 Average	1.7	2.2	2.7	3.1	3.4	2.6	3.5
	Bottom 10 Average	0.9	1.2	1.4	1.7	1.8	1.4	2.2
11. Treasury Bond Yield, 30-Yr	CONSENSUS	2.1	2.4	2.8	3.1	3.4	2.8	3.6
	Top 10 Average	2.5	3.0	3.5	4.0	4.2	3.4	4.3
	Bottom 10 Average	1.6	1.9	2.2	2.4	2.6	2.1	2.9
12. Corporate Aaa Bond Yield	CONSENSUS	2.8	3.2	3.6	4.0	4.2	3.6	4.5
	Top 10 Average	3.1	3.6	4.2	4.6	4.9	4.1	5.0
	Bottom 10 Average	2.4	2.8	3.0	3.3	3.6	3.0	3.9
13. Corporate Baa Bond Yield	CONSENSUS	3.9	4.3	4.7	5.0	5.2	4.6	5.4
	Top 10 Average	4.3	4.7	5.2	5.6	5.9	5.1	6.0
	Bottom 10 Average	3.5	3.9	4.1	4.3	4.5	4.1	4.9
14. State & Local Bonds Yield	CONSENSUS	2.8	3.1	3.4	3.6	3.8	3.3	3.9
	Top 10 Average	3.1	3.5	3.8	4.1	4.3	3.8	4.3
	Bottom 10 Average	2.5	2.8	2.9	3.2	3.4	2.9	3.6
15. Home Mortgage Rate	CONSENSUS	3.2	3.5	3.9	4.2	4.5	3.9	4.7
	Top 10 Average	3.5	3.9	4.4	4.9	5.2	4.4	5.2
	Bottom 10 Average	2.9	3.2	3.4	3.6	3.8	3.4	4.2
A. Fed's AFE Nominal \$ Index	CONSENSUS	107.2	107.0	106.5	106.4	106.6	106.7	106.7
	Top 10 Average	109.0	108.9	108.8	108.9	109.5	109.0	110.2
	Bottom 10 Average	105.4	105.2	104.4	103.8	103.7	104.5	103.0
		Year-Over-Year, % Change					Five-Year Averages	
		2022	2023	2024	2025	2026	2022-2026	2027-2031
B. Real GDP	CONSENSUS	3.2	2.5	2.3	2.2	2.1	2.4	2.1
	Top 10 Average	3.8	3.0	2.6	2.5	2.4	2.9	2.4
	Bottom 10 Average	2.6	2.1	1.9	1.9	1.8	2.1	1.8
C. GDP Chained Price Index	CONSENSUS	1.9	2.0	2.1	2.1	2.1	2.0	2.1
	Top 10 Average	2.2	2.3	2.3	2.3	2.3	2.3	2.3
	Bottom 10 Average	1.7	1.8	1.9	1.9	1.9	1.8	1.9
D. Consumer Price Index	CONSENSUS	2.1	2.2	2.2	2.1	2.2	2.1	2.2
	Top 10 Average	2.4	2.4	2.4	2.4	2.4	2.4	2.4
	Bottom 10 Average	1.8	1.9	1.9	1.9	1.9	1.9	1.9
E. PCE Price Index	CONSENSUS	1.9	2.0	2.1	2.1	2.1	2.0	2.1
	Top 10 Average	2.2	2.2	2.2	2.2	2.3	2.2	2.4
	Bottom 10 Average	1.7	1.8	1.9	1.9	1.9	1.8	1.9

Aqua Ohio, Inc.
Derivation of Mean Equity Risk Premium Based Studies
Using Holding Period Returns and
Projected Market Appreciation of the S&P Utility Index

<u>Line No.</u>		<u>Implied Equity Risk Premium</u>
	<u>Equity Risk Premium based on S&P Utility Index Holding Period Returns (1):</u>	
1.	Historical Equity Risk Premium	4.16 %
2.	Regression of Historical Equity Risk Premium (2)	6.45
3.	Forecasted Equity Risk Premium Based on PRPM (3)	4.77
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)	<u>5.70</u>
6.	Average Equity Risk Premium (6)	<u><u>5.55 %</u></u>

Notes: (1) Based on S&P Public Utility Index monthly total returns and Moody's Public Utility Bond average monthly yields from 1928-2020. 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 - 2020 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 - March 2021.

(4) Using data from Value Line for the S&P Utilities Index, an expected return of 10.54% 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 3.86%, calculated on line 3 of page 3 of this Schedule results in an equity risk premium of 6.68%. (10.54% - 3.86% = 6.68%)

(5) Using data from Bloomberg Professional Service for the S&P Utilities Index, an expected return of 9.56% 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 3.86%, calculated on line 3 of page 3 of this Schedule results in an equity risk premium of 5.70%. (9.56% - 3.86% = 5.70%)

(6) Average of lines 1 through 5.

Aqua Ohio, 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 Eight 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	0.59	0.62	9.57 %	2.73 %	8.66 %	9.57 %	9.11 %
American Water Works Company, Inc.	0.85	1.04	0.94	9.57	2.73	11.72	11.86	11.79
Artesian Resources Corporation	0.75	0.67	0.71	9.57	2.73	9.52	10.21	9.87
California Water Service Group	0.65	0.63	0.64	9.57	2.73	8.85	9.71	9.28
Global Water Resources, Inc.	0.75	0.88	0.81	9.57	2.73	10.48	10.93	10.70
Middlesex Water Company	0.70	0.79	0.75	9.57	2.73	9.90	10.50	10.20
SJW Group	0.85	0.95	0.90	9.57	2.73	11.34	11.58	11.46
The York Water Company	0.80	0.95	0.87	9.57	2.73	11.05	11.36	11.21
Mean			0.78			10.19 %	10.72 %	10.45 %
Median			0.78			10.19 %	10.72 %	10.45 %
Average of Mean and Median			0.78			10.19	10.72	10.45 %

Notes on page 2 of this Schedule.

Aqua Ohio, 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 (1926-2020)

Arithmetic Mean Monthly Returns for Large Stocks 1926-2020:	12.20 %
Arithmetic Mean Income Returns on Long-Term Government Bonds:	5.05
MRP based on Ibbotson Historical Data:	<u>7.15 %</u>

Measure 2: Application of a Regression Analysis to Ibbotson Historical Data (1926-2020)

9.54 %

Measure 3: Application of the PRPM to Ibbotson Historical Data: (January 1926 - March 2021)

10.46 %

Value Line MRP Estimates:

Measure 4: Value Line Projected MRP (Thirteen weeks ending April 09, 2021)

Total projected return on the market 3-5 years hence*:	8.45 %
Projected Risk-Free Rate (see note 2):	2.73
MRP based on Value Line Summary & Index:	<u>5.72 %</u>

*Forecasted 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:	14.16 %
Projected Risk-Free Rate (see note 2):	2.73
MRP based on Value Line data	<u>11.43 %</u>

Measure 6: Bloomberg Projected MRP

Total return on the Market based on the S&P 500:	15.81 %
Projected Risk-Free Rate (see note 2):	2.73
MRP based on Bloomberg data	<u>13.08 %</u>

Average of Value Line, Ibbotson, and Bloomberg MRP: 9.56 %

- (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 Schedule DWD-4.) The projection of the risk-free rate is illustrated below:

Second Quarter 2021	2.40 %
Third Quarter 2021	2.50
Fourth Quarter 2021	2.50
First Quarter 2022	2.60
Second Quarter 2022	2.70
Third Quarter 2022	2.70
2022-2026	2.80
2027-2031	3.60
	<u>2.73 %</u>

- (3) Average of Column 6 and Column 7.

Sources of Information:

Value Line Summary and Index
Blue Chip Financial Forecasts, April 1, 2021 and December 1, 2020
Stocks, Bonds, Bills, and Inflation - 2021 SBBI Yearbook, John Wiley & Sons, Inc.
Bloomberg Professional Services

Aqua Ohio, 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 proxy group of twenty non-price regulated companies was that the non-price regulated companies be domestic and reported in Value Line Investment Survey (Standard Edition).

The Non-Price Regulated Proxy Group were then selected based on the unadjusted beta range of 0.43 – 0.75 and residual standard error of the regression range of 3.0062 – 3.5854 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 0.1448. 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

$$\text{Thus, } 0.1448 = \frac{3.2958}{\sqrt{518}} = \frac{3.2958}{22.7596}$$

Source of Information: Value Line, Inc., March 2021
Value Line Investment Survey (Standard Edition)

Aqua Ohio, Inc.
Proxy Group of Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Eight Water Companies

	[1]	[2]	[3]	[4]
Proxy Group of Twenty Non-Price Regulated Companies	VL Adjusted Beta	Unadjusted Beta	Residual Standard Error of the Regression	Standard Deviation of Beta
Adobe, Inc.	0.75	0.61	3.2593	0.0813
Balchem Corporation	0.70	0.54	3.5216	0.0879
Bio-Rad Labs	0.75	0.58	3.2201	0.0804
CSG Systems Int'l	0.75	0.60	3.1995	0.0798
Citrix Sys.	0.70	0.47	3.4840	0.0869
Dollar General Corporation	0.65	0.46	3.1921	0.0797
Ennis, Inc.	0.80	0.66	3.3410	0.0834
Heartland Express	0.70	0.54	3.0069	0.0750
Intel Corp.	0.80	0.67	3.5783	0.0893
Keysight Technologies	0.85	0.73	3.5026	0.0874
Lancaster Colony Corp.	0.70	0.50	3.0103	0.0751
Lilly (Eli)	0.75	0.59	3.0669	0.0765
Smucker (J.M.)	0.65	0.45	3.0463	0.0760
Schneider National, Inc.	0.80	0.65	3.4534	0.0894
Bio-Techne Corp.	0.80	0.67	3.2475	0.0810
Tyler Technologies	0.75	0.56	3.2350	0.0807
United Parcel Serv.	0.80	0.63	3.0112	0.0751
Walgreens Boots Alliance	0.85	0.71	3.4851	0.0870
Werner Enterprises	0.75	0.58	3.3887	0.0846
West Pharmaceutical Services Inc	0.85	0.70	3.1887	0.0796
Average	0.76	0.60	3.2719	0.0818
Proxy Group of Eight Water Companies	0.75	0.59	3.2958	0.0824

Source of Information:

Valueline Proprietary Database, March 2021

Aqua Ohio, Inc.
Summary of Cost of Equity Models Applied to
Proxy Group of Twenty Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Eight Water Companies

<u>Principal Methods</u>	<u>Proxy Group of Twenty Non- Price Regulated Companies</u>
Discounted Cash Flow Model (DCF) (1)	11.51 %
Risk Premium Model (RPM) (2)	10.85
Capital Asset Pricing Model (CAPM) (3)	<u>10.30</u>
	Mean <u><u>10.89</u></u> %
	Median <u><u>10.85</u></u> %
	Average of Mean and Median <u><u>10.87</u></u> %

Notes:

- (1) From page 2 of this Schedule.
- (2) From page 3 of this Schedule.
- (3) From page 6 of this Schedule.

Aqua Ohio, Inc.
DCF Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Eight Water Companies

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Twenty Non-Price Regulated Companies	Average Dividend Yield	Value Line Projected Five Year Growth in EPS	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 Rate in EPS	Adjusted Dividend Yield	Indicated Common Equity Cost Rate (1)
Adobe, Inc.	-	14.00 %	19.00 %	17.80 %	17.27 %	17.02 %	-	NA %
Balchem Corporation	0.48	13.50	NA	24.00	7.93	15.14	0.52	15.66
Bio-Rad Labs	-	11.50	NA	17.80	28.75	19.35	-	NA
CSG Systems Int'l	2.17	10.00	NA	NMF	NA	10.00	2.28	12.28
Citrix Sys.	1.10	9.00	5.30	10.70	9.60	8.65	1.15	9.80
Dollar General Corporation	0.85	13.00	10.80	13.57	10.57	11.99	0.90	12.89
Ennis, Inc.	4.52	3.00	NA	5.00	NA	4.00	4.61	8.61
Heartland Express	0.42	10.00	NA	12.50	NA	11.25	0.44	11.69
Intel Corp.	2.31	7.00	7.50	5.43	5.24	6.29	2.38	8.67
Keysight Technologies	-	17.00	10.40	12.41	10.41	12.56	-	NA
Lancaster Colony Corp.	1.67	6.50	NA	3.00	NA	4.75	1.71	6.46
Lilly (Eli)	1.73	9.00	12.20	11.60	NA	10.93	1.82	12.75
Smucker (J.M.)	3.04	2.50	1.60	NMF	1.65	1.92	3.07	4.99
Schneider National, Inc.	1.19	2.50	14.00	15.25	14.48	11.56	1.26	12.82
Bio-Techne Corp.	0.35	12.50	15.00	15.00	19.03	15.38	0.38	15.76
Tyler Technologies	-	10.50	15.00	10.00	20.15	13.91	-	NA
United Parcel Serv.	2.52	8.00	8.70	10.06	8.04	8.70	2.63	11.33
Walgreens Boots Alliance	3.74	6.00	6.80	3.63	4.74	5.29	3.84	9.13
Werner Enterprises	0.91	9.50	10.00	11.34	9.52	10.09	0.96	11.05
West Pharmaceutical Services Inc	0.24	17.00	22.60	22.60	17.21	19.85	0.26	20.11
							Mean	11.50 %
							Median	11.51 %
							Average of Mean and Median	11.51 %

NA= Not Available

NMF= Not Meaningful Figure

(1) The application of the DCF model to the domestic, non-price regulated 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 April 5, 2021. 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 04/05/2021
www.yahoo.com Downloaded on 04/05/2021
Bloomberg Professional Services

Aqua Ohio, Inc.
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

<u>Line No.</u>		<u>Proxy Group of Twenty Non-Price Regulated Companies</u>
1.	Prospective Yield on Baa2 Rated Corporate Bonds (1)	4.36 %
2.	Adjustment to Reflect Proxy Group Bond Rating (2)	<u>(0.13)</u>
3.	Prospective Bond Yield Applicable to the Non-Price Regulated Proxy Group	4.23
4.	Equity Risk Premium (3)	<u>6.62</u>
5.	Risk Premium Derived Common Equity Cost Rate	<u><u>10.85 %</u></u>

Notes: (1) Average forecast of Baa2 corporate bonds based upon the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts dated April 1, 2021 and December 1, 2020 (see pages 10 and 11 of Schedule DWD-4). The estimates are detailed below.

Second Quarter 2021	3.90 %
Third Quarter 2021	4.00
Fourth Quarter 2021	4.10
First Quarter 2022	4.20
Second Quarter 2022	4.30
Third Quarter 2022	4.40
2022-2026	4.60
2027-2031	<u>5.40</u>
Average	<u><u>4.36 %</u></u>

(2) To reflect the Baa1 average rating of the Non-Price Regulated Proxy Group, the prospective 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
Mar-2021	3.37 %		3.74 %		0.37 %
Feb-2021	3.03		3.42		0.39
Jan-2021	2.84		3.24		<u>0.40</u>
	Average yield spread				<u><u>0.39 %</u></u>
			1/3 of spread		<u><u>0.13 %</u></u>

(3) From page 5 of this Schedule.

Aqua Ohio, Inc.
Comparison of Long-Term Issuer Ratings for the
Proxy Group of Twenty Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Eight Water Companies

Proxy Group of Twenty Non- Price Regulated Companies	Moody's Long-Term Issuer Rating April 2021		Standard & Poor's Long-Term Issuer Rating April 2021	
	Long-Term Issuer Rating	Numerical Weighting (1)	Long-Term Issuer Rating	Numerical Weighting (1)
Adobe, Inc.	A2	6.0	A	6.0
Balchem Corporation	NA	--	NA	--
Bio-Rad Labs	Baa2	9.0	BBB	9.0
CSG Systems Int'l	NA	--	BB+	11.0
Citrix Sys.	Baa3	10.0	BBB	9.0
Dollar General Corporation	Baa2	9.0	BBB	9.0
Ennis, Inc.	NA	--	NA	--
Heartland Express	NA	--	NA	--
Intel Corp.	A1	5.0	A+	5.0
Keysight Technologies	Baa2	9.0	BBB	9.0
Lancaster Colony Corp.	NA	--	NA	--
Lilly (Eli)	A2	6.0	A+	5.0
Smucker (J.M.)	Baa2	9.0	BBB	9.0
Schneider National, Inc.	NA	--	NA	--
Bio-Techne Corp.	NA	--	NA	--
Tyler Technologies	NA	--	NA	--
United Parcel Serv.	A2	6.0	A-	7.0
Walgreens Boots Alliance	Baa2	9.0	BBB	9.0
Werner Enterprises	NA	--	NA	--
West Pharmaceutical Services Inc	NA	--	NA	--
Average	<u>Baa1</u>	<u>7.8</u>	<u>BBB+</u>	<u>8.0</u>

Notes:

(1) From page 6 of Schedule DWD-4.

Source of Information:

Bloomberg Professional Services

Aqua Ohio, Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for
Proxy Group of Twenty Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Eight Water Companies

<u>Line No.</u>	<u>Equity Risk Premium Measure</u>	<u>Proxy Group of Twenty Non-Price Regulated Companies</u>
<u>Ibbotson-Based Equity Risk Premiums:</u>		
1.	Ibbotson Equity Risk Premium (1)	5.92 %
2.	Regression on Ibbotson Risk Premium Data (2)	8.83
3.	Ibbotson Equity Risk Premium based on PRPM (3)	9.40
4.	Equity Risk Premium Based on <u>Value Line</u> Summary and Index (4)	5.01
5.	Equity Risk Premium Based on <u>Value Line</u> S&P 500 Companies (5)	10.72
6.	Equity Risk Premium Based on Bloomberg S&P 500 Companies (6)	<u>12.37</u>
7.	Conclusion of Equity Risk Premium	8.71 %
8.	Adjusted Beta (7)	<u>0.76</u>
9.	Forecasted Equity Risk Premium	<u><u>6.62 %</u></u>

Notes:

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

Sources of Information:

Stocks, Bonds, Bills, and Inflation - 2021 SBBI Yearbook, John Wiley & Sons, Inc.
Value Line Summary and Index
Blue Chip Financial Forecasts, April 1, 2021 and December 1, 2020
Bloomberg Professional Services

Aqua Ohio, Inc.
Traditional CAPM and ECAPM Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Eight Water Companies

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Twenty 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.	0.75	0.87	0.81	9.57 %	2.73 %	10.48 %	10.93 %	10.70 %
Balchem Corporation	0.70	0.73	0.72	9.57	2.73	9.62	10.29	9.95
Bio-Rad Labs	0.75	0.70	0.72	9.57	2.73	9.62	10.29	9.95
CSG Systems Int'l	0.75	0.91	0.83	9.57	2.73	10.67	11.08	10.87
Citrix Sys.	0.70	0.61	0.66	9.57	2.73	9.04	9.86	9.45
Dollar General Corporation	0.70	0.67	0.69	9.57	2.73	9.33	10.07	9.70
Ennis, Inc.	0.80	0.82	0.81	9.57	2.73	10.48	10.93	10.70
Heartland Express	0.70	0.76	0.73	9.57	2.73	9.71	10.36	10.04
Intel Corp.	0.80	0.96	0.88	9.57	2.73	11.15	11.43	11.29
Keysight Technologies	0.85	0.79	0.82	9.57	2.73	10.57	11.00	10.79
Lancaster Colony Corp.	0.70	0.71	0.71	9.57	2.73	9.52	10.21	9.87
Lilly (Eli)	0.75	0.73	0.74	9.57	2.73	9.81	10.43	10.12
Smucker (J.M.)	0.70	0.50	0.60	9.57	2.73	8.47	9.43	8.95
Schneider National, Inc.	0.80	0.72	0.76	9.57	2.73	10.00	10.57	10.29
Bio-Techne Corp.	0.80	0.92	0.86	9.57	2.73	10.96	11.29	11.12
Tyler Technologies	0.75	0.75	0.75	9.57	2.73	9.90	10.50	10.20
United Parcel Serv.	0.80	0.85	0.83	9.57	2.73	10.67	11.08	10.87
Walgreens Boots Alliance	0.75	0.80	0.78	9.57	2.73	10.19	10.72	10.45
Werner Enterprises	0.75	0.78	0.76	9.57	2.73	10.00	10.57	10.29
West Pharmaceutical Services Inc	0.85	0.76	0.80	9.57	2.73	10.38	10.86	10.62
Mean			0.76			10.11 %	10.66 %	10.31 %
Median			0.76			10.00 %	10.57 %	10.29 %
Average of Mean and Median			0.76			10.06 %	10.62 %	10.30 %

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

Notes:

- (1) From page 2 of this Schedule.
- (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 0.92% in Column [4], Line No. 2 is derived as follows $0.92\% = 2.29\% - 1.37\%$.

Aqua Ohio, Inc.
Market Capitalization of Aqua Ohio, Inc. and the
Proxy Group of Eight Water Companies

Company	Exchange	[1] Common Stock Shares Outstanding at Fiscal Year End 2020 (millions)	[2] Book Value per Share at Fiscal Year End 2020 (1)	[3] Total Common Equity at Fiscal Year End 2020 (millions)	[4] Closing Stock Market Price on April 05, 2021	[5] Market-to-Book Ratio on April 05, 2021 (2)	[6] Market Capitalization on April 05, 2021 (3) (millions)
Aqua Ohio, Inc.		NA	NA	\$ 111,210 (4)	NA		
Based upon Proxy Group of Eight Water Companies					402.7	(5)	\$ 447,841 (6)
Proxy Group of Eight Water Companies							
American States Water Company	NYSE	36,889	\$ 17,395	\$ 641,673	\$ 76,250	438.3 %	\$ 2,812,794
American Water Works Company, Inc.	NYSE	181,298	35,599	6,454,000	152,030	427.1	27,562,810
Artesian Resources Corporation	NASDAQ	9,357	18,107	169,426	40,290	222.5	376,994
California Water Service Group	NYSE	50,334	18,305	921,344	57,170	312.3	2,877,575
Global Water Resources, Inc.	NASDAQ	22,588	1,425	32,188	16,930	NMF	382,411
Middlesex Water Company	NASDAQ	17,473	19,814	346,208	79,790	402.7	1,394,171
SJW Group	NYSE	28,557	32,117	917,160	64,000	199.3	1,827,623
The York Water Company	NASDAQ	13,061	10,968	143,252	49,950	455.4	652,388
Median		25,572	\$ 18,206	\$ 493,941	\$ 60,585	402.7 %	\$ 1,610,897

NA= Not Available

- Notes: (1) Column 3 / Column 1.
(2) Column 4 / Column 2.
(3) Column 1 * Column 4.
(4) Combined book common equity from Company 2020 annual report filed with the Commission.
(5) The market-to-book ratio of Aqua Ohio, Inc. on April 05, 2021 is assumed to be equal to the market-to-book ratio of Proxy Group of Eight Water Companies on April 05, 2021 as appropriate.
(6) Column [3] multiplied by Column [5].

Aqua Ohio, Inc.
Derivation of the Flotation Cost Adjustment to the Cost of Common Equity

Equity Issuances and Flotation Costs of the Parent Since 2019

		[Column 1]	[Column 2]	[Column 3]	[Column 4]	[Column 5]
Date	Transaction	Shares Issued	Gross Equity Issue before Costs	Total Flotation Costs	Total Net Proceeds (1)	Flotation Cost Percentage (2)
03/16/20	Equity Offering	21,661,095	\$ 749,907,000	\$ 23,772,000	\$ 726,135,000	3.17%
04/23/19	Equity Offering	2,335,654	\$ 80,860,341	\$ 2,763,842	\$ 78,096,500	3.42%
04/23/19	Equity Offering	32,495,667	\$ 1,324,401,000	\$ 30,651,000	\$ 1,293,750,000	2.31%
			<u>\$ 2,155,168,341</u>	<u>\$ 57,186,842</u>	<u>\$ 2,097,981,500</u>	<u>2.65%</u>
<u>Flotation Cost Adjustment</u>						
	[Column 6]	[Column 7]	[Column 8]	[Column 9]	[Column 10]	[Column 11]
	Average Dividend Yield (3)	Average Projected EPS Growth Rate (3)	Adjusted Dividend Yield	Average DCF Cost Rate Unadjusted for Flotation (3)	DCF Cost Rate Adjusted for Flotation (4)	Flotation Cost Adjustment (5)
Proxy Group of Eight Water Companies	<u>1.80 %</u>	<u>7.25 %</u>	<u>1.87 %</u>	<u>9.12 %</u>	<u>9.17 %</u>	<u>0.05 %</u>

Notes:

- (1) Column 2 - Column 3.
- (2) (Column 2 - Column 4) / Column 2.
- (3) From page 1 of Schedule DWD-3.
- (4) Adjustment for flotation costs based on adjusting the average constant growth DCF 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.

- (5) Column 10 - Column 9.

Source of Information: Company SEC filed documents

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Summary: Testimony of Dylan W. D'Ascendis, CRRA, CVA electronically filed by Ms. Nicole R Woods on behalf of Aqua Ohio, Inc.