

BEFORE THE
NEW JERSEY BOARD OF PUBLIC UTILITIES

PREPARED DIRECT TESTIMONY
OF
DYLAN W. D'ASCENDIS, CRRA, CVA
DIRECTOR
SCOTTMADDEN, INC.

ON BEHALF OF
MIDDLESEX WATER COMPANY

MAY 2021

TABLE OF CONTENTS

	Page
I. INTRODUCTION.....	1
A. WITNESS IDENTIFICATION.....	1
B. BACKGROUND AND QUALIFICATIONS	1
II. PURPOSE OF TESTIMONY.....	2
III. SUMMARY.....	3
IV. GENERAL PRINCIPLES.....	5
A. BUSINESS RISK.....	6
B. FINANCIAL RISK	9
V. CAPITAL STRUCTURE.....	10
VI. LONG-TERM DEBT COST RATE.....	12
VII. PREFERRED EQUITY COST RATE	14
VIII. MIDDLESEX WATER COMPANY AND THE UTILITY PROXY GROUP	15
IX. COMMON EQUITY COST RATE MODELS	17
A. DISCOUNTED CASH FLOW MODEL.....	18
B. THE RISK PREMIUM MODEL	23
1. Predictive Risk Premium Model.....	24
2. Total Market Approach Risk Premium Model	25
C. THE CAPITAL ASSET PRICING MODEL.....	35
D. COMMON EQUITY COST RATES FOR A PROXY GROUP OF DOMESTIC, NON-PRICE REGULATED COMPANIES BASED ON THE DCF, RPM, AND CAPM.....	42
X. CONCLUSION OF COMMON EQUITY COST RATE BEFORE ADJUSTMENT	45
XI. ADJUSTMENTS TO THE COMMON EQUITY COST RATE.....	46
A. SIZE ADJUSTMENT	46
B. FLOTATION COST ADJUSTMENT	51
XII. CONCLUSION	54

1 I. INTRODUCTION

2 A. WITNESS IDENTIFICATION

3 Q. Please state your name and business address.

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

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

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

8 B. BACKGROUND AND QUALIFICATIONS

9 Q. Please summarize your professional experience and educational
10 background.

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

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

22 I am a member of the Society of Utility and Regulatory Financial Analysts
23 ("SURFA"). In 2011, I was awarded the professional designation "Certified Rate

1 of Return Analyst" by SURFA, which is based on education, experience, and the
2 successful completion of a comprehensive written examination.

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

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

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

12 **II. PURPOSE OF TESTIMONY**

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

14 A. The purpose of my direct testimony is to present evidence on behalf of Middlesex
15 Water Company ("Middlesex" or the "Company") about the appropriate capital
16 structure and corresponding cost rates the Company should be given the
17 opportunity to earn on its jurisdictional rate base.

18 **Q. Have you prepared an Exhibit in support of your recommendation?**

19 A. Yes. I have prepared PT-7, which consists of Schedules DWD-1 through DWD-
20 12.

21 **Q. What is your recommended cost of capital for Middlesex Water Company?**

22 A. I recommend the New Jersey Board of Public Utilities ("NJ BPU" or the "Board")
23 authorize the Company the opportunity to earn an overall rate of return of 6.97%
24 based on a test year ending September 30, 2021. The ratemaking capital structure

1 consists of 46.00% long-term debt at an embedded cost rate of 2.68%, 0.16%
2 preferred equity at a 5.01% cost rate, and 53.84% common equity at my
3 recommended common equity cost rate of 10.65%. The overall rate of return is
4 summarized on page 1 of Schedule DWD-1 and in Table 1 below:

5 **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	46.00%	2.68%	1.23%
Preferred Equity	0.16%	5.01%	0.01%
Common Equity	<u>53.84%</u>	10.65%	<u>5.73%</u>
Total	<u>100.00%</u>		<u>6.97%</u>

6 **III. SUMMARY**

7 **Q. Please summarize your recommended common equity cost rate.**

8 A. My recommended common equity cost rate of 10.65% is summarized on page 2
9 of Schedule DWD-1. I have assessed the market-based common equity cost rates
10 of companies of relatively similar, but not necessarily identical, risk to Middlesex.
11 Using companies of relatively comparable risk as proxies is consistent with the
12 principles of fair rate of return established in the *Hope*¹ and *Bluefield*² cases. No
13 proxy group can be identical in risk to any single company, so there must be an
14 evaluation of relative risk between the company and the proxy group to see if it is
15 appropriate to make adjustments to the proxy group's indicated rate of return.

16 My recommendation results from the application of several cost of common
17 equity models, specifically the Discounted Cash Flow ("DCF") model, the Risk
18 Premium Model ("RPM"), and the Capital Asset Pricing Model ("CAPM"), to the

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

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

1 market data of a proxy group of eight water companies (“Utility Proxy Group”)
 2 whose selection criteria will be discussed below. In addition, I also applied the
 3 DCF, RPM, and CAPM to a proxy group of domestic, non-price regulated
 4 companies comparable in total risk to the Utility Proxy Group (“Non-Price
 5 Regulated Proxy Group”).

6 The results derived from each are as follows:

7 **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>10.93%</u>
Indicated Range of Common Equity Cost Rates Before Adjustments for Company-Specific Risk	10.28% - 10.69%
Business Risk Adjustment	0.05%
Flotation Cost Adjustment	0.09%
Indicated Range of Common Equity Cost Rates after Adjustment	<u>10.42% – 10.83%</u>
Recommended Cost of Common Equity	<u>10.65%</u>

8
 9 After analyzing the indicated common equity cost rates derived through
 10 these models, the indicated range of common equity cost rates produced by the
 11 models are between 10.28% and 10.69%, which are applicable to the Utility Proxy
 12 Group. In view of these model results, it is clear that the DCF model is a low side
 13 outlier when compared to the results of the other models.

14 In order to obtain a fair comparison, the indicated range of common equity
 15 cost rates needed to be adjusted upward by 0.05% and 0.09% to reflect

1 Middlesex's smaller relative size and flotation costs, respectively.³ These
2 adjustments result in a Company-specific range of common equity cost rates
3 between 10.42% and 10.83%. From this range of results, I recommend the
4 Commission consider a common equity cost rate of 10.65% for use in setting rates
5 for the Company.

6 **IV. GENERAL PRINCIPLES**

7 **Q. What general principles have you considered in arriving at your
8 recommended common equity cost rate of 10.65%?**

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

³ Adjustments to the Utility Proxy Group's indicated ROE for Company-specific factors will be discussed in Section XI, below.

1 accepted common equity cost rate models also adds reliability and accuracy when
2 arriving at a recommended common equity cost rate.

3 **A. BUSINESS RISK**

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

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

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

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

17 A. Water and wastewater utilities have an ever-increasing responsibility to be
18 stewards of the environment from which water supplies are drawn in order to
19 preserve and protect essential natural resources of the United States. This
20 increased environmental stewardship is a direct result of compliance with the
21 Federal Safe Drinking Water Act ("SDWA"), as well as a response to continuous
22 monitoring by the U.S. Environmental Protection Agency and state and local
23 governments, of the water supply for potential contaminants and their resultant
24 regulations. The recently promulgated revision to the Lead & Copper Rule ("LCR")

1 under the SDWA is extensive, and is the first revision since the LCR was initially
2 promulgated in 1991. This revision includes a dramatic increase in the
3 responsibilities of both water utilities and property owners for the removal of lead
4 service lines, as well as other requirements, for assets owned by both the utility or
5 others. The scope and cost of the ever-changing processes required to maintain
6 regulatory compliance with the revised LCR are significant and result in additional
7 operational risk to water utilities. This, combined with the aging infrastructure,
8 necessitate additional capital investment in the distribution and treatment of water,
9 exacerbating the pressure on free cash flows arising from increased capital
10 expenditures for infrastructure repair and replacement. The significant amount of
11 required additional capital investment and, hence, even higher capital intensity, is
12 a major risk factor for the water and wastewater utility industry.

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

15 Following years and years of underinvestment, the nation
16 found itself with an aging water infrastructure that is in poor
17 condition. Many pipelines were installed 50 to 75 years ago.
18 In badly need of replacement, water utilities have been
19 spending heavily to replace old assets. This high level of
20 expenditures will have to be maintained for decades.

21 * * *

22 As we have highlighted in the past, one of the most significant
23 factors in determining the profitability of a utility is the
24 regulatory climate where it operates. Fortunately for the
25 Water Utility Industry, state authorities and water utilities both
26 realize what needs to be done, and are working constructively
27 to address the issues. Regulators agree that the outlays
28 being made to upgrade the country’s infrastructure are
29 required, so they are allowing fair return on investment to be
30 made. Having a positive relationship may seem reasonable,

1 but this is not the case for gas and electric utilities. Conflicts
2 are not unusual.⁴

3 The water and wastewater industry also experiences low depreciation rates.

4 Depreciation rates are one of the principal sources of internal cash flows for all
5 utilities (through a utility's depreciation expense) and are a vital component of a
6 company's ability to fund ongoing replacements and repairs of water and
7 wastewater systems. Water / wastewater utility assets tend to have longer lives
8 than most other utilities, and therefore have longer capital recovery periods. As
9 such, they face greater risk due to inflation, which results in a higher replacement
10 cost per dollar of net plant.

11 Substantial capital expenditures, as noted by *Value Line*, will require similar
12 substantial financing. The three sources of financing typically used are debt, equity
13 (common and preferred), and internal cash flow. All three are intricately linked to
14 the opportunity to earn a sufficient rate of return as well as the ability to achieve
15 that return. Consistent with *Hope* and *Bluefield*, the return must be sufficient to
16 maintain credit quality as well as enable the attraction of necessary new capital,
17 be it debt or equity capital. The ability to raise debt or equity capital at reasonable
18 rates inevitably require either a greater reliance on its internal generation of free
19 cash flow,⁵ or a restriction of the utility's needed investments. Either option are
20 directly linked to earning a sufficient rate of return. The level of free cash flow
21 represents a utility's ability to meet the needs of its debt and equity holders as well
22 as to fund its operations. If free cash flow is inadequate, it will be measurably more
23 difficult for the utility to attract the needed capital for new infrastructure investment

⁴ *Value Line Investment Survey*, April 9, 2021.

⁵ Free Cash Flow = Operating Cash Flow (Funds From Operations) minus Capital Expenditures.

1 necessary to ensure continued reliable quality service to its customers.

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

8 **B. FINANCIAL RISK**

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

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

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

19 A. Yes, similar bond ratings/issuer credit ratings reflect, and are representative of,
20 similar combined business and financial risks (*i.e.*, total risk) faced by bond
21 investors.⁶ Although specific business or financial risks may differ between

⁶ 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.

1 companies, the same bond/credit rating indicates that the combined risks are
2 roughly similar, albeit not necessarily equal, as the purpose of the bond/credit
3 rating process is to assess credit quality or credit risk, and not common equity risk.

4 **Q. Do rating agencies reflect company size in their bond ratings?**

5 A. No. Neither S&P Global Ratings (“S&P”) nor Moody’s Investor’s Service
6 (“Moody’s”) have specific minimum company size requirements for any given rating
7 level, but the reality is that smaller companies have smaller cushions to deal with
8 unforeseen and substantial events. This means, all else equal, a relative size
9 analysis needs to be conducted for companies with similar bond ratings.

10 **V. CAPITAL STRUCTURE**

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

13 A. I recommend the use of a hypothetical capital structure consisting of 46.00% long-
14 term debt, and 54.00% total equity, consisting of 0.16% preferred equity, and
15 53.84% common equity, as shown on page 1 of Schedule DWD-1.

16 **Q. Why are you recommending a hypothetical capital structure containing
17 54.00% total equity?**

18 A. Middlesex’s estimated capital structure ratios at test-year end September 30,
19 2021, adjusted to reflect the elimination of the cumulative preferred stock issued
20 to acquire Tidewater Utilities, Inc. and Public Water Supply Co., Inc., are expected
21 to consist of 39.31% long-term debt and 60.69% total equity, consisting of 0.18%
22 preferred stock and 60.51% common equity, as derived on page 1 of Schedule
23 DWD-2. Although the estimated capital structure and related ratios represent the
24 capital structure which finances the Middlesex stand-alone New Jersey

1 jurisdictional rate base, a total equity ratio of 60.69% is inappropriate at this time
2 for ratemaking purposes because it contains a higher than necessary common
3 equity ratio, which results in, all else equal, a higher revenue cost of capital which
4 must be paid for by ratepayers.

5 **Q. How did you determine the relative proportion of preferred stock and
6 common equity?**

7 A. To determine the proper amounts of preferred stock and common equity to reflect
8 in the capital structure, I reviewed Middlesex's mix of preferred stock and common
9 equity. As derived on page 1 of Schedule DWD-2 and summarized in Note 2 on
10 page 1 of Schedule DWD-1, Middlesex's total equity ratio, after eliminating the
11 preferred equity used to acquire Tidewater Utilities, Inc. and Public Water Supply,
12 estimated at September 30, 2021 is 60.69%. Middlesex's preferred stock ratio of
13 0.18% relative to its total equity ratio of 60.69% is 0.30%, as derived in Note 2 of
14 Schedule DWD-1. Applying 0.30% to the hypothetical total equity ratio of 54.00%
15 results in a hypothetical preferred stock ratio of 0.16%. In turn, 54.00% total equity
16 less a preferred stock ratio of 0.16% results in a hypothetical 53.84% common
17 equity ratio. In my opinion, these ratios represent an appropriate balance between
18 preferred stock and common equity.

19 **Q. How does your proposed hypothetical total equity ratio of 54.00% for
20 Middlesex compare with the total equity ratios maintained by the companies
21 in your Utility Proxy Group?**

22 A. My proposed hypothetical ratemaking total equity ratio of 54.00% for Middlesex is
23 reasonable to use and is generally consistent with the range of total equity ratios
24 maintained, on average, by the companies in the Utility Proxy Group on which I

1 base my recommended common equity cost rate. Based on the data shown on
2 page 3 of Schedule DWD-5, in 2020, the median total equity ratio is approximately
3 54.00%.

4 In my opinion, a hypothetical capital structure consisting of 46.00% long-
5 term debt and 54.00% total equity is appropriate for ratemaking purposes for
6 Middlesex in the current proceeding. It is appropriate because it is generally
7 consistent with the capital structure ratios (based on total permanent capital)
8 maintained by the Utility Proxy Group on whose market data I base my
9 recommended common equity cost rate.

10 **VI. LONG-TERM DEBT COST RATE**

11 **Q. What cost rate for long-term debt is most appropriate for use in a cost of
12 capital determination for Middlesex?**

13 A. A long-term debt cost rate of 2.68%, estimated at test-year end September 30,
14 2021, is the most appropriate and is derived from Middlesex's long-term debt,
15 estimated to be outstanding at September 30, 2021. On page 1 of Schedule DWD-
16 3, I calculate the actual embedded cost rate at February 28, 2021 to be 2.68% for
17 Middlesex. The long-term debt cost rate is determined by employing a cost rate
18 to maturity method, *i.e.*, yield to maturity, using as inputs the stated coupon rate
19 and net proceeds ratio, which reflects the necessary costs of issuance, early
20 redemption premiums, as well as any interest earned on the proceeds of applicable
21 series held in trust, but not fully expended, and term in years. If such costs are not
22 permitted to be recovered in the effective long-term debt cost rate, recovery would
23 be at the expense of common shareholders and the cost rate for common equity
24 capital would be higher than otherwise. Once the cost rate to maturity, *i.e.*,

1 effective cost rate, is determined for each issue, a composite cost rate can be
2 calculated based on the total annualized long-term debt cost and total long-term
3 debt outstanding. Thus, Middlesex's embedded long-term debt cost rate at
4 September 30, 2021 is expected to be 2.68%, as shown on the bottom of page 1
5 of Schedule DWD-3. This method of calculating the embedded cost rate has not
6 been challenged by any party in the last several Middlesex base rate cases.

7 **Q. Please describe your projection of the debt cost rates attributable to the 2018**
8 **RENEW Series, the W. Transmission Main Series, and the Probable Private**
9 **Placement / NJEDA Loan.**

10 A. The 2018 RENEW Series and the W. Transmission Main Series are funded by the
11 New Jersey State Revolving Fund ("SRF"). Under the New Jersey SRF program,
12 borrowers first enter into a short-term construction loan with the New Jersey
13 Environmental Infrastructure Trust ("NJEIT").⁷ When construction on the qualifying
14 project is substantially complete, the NJEIT will coordinate the conversion of the
15 construction loan into a long-term securitized loan with a portion (usually 75%) of
16 the initial principal balance at a stated interest rate of 0.00%, and the remaining
17 portion of the initial principal balance at a market interest rate at the time of closing,
18 by using the credit rating of the NJEIT.

19 The current terms of the long-term loans offered through NJEIT are up to
20 30 years and the NJEIT has historically scheduled its long-term financings in May
21 and November. The 2018 RENEW Series and the W. Transmission Main Series
22 are scheduled to be part of the NJEIT's long-term program in May 2021. Without

⁷ The NJEIT is also known as the New Jersey Infrastructure Bank.

1 actual amortization schedules and interest rates for these loans at the present
2 time, based on discussions with the Company, I applied a weighted average cost
3 rate of 1.25% for the 2018 RENEW Series, as well as the W. Transmission Main
4 Series.

5 Regarding the Probable Private Placement NJEDA Loan, the Company
6 expects to have all data regarding the refunding process by May 1, 2021. Since
7 this refunding issue is not an NJEIT program, I assume that the expected interest
8 rate for this loan will be the average A2-rated utility bond yield for March 2021, or
9 3.44%. Once the terms for these series are confirmed, I will update my
10 recommended long-term debt cost rates using the actual data when they become
11 available.

12 **VII. PREFERRED EQUITY COST RATE**

13 **Q. What cost rate for preferred stock is most appropriate for use in a cost of
14 capital determination?**

15 A. A preferred stock cost rate of 5.01% expected at test-year end September 30, 2021
16 on an estimated basis is the most appropriate, for reasons previously explained. I
17 also calculate the actual embedded cost rate at February 28, 2021 to be 5.01% for
18 Middlesex. These cost rates are summarized on page 1 of Schedule DWD-4. In
19 developing the embedded cost rates to maturity by issue, I have taken into account
20 the impact of the necessary original costs of issuance. As discussed previously
21 relative to debt cost, if such costs are not permitted to be recovered, recovery
22 would be at the expense of the common shareholders and the cost rate for
23 common equity capital would then be higher than otherwise. Historically, there has

1 been little issue with including these costs in the effective preferred stock cost rate.

2 The details of the cost rates to maturity by issue are shown on page 2.

3 **Q. What is your conclusion regarding capital structure and the embedded cost**
4 **rates of long-term debt and preferred equity?**

5 A. It is my recommendation that the Board adopt a hypothetical capital structure
6 including, 46.00% long-term debt at an embedded cost rate of 2.68%, and 0.16%
7 preferred equity at an embedded cost rate of 5.01%.

8 **VIII. MIDDLESEX WATER COMPANY AND THE UTILITY PROXY GROUP**

9 **Q. Are you familiar with the operations of Middlesex?**

10 A. Yes. Middlesex's operations serve approximately 61,000 customers primarily in
11 eastern Middlesex County, as well as wholesale water to the City of Rahway,
12 Townships of Edison and Marlboro, the Borough of Highland Park, and the Old
13 Bridge Municipal Utilities Authority.⁸ Middlesex's New Jersey operations are not a
14 separate publicly-traded entity. Middlesex's New Jersey operations are not
15 independently rated by either Moody's or S&P.

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

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

19 (i) They are included in the Water Utility Group of *Value Line's Standard*
20 *Edition or Small & Midcap Edition* (April 9, 2021);

21 (ii) They have 70% or greater of 2020 total operating income and 70% or
22 greater of 2020 total assets attributable to regulated water operations;

⁸ Middlesex Water Company, SEC Form 10-K for the fiscal year ended December 31, 2020, at 2.

- 1 (iii) At the time of preparation of this testimony, they had not publicly announced
2 that they were involved in any major merger or acquisition activity (*i.e.*, one
3 publicly-traded utility merging with or acquiring another);
- 4 (iv) They have not cut or omitted their common dividends during the five years
5 ending 2020 or through the time of the preparation of this testimony;
- 6 (v) They have *Value Line* and Bloomberg Professional Services (“Bloomberg”)
7 adjusted betas;
- 8 (vi) They have a positive *Value Line* five-year dividends per share (“DPS”)
9 growth rate projection; and
- 10 (vii) They have *Value Line*, Zacks, Yahoo! Finance, or Bloomberg consensus
11 five-year earnings per share (“EPS”) growth rate projections.

12 The following eight companies met these criteria: American States Water
13 Co., American Water Works Co., Inc., Artesian Resources Corp., California Water
14 Service Group, Global Water Resources, Inc., Middlesex Water Co., SJW Group.,
15 and York Water Co.

16 **Q. Please describe Schedule DWD-5, page 1.**

17 A. Page 1 of Schedule DWD-5 contains comparative capitalization and financial
18 statistics for the Utility Proxy Group identified above for the years 2016 to 2020.
19 During the five-year period ending 2020, the historically achieved average
20 earnings rate on book common equity for the group averaged 10.34%. The
21 average common equity ratio based on total capital (including short-term debt) was
22 49.39%, and the average dividend payout ratio was 56.10%.

23 Total debt to earnings before interest, taxes, depreciation, and amortization
24 (“EBITDA”) for the years 2016 to 2020 ranges between 3.73 and 5.32, with an

1 average of 4.44. Funds from operations to total debt range from 12.38% to
2 24.84%, with an average of 19.01%.

3 **Q. Have you reviewed financial data for Middlesex?**

4 A. Yes. As shown on page 2 of Schedule DWD-5, during the five years ending 2020,
5 Middlesex's achieved average earnings rate on book common equity was 6.63%,
6 ranging from 5.29% to 8.29%. Total debt to EBITDA has averaged 5.57x for the
7 five years ended 2019, ranging from 3.29x to 8.13x.

8 **IX. COMMON EQUITY COST RATE MODELS**

9 **Q. Is it important that cost of common equity models be market based?**

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

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

17 A. Yes. The DCF model is market-based because market prices are used in
18 developing the dividend yield component of the model. The RPM is market-based
19 because the bond ratings and expected bond yields used in the application of the
20 RPM reflect the market's assessment of bond/credit risk. In addition, the use of
21 beta coefficients (β) to determine the equity risk premium reflects the market's
22 assessment of market/systematic risk, since beta coefficients are derived from
23 regression analyses of market prices. The Predictive Risk Premium Model
24 ("PRPM") uses monthly market returns in addition to expectations of the risk-free

1 rate. The CAPM is market-based for many of the same reasons that the RPM is
2 market-based (*i.e.*, the use of expected bond yields and beta coefficients).
3 Selection of the comparable risk non-price regulated companies is market-based
4 because it is based on statistics which result from regression analyses of market
5 prices and reflect the market's assessment of total risk.

6 **A. DISCOUNTED CASH FLOW MODEL**

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

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

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

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

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

20 A. The unadjusted dividend yields are based on the proxy companies' dividends as
21 of April 5, 2021, divided by the average of closing market prices for the 60 trading
22 days ending April 5, 2021.⁹

⁹ See, Schedule DWD-6, page 1, Column 1.

1 **Q. Please explain your adjustment to the dividend yield.**

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

5 DCF theory calls for the use of the full growth rate, or D_1 , in calculating the
6 dividend yield component of the model. Since the various companies in the Utility
7 Proxy Group increase their quarterly dividend at various times during the year, a
8 reasonable assumption is to reflect one-half the annual dividend growth rate in the
9 dividend yield component, or $D_{1/2}$. Because the dividend should be representative
10 of the next 12-month period, my adjustment is a conservative approach that does
11 not overstate the dividend yield. Therefore, the actual average dividend yields in
12 Column 1 on page 1 of Schedule DWD-6 have been adjusted upward to reflect
13 one-half the average projected growth rate shown in Column 6.

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

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

23 Over the long run, there can be no growth in DPS without growth in EPS.
24 Security analysts' earnings expectations have a more significant influence on

1 market prices than dividend expectations. Thus, the use of earnings growth rates
2 in a DCF analysis provides a better match between investors' market price
3 appreciation expectations and the growth rate component of the DCF.

4 **Q. Please summarize the DCF model results.**

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

12 **Q. As shown on Table 2, above, the DCF results appear to be a low-side outlier
13 compared to the rest of your model results. Are there any specific
14 weaknesses of the DCF model where it would mis-specify investors return
15 on common equity necessitating the use of multiple common equity cost
16 rate models?**

17 A. Yes. The DCF model presumes that market-to-book ("M/B") ratios are at unity or
18 1.00. However, that is rarely the case. Morin¹⁰ states:

19 The third and perhaps most important reason for caution and
20 skepticism is that application of the DCF model produces estimates
21 of common equity cost that are consistent with investors' expected
22 return only when stock price and book value are reasonably similarly,
23 that is, when the M/B is close to unity. As shown below, application
24 of the standard DCF model to utility stocks understates the investor's
25 expected return when the market-to-book (M/B) ratio of a given stock
26 exceeds unity. This was particularly relevant in the capital market
27 environment of the 1990s and 2000s whose utility stocks are trading

¹⁰ Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, at 434 ("Morin").

1 at M/B ratios well above unity and have been for nearly two decades.
2 The converse is also true, that is, the DCF model overstates that
3 investor's return when the stock's M/B ratio is less than unity. The
4 reason for the distortion is that the DCF market return is applied to a
5 book value rate base by the regulator, that is, a utility's earnings are
6 limited to earnings on a book value rate base. (emphasis supplied)

7 Since the "simplified" DCF model traditionally used in rate regulation
8 assumes a M/B ratio of 1.00, it understates/overstates investors' required return
9 rate when market value exceeds or is less than book value. It does so because
10 utility investors evaluate and receive their returns on the market value of a utility's
11 equity, whereas regulators authorize returns on book common equity. This means
12 the market-based DCF model will produce the total annual dollar return expected
13 by investors only when market and book values are equal, and again, a rare and
14 unlikely situation.

15 Market values can diverge from book values for a myriad of reasons
16 including, but not limited to, EPS and DPS expectations, merger/acquisition
17 expectations, the rising interest rate environment, etc. As noted by Phillips:

18 Many question the assumption that market price should equal book
19 value, believing that 'the earnings of utilities should be sufficiently
20 high to achieve market-to-book ratios which are consistent with those
21 prevailing for stocks of unregulated companies.¹¹

22 In addition, Bonbright states:

23 In the first place, commissions cannot forecast, except within wide
24 limits, the effect their rate orders will have on the market prices of the
25 stocks of the companies they regulate. In the second place,
26 *whatever the initial market prices may be, they are sure to change*
27 *not only with the changing prospects for earnings, but with the*
28 *changing outlook of an inherently volatile stock market.* In short,
29 market prices are beyond the control, though not beyond the
30 influence of rate regulation. Moreover, even if a commission did
31 possess the power of control, any attempt to exercise it ... would

¹¹ Charles F. Phillips, The Regulation of Public Utilities, Public Utilities Reports, Inc., 1993, at 395.

1 result in harmful, uneconomic shifts in public utility rate levels. (italics
2 added)¹²

3 **Q. Can the under- or overstatement of investors' required rate of return by the**
4 **DCF model be demonstrated mathematically?**

5 A. Yes. The under- or overstatement of the investor required rate of return on the
6 market by the DCF model is demonstrated mathematically on page 2 of Schedule
7 DWD-6. Column [1] represents a M/B ratio of 100% (market and book value of
8 equity is \$30.00 per share). The DCF cost rate of 10.00% is comprised of a 3.00%
9 dividend yield and 7.00% growth rate. The total return expected by investors is
10 \$3.00 (\$0.90 dividends, \$2.10 capital appreciation). When M/B ratios are not equal
11 to 100%, the DCF model mis-specifies the investor expected return. As shown in
12 Column [2], Line No. 7, using the same market value as Column [1] (\$30.00) and
13 a book value per share of \$15.00 (a M/B ratio of 200%), the investor would only
14 receive a return on book value of \$1.50 ($\$15.00 * 10.00\%$ investor-expected
15 return). The \$1.50 is broken down into \$0.90 in dividends ($\30.00 market price *
16 3.00% dividend yield) and \$0.60 in capital appreciation. Since investor's
17 expectations are based on market values, the capital appreciation return is 2.00%
18 ($\$0.60 / \30.00), which is 5.00% less than the investor-expected return of 7.00%
19 (the growth term in the DCF model). Conversely, as shown in Column [3], using
20 the same market value of \$30.00 and a book value per share of \$37.50 (a M/B
21 ratio of 80%), the investor would receive a return on book value of \$3.75 ($\37.50
22 * 10.00% investor-expected return) The \$3.75 is broken down into \$0.90 in
23 dividends ($\$30.00$ market price * 3.00% dividend yield) and \$2.85 in capital

¹² James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates, Public Utilities Reports, Inc., 1988, at 334.

1 appreciation. Since investor's expectations are based on market values, the
2 capital appreciation return is 9.50% ($\$2.85 / \30.00), which is 2.50% more than
3 the investor-expected return of 7.00% (the growth term in the DCF model).

4 Stated simply, the DCF model either understates or overstates investors'
5 required cost of common equity capital when market values exceed/are less than
6 their underlying book values. In this instance, the DCF model results for the Utility
7 Proxy Group is a clear outlier compared to my other cost of common equity model
8 results. Because of this, multiple cost of common equity models must be used for
9 one to derive a more reliable estimate of the cost of common equity for a company.

10 **B. THE RISK PREMIUM MODEL**

11 **Q. Please describe the theoretical basis of the RPM.**

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

19 While it is possible to directly observe bond returns and yields, investors'
20 required common equity return cannot be directly determined or observed.
21 According to RPM theory, one can estimate a common equity risk premium over
22 bonds (either historically or prospectively), and use that premium to derive a cost
23 rate of common equity. The cost of common equity equals the expected cost rate
24 for long-term debt capital, plus a risk premium over that cost rate, to compensate

1 common shareholders for the added risk of being unsecured and last-in-line for
2 any claim on the corporation's assets and earnings in the event of a liquidation.

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

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

8 **1. Predictive Risk Premium Model**

9 **Q. Please explain the PRPM.**

10 A. The PRPM, published in the *Journal of Regulatory Economics* and *The Electricity*
11 *Journal*¹³, was developed from the work of Robert F. Engle who shared the Nobel
12 Prize in Economics in 2003 “for methods of analyzing economic time series with
13 time-varying volatility (“ARCH”).¹⁴ Engle found that volatility changes over time
14 and is related from one period to the next, especially in financial markets. Engle
15 discovered that the volatility in prices and returns clusters over time and is
16 therefore highly predictable and can be used to predict future levels of risk and risk
17 premiums.

18 The PRPM estimates the risk / return relationship directly, as the predicted
19 equity risk premium is generated by the prediction of volatility or risk. The PRPM

¹³ 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.

¹⁴ www.nobelprize.org.

1 is not based on an estimate of investor behavior, but rather on the evaluation of
2 the results of that behavior (*i.e.*, the variance of historical equity risk premiums).

3 The inputs to the model are the historical returns on the common shares of
4 each company in the Utility Proxy Group minus the historical monthly yield on long-
5 term U.S. Treasury securities through March 2021. Using a generalized form of
6 ARCH, known as GARCH, I calculated each Utility Proxy Group company's
7 projected equity risk premium using Eviews[®] statistical software. When the
8 GARCH Model is applied to the historical return data, it produces a predicted
9 GARCH variance series¹⁵ and a GARCH coefficient¹⁶. Multiplying the predicted
10 monthly variance by the GARCH coefficient, then annualizing it¹⁷, produces the
11 predicted annual equity risk premium. I then added the forecasted 30-year U.S.
12 Treasury Bond yield, 2.73%¹⁸, to each company's PRPM-derived equity risk
13 premium to arrive at an indicated cost of common equity. The 30-year Treasury
14 yield is a consensus forecast derived from the Blue Chip Financial Forecasts ("Blue
15 Chip")¹⁹. The mean PRPM indicated common equity cost rate for the Utility Proxy
16 Group is 12.72%, the median is 11.53%, and the average of the two is 12.13%.
17 Consistent with my reliance on the average of the median and mean results of the
18 DCF, I relied on the average of the mean and median results of the Utility Proxy
19 Group PRPM to calculate a cost of common equity rate of 12.13%.

20 **2. Total Market Approach Risk Premium Model**

15 Illustrated on Columns 1 and 2 of page 2 of Schedule DWD-7.

16 Illustrated on Column 4 of page 2 of Schedule DWD-7.

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

18 See, Column 6 of page 2 of Schedule DWD-7.

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

1 **Q. Please explain the total market approach RPM.**

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

6 **Q. Please explain the basis of the expected bond yield of 3.91% applicable to**
7 **the Utility Proxy Group.**

8 A. The first step in the total market approach RPM analysis is to determine the
9 expected bond yield. Because both ratemaking and the cost of capital, including
10 common equity cost rate, are prospective in nature, a prospective yield on
11 similarly-rated long-term debt is essential. I rely on a consensus forecast of about
12 50 economists of the expected yield on Aaa-rated corporate bonds for the six
13 calendar quarters ending with the third calendar quarter of 2022, and the long-term
14 projections for 2022 to 2026 and 2027 to 2031 from *Blue Chip*. As shown on Line
15 No. 1 of page 3 of Schedule DWD-7, the average expected yield on Moody's Aaa-
16 rated corporate bonds is 3.44%. In order to derive an expected yield on A2-rated
17 public utility bonds, I make an upward adjustment of 0.42%, which represents a
18 recent spread between Aaa-rated corporate bonds and A2-rated public utility
19 bonds, in order to adjust the expected Aaa-rated corporate bond yield to an
20 equivalent Moody's A2-rated public utility bond.²⁰ Adding that recent 0.42%
21 spread to the expected Aaa-rated corporate bond yield of 3.44% results in an
22 expected A2-rated public utility bond of 3.86%.

²⁰ As shown on Line No. 2 and explained in Note 2 of page 3 of Schedule DWD-7.

1 Since the Utility Proxy Group's average Moody's long-term issuer rating is
 2 A2/A3, another adjustment to the expected A2-rated public utility bond yield is
 3 needed to reflect the difference in bond ratings. An upward adjustment of 0.05%,
 4 which represents one-sixth of a recent spread between A2- and Baa2-rated public
 5 utility bond yields, is necessary to make the A2-rated prospective bond yield
 6 applicable to an A2/A3-rated public utility bond.²¹ Adding the 0.05% to the 3.86%
 7 prospective A2-rated public utility bond yield results in a 3.91% expected bond
 8 yield for the Utility Proxy Group.

9 **Table 3: Summary of the Calculation of the Utility Proxy Group Projected**
 10 **Bond Yield**²²

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>

11 To develop the indicated return on equity ("ROE") using the total market approach
 12 RPM, this prospective bond yield is then added to the average of the three different
 13 equity risk premiums described below.

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

15 A. The components of the beta-derived risk premium model are: 1) an expected
 16 market equity risk premium over corporate bonds, and 2) the beta coefficient. The
 17 derivation of the beta-derived equity risk premium that I applied to the Utility Proxy

²¹ As shown on Line No. 4 and explained in Note 3 on page 3 of Schedule DWD-7.

²² As shown on page 3 of Schedule DWD-7.

1 Group is shown on Line Nos. 1 through 9 of page 8 of Schedule DWD-7. The total
2 beta-derived equity risk premium I applied was based on an average of: 1)
3 Ibbotson-based equity risk premiums; 2) *Value Line*-based equity risk premiums;
4 and 3) Bloomberg-based equity risk premium. Each of these is described in turn.

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

7 A. To derive a historical market equity risk premium, I used the most recent holding
8 period returns for the large company common stocks from the Stocks, Bonds, Bills,
9 and Inflation ("SBBI") 2021 Yearbook ("SBBI – 2021")²³ less the average historical
10 yield on Moody's Aaa/Aa-rated corporate bonds for the period 1928 to 2020. The
11 use of holding period returns over a very long period of time is appropriate because
12 it is consistent with the long-term investment horizon presumed by investing in a
13 going concern, *i.e.*, a company expected to operate in perpetuity.

14 SBBI's long-term arithmetic mean monthly total return rate on large
15 company common stocks was 11.94% and the long-term arithmetic mean monthly
16 yield on Moody's Aaa/Aa-rated corporate bonds was 6.02%.²⁴ As shown on Line
17 No. 1 of page 8 of Schedule DWD-7, subtracting the mean monthly bond yield from
18 the total return on large company stocks results in a long-term historical equity risk
19 premium of 5.92%.

20 I used the arithmetic mean monthly total return rates for the large company
21 stocks and yields (income returns) for the Moody's Aaa/Aa-rated corporate bonds,
22 because they are appropriate for the purpose of estimating the cost of capital, as

²³ 2021 SBBI Yearbook, US Capital Markets Performance by Asset Class 1926-2020, Appendix A
Tables ("SBBI – 2021").

²⁴ As explained in Note 1 on page 9 of Schedule DWD-7.

1 noted in SBBI – 2021.²⁵ The use of the arithmetic mean return rates and yields is
2 appropriate because historical total returns and equity risk premiums provide
3 insight into the variance and standard deviation of returns needed by investors in
4 estimating future risk when making a current investment. If investors relied on the
5 geometric mean of historical equity risk premiums, they would have no insight into
6 the potential variance of future returns because the geometric mean relates the
7 change over many periods to a constant rate of change, thereby obviating the year-
8 to-year fluctuations, or variance, which is critical to risk analysis.

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

11 A. To derive the regression analysis-derived market equity risk premium of 8.83%,
12 shown on Line No. 2 of Page 8 of Schedule DWD-7, I used the same monthly
13 annualized total returns on large company common stocks relative to the monthly
14 annualized yields on Moody's Aaa/Aa-rated corporate bonds as mentioned above.
15 The relationship between interest rates and the market equity risk premium was
16 modeled using the observed monthly market equity risk premium as the dependent
17 variable, and the monthly yield on Moody's Aaa/Aa-rated corporate bonds as the
18 independent variable. I used a linear Ordinary Least Squares ("OLS") regression,
19 in which the market equity risk premium is expressed as a function of the Moody's
20 Aaa/Aa-rated corporate bonds yield:

$$21 \quad RP = \alpha + \beta (R_{Aaa/Aa})$$

²⁵ SBBI – 2021, at 10-22.

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

2 A. I used the same PRPM approach described previously to develop another equity
3 risk premium estimate. The inputs to the model are the historical monthly returns
4 on large company common stocks minus the monthly yields on Aaa/Aa-rated
5 corporate bonds during the period from January 1928 through March 2021.²⁶
6 Using the previously discussed generalized form of ARCH, known as GARCH, the
7 projected equity risk premium is determined using Eviews[®] statistical software.
8 The resulting PRPM predicted market equity risk premium is 9.40%.²⁷

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

11 A. As noted previously, because both ratemaking and the cost of capital are
12 prospective, a prospective market equity risk premium is needed. The derivation
13 of the forecasted or prospective market equity risk premium can be found in Note
14 4 on page 9 of Schedule DWD-7. Consistent with my calculation of the dividend
15 yield component in my DCF analysis, this prospective market equity risk premium
16 is derived from an average of the three- to five-year median market price
17 appreciation potential by *Value Line* for the 13 weeks ending April 9, 2021, plus an
18 average of the median estimated dividend yield for the common stocks of the 1,700
19 firms covered in *Value Line's* Standard Edition.²⁸

20 The average median expected price appreciation is 29%, which translates
21 to an 6.57% annual appreciation, and when added to the average of *Value Line's*

²⁶ Data from January 1928-December 2020 is from SBBI – 2021. Data from January – March 2021 is from Bloomberg Professional Services.

²⁷ Shown on Line No. 3 on page 8 of Schedule DWD-7.

²⁸ As explained in detail in page 2, Note 1 of Schedule DWD-8.

1 median expected dividend yields of 1.88%, equates to a forecasted annual total
2 return rate on the market of 8.45%. The forecasted Aaa-rated bond yield of 3.44%
3 is deducted from the total market return of 8.45%, resulting in an equity risk
4 premium of 5.01%, shown on page 8, Line No. 4 of Schedule DWD-7.

5 **Q. Please explain the derivation of an equity risk premium based on the S&P**
6 **500 companies.**

7 A. Using data from *Value Line*, I calculated an expected total return on the S&P 500
8 using expected dividend yields and long-term growth estimates as a proxy for
9 capital appreciation. The expected total return for the S&P 500 is 14.16%.
10 Subtracting the prospective yield on Aaa-rated Corporate bonds of 3.44% results
11 in a 10.72% projected equity risk premium.

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

14 A. Using data from Bloomberg, I calculated an expected total return on the S&P 500
15 using expected dividend yields and long-term growth estimates as a proxy for
16 capital appreciation, identical to the method described above. The expected total
17 return for the S&P 500 is 15.81%. Subtracting the prospective yield on Aaa-rated
18 Corporate bonds of 3.44% results in a 12.37% projected equity risk premium.

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

21 A. I gave equal weight to the six equity risk premiums in arriving at my conclusion of
22 8.71%.²⁹

²⁹ See, Line No. 7 on Page 8 of Schedule DWD-7.

1 **Table 4: Summary of the Calculation of the Equity Risk Premium Using**
 2 **Total Market Returns³⁰**

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>8.71%</u>

3
 4 After calculating the average market equity risk premium of 8.71%, I
 5 adjusted it by the beta coefficient to account for the risk of the Utility Proxy Group.
 6 As discussed below, the beta coefficient is a meaningful measure of prospective
 7 relative risk to the market as a whole and is a logical means by which to allocate a
 8 company's, or proxy group's, share of the market's total equity risk premium
 9 relative to corporate bond yields. As shown on Page 1 of Schedule DWD-8, the
 10 average of the mean and median beta coefficient for the Utility Proxy Group is
 11 0.78. Multiplying the beta coefficient of the Utility Proxy Group of 0.78 by the
 12 market equity risk premium of 8.71% results in a beta-adjusted equity risk premium
 13 of 6.79% for the Utility Proxy Group.

³⁰ As shown on Page 8 of Schedule DWD-7.

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

3 A. I estimated three equity risk premiums based on S&P Utility Index holding returns,
4 and two equity risk premiums based on the expected returns of the S&P Utilities
5 Index, using *Value Line* and Bloomberg data, respectively. Turning first to the S&P
6 Utility Index holding period returns, I derived a long-term monthly arithmetic mean
7 equity risk premium between the S&P Utility Index total returns of 10.65% and
8 monthly A-rated public utility bond yields of 6.49% from 1928 to 2020, to arrive at
9 an equity risk premium of 4.16%.³¹ I then used the same historical data to derive
10 an equity risk premium of 6.45% based on a regression of the monthly equity risk
11 premiums. The final S&P Utility Index holding period equity risk premium involved
12 applying the PRPM, using the historical monthly equity risk premiums from January
13 1928 to March 2021, to arrive at a PRPM-derived equity risk premium of 4.77% for
14 the S&P Utility Index.

15 I then derived expected total returns on the S&P Utilities Index of 10.54%
16 and 9.56% using data from *Value Line* and Bloomberg, respectively, and
17 subtracted the prospective A2-rated public utility bond yield (3.86%³²), which
18 results in risk premiums of 6.68% and 5.70%, respectively. As with the market
19 equity risk premiums, I averaged each risk premium to arrive at my utility-specific
20 equity risk premium of 5.55%.

³¹ As shown on Line No. 1 on page 12 of Schedule DWD-7.

³² Derived on Line No. 3 of page 3 of Schedule DWD-7.

1 **Table 5: Summary of the Calculation of the Equity Risk Premium Using S&P**
 2 **Utility Index Holding Returns³³**

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>

3

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

6 A. The equity risk premium I applied to the Utility Proxy Group is 6.17%, which is the
 7 average of the beta-derived and the S&P utility equity risk premiums of 6.79% and
 8 5.55%, respectively.³⁴

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

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

³³ As shown on page 12 of Schedule DWD-7.

³⁴ As shown on page 7 of Schedule DWD-7.

1 **Table 6: Summary of the Total Market Return Risk Premium Model³⁵**

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>

2

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

5 A. As shown on page 1 of Schedule DWD-7, the indicated RPM-derived common
6 equity cost rate is 11.11%, which gives equal weight to the PRPM (12.13%) and
7 the adjusted market approach results (10.08%).

8 **C. THE CAPITAL ASSET PRICING MODEL**

9 **Q. Please explain the theoretical basis of the CAPM.**

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

14 The CAPM assumes that all other risk (*i.e.*, all non-market or unsystematic
15 risk) can be eliminated through diversification. The risk that cannot be eliminated
16 through diversification is called market, or systematic, risk. In addition, the CAPM
17 presumes that investors require compensation only for systematic risk, which is
18 the result of macroeconomic and other events that affect the returns on all assets.
19 The model is applied by adding a risk-free rate of return to a market risk premium,
20 which is adjusted proportionately to reflect the systematic risk of the individual

³⁵ As shown on page 3 of Schedule DWD-7.

1 security relative to the total market, as measured by the beta coefficient. The
2 traditional CAPM model is expressed as:

$$3 \quad R_s = R_f + \beta(R_m - R_f)$$

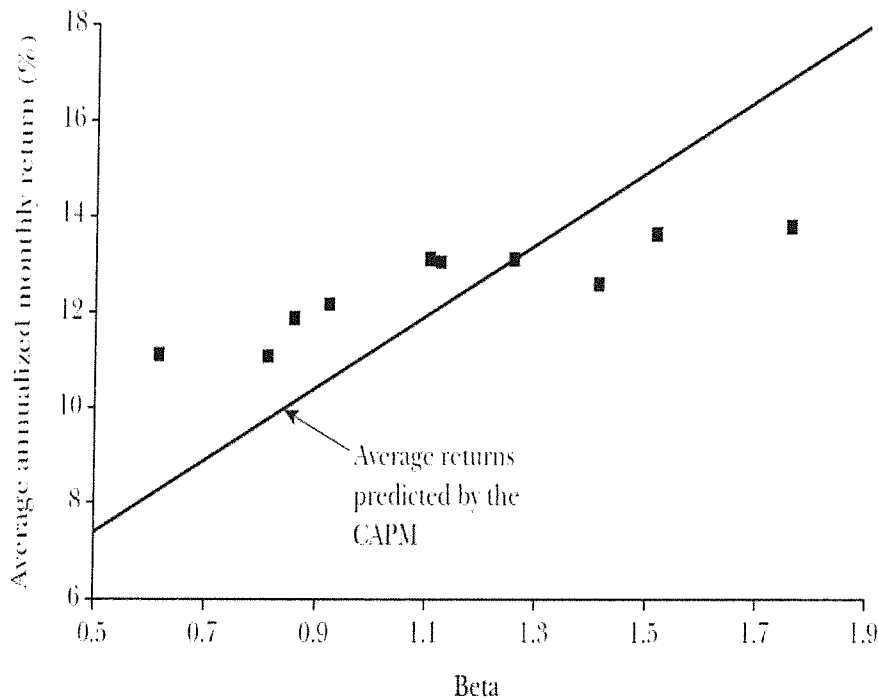
4 Where: R_s = Return rate on the common stock;
5 R_f = Risk-free rate of return;
6 R_m = Return rate on the market as a whole; and
7 β = Adjusted beta coefficient (volatility of the
8 security relative to the market as a whole).

9 Numerous tests of the CAPM have measured the extent to which security
10 returns and beta coefficients are related as predicted by the CAPM, confirming its
11 validity. The empirical CAPM ("ECAPM") reflects the reality that while the results
12 of these tests support the notion that the beta coefficient is related to security
13 returns, the empirical Security Market Line ("SML") described by the CAPM
14 formula is not as steeply sloped as the predicted SML.³⁶ The ECAPM reflects this
15 empirical reality. Fama and French clearly state regarding Figure 2, below, that
16 "[t]he returns on the low beta portfolios are too high, and the returns on the high
17 beta portfolios are too low."³⁷

³⁶ Morin, at 175.

³⁷ 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



1

2

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:

3

4

5

6

7

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.³⁸

8

* * *

9

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

10

11

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

12

where x is a fraction to be determined empirically. The value of x that best explains the observed relationship [is] $\text{Return} = 0.0829 +$

13

³⁸ Morin, at 175.

1 0.0520 β is between 0.25 and 0.30. If $x = 0.25$, the equation
2 becomes:

$$3 \quad K = R_F + 0.25(R_M - R_F) + 0.75 \beta(R_M - R_F)^{39}$$

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

5 The early tests firmly reject the Sharpe-Lintner version of the CAPM.
6 There is a positive relation between beta and average return, but it
7 is too 'flat.'... The regressions consistently find that the intercept is
8 greater than the average risk-free rate... and the coefficient on beta
9 is less than the average excess market return... This is true in the
10 early tests... as well as in more recent cross-section regressions
11 tests, like Fama and French (1992).⁴⁰

12 Finally, Fama and French further note:

13 Confirming earlier evidence, the relation between beta and average
14 return for the ten portfolios is much flatter than the Sharpe-Linter
15 CAPM predicts. The returns on low beta portfolios are too high, and
16 the returns on the high beta portfolios are too low. For example, the
17 predicted return on the portfolio with the lowest beta is 8.3 percent
18 per year; the actual return as 11.1 percent. The predicted return on
19 the portfolio with the t beta is 16.8 percent per year; the actual is 13.7
20 percent.⁴¹

21
22 Clearly, the justification from Morin, Fama, and French, along with their
23 reviews of other academic research on the CAPM, validate the use of the ECAPM.
24 In view of theory and practical research, I have applied both the traditional CAPM
25 and the ECAPM to the companies in the Utility Proxy Group and averaged the
26 results.

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

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

³⁹ *Ibid.*, at 190.

⁴⁰ Fama & French, at 32.

⁴¹ *Ibid.*, at 33.

1 companies as reported by *Value Line*. While both of those services adjust their
2 calculated (or “raw”) beta coefficients to reflect the tendency of the beta coefficient
3 to regress to the market mean of 1.00, *Value Line* calculates the beta coefficient
4 over a five-year period, while Bloomberg’s calculation is based on two years of
5 data.

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

7 A. As shown in Column 5 on page 1 of Schedule DWD-8, the risk-free rate adopted
8 for both applications of the CAPM is 2.73%. This risk-free rate of 2.73% is based
9 on the average of the *Blue Chip* consensus forecast of the expected yields on 30-
10 year U.S. Treasury bonds for the six quarters ending with the third calendar quarter
11 of 2022, and long-term projections for the years 2022 to 2026 and 2027 to 2031.

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

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

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

3 A. The basis of the market risk premium is explained in detail in Note 1 on page 2 of
4 Schedule DWD-8. As discussed previously, the market risk premium is derived
5 from an average of:

- 6 (i) Ibbotson-based market risk premiums;
- 7 (ii) *Value Line* data-based market risk premiums; and
- 8 (iii) Bloomberg data-based market risk premium.

9 The long-term income return on U.S. Government Securities of 5.05% was
10 deducted from the SBBI - 2021 monthly historical total market return of 12.20%,
11 which results in an historical market equity risk premium of 7.15%.⁴² I applied a
12 linear OLS regression to the monthly annualized historical returns on the S&P 500
13 relative to historical yields on long-term U.S. Government Securities from SBBI -
14 2021. That regression analysis yielded a market equity risk premium of 9.54%.
15 The PRPM market equity risk premium is 10.46% and is derived using the PRPM
16 relative to the yields on long-term U.S. Treasury securities from January 1926
17 through March 2021.

18 The *Value Line*-derived forecasted total market equity risk premium is
19 derived by deducting the forecasted risk-free rate of 2.73%, discussed above, from
20 the *Value Line* projected total annual market return of 8.45%, resulting in a
21 forecasted total market equity risk premium of 5.72%. The S&P 500 projected
22 market equity risk premium using *Value Line* data is derived by subtracting the

⁴² SBBI - 2021, at Appendix A-1 (1) through .A-1 (3) and Appendix A-7 (19) through A-7 (21).

1 projected risk-free rate of 2.73% from the projected total return of the S&P 500 of
 2 14.16%. The resulting market equity risk premium is 11.43%.

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

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

9 **Table 7: Summary of the Calculation of the Market Risk Premium**
 10 **for Use in the CAPM⁴³**

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>

11

⁴³ As shown on page 2 of Schedule DWD-8.

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

3 A. As shown on page 1 of Schedule DWD-8, the mean and median results of my
4 CAPM/ECAPM analyses are 10.45%. Consistent with my reliance on the average
5 of mean and median DCF results discussed above, the indicated common equity
6 cost rate using the CAPM/ECAPM is 10.45%.

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

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

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

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

22 A. In order to select a proxy group of domestic, non-price regulated companies similar
23 in total risk to the Utility Proxy Group, I relied on the beta coefficients and related
24 statistics derived from *Value Line* regression analyses of weekly market prices
25 over the most recent 260 weeks (*i.e.*, five years). Using these selection criteria

1 resulted in a proxy group of 20 domestic, non-price regulated firms comparable in
2 total risk to the Utility Proxy Group. Total risk is the sum of non-diversifiable market
3 risk and diversifiable company-specific risks. The criteria used in the selection of
4 the domestic, non-price regulated firms was:

- 5 (i) They must be covered by *Value Line* Standard Edition;
- 6 (ii) They must be domestic, non-price regulated companies, *i.e.*, non-utilities;
- 7 (iii) Their beta coefficients must lie within plus or minus two standard deviations
8 of the average unadjusted beta coefficient of the Utility Proxy Group; and
- 9 (iv) The residual standard errors of the *Value Line* regressions which gave rise
10 to the unadjusted beta coefficients must lie within plus or minus two
11 standard deviations of the average residual standard error of the Utility
12 Proxy Group.

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

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

21 A. Yes, the basis of my selection, and both proxy groups' regression statistics, are
22 shown in Schedule DWD-9.

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

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

8 Page 2 of Schedule DWD-10 contains the derivation of the DCF cost rates.
9 As shown, the indicated common equity cost rate using the DCF for the Non-Price
10 Regulated Proxy Group comparable in total risk to the Utility Proxy Group, is
11 11.51%.

12 Pages 3 through 5 contain the data and calculations that support the
13 10.94% RPM cost rate. As shown on Line No. 1 of page 3 of Schedule DWD-10,
14 the consensus prospective yield on Moody's Baa2-rated corporate bonds for the
15 six quarters ending in the third quarter of 2022, and for the years 2022 to 2026 and
16 2027 to 2031, is 4.36%.⁴⁴ Because the Non-Price Regulated Proxy Group has an
17 average Moody's bond rating of Baa1, a downward adjustment of 0.13% to the
18 prospective Baa2-rated bond yield is necessary to reflect the difference in bond
19 ratings.⁴⁵ Subtracting 0.13% from the prospective Baa2-rated bond yield of 4.36%
20 is 4.23%.

⁴⁴ *Blue Chip Financial Forecasts*, December 1, 2020, at 14 and April 1, 2021, at 2.

⁴⁵ As demonstrated on Schedule DWD-10, page 3, Note 2.

1 When the beta-adjusted risk premium of 6.71%⁴⁶ relative to the Non-Price
2 Regulated Proxy Group is added to the prospective Baa1-rated corporate bond
3 yield of 4.23%, the indicated RPM cost rate is 10.94%.

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

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

8 A. As shown on page 1 of Schedule DWD-10, the results of the DCF, RPM, and
9 CAPM applied to the Non-Price Regulated Proxy Group comparable in total risk to
10 the Utility Proxy Group are 11.51%, 10.94%, and 10.30%, respectively. The
11 average of the mean and median of these models is 10.93%, which I used as the
12 indicated common equity cost rate for the Non-Price Regulated Proxy Group.

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

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

15 A. Based on the results of the application of multiple cost of common equity models
16 to the Utility Proxy Group and the Non-Price Regulated Proxy Group, the indicated
17 model results are between 10.28% and 10.69%. I used multiple cost of common
18 equity models as primary tools in arriving at my recommended common equity cost
19 rate, because no single model is so inherently precise that it can be relied on solely
20 to the exclusion of other theoretically sound models. The use of multiple models
21 adds reliability to the estimation of the common equity cost rate, and the prudence

⁴⁶ Derived on page 5 of Schedule DWD-10.

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

3 **XI. ADJUSTMENTS TO THE COMMON EQUITY COST RATE**

4 **A. SIZE ADJUSTMENT**

5 **Q. Does Middlesex's smaller size compared with the Utility Proxy Group
6 increase its business risk?**

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

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

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

23 The size effect is based on the empirical observation that companies
24 of smaller size are associated with greater risk and, therefore, have
25 greater cost of capital [sic]. The "size" of a company is one of the

1 most important risk elements to consider when developing cost of
2 equity capital estimates for use in valuing a business simply because
3 size has been shown to be a *predictor* of equity returns. In other
4 words, there is a significant (negative) relationship between size and
5 historical equity returns - as size *decreases*, returns tend to *increase*,
6 and vice versa. (footnote omitted) (emphasis in original)⁴⁷

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

10 . . . the higher average returns on small stocks and high book-to-
11 market stocks reflect unidentified state variables that produce
12 undiversifiable risks (covariances) in returns not captured in the
13 market return and are priced separately from market betas.⁴⁸

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

17 Also, it is a basic financial principle that the use of funds invested, and not
18 the source of funds, is what gives rise to the risk of any investment.⁴⁹ Eugene
19 Brigham, a well-known authority, states:

20 A number of researchers have observed that portfolios of small-firms
21 (sic) have earned consistently higher average returns than those of
22 large-firm stocks; this is called the “small-firm effect.” On the surface,
23 it would seem to be advantageous to the small firms to provide
24 average returns in a stock market that are higher than those of larger
25 firms. In reality, it is bad news for the small firm; **what the small-
26 firm effect means is that the capital market demands higher
27 returns on stocks of small firms than on otherwise similar
28 stocks of the large firms.** (emphasis added)⁵⁰

29 Consistent with the financial principle of risk and return discussed above,

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

48 Fama & French, at 25-43.

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

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

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

6 **Q. Should the Commission consider Middlesex as a stand-alone company?**

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

11 The true cost of capital depends on the use to which the capital is
12 put.

13 ***

14 *Each project should be evaluated at its own opportunity cost of*
15 *capital; the true cost of capital depends on the use to which the*
16 *capital is put. (italics and bold in original) ⁵¹*

17 Morin confirms Brealey and Myers when he states:

18 Financial theory clearly establishes that the cost of equity is the risk-
19 adjusted opportunity cost of the investors and not the cost of the
20 specific capital sources employed by the investors. The true cost of
21 capital depends on the use to which the capital is put and not on its
22 source. The Hope and Bluefield doctrines have made clear that the
23 relevant considerations in calculating a company's cost of capital are
24 the alternatives available to investors and the returns and risks
25 associated with those alternatives.⁵²

26 Additionally, Levy and Sarnat state:

27 The firm's cost of capital is the discount rate employed to discount
28 the firm's average cash flow, hence obtaining the value of the firm.
29 It is also the weighted average cost of capital, as we shall see below.

⁵¹ Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, McGraw-Hill, Third Edition, 1988, at 173, 198.

⁵² Morin, at 523.

1 The weighted average cost of capital should be employed for project
2 evaluation... only in cases where the risk profile of the new projects
3 is a "carbon copy" of the risk profile of the firm⁵³

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

8 A public utility is entitled to such rates as will permit it to earn a return
9 on the value of the property which it employs for the convenience of
10 the public equal to that generally being made at the same time and
11 in the same general part of the country on investments in other
12 business undertakings which are attended by corresponding risks
13 and uncertainties;⁵⁴

14 In other words, it is the "risks and uncertainties" surrounding the property
15 employed for the "convenience of the public" which determines the appropriate
16 level of rates. In this proceeding, the property employed "for the convenience of
17 the public" is the rate base of Middlesex. Thus, it is only the risk of investment in
18 Middlesex that is relevant to the determination of the cost of common equity to be
19 applied to the common equity-financed portion of that rate base.

20 In addition, in the Fama and French article previously cited, the authors⁵⁵
21 proposed that their three-factor model include the SMB (Small Minus Big) factor,
22 which indicates that small capitalization firms are more risky than large
23 capitalization firms, confirming that size is a risk factor which must be taken into
24 account in estimating the cost of common equity.

25 Consistent with the financial principle of risk and return discussed

⁵³ Haim Levy & Marshall Sarnat, Capital Investment and Financial Decisions, Prentice/Hall International, 1986, at 465.

⁵⁴ *Bluefield*, at 6.

⁵⁵ Fama & French, at 39.

1 previously, and the stand-alone nature of ratemaking, an upward adjustment must
2 be applied to the indicated cost of common equity derived from the cost of equity
3 models of the proxy groups used in this proceeding.

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

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

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

	Market Capitalization* (\$ Millions)	Times Greater than the Company
Middlesex Water Company	\$1,409.357	
Utility Proxy Group	\$1,610.897	1.1x

*From page 1 of Schedule DWD-11.

12
13 The Company's estimated market capitalization was at \$1.409 billion as of
14 April 5, 2021, compared with the market capitalization of the average water
15 company in the Utility Proxy Group of \$1.611 billion as of April 5, 2021. The Utility
16 Proxy Group's market capitalization is 1.1 times the size of Middlesex's estimated
17 market capitalization.

18 As a result, it is necessary to upwardly adjust the indicated range of
19 common equity cost rates to reflect Middlesex's greater risk due to its smaller
20 relative size. The determination is based on the size premiums for portfolios of

1 New York Stock Exchange, American Stock Exchange, and NASDAQ listed
2 companies ranked by deciles for the 1926 to 2020 period. The average size
3 premium for the Utility Proxy Group with a market capitalization of \$1.611 billion
4 falls in the 6th decile, while Middlesex's market capitalization of \$1.409 billion
5 places the Company in the 7th decile. The size premium spread between the 6th
6 decile and the 7th decile is 0.17%. Even though a 0.17% upward size adjustment
7 is indicated, I apply a size premium of 0.05% to Middlesex's indicated range of
8 common equity cost rates.

9 **B. FLOTATION COST ADJUSTMENT**

10 **Q. What are flotation costs?**

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

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

17 A. It is important because there is no other mechanism in the ratemaking paradigm
18 through which such costs are normally recovered. Because these costs are real
19 and legitimate, these costs have to be recovered. As noted by Morin:

20 The costs of issuing these securities are just as real as
21 operating and maintenance expenses or costs incurred to
22 build utility plants, and fair regulatory treatment must permit
23 recovery of these costs....

1 The simple fact of the matter is that common equity capital is
2 not free....[Flotation costs] must be recovered through a rate
3 of return adjustment.⁵⁶

4 **Q. Should flotation costs be recognized for the lives of the Company's**
5 **securities?**

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

17 Historical flotation costs are a permanent loss of investment to the utility and
18 should be accounted for. When any company, including a utility, issues common
19 stock, flotation costs are incurred for legal, accounting, printing fees and the like.
20 For each dollar of issuing market price, a small percentage is expensed and is
21 permanently unavailable for investment in utility rate base. These expenses are
22 charged to capital accounts and not expensed on the income statement; therefore,
23 the only way to restore the full value of that dollar of issuing price with an assumed
24 investor required return of 10% is for the net investment, \$0.95, to earn more than

⁵⁶ Morin, at 321.

1 10% to net back to the investor a fair return on that dollar. In other words, if a
2 company issues stock at \$1.00 with 5% in flotation costs, it will net \$0.95 in
3 investment. Assuming the investor in that stock requires a 10% return on his or
4 her invested \$1.00 (*i.e.*, a return of \$0.10), the company needs to earn
5 approximately 10.5% on its invested \$0.95 to receive a \$0.10 return.

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

8 A. No. All of these models assume no transaction costs. The literature is quite clear
9 that these costs are not reflected in market prices paid for common stocks. For
10 example, Brigham and Daves confirm this and provide the methodology utilized to
11 calculate the flotation adjustment.⁵⁷ In addition, Morin confirms the need for such
12 an adjustment even when no new equity issuance is imminent.⁵⁸ Consequently, it
13 is proper to include a flotation cost adjustment when using cost of common equity
14 models to estimate the common equity cost rate.

15 **Q. How did you calculate the flotation cost allowance?**

16 A. I modified the DCF calculation to provide a dividend yield that would reimburse
17 investors for issuance costs in accordance with the method cited in literature by
18 Brigham and Daves, as well as by Morin. The flotation cost adjustment recognizes
19 the costs of issuing equity that were incurred by Middlesex's parent company.
20 Based upon the issuance costs shown on page 1 of Schedule DWD-12, an
21 adjustment of 0.09% is required to reflect the flotation costs applicable to the
22 Company.

⁵⁷ Eugene F. Brigham and Phillip R. Daves, Intermediate Financial Management, 9th Edition, Thomson/Southwestern, at 342.

⁵⁸ Morin, at 327-330.

1 **Q. What is the indicated range of common equity cost rates after adjustments**
2 **for size and flotation costs?**

3 After applying the 0.05% size adjustment and 0.09% flotation cost adjustment to
4 the indicated range of common equity cost rates between 10.28% and 10.69%,
5 based on the Utility Proxy Group results, a range of common equity cost rates
6 between 10.42% and 10.83% is applicable to Middlesex.

7 **XII. CONCLUSION**

8 **Q. What is your recommended return on investor-supplied capital for**
9 **Middlesex?**

10 A. Given my recommended ratemaking capital structure ending September 30, 2021,
11 which consists of 46.00% long-term debt at an embedded debt cost rate of 2.68%,
12 0.16% preferred equity at a 5.01% cost rate, and 53.84% common equity at my
13 recommended ROE of 10.65%, I conclude that an appropriate return on investor-
14 supplied capital for the Company is 6.97%. A common equity cost rate of 10.65%
15 is consistent with the *Hope and Bluefield* standard of a just and reasonable return,
16 which ensures the integrity of presently invested capital and enables the attraction
17 of needed new capital on reasonable terms. It also ensures that Middlesex will be
18 able to continue providing safe, adequate, and reliable service to the benefit of
19 customers. Thus, it balances the interests of both customers and the Company.

20 **Q. In your opinion, is your proposed common equity cost rate of 10.65% fair**
21 **and reasonable to Middlesex, its shareholders, and its customers?**

22 A. Yes, it is.

23 **Q. Does this conclude your direct testimony?**

24 A. Yes, it does.



Summary

Dylan is an experienced consultant and a Certified Rate of Return Analyst (CRRA) and Certified Valuation Analyst (CVA). He has served as a consultant for investor-owned and municipal utilities and authorities for 12 years. Dylan has extensive experience in rate of return analyses, class cost of service, rate design, and valuation for regulated public utilities. He has testified as an expert witness in the subjects of rate of return, cost of service, rate design, and valuation before 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
- Utilities
- Mutual Fund Benchmarking
- Capital Market Risk
- Financial Modeling
- Valuation
- Regulatory Strategy
- Rate Case Support
- Rate of Return
- Cost of Service
- Rate Design

Recent Expert Testimony Submission/Apearances

<i>Jurisdiction</i>	<i>Topic</i>
■ 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.



Resume & Testimony Listing of:
Dylan W. D'Ascendis, CRRA, CVA
Director

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



Resume & Testimony Listing of:
Dylan W. D'Ascendis, CRRA, CVA
Director

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				



Resume & Testimony Listing of:
Dylan W. D'Ascendis, CRRA, CVA
Director

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



Resume & Testimony Listing of:
Dylan W. D'Ascendis, CRRA, CVA
Director

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

Table of Contents
to Exhibit No. P-7
of Dylan W. D'Ascendis, CRRA, CVA

	<u>Schedule</u>
Recommended Capital Structure and Cost of of Capital Rates	DWD-1
Capitalization and Capital Structure Ratios	DWD-2
Composite Cost Rate of Long-Term Debt	DWD-3
Composite Cost Rate of Preferred Stock	DWD-4
Financial Profile of Middlesex Water Company and the Proxy Group of Eight Water Companies	DWD-5
Application of the Discounted Cash Flow Model (DCF) to the Proxy Group of Eight Water Companies	DWD-6
Application of the Risk Premium Model (RPM) to the Proxy Group of Eight Water Companies	DWD-7
Application of the Capital Asset Pricing Model (CAPM) to the Proxy Group of Eight Water Companies	DWD-8
Basis of Selection for the Non-Price Regulated Companies Comparable in Total Risk to the Proxy Group of Eight Water Companies	DWD-9
Cost of Common Equity Models Applied to the Comparable Risk Non-Price Regulated Companies	DWD-10
Estimated Market Capitalization for Middlesex Water Company and the Proxy Group of Eight Water Companies	DWD-11
Derivation of Flotation Cost Adjustment	DWD-12

Middlesex Water Company
Recommended Capital Structure and Cost Rates
for Ratemaking Purposes
Estimated at September 30, 2021

<u>Type Of Capital</u>	<u>Ratios (1)</u>	<u>Cost Rate</u>	<u>Weighted Cost Rate</u>
Long-Term Debt	46.00%	2.68% (3)	1.23%
Preferred Equity	0.16% (2)	5.01% (4)	0.01%
Common Equity	<u>53.84% (2)</u>	10.65% (5)	<u>5.73%</u>
Total	<u><u>100.00%</u></u>		<u><u>6.97%</u></u>

Notes:

- (1) A hypothetical capital structure of 46.00% long-term debt, 0.16% preferred equity and 53.84% common equity is appropriate for cost of capital purposes for reasons detailed in Mr. D'Ascendis' accompanying direct testimony.
- (2) The 54.00% total equity ratio has been allocated as follows between preferred and common equity based upon Middlesex Water Company's relative proportions of preferred and common equity estimated at September 30, 2021 from page 1 of Schedule DWD-2.

	<u>Estimated at September 30, 2021</u>	<u>% to Total Equity</u>	<u>Hypothetical Equity Ratios</u>
Preferred Equity	0.18%	0.30%	0.16%
Common Equity	<u>60.51%</u>	<u>99.70%</u>	<u>53.84%</u>
Total Equity	<u><u>60.69%</u></u>	<u><u>100.00%</u></u>	<u><u>54.00%</u></u>

- (3) From Schedule DWD-3.
- (4) From Schedule DWD-4.
- (5) From page 2 of this Schedule.

Middlesex Water Company
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>10.93%</u>
5.	Indicated Common Equity Cost Rate before Adjustment for Unique Risk	10.28% - 10.69%
6.	Business Risk Adjustment (5)	0.05%
7.	Flotation Cost Adjustment (6)	<u>0.09%</u>
8.	Indicated Common Equity Cost Rate after Adjustment	<u>10.42% - 10.83%</u>
9.	Recommended Common Equity Cost Rate	<u>10.65%</u>

- Notes: (1) From Schedule DWD-6.
 (2) From page 1 of Schedule DWD-7.
 (3) From page 1 of Schedule DWD-8.
 (4) From page 1 of Schedule DWD-10.
 (5) Business risk adjustment to reflect the Company's unique risk compared to the Utility Proxy Group as detailed in the accompanying direct testimony.
 (6) From page 1 of Schedule DWD-12.

Middlesex Water Company
 Capitalization and Capital Structure Ratios
 Based Upon Investor-Provided Capital
 Actual at February 28, 2021 and Estimated at September 30, 2021
 Adjusted to Reflect the Elimination of Cumulative Convertible Preferred
Stock Issued to Acquire Tidewater Utilities, Inc.

Capitalization	February 28, 2021 (Actual)			February 28, 2021 (Adjusted Actual)			September 30, 2021 (Estimated)			September 30, 2021 (Adjusted - Estimated)		
	Amount Outstanding	Ratios (%)	Adjustments	Amount Outstanding	Ratios (%)	Adjustments	Amount Outstanding	Ratios (%)	Adjustments	Amount Outstanding	Ratios (%)	Adjustments
Long-Term Debt												
First Mortgage Bonds	\$237,836,591 (1)			\$237,836,591 (1)			\$236,459,021 (1)			\$236,459,021 (1)		
Total Long-Term Debt	237,836,591	40.52 %		237,836,591	40.59 %		236,459,021	39.26 %	0	236,459,021	39.31 %	
Preferred Stock												
Middlesex Water Company \$7.00 Series Issued to Acquire Tidewater Utilities, Inc.	1,078,400			1,078,400			1,078,400			1,078,400		
	1,005,165		(1,005,165) (2)	0			1,005,165		(1,005,165) (2)	0		
Total Preferred Stock	2,083,565	0.35	(1,005,165)	1,078,400	0.18		2,083,565	0.35	(1,005,165)	1,078,400	0.18	
Common Equity												
Total Common Equity	347,086,961	59.13		347,086,961	59.23		363,935,252	60.41		363,935,252	60.51	
Total Permanent Capital Employed	\$587,007,117	100.00 %	(\$1,005,165)	\$586,001,952	100.00 %		\$602,477,838	100.02 %	(\$1,005,165)	\$601,472,673	100.00 %	
Short-term Debt												
	3,000,000			3,000,000			32,434,813			32,434,813		
Total Capital Employed	\$ 590,007,117			\$ 589,001,952			\$ 634,912,651			\$ 633,907,486		

Notes:

(1) From Schedule DWD-3, page 1.

(2) Reflects the elimination of \$1,005,165 of the \$7.00 Series cumulative convertible preferred stock issued to acquire Tidewater Utilities, Inc. actual at February 28, 2021 and projected at September 30, 2021.

Middlesex Water Company
Calculation of the Composite Cost Rate of Long-Term Debt Outstanding
Actual at February 28, 2021 and
Estimated at September 30, 2021

Actual at February 28, 2021

Series	Amount Outstanding (1)	Effective Cost Rate (2)	Annualized Cost	Composite Interest Rate
<u>First Mortgage Bonds</u>				
0.00% Series BB	\$ 116,301	0.00 %	\$ -	
4.00% to 5.00% Series CC	163,756	6.10	9,989	
0.00% Series EE	996,155	0.00	-	
3.00% to 5.50% Series FF	1,870,000	4.86	90,882	
0.00% Series GG	531,290	0.00	-	
4.00% to 5.00% Series HH	620,000	6.85	42,470	
0.00% Series II	326,038	0.00	-	
3.40% to 5.00% Series JJ	500,000	6.84	34,200	
0.00% Series KK	703,917	0.00	-	
5.00% to 5.50% Series LL	846,000	6.30	53,298	
0.00% Series MM	903,270	0.00	-	
3.00%- 4.375% Series NN	1,105,000	4.58	50,609	
0.00% Series OO due 2031	1,605,424	0.00	-	
2.00% - 5.00% Series PP due 2031	600,000	3.75	22,500	
5.00% Series QQ due 2023*	9,915,000	3.13	310,340	
3.80% Series RR due 2038*	22,500,000	4.24	954,000	
4.25% Series SS due 2047*	23,000,000	4.46	1,025,800	
0.00% Series TT due 2032	1,755,932	0.00	-	
3.00% - 3.25% Series UU due 2032	705,000	4.03	28,412	
0.00% Series VV due 2033	1,813,215	0.00	-	
3.00% - 5.00% Series WW due 2033	715,000	4.86	34,749	
0.00% Series 2018A 2017 RENEW - Fund due 2047	6,166,772	0.00	-	
3.00% to 5.00% Series 2018B 2017 RENEW - Trust due 2047	2,210,557	5.12	113,181	
0.00% Series XX due 2047	10,120,606	0.00	-	
3.00% to 5.00% Series YY due 2047	3,710,000	5.06	187,726	
Construction Loan - W. Transmission Main **	(3) 41,970,760	1.25	524,635	
Construction Loan - RENEW 2018 **	(3) 8,656,747	1.25	108,209	
4.00% NJEDA Series 2019A due 2059 *	32,500,000	3.66	1,189,500	
5.00% NJEDA Series 2019B due 2059 *	21,200,000	4.04	856,480	
2.90% Private Placement Series 2020A due 2050	40,000,000	2.91	1,164,000	
0.00% State Revolving Fund Bond	9,850	0.00	-	
Total Long-Term Debt	<u>\$237,836,591</u>		<u>\$6,800,980</u>	<u>2.86 %</u>

Estimated at September 30, 2021

Series	Amount Outstanding (1)	Effective Cost Rate (2)	Annualized Cost	Composite Interest Rate
<u>First Mortgage Bonds</u>				
0.00% Series BB	-	0.00 %	\$ -	
4.00% to 5.00% Series CC	-	6.10	-	
0.00% Series EE	620,053	0.00	-	
3.00% to 5.50% Series FF	1,275,000	4.86	61,965	
0.00% Series GG	450,528	0.00	-	
4.00% to 5.00% Series HH	530,000	6.85	36,305	
0.00% Series II	249,256	0.00	-	
3.40% to 5.00% Series JJ	411,000	6.84	28,112	
0.00% Series KK	630,786	0.00	-	
5.00% to 5.50% Series LL	760,000	6.30	47,880	
0.00% Series MM	836,558	0.00	-	
3.00%- 4.375% Series NN	1,015,000	4.58	46,487	
0.00% Series OO due 2031	1,505,085	0.00	-	
2.00% - 5.00% Series PP due 2031	555,000	3.75	20,813	
5.00% Series QQ due 2023*	9,915,000	3.13	310,340	
3.80% Series RR due 2038*	-	4.24	-	
4.25% Series SS due 2047*	-	4.46	-	
0.00% Series TT due 2032	1,655,593	0.00	-	
3.00% - 3.25% Series UU due 2032	655,000	4.03	26,397	
0.00% Series VV due 2033	1,717,783	0.00	-	
3.00% - 5.00% Series WW due 2033	675,000	4.86	32,805	
0.00% Series 2018A 2017 RENEW - Fund due 2047	6,007,770	0.00	-	
3.00% to 5.00% Series 2018B 2017 RENEW - Trust due 2047	2,165,557	5.12	110,877	
0.00% Series XX due 2047	9,867,591	0.00	-	
3.00% to 5.00% Series YY due 2047	3,630,000	5.06	183,678	
Construction Loan - W. Transmission Main **	(3) 43,474,714	1.25	543,434	
Construction Loan - RENEW 2018 **	(3) 8,656,747	1.25	108,209	
4.00% NJEDA Series 2019A due 2059 *	32,500,000	3.66	1,189,500	
5.00% NJEDA Series 2019B due 2059 *	21,200,000	4.04	856,480	
2.90% Private Placement Series 2020A due 2050	40,000,000	2.91	1,164,000	
0.00% State Revolving Fund Bond	-	0.00	-	
Probable Private Placement / NJEDA Loan (RR/SS Refunding)	(4) 45,500,000	3.44	1,565,200	
Total Long-Term Debt	<u>\$236,459,021</u>		<u>\$6,332,482</u>	<u>2.68 %</u>

Notes:

- (1) Company-Provided.
- (2) As developed on page 2 of this Schedule.
- (3) The principal amount is expected to be broken into interest bearing and non-interest bearing portions. Based on discussions with the Company, they expect a weighted average cost rate of approximately 1.25%, which includes transaction costs. Cost rate will be updated when the actual debt weighted cost rates are finalized.
- (4) Assume to be average March 2021 A2 rated utility bond.

Middlesex Water Company
Calculation of the Effective Cost Rate of Long-Term Debt by Series

Series	Nominal Date of Issue	Date of Maturity	Average Term in Years (1)	Principal Amount Issued	(Expense) Premium / (Discount) at Issuance	Net Proceeds	Net Proceeds Ratio	Effective Cost Rate to Maturity (2)
First Mortgage Bonds								
0.00% Series BB	8-Nov-01	1-Aug-21	-- (3)	2,350,000	(12,255)	2,337,745	99.48	0.00%
4.00% to 5.00% Series CC	8-Nov-01	1-Aug-21	-- (4)	2,440,000	(11,236)	2,428,764	99.54	6.10% (5) (6)
0.00% Series EE	1-Nov-04	1-Aug-23	-- (3)	7,715,909	(22,218)	7,693,691	99.71	0.00%
3.00% to 5.50% Series FF	1-Nov-04	1-Aug-24	-- (4)	8,920,000	(25,139)	8,894,861	99.72	4.86% (5) (6)
0.00% Series GG	9-Nov-06	1-Aug-26	-- (3)	1,750,000	(57,546)	1,692,454	96.71	0.00%
4.00% to 5.00% Series HH	9-Nov-06	1-Aug-26	-- (4)	1,950,000	(64,893)	1,885,107	96.67	6.85% (5) (6)
0.00% Series II	8-Nov-07	1-Aug-24	-- (3)	1,750,000	(33,984)	1,716,016	98.06	0.00%
3.40% to 5.00% Series JJ	8-Nov-07	1-Aug-26	-- (4)	1,750,000	(33,984)	1,716,016	98.06	6.84% (5)
0.00% Series KK	6-Nov-08	1-Aug-28	-- (3)	1,750,000	(25,604)	1,724,396	98.54	0.00%
5.00% to 5.50% Series LL	6-Nov-08	1-Aug-28	-- (4)	1,750,000	(25,604)	1,724,396	98.54	6.30% (5)
0.00% Series MM	2-Dec-10	1-Aug-30	-- (3)	1,968,000	(22,599)	1,945,401	98.85	0.00%
3.00%- 4.375% Series NN	2-Dec-10	1-Aug-30	-- (4)	1,985,000	(22,599)	1,962,401	98.86	4.58% (5)
0.00% Series OO due 2031	2-May-12	1-Aug-31	-- (3)	2,960,000	(16,193)	2,943,807	99.45	0.00%
2.00% - 5.00% Series PP due 2031	2-May-12	1-Aug-31	-- (4)	915,000	66,268	981,268	107.24	3.75% (5)
5.00% Series QQ due 2023*	27-Nov-12	1-Oct-23	11.0	9,915,000	1,694,265	11,609,265	117.09	3.13%
3.80% Series RR due 2038*	27-Nov-12	1-Oct-38	26.0	22,500,000	(1,548,262)	20,951,738	93.12	4.24%
4.25% Series SS due 2047*	27-Nov-12	1-Oct-47	35.0	23,000,000	(833,202)	22,166,798	96.38	4.46%
0.00% Series TT due 2032	2-May-13	1-Aug-32	-- (3)	2,960,000	(32,264)	2,927,736	98.91	0.00%
3.00% - 3.25% Series UU due 2032	2-May-13	1-Aug-32	-- (4)	1,015,000	20,199	1,035,199	101.99	4.03% (5)
0.00% Series VV due 2033	21-May-14	1-Aug-33	-- (3)	2,815,555	(56,628)	2,758,927	97.99	0.00%
3.00% - 5.00% Series WW due 2033	21-May-14	1-Aug-33	-- (4)	935,000	40,492	975,492	104.33	4.86% (5)
0.00% Series 2018A 2017 RENEW - Fund due 2047	22-May-18	1-Aug-47	-- (3)	7,075,616	(189,359)	6,886,257	97.32	0.00%
3.00% to 5.00% Series 2018B 2017 RENEW - Trust due 2047	22-May-18	1-Aug-47	-- (4)	2,365,000	45,388	2,410,388	101.92	5.12% (5)
0.00% Series XX due 2047	21-Nov-17	1-Aug-47	-- (3)	11,259,174	(331,506)	10,927,668	97.06	0.00%
3.00% to 5.00% Series YY due 2047	21-Nov-17	1-Aug-47	-- (4)	3,860,000	(23,770)	3,836,230	99.38	5.06% (5)
Construction Loan - W. Transmission Main **	1-Aug-18	1-May-51	30.0	41,879,557	(452,004)	41,427,553	98.92	1.25%
Construction Loan - RENEW 2018 **	12-Sep-18	1-May-51	30.0	8,656,747	(99,470)	8,557,277	98.85	1.25%
4.00% NJEDA Series 2019A due 2059 *	22-Aug-19	1-Aug-59	40.0	32,500,000	2,305,077	34,805,077	107.09	3.66%
5.00% NJEDA Series 2019B due 2059 *	22-Aug-19	1-Aug-59	40.0	21,200,000	4,007,710	25,207,710	118.90	4.04%
2.90% Private Placement Series 2020A due 2050	18-Nov-20	18-Nov-50	30.0	40,000,000	(108,974)	39,891,026	99.73	2.91%
0.00% State Revolving Fund Bond	8-Nov-01	1-Aug-21	-- (3)	750,000	(3,669)	746,331	99.51	0.00%
Probable Private Placement / NJEDA Loan (RR/SS Refunding)**	1-May-21	1-May-51	30.0	45,500,000	0	45,500,000	100.00	3.44%

* EDA financing

** Pending Transactions. Subject to change.

See page 3 for notes.

Source of Information: Company-provided data

Middlesex Water Company
Calculation of the Effective Cost Rate of Long-Term Debt by Series

Notes:

- (1) Determined by taking into account the effect of annual sinking fund requirements, if any, which are met by the retirement of bonds which reduce the average term of each series.
- (2) The effective cost rate for each issue is the cost rate to maturity using as inputs the average term of issue, coupon rate and net proceeds ratio.
- (3) Average term not calculated since the effective cost rate to maturity is calculated based upon cash flows throughout the life of the series.
- (4) Average term not calculated since the sinking fund payments are made semi-annually.
- (5) Calculated based upon cash flows throughout the life of the series.
- (6) The defeasance / deobligation / savings credit of the following Series during 2009, 2010 and 2011 were taken into account in the calculation of the effective cost rates to maturity:

<u>Series</u>	<u>Amount</u>	<u>Date</u>
Series CC	\$160,000	August 2011
Series FF	\$720,000	March 2009
Series HH	\$ 20,000	April 2010

Middlesex Water Company
 Calculation of the Composite Cost Rate of Preferred Stock Outstanding
 Actual at February 28, 2021 and
 Estimated at September 30, 2021

Actual at February 28, 2021

<u>Series</u>	<u>Amount Outstanding</u>	<u>Effective Cost Rate (1)</u>	<u>Annualized Cost</u>	<u>Composite Interest Rate</u>
<u>Cumulative Preferred Stock</u>				
\$7.00 Series	\$78,400	7.00 %	\$5,488	
\$4.75 Series	<u>1,000,000</u>	4.85	<u>48,500</u>	
Total Preferred Stock	<u>1,078,400</u>		<u>53,988</u>	<u>5.01 %</u>

Estimated at September 30, 2021

<u>Series</u>	<u>Amount Outstanding</u>	<u>Effective Cost Rate (1)</u>	<u>Annualized Cost</u>	<u>Composite Interest Rate</u>
<u>Cumulative Preferred Stock</u>				
\$7.00 Series	\$78,400	7.00 %	\$5,488	
\$4.75 Series	<u>1,000,000</u>	4.85	<u>48,500</u>	
Total Preferred Stock	<u>1,078,400</u>		<u>53,988</u>	<u>5.01 %</u>

Notes:

(1) As developed on page 3 of this Schedule.

Source of Information: Company-provided data.

Middlesex Water Company
Calculation of the Effective Cost Rate of Preferred Stock by Series

<u>Non-Redeemable Preferred Stock</u>	<u>Nominal Date of Issue</u>	<u>Date of Maturity</u>	<u>Average Term in Years (1)</u>	<u>Principal Amount Issued</u>	<u>Total (Expense) Premium / (Discount) at Issuance</u>	<u>Net Proceeds</u>	<u>Net Proceeds Ratio</u>	<u>Effective Cost Rate to Maturity (2)</u>
\$7.00 Series	1963	Permanent	--	\$250,000	(\$25)	\$249,975	99.99 %	7.00 % (3)
\$4.75 Series	1963	Permanent	--	1,000,000	(19,882)	980,118	98.01	4.85 (3)

- Notes: (1) Determined by taking into account the effect of annual purchase requirements of shares, if any, through redemption of each series.
- (2) The effective cost rate for each issue is the cost rate to maturity using as inputs the average term of issue, coupon rate and net proceeds ratio.
- (3) Effective cost rate calculated by dividing the nominal dividend rate by the net proceeds ratio.

Source of Information: Company-provided data

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

	2020	2019	2018	2017	2016	
	(MILLIONS OF DOLLARS)					
Capitalization Statistics						
Amount of Capital Employed						
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>	
Indicated Average Capital Cost Rates (2)						
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
Capital Structure Ratios						
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>
Financial Statistics						
Financial Ratios - Market Based						
Earnings / Price Ratio	3.16 %	2.66 %	3.24 %	3.54 %	4.05 %	3.33 %
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	56.52	57.69	56.10	57.06	56.10
Rate of Return on Average Book Common Equity	10.11 %	9.60 %	10.65 %	10.91 %	10.42 %	10.34 %
Total Debt / EBITDA (3)	5.06 x	5.32 x	4.21 x	3.73 x	3.88 x	4.44 x
Funds from Operations / Total Debt (4)	12.38 %	13.75 %	21.05 %	23.06 %	24.84 %	19.01 %
Total Debt / Total Capital	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

Middlesex Water Company
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	\$ 586.505	\$ 517.703	\$ 369.141	\$ 330.805	\$ 311.129	
SHORT-TERM DEBT	-	5.000	35.500	21.000	9.500	
TOTAL-CAPITAL EMPLOYED	<u>\$ 586.505</u>	<u>\$ 522.703</u>	<u>\$ 404.641</u>	<u>\$ 351.805</u>	<u>\$ 320.629</u>	
<u>INDICATED AVERAGE CAPITAL COST RATES (2)</u>						
TOTAL DEBT	1.81 %	2.14 %	2.97 %	2.66 %	2.89 %	
PREFERRED EQUITY	5.76 %	5.84 %	5.92 %	5.92 %	5.92 %	
<u>CAPITAL STRUCTURE RATIOS</u>						
5 YEAR						
AVERAGE						
<u>BASED ON TOTAL PERMANENT CAPITAL:</u>						
LONG-TERM DEBT	40.62 %	37.05 %	31.94 %	29.99 %	29.01 %	33.72 %
PREFERRED STOCK	0.35	0.40	0.66	0.74	0.78	0.59
COMMON EQUITY	<u>59.03</u>	<u>62.55</u>	<u>67.40</u>	<u>69.27</u>	<u>70.21</u>	<u>65.69</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>BASED ON TOTAL CAPITAL:</u>						
TOTAL DEBT, INCLUDING SHORT-TERM	40.62 %	37.66 %	37.92 %	34.17 %	31.11 %	36.30 %
PREFERRED STOCK	0.35	0.40	0.60	0.69	0.76	0.56
COMMON EQUITY	<u>59.03</u>	<u>61.94</u>	<u>61.48</u>	<u>65.14</u>	<u>68.13</u>	<u>63.14</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>DIVIDEND PAYOUT RATIO (3)</u>	57.00 %	55.57 %	54.92 %	74.92 %	77.17 %	63.92 %
<u>RATE OF RETURN ON AVERAGE COMMON EQUITY</u>	6.39 %	7.12 %	8.29 %	5.29 %	6.07 %	6.63 %
<u>TOTAL DEBT / EBITDA (4)</u>	8.13 x	7.05 x	5.22 x	4.17 x	3.29 x	5.57 x

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) The dividend payout ratio was based on adjusted dividends to reflect the ratio of operating and non-operating income.
- (4) Total debt as a percentage of EBITDA (Earnings before Interest, Income Taxes, Depreciation and Amortization)

Source of Information: Company-Provided Information

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

Middlesex Water Company
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]
Proxy Group of Eight Water Companies	Average Dividend Yield (1)	Value Line Projected Five Year Growth in EPS (2)	Zack's Five Year Projected Growth Rate in EPS	Yahoo! Finance Projected Five Year Growth in EPS	Bloomberg Projected Five Year Growth in EPS	Average Projected Five Year Growth in EPS (3)	Adjusted Dividend Yield (4)	Indicated Common Equity Cost Rate (5)
American States Water Company	1.74 %	6.50 %	NA %	4.60 %	6.00 %	5.70 %	1.79 %	7.49 %
American Water Works Company, Inc.	1.45	8.50	8.10	8.60	8.54	8.44	1.51	9.95
Artesian Resources Corporation	2.62	NA	NA	4.00	NA	4.00	2.67	6.67
California Water Service Group	1.66	6.50	NA	10.75	4.00	7.08	1.72	8.80
Global Water Resources, Inc.	1.73	15.00	15.00	15.00	NA	15.00	1.86	16.86
Middlesex Water Company	1.43	4.50	NA	2.70	NA	3.60	1.46	5.06
SJW Group	2.09	13.00	NA	5.50	7.00	8.50	2.18	10.68
The York Water Company	1.64	6.50	NA	4.90	NA	5.70	1.69	7.39
							Average	<u>9.11 %</u>
							Median	<u>8.14 %</u>
							Average of Mean and Median	<u>8.63 %</u>

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 3 through 10 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

Middlesex Water Company
 Hypothetical Example of the Inadequacy of
 A DCF Return Rate Related to Book Value
When Market Value is Greater / Less than Book Value

<u>Line No.</u>	[1] <u>Market Value</u>	[2] <u>Book Value with Market to Book Ratio of 200%</u>	[3] <u>Book Value with Market to Book Ratio of 80%</u>
1. Per Share	\$ 30.00	\$ 15.00	\$ 37.50
2. DCF Cost Rate (1)	10.00%	10.00%	10.00%
3. Return in Dollars	\$ 3.000	\$ 1.500	\$ 3.750
4. Dividends (2)	\$ 0.900	\$ 0.900	\$ 0.900
5. Growth in Dollars	\$ 2.100	\$ 0.600	\$ 2.850
6. Return on Market Value	10.00%	5.00% (3)	12.50% (4)
7. Rate of Growth on Market Value	7.00% (5)	2.00% (6)	9.50% (7)

Notes:

- (1) Comprised of 3.0% dividend yield and
- (2) $\$30.00 \times 3.0\% \text{ yield} = \0.900 .
- (3) $\$1.50 / \$30.00 \text{ market value} = 5.00\%$.
- (4) $\$3.75 / \$30.00 \text{ market value} = 12.50\%$.
- (5) Expected rate of growth per market based DCF model.
- (6) Actual rate of growth when DCF cost rate is applied to book value ($\$1.500$ possible earnings - $\$0.900$ dividends = $\$0.600$ for growth / $\$30.00$ market value = 2.00%).
- (7) Actual rate of growth when DCF cost rate is applied to book value ($\$3.750$ possible earnings - $\$0.900$ dividends = $\$2.850$ for growth / $\$30.00$ market value = 9.50%).

AMER. STATES WATER NYSE-AWR RECENT PRICE **75.91** P/E RATIO **31.5** (Trailing: 32.6 Median: 24.0) RELATIVE P/E RATIO **1.44** DIV'D 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

Price	Gain	Ann'l Total
High 85	(+10%)	5%
Low 60	(-20%)	-3%

Institutional Decisions

2020	3Q2020	4Q2020	Percent
to Buy 135	121	121	shares 24
to Sell 129	135	142	traded 6
Mk's(000) 25635	25731	25483	

% TOT. RETURN 2/21

THIS STOCK	VL ARITH. INDEX
1 yr. -3.0	50.1
3 yr. 43.9	45.4
5 yr. 88.1	108.8

2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Revenues per sh	Cap'l Spending per sh	Div'd Decl'd per sh	Common Shs Outst'g
7.03	7.88	8.75	9.21	9.74	10.71	11.12	12.12	12.19	12.17	12.56	11.92	12.01	11.88	12.86	13.24	13.55	13.75	4.80	3.05	2.00	17.20
1.32	1.45	1.65	1.69	1.70	2.11	2.13	2.48	2.65	2.67	2.81	2.70	2.96	2.84	3.26	3.34	3.50	3.65	3.05	2.55	1.52	37.50
.66	.67	.81	.78	.81	1.11	1.12	1.41	1.61	1.57	1.61	1.62	1.88	1.72	2.28	2.33	2.40	2.55	2.40	2.40	1.40	37.50
.45	.46	.48	.50	.51	.52	.55	.64	.76	.83	.87	.91	.99	1.06	1.16	1.28	1.40	1.52	1.40	1.40	1.40	37.50
2.12	1.95	1.45	2.23	2.09	2.12	2.13	1.77	2.52	1.89	2.39	3.55	3.08	3.44	4.12	3.54	4.05	4.00	4.05	4.05	4.05	37.50
7.86	8.32	8.77	8.97	9.70	10.13	10.84	11.80	12.72	13.24	12.77	13.52	14.45	15.19	16.33	17.39	18.95	20.00	18.95	20.00	18.95	37.50
33.60	34.10	34.46	34.60	37.06	37.26	37.70	38.53	38.72	38.29	36.50	36.57	36.68	36.76	36.85	36.89	37.25	37.50	37.25	37.50	37.25	37.50
21.9	27.7	24.0	22.6	21.2	15.7	15.4	14.3	17.2	20.1	24.6	25.6	25.7	34.0	34.4	34.3	34.3	34.3	34.3	34.3	34.3	37.50
1.17	1.50	1.27	1.36	1.41	1.00	.97	.91	.97	1.06	1.24	1.34	1.29	1.84	1.83	1.78	1.83	1.78	1.83	1.78	1.78	37.50
3.1%	2.5%	2.5%	2.9%	2.9%	3.0%	3.2%	3.1%	2.7%	2.6%	2.2%	2.2%	2.0%	1.8%	1.5%	1.6%	1.5%	1.6%	1.5%	1.6%	1.6%	37.50

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)

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
42.0	54.1	62.7	61.1	60.5	59.7	69.4	63.9	84.3	86.4	90.0	95.0	95.0	95.0	95.0	95.0	95.0
41.7%	39.9%	36.3%	38.4%	38.4%	36.8%	36.0%	22.0%	22.6%	24.6%	23.0%	24.0%	24.0%	24.0%	24.0%	24.0%	24.0%
2.0%	2.5%	--	--	--	--	--	--	2.5%	--	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

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 (2018-2019-12/31/20)

(\$MILL.)	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
Revenues	2.5%	5.0%
"Cash Flow"	5.5%	7.0%
Earnings	9.0%	6.5%
Dividends	8.5%	9.5%
Book Value	5.5%	5.5%

QUARTERLY REVENUES (\$ mill.)

Cal-endar	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	488.2
2021	115	125	145	120	505
2022	118	127	148	122	515

EARNINGS PER SHARE

Cal-endar	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

QUARTERLY DIVIDENDS PAID

Cal-endar	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				

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*

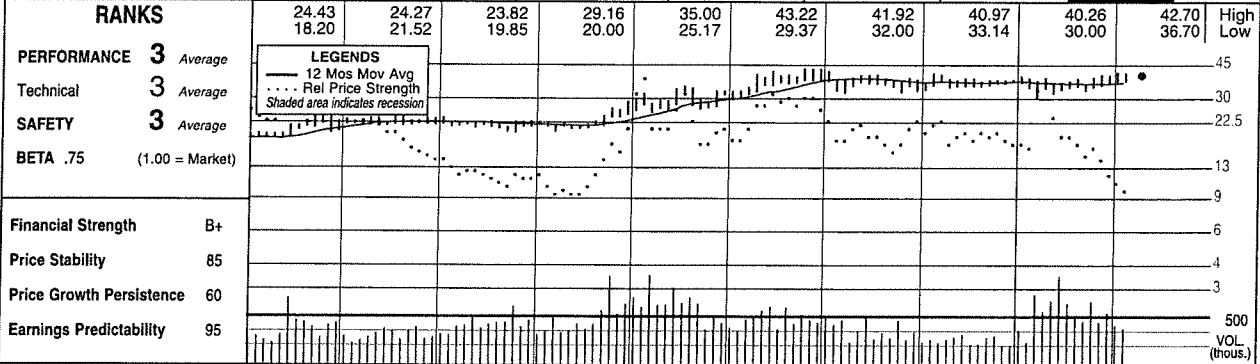
(A) Primary earnings. Excludes nonrecurring gains/(losses): '05, 13c; '06, 3c; '08, (14c); '10, (23c); '11, 10c. Next earnings report due mid-May.
(B) Dividends historically paid in early March, June, September, and December. ■ Div'd reinvestment plan available.
(C) In millions, adjusted for split.
(D) 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

To subscribe call 1-800-VALUELINE

AMERICAN WATER NYSE-AWK		RECENT PRICE	P/E RATIO	RELATIVE P/E RATIO	DIV'D YLD	VALUE LINE	
		147.91	35.4 (Trailing: 37.8 Median: 24.0)	1.62	1.6%		
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					Target Price Range 2024 2025 2026
SAFETY 3 New 7/25/08	LEGENDS 1.10 x Dividends p sh divided by Interest Rate Relative Price Strength Options: Yes Shaded area indicates recession						
TECHNICAL 3 Lowered 4/9/21	Percent shares traded: 21, 14, 7						
BETA .85 (1.00 = Market)	18-Month Target Price Range: Low-High Midpoint (% to Mid) \$114-\$247 \$181 (20%)						
2024-26 PROJECTIONS							
Price	Gain	Ann'l Total Return					
High 155	(+5%)	3%					
Low 105	(-30%)	-6%					
Institutional Decisions							
to Buy	2020	3Q2020	4Q2020				
363	401	449					
to Sell	371	337	344				
HL's(000)	1511102	150689	148917				
2005 2006E 2007E 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022							
Revenues per sh 25.80							
"Cash Flow" per sh 9.70							
Earnings per sh A 5.50							
Div'd Decl'd per sh B 3.10							
Cap'l Spending per sh 11.75							
Book Value per sh D 50.00							
Common Shs Outst'g C 190.00							
Avg Ann'l P/E Ratio 23.5							
Relative P/E Ratio 1.30							
Avg Ann'l Div'd Yield 2.4%							
CAPITAL STRUCTURE as of 12/31/20							
Total Debt \$10691 mil. Due in 5 Yrs \$2500 mil.							
LT Debt \$9329 mil. LT Interest \$354 mil. (59% of Cap'l)							
Leases, Uncapitalized: Annual rentals \$14.0 mil.							
Pension Assets 12/19 \$1747.0 mil. Oblig. \$2161.0 mil.							
Pfd Stock \$4.0 mil. Pfd Div'd \$3.3 mil							
Common Stock 181,439,255 shares as of 2/19/21							
MARKET CAP: \$26.8 billion (Large Cap)							
CURRENT POSITION 2018 2019 12/31/20 (\$ MILL.)							
Cash Assets 158 91 576							
Accts Receivable 301 294 321							
Other 322 900 1009							
Current Assets 781 1285 1906							
Accts Payable 175 203 189							
Debt Due 1035 814 1611							
Other 884 1028 1081							
Current Liab. 2094 2045 2881							
ANNUAL RATES Past 10 Yrs. Past 5 Yrs. Est'd '18-'20 of change (per sh)							
Revenues 3.0% 3.5% 4.5%							
"Cash Flow" 8.0% 7.0% 6.5%							
Earnings 10.5% 8.0% 8.5%							
Dividends 11.0% 11.5% 8.5%							
Book Value 3.5% 4.5% 5.0%							
Cal-endar QUARTERLY REVENUES (\$ mill.) Full Year							
Mar.31 Jun.30 Sep.30 Dec.31							
2018 761 853 976 850 3440							
2019 813 882 1013 902 3610							
2020 844 931 1079 923 3777							
2021 880 995 1140 995 4010							
2022 935 1055 1200 1050 4240							
Cal-endar EARNINGS PER SHARE A Full Year							
Mar.31 Jun.30 Sep.30 Dec.31							
2018 .59 .91 1.03 .62 3.15							
2019 .62 .94 1.33 .54 3.43							
2020 .68 .97 1.46 .80 3.91							
2021 .73 1.05 1.60 .87 4.25							
2022 .80 1.15 1.70 .95 4.60							
Cal-endar QUARTERLY DIVIDENDS PAID B Full Year							
Mar.31 Jun.30 Sep.30 Dec.31							
2017 .375 .415 .415 .415 1.62							
2018 .415 .455 .455 .455 1.78							
2019 .455 .50 .50 .50 1.96							
2020 .50 .55 .55 .55 2.15							
2021 .55							
BUSINESS: American Water Works Company, Inc. is the largest investor-owned water and wastewater utility in the U.S., providing services to approximately 15 million people in 46 states. Nonregulated business assists municipalities and military bases with the maintenance and upkeep as well. Regulated operations made up 86% of 2020 revenues. New Jersey is its largest market accounting for 24.5% of regulated revenues; Pennsylvania, 22.5%; Missouri, 10.6%. Has 6,800 employees. The Vanguard Grp, owns 11.7% of outstanding shares; BlackRock, Inc., 8.1%; officers & directors, less than 1.0%. (3/21 Proxy). President & CEO: Susan N. Story, Chairman: George MacKenzie. Address: 1 Water Street, Camden, NJ 08102. Tel: 856-346-8200. Internet: www.amwater.com.							
American Water Works completed another very successful year in 2020. Due in part to a strong fourth quarter, the water utility managed to post an impressive 14% share-earnings increase over 2019. One of the most attractive qualities about this industry is that the demand for water is relatively inelastic. Hence, the pandemic has had no real impact on the company. The earnings picture remains bright. American Water has an aggressive acquisition policy (more below). This, plus solid cost controls, an expanding rate base, and the stable need for water, should ensure solid yearly earnings per share increases for the foreseeable future. We think the company's share net will rise 8% both this year and in 2022. Through 2024 to 2026, we estimate growth here should be in the 7%-10% range, a much higher rate than the typical utility. The company ought to continue to following what has been a successful strategy. Management has been acquiring small, independent water districts for many years. Indeed, in 2020, 23 such purchases were made. Domestically, there are literally thousands of these undersized water entities that are run by local municipalities. Often they are inefficient and undercapitalized. American Water can merge these operations into its existing business and attain significant economies of scale. As a result, the utility's margins should continue to widen annually as long as this policy is in place. Capital expenditures are large, but manageable. Like others in the group, the company is spending heavily to upgrade its pipelines and other assets. Also, most of the acquisitions require investment to ensure that they are in compliance with federal mandates. Over the past 10 years, capital outlays have totaled \$28 billion. Out to mid-decade, annual outlays may average \$2.2 billion to \$2.5 billion. The balance sheet will likely handle this without deteriorating much. These shares are timely. Since our January report, the equity has underperformed the market indexes by about 750 basis points. Thus, the premium investors usually have to pay for this industry standout has declined to some degree. James A. Flood April 9, 2021							
(A) Diluted earnings. Excludes nonrecurr. losses: '08, \$4.62; '09, \$2.63; '11, \$0.07. Disc. oper.: '06, (\$0.04); '11, \$0.03; '12, (\$0.10); '13, (\$0.01). GAAP used as of 2014. Next earnings report due mid-May.							
(B) Dividends paid in March, June, September, and December. ■ Div. reinvestment available.							
(C) In millions. (D) Includes intangibles. On 12/31/20: \$1.559 billion, \$8.59/share. (E) Pro forma numbers for '06 & '07.							
Company's Financial Strength B++							
Stock's Price Stability 85							
Price Growth Persistence 80							
Earnings Predictability 85							

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



© VALUE LINE PUBLISHING LLC	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021/2022
SALES PER SH	8.10	7.82	8.13	8.50	8.67	8.92	8.69	9.00	9.42	
"CASH FLOW" PER SH	2.04	1.87	2.04	2.22	2.43	2.55	2.66	2.77	2.99	NA/NA
EARNINGS PER SH	1.13	.94	1.07	1.26	1.41	1.51	1.54	1.60	1.79	
DIV'DS DECL'D PER SH	.79	.82	.85	.87	.90	.93	.96	.98	1.01	
CAP'L SPENDING PER SH	2.36	2.40	2.66	2.28	3.10	4.46	5.30	4.38	3.66	
BOOK VALUE PER SH	13.57	13.80	14.09	14.61	15.23	15.91	16.57	17.25	18.11	
COMMON SHS OUTST'G (MILL)	8.71	8.83	8.91	9.06	9.13	9.22	9.25	9.29	9.36	
AVG ANN'L P/E RATIO	18.3	23.9	20.5	18.0	20.9	24.2	23.9	22.8	20.2	NA/NA
RELATIVE P/E RATIO	1.17	1.34	1.08	.93	1.14	1.21	1.35	1.32	1.19	
AVG ANN'L DIV'D YIELD	3.8%	3.7%	3.9%	3.8%	3.1%	2.5%	2.6%	2.7%	2.8%	
SALES (\$MILL)	70.6	69.1	72.5	77.0	79.1	82.2	80.4	83.6	88.1	<i>Bold figures are consensus earnings estimates and, using the recent prices, P/E ratios.</i>
OPERATING MARGIN	48.7%	47.0%	48.8%	43.0%	44.4%	44.6%	46.1%	43.0%	47.8%	
DEPRECIATION (\$MILL)	7.9	8.3	8.7	8.8	9.2	9.6	10.3	10.8	11.1	
NET PROFIT (\$MILL)	9.8	8.3	9.5	11.3	13.0	14.0	14.3	14.9	16.8	
INCOME TAX RATE	40.2%	40.2%	40.1%	--	--	--	--	--	--	
NET PROFIT MARGIN	14.0%	12.0%	13.1%	14.7%	16.4%	17.0%	17.8%	17.9%	19.1%	
WORKING CAP'L (\$MILL)	d11.4	d12.3	d13.5	d8.8	d4.7	d9.5	d21.6	d11.4	d26.1	
LONG-TERM DEBT (\$MILL)	106.3	105.5	105.0	103.6	102.3	105.6	115.9	144.2	142.3	
SHR. EQUITY (\$MILL)	118.2	121.8	125.6	132.3	139.0	146.6	153.3	160.3	169.4	
RETURN ON TOTAL CAP'L	5.9%	5.1%	5.5%	6.3%	6.7%	6.8%	6.5%	6.1%	6.6%	
RETURN ON SHR. EQUITY	8.3%	6.8%	7.6%	8.5%	9.3%	9.5%	9.3%	9.3%	9.9%	
RETAINED TO COM EQ	2.5%	.9%	1.6%	2.6%	3.4%	3.7%	3.6%	3.6%	4.4%	
ALL DIV'DS TO NET PROF	70%	87%	79%	69%	63%	61%	62%	61%	56%	

Note: No analyst estimates available.

ANNUAL RATES					ASSETS (\$mill.)			INDUSTRY: Water Utility																			
of change (per share)	5 Yrs.	1 Yr.			2018	2019	12/31/20	<p>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.</p> <p style="text-align: right;"><i>E.B.</i></p> <p style="text-align: center;">April 9, 2021</p>																			
Sales	2.0%	4.5%			.3	.6	.0						<p>TOTAL SHAREHOLDER RETURN <i>Dividends plus appreciation as of 2/28/2021</i></p> <table border="1"> <thead> <tr> <th>3 Mos.</th> <th>6 Mos.</th> <th>1 Yr.</th> <th>3 Yrs.</th> <th>5 Yrs.</th> </tr> </thead> <tbody> <tr> <td>0.73%</td> <td>6.58%</td> <td>10.82%</td> <td>20.40%</td> <td>49.21%</td> </tr> </tbody> </table>					3 Mos.	6 Mos.	1 Yr.	3 Yrs.	5 Yrs.	0.73%	6.58%	10.82%	20.40%	49.21%
3 Mos.	6 Mos.	1 Yr.	3 Yrs.	5 Yrs.																							
0.73%	6.58%	10.82%	20.40%	49.21%																							
"Cash Flow"	6.5%	8.0%			8.2	6.9	10.2																				
Earnings	8.5%	12.0%			1.5	1.3	1.5																				
Dividends	3.0%	2.5%			6.1	5.4	5.9																				
Book Value	4.0%	5.0%			16.1	14.2	17.6																				
Fiscal Year	QUARTERLY SALES (\$mill.)				Property, Plant & Equip, at cost													<p>LONG-TERM DEBT AND EQUITY as of 12/31/20</p> <p>Total Debt \$170.9 mill. Due in 5 Yrs. \$34.7 mill. LT Debt \$142.3 mill. Including Cap. Leases None (46% of Cap'l) Leases, Uncapitalized Annual rentals \$0 mill.</p> <p>Pension Liability None in '20 vs. None in '19</p> <p>Pfd Stock None Pfd Div'd Paid None</p> <p>Common Stock 9,357,000 shares (54% of Cap'l)</p>									
	1Q	2Q	3Q	4Q	Full Year	LIABILITIES (\$mill.)																					
12/31/18	18.9	20.2	21.9	19.4	80.4	Accts Payable	8.3	8.2	6.4																		
12/31/19	19.4	20.7	22.5	21.0	83.6	Debt Due	17.7	9.2	28.6																		
12/31/20	19.9	21.8	24.7	21.7	88.1	Other	11.7	8.2	8.7																		
12/31/21						Current Liab	37.7	25.6	43.7																		
Fiscal Year	EARNINGS PER SHARE				Full Year	LONG-TERM DEBT AND EQUITY																					
	1Q	2Q	3Q	4Q	Full Year	as of 12/31/20																					
12/31/17	.34	.35	.42	.40	1.51	Total Debt \$170.9 mill. Due in 5 Yrs. \$34.7 mill.																					
12/31/18	.38	.42	.42	.32	1.54	LT Debt \$142.3 mill.																					
12/31/19	.38	.41	.48	.33	1.60	Including Cap. Leases None (46% of Cap'l)																					
12/31/20	.44	.49	.54	.32	1.79	Leases, Uncapitalized Annual rentals \$0 mill.																					
12/31/21						Pension Liability None in '20 vs. None in '19																					
Cal-endar	QUARTERLY DIVIDENDS PAID				Full Year	Pfd Stock None Pfd Div'd Paid None																					
	1Q	2Q	3Q	4Q	Full Year	Common Stock 9,357,000 shares (54% of Cap'l)																					
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																						

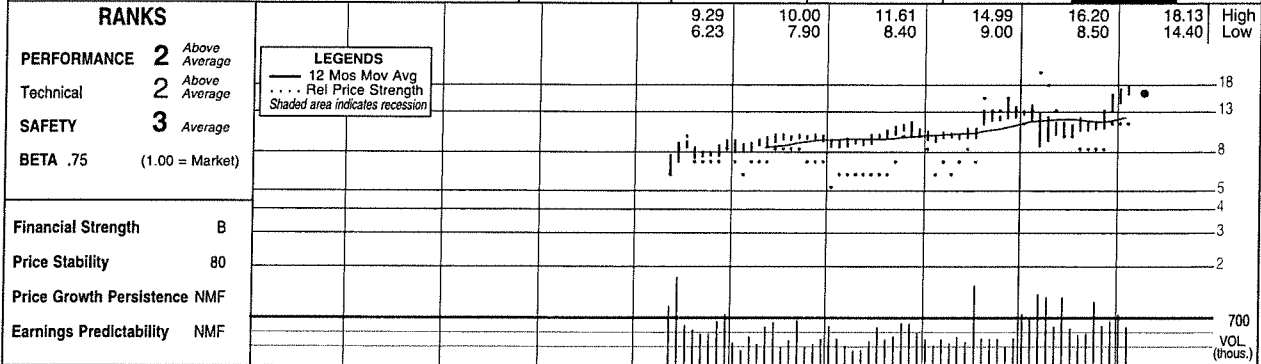
CALIFORNIA WATER NYSE-CWT										RECENT PRICE	P/E RATIO 31.4 (Trailing: 29.0 Median: 24.0)					RELATIVE P/E RATIO	DIV'D YLD	VALUE LINE					
TIMELINESS 1 Raised 3/19/21	High: 19.8	19.4	19.3	23.4	26.4	26.0	36.8	46.2	49.1	57.5	57.4	60.5											
SAFETY 3 Lowered 7/27/07	Low: 16.9	16.7	16.8	18.4	20.3	19.5	22.5	32.4	35.3	44.6	39.7	51.8											
TECHNICAL 2 Lowered 4/9/21	LEGENDS 1.33 x Dividends p sh divided by Interest Rate Relative Price Strength 2-for-1 split 6/11 Options: Yes Shaded area indicates recession																						
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 High 65 (+15%) 6% Low 45 (-20%) -3%																							
Institutional Decisions 2020 3Q2020 4Q2020 to Buy 109 101 122 to Sell 107 106 91 Hrs(000) 35580 36492 37534																							
2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022																							
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						
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						
.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						
.57	.58	.58	.59	.59	.60	.62	.63	.64	.65	.67	.69	.72	.75	.79	.85	.92	.98						
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						
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						
36.78	41.31	41.33	41.45	41.53	41.67	41.82	41.98	42.74	42.81	42.88	42.97	43.01	43.07	43.53	43.33	43.00	42.80						
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	24.9	24.9						
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	1.29	1.29						
3.1%	2.9%	3.0%	3.1%	3.2%	3.4%	3.5%	3.1%	2.8%	2.9%	2.3%	1.9%	1.8%	1.8%	1.5%	1.7%	1.7%	1.7%						
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		
Pension Assets-12/20 \$716.8 mill. Oblig. \$833.9 mill.										36.1	42.6	47.3	56.7	45.0	48.7	67.2	65.6	63.1	96.8	97.0	105		
Pfd Stock None										40.5%	37.5%	30.3%	33.0%	36.0%	35.5%	30.1%	24.5%	19.1%	11.1%	21.0%	21.0%		
Common Stock 50,330,000 shs.										7.6%	8.0%	4.3%	2.7%	4.3%	6.1%	3.5%	3.1%	5.8%	3.3%	5.0%	5.0%		
MARKET CAP: \$2.8 billion (Mid Cap)										51.7%	47.8%	41.6%	40.1%	44.4%	44.6%	42.7%	49.3%	50.2%	45.9%	44.5%	43.5%		
CURRENT POSITION 2018 2019 12/31/20										48.3%	52.2%	58.4%	59.9%	55.6%	55.4%	57.3%	50.7%	49.8%	54.1%	55.5%	56.5%		
Cash Assets (\$mill.)										931.5	908.2	1024.9	1045.9	1154.4	1191.2	1209.3	1440.2	1566.7	1702.4	1685	1675		
Other										1381.1	1457.1	1515.8	1590.4	1701.8	1859.3	2048.0	2232.7	2406.4	2650.6	2675	2700		
Current Assets										5.5%	6.3%	6.0%	6.3%	5.2%	5.5%	7.1%	5.9%	5.5%	7.0%	6.5%	7.0%		
Accts Payable										8.0%	9.0%	7.9%	9.1%	7.0%	7.4%	9.7%	9.0%	8.1%	10.5%	10.5%	11.0%		
Debt Due										8.0%	9.0%	7.9%	9.1%	7.0%	7.4%	9.7%	9.0%	8.1%	10.5%	10.5%	11.0%		
Other										2.3%	3.4%	3.4%	4.1%	2.0%	2.4%	4.7%	4.0%	3.2%	6.0%	5.5%	5.5%		
Current Liab.										71%	62%	56%	55%	71%	68%	51%	55%	60%	43%	48%	49%		
ANNUAL RATES Past 10 Yrs. 5 Yrs. Est'd '18-'20 of change (per sh)										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.						
Revenues 3.5% 4.0% 1.5% "Cash Flow" 6.0% 8.0% 2.0% Earnings 5.0% 8.0% 6.5% Dividends 3.0% 4.0% 6.5% Book Value 5.0% 5.0% 4.0%										QUARTERLY REVENUES (\$mill.)^F							QUARTERLY DIVIDENDS PAID[®]						
Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year										Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year													
2018 134.6 174.9 221.3 167.4 698.2 2019 126.1 179.0 232.6 176.9 714.6 2020 125.6 175.5 304.1 189.1 794.3 2021 155 205 255 200 815 2022 160 205 260 205 830										2018 d.02 .31 .75 .32 1.36 2019 d.16 .35 .88 .24 1.31 2020 d.42 .11 1.94 .31 1.97 2021 .08 .45 .95 .42 1.90 2022 .10 .45 1.00 .45 2.00													
2017 .18 .18 .18 .18 .72 2018 .1875 .1875 .1875 .1875 .75 2019 .1975 .1975 .1975 .1975 .79 2020 .2125 .2125 .2125 .2125 .85 2021 .230										Company's Financial Strength B++ Stock's Price Stability 95 Price Growth Persistence 70 Earnings Predictability 65													

(A) Basic EPS. Excl. nonrecurring gain (loss): '11, 4c. 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
© 2021 Value Line, Inc. All rights reserved. Factual material is obtained from sources believed to be reliable and is provided without warranties of any kind. THE PUBLISHER IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS HEREIN. This publication is strictly for subscriber's own, non-commercial, internal use. No part of it may be reproduced, resold, stored or transmitted in any printed, electronic or other form, or used for generating or marketing any printed or electronic publication, service or product.

To subscribe call 1-800-VALUELINE

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



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021/2022
REVENUES PER SH	--	--	--	--	1.52	1.59	1.65	1.65	1.71	
"CASH FLOW" PER SH	--	--	--	--	.18	.58	.49	.49	.45	
EARNINGS PER SH	--	--	--	--	d.15	.23	.15	.10	.05	.11 ^{A,B} /.18 ^C
DIV'DS DECL'D PER SH	--	--	--	--	.17	.28	.28	.29	.29	
CAP'L SPENDING PER SH	--	--	--	--	.44	1.06	.22	.52	.40	
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	NMF/90.4
RELATIVE P/E RATIO	--	--	--	--	--	2.01	3.61	NMF	NMF	
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	<i>Bold figures are consensus earnings estimates and, using the recent prices, P/E ratios.</i>
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	
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	
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%	
RETAINED TO COM EQ	--	--	--	106.5%	NMF	NMF	11.1%	NMF	NMF	
ALL DIV'DS TO NET PROF	--	--	--	--	NMF	NMF	119%	NMF	NMF	

^ANo. of analysts changing earn. est. in last 29 days: 0 up, 0 down, consensus 5-year earnings growth 15.0% per year. ^BBased upon one analyst's estimate. ^CBased upon one analyst's estimate.

ANNUAL RATES					ASSETS (\$mill.)			INDUSTRY: Water Utility				
of change (per share)	5 Yrs.	1 Yr.			2018	2019	12/31/20					
Sales	--	4.0%			12.8	7.5	18.0	<p>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.</p> <p style="text-align: right;">April 9, 2021</p>				
"Cash Flow"	--	-8.5%			1.5	1.6	2.1					
Earnings	--	-50.0%			.0	.0	.0					
Dividends	--	1.0%			3.0	3.2	3.4					
Book Value	--	24.5%			17.3	12.3	23.5					
Fiscal Year	1Q	2Q	3Q	4Q	Full Year							
12/31/18	7.4	10.8	9.0	8.3	35.5	Property, Plant & Equip, at cost	312.1				326.3	340.2
12/31/19	7.7	9.2	9.9	8.7	35.5	Accum Depreciation	85.0				92.7	101.3
12/31/20	8.2	9.9	10.8	9.7	38.6	Net Property	227.1				233.6	238.9
12/31/21						Other	18.1				20.2	21.0
						Total Assets	262.5	266.1	283.4			
Fiscal Year	1Q	2Q	3Q	4Q	Full Year							
12/31/17	--	.02	.06	.15	.23							
12/31/18	.02	.10	.03	--	.15							
12/31/19	.02	.04	.05	d.01	.10							
12/31/20	.02	d.01	.05	d.01	.05							
12/31/21	d.01	.04	.06									
Cal-endar	1Q	2Q	3Q	4Q	Full Year							
2018	.071	.071	.071	.071	.28							
2019	.072	.072	.072	.072	.29							
2020	.073	.072	.073	.072	.29							
2021	.073											
INSTITUTIONAL DECISIONS					LIABILITIES (\$mill.)			LONG-TERM DEBT AND EQUITY as of 12/31/20				
to Buy	33	18	26		Accts Payable	.6	1.0	.5	Total Debt \$114.7 mill. Due in 5 Yrs. \$17.4 mill.			
to Sell	22	33	21		Debt Due	.0	.1	2.0	LT Debt \$112.7 mill. Including Cap. Leases \$.1 mill. (78% of Cap'l)			
Hld's(000)	8849	7844	7595		Other	9.0	9.0	9.9	Leases, Uncapitalized Annual rentals None			
					Current Liab	9.6	10.1	12.4	Pension Liability None in '20 vs. None in '19			
									Pfd Stock None Pfd Div'd Paid None			
									Common Stock 22,588,000 shares (22% of Cap'l)			

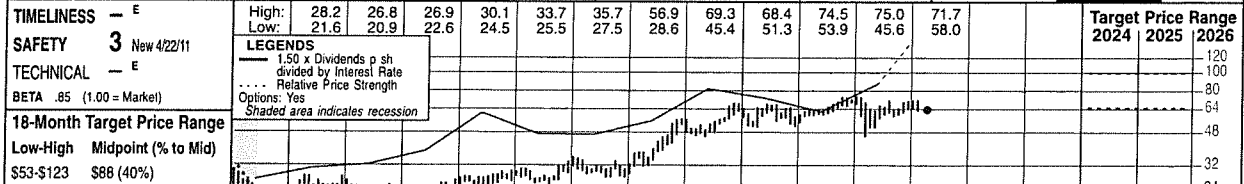
TOTAL SHAREHOLDER RETURN				
Dividends plus appreciation as of 2/28/2021				
3 Mos.	6 Mos.	1 Yr.	3 Yrs.	5 Yrs.
35.15%	58.52%	48.56%	118.55%	--

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			Target Price Range		
SAFETY	2 New 10/21/11	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			2024 2025 2026		
TECHNICAL	4 Lowered 4/9/21	LEGENDS 1.20 x Dividends p sh divided by Interest Rate Relative Price Strength Options: Yes Shaded area indicates recession																	
BETA	.70 (1.00 = Market)	18-Month Target Price Range Low-High Midpoint (% to Mid) \$58-\$106 \$82 (0%)																	
2024-26 PROJECTIONS Price Gain Ann'l Total High Low 75 (-5%) Nil 55 (-30%) -7%																			
Institutional Decisions 2020 3Q2020 4Q2020 to Buy 68 52 67 to Sell 55 69 49 Hld's(000) 10359 10357 10675 Percent shares traded 12 8 4																			
% TOT. RETURN 2/21 THIS STOCK VL ARITH. INDEX 1 yr. 17.2 50.1 3 yr. 103.1 45.4 5 yr. 168.7 108.8																			
© VALUE LINE PUB. LLC 24-26																			
2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Revenues per sh	9.15
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	"Cash Flow" per sh	3.70
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	Earnings per sh A	2.70
.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	Div'd Decl'd per sh B	1.35
.67	.68	.69	.70	.71	.72	.73	.74	.75	.76	.78	.81	.86	.91	.98	1.04	1.10	1.15	Cap'l Spending per sh	6.25
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	Book Value per sh	20.85
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	Common Shs Outst'g C	18.00
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	Avg Ann'l P/E Ratio	24.0
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	30.1	30.1	Relative P/E Ratio	1.30
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	1.56	1.56	Avg Ann'l Div'd Yield	2.1%
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%	1.6%	1.6%		
CAPITAL STRUCTURE as of 12/31/20 Total Debt \$282.5 mill. Due in 5 Yrs \$43.7 mill. LT Debt \$273.2 mill. LT Interest \$7.5 mill. (Total interest coverage: 7.3x) (44% of Cap'l)																			
Pension Assets-12/20 \$88.9 mill. Oblig. \$115.9 mill. Pfd Stock \$2.4 mill. Pfd Div'd: \$1 mill. Common Stock 17,473,000 shs.																			
MARKET CAP: \$1.4 billion (Mid-Cap)																			
CURRENT POSITION (\$MILL) Cash Assets 3.7 2.2 4.5 Other 27.1 26.9 29.6 Current Assets 30.8 29.1 34.1 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 Past 10 Yrs. Past 5 Yrs. Est'd '18-'20 of change (per sh) 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%																			
QUARTERLY REVENUES (\$ mill.) Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year 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																			
EARNINGS PER SHARE A Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year 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																			
QUARTERLY DIVIDENDS PAID B Cal-endar Mar.31 Jun.30 Sep.30 Dec.31 Full Year 2017 .2125 .2125 .2125 .22375 .86 2018 .22375 .22375 .22375 .24 .91 2019 .24 .24 .24 .2562 .98 2020 .2562 .2562 .2562 .2725 1.04 2021 .2725																			
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.																			
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 water mains, 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. <i>Nicholas P. Patrikis April 9, 2021</i>																			
(A) Diluted earnings. Next earnings report due early May. (B) Dividends historically paid in mid-Feb., May, Aug., and November. Div'd reinvestment plan available. (C) In millions.																			
Company's Financial Strength B++ Stock's Price Stability 85 Price Growth Persistence 65 Earnings Predictability 85																			

© 2021 Value Line, Inc. All rights reserved. Factual material is obtained from sources believed to be reliable and is provided without warranties of any kind. THE PUBLISHER IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS HEREIN. This publication is strictly for subscriber's own, non-commercial, internal use. No part of it may be reproduced, resold, stored or transmitted in any printed, electronic or other form, or used for generating or marketing any printed or electronic publication, service or product.

To subscribe call 1-800-VALUELINE

SJW GROUP NYSE-SJW		RECENT PRICE 63.42	P/E RATIO 26.9 (Trailing: 29.6 Median: 21.0)	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	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				

LEGENDS	150 x Dividends p sh divided by Interest Rate	15
--- ---	Relative Price Strength	10
Options: Yes		5
Shaded area indicates recession		

2024-26 PROJECTIONS	Price	Gain	Ann'l Total Return
High	100	(+60%)	14%
Low	65	(Nil)	3%

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

CAPITAL STRUCTURE as of 12/31/20	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Revenues per sh	22.15
Total Debt \$1363.8 mill. Due in 5 Yrs \$22.4 mill.	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

MARKET CAP: \$1.8 billion (Mid Cap)	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	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	1.72

ANNUAL RATES	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

QUARTERLY REVENUES (\$ mill.)	18.27	18.28	18.36	18.18	18.50	18.55	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	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	30.0	Avg Ann'l P/E Ratio	23.0

ANNUAL RATES	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	1.9%	2.0%	Relative P/E Ratio	1.30
	2.4%	2.0%	1.7%	2.3%	2.8%	2.9%	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%

QUARTERLY DIVIDENDS PAID	239.0	261.5	276.9	319.7	305.1	339.7	389.2	397.7	420.5	564.5	590	615	615	615	615	615	615	615	Net Profit (\$mill)	110
	607.9	610.2	656.2	744.5	764.6	855.0	894.3	1320.7	2173.6	2204.7	2250	2250	2250	2250	2250	2250	2250	2250	Total Capital (\$mill)	1975

QUARTERLY REVENUES (\$ mill.)	2018	2019	2020	2021	2022	Full Year
Mar.31	75.0	99.1	124.9	98.7	397.7	397.7
Jun.30	77.7	103.0	114.0	126.0	420.5	420.5
Sep.30	115.8	147.2	165.9	135.6	564.5	564.5
Dec.31	120	150	175	145	590	590
Full Year	125	155	185	150	615	615

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 Thomburg. Inc. 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	P/E RATIO	RELATIVE P/E RATIO	DIV'D YLD	VALUE LINE								
TIMELINESS 3 Lowered 1/15/21 SAFETY 3 Lowered 7/17/15 TECHNICAL 3 Lowered 4/22/21 BETA .80 (1.00 = Market)										48.74	38.1	1.74	1.5%									
18-Month Target Price Range Low-High Midpoint (% to Mid) \$36-\$76 \$56 (15%)										18.0 12.6	18.1 15.8	18.5 16.8	22.0 17.6	24.3 18.8	26.7 19.7	39.8 23.8	39.9 31.7	36.1 27.5	47.3 30.3	51.3 34.6	51.9 40.7	Target Price Range 2024 2025 2026
2024-26 PROJECTIONS Price Gain Ann'l Total High 50 (+5%) 2% Low 35 (-30%) -6%																						
Institutional Decisions 2020 2021 2022 to Buy 59 46 56 to Sell 48 53 46 Hld's(%) 5479 5302 5341																						
MARKET CAP: \$625 million (Small Cap)																						
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.										© VALUE LINE PUB, LLC 24-26												
Pension Assets 12/20 \$56.3 mill. Oblig. \$54.1 mill.										Revenues per sh 5.10 Cash Flow per sh 2.45 Earnings per sh A 1.65 Div'd Decl'd per sh B 1.00 Cap'l Spending per sh 1.85 Book Value per sh 12.90 Common Shs Outst'g C 12.80												
Pfd Stock None										2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022												
Common Stock 13,060,817 shs.										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												
MARKET CAP: \$625 million (Small Cap)										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 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 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%												
CURRENT POSITION (MILL)										2018 2019 12/31/20 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										2018 2019 2020 2021 2022 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.)										2018 2019 2020 2021 2022 Mar.31 Jun.30 Sep.30 Dec.31 Full Year 11.6 12.0 12.7 12.1 48.4 11.8 13.0 13.7 13.1 51.6 12.9 13.3 14.3 13.4 53.9 13.0 13.5 14.5 13.5 54.5 13.5 13.7 15.0 13.8 56.0												
QUARTERLY EARNINGS PER SHARE A										2018 2019 2020 2021 2022 Mar.31 Jun.30 Sep.30 Dec.31 Full Year .20 .26 .29 .29 1.04 .22 .28 .35 .26 1.11 .31 .32 .36 .28 1.27 .28 .35 .37 .35 1.35 .30 .36 .38 .36 1.40												
QUARTERLY DIVIDENDS PAID B										2017 2018 2019 2020 2021 Mar.31 Jun.30 Sep.30 Dec.31 Full Year .1602 .1602 .1602 .1666 .647 .1666 .1666 .1666 .1733 .673 .1733 .1733 .1733 .1802 .70 .1802 .1802 .1802 .1874 .73												
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 revenues; 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. Inlernet: 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.												

(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

To subscribe call 1-800-VALUELINE

Middlesex Water Company
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.

Middlesex Water Company
Indicated ROE
Derived by the Predictive Risk Premium Model (1)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
<u>Proxy Group of Eight Water Companies</u>	<u>LT Average Predicted Variance</u>	<u>Spot Predicted Variance</u>	<u>Recommended Variance</u>	<u>GARCH Coefficient</u>	<u>Predicted Risk Premium (2)</u>	<u>Risk-Free Rate (3)</u>	<u>Indicated ROE (4)</u>
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	<u>12.72%</u>
						Median	<u>11.53%</u>
					Average of Mean and Median		<u>12.13%</u>

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-8.
- (4) Column [5] + Column [6].

Middlesex Water Company
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.

Middlesex Water Company
 Interest Rates and Bond Spreads for
Moody's Corporate and Public Utility Bonds

Selected Bond Yields

	[1]	[2]	[3]
	<u>Aaa Rated Corporate Bond</u>	<u>A2 Rated Public Utility Bond</u>	<u>Baa2 Rated Public Utility Bond</u>
Mar-2021	3.04 %	3.44 %	3.72 %
Feb-2021	2.70	3.09	3.37
Jan-2021	<u>2.45</u>	<u>2.91</u>	<u>3.18</u>
Average	<u>2.73 %</u>	<u>3.15 %</u>	<u>3.42 %</u>

Selected Bond Spreads

A2 Rated Public Utility Bonds Over Aaa Rated Corporate Bonds:	<u>0.42 % (1)</u>
Baa2 Rated Public Utility Bonds Over A2 Rated Public Utility Bonds:	<u>0.27 % (2)</u>

Notes:

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

Source of Information:

Bloomberg Professional Service

Middlesex Water Company
Comparison of Long-Term Issuer Ratings for
Proxy Group of Eight Water Companies

	Moody's		Standard & Poor's	
	Long-Term Issuer Rating	Numerical Weighting (1)	Long-Term Issuer Rating	Numerical Weighting (1)
Proxy Group of Eight Water Companies	April 2021		April 2021	
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

<u>Moody's Bond Rating</u>	<u>Numerical Bond Weighting</u>	<u>Standard & Poor's Bond Rating</u>
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-

Middlesex Water Company
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.

Middlesex Water Company
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.

Middlesex Water Company
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-8).
- (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-8.

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

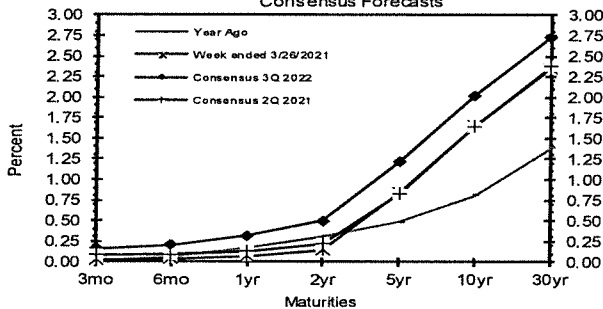
Consensus Forecasts of U.S. Interest Rates and Key Assumptions

Interest Rates	-----History-----								Consensus Forecasts-Quarterly Avg.					
	-----Average For Week Ending-----				---Average For Month---				Latest Qtr	2Q 2021	3Q 2021	4Q 2021	1Q 2022	2Q 2022
	Mar 26	Mar 19	Mar 12	Mar 5	Feb	Jan	Dec	1Q 2021*						
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

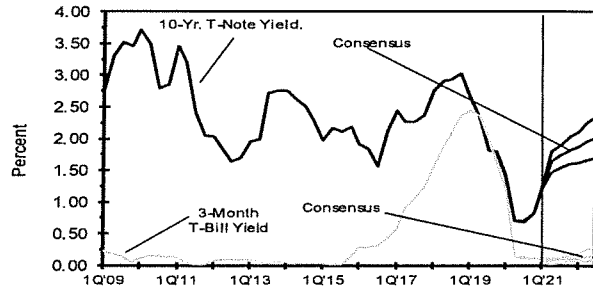
Key Assumptions	-----History-----								Consensus Forecasts-Quarterly					
	2Q 2019	3Q 2019	4Q 2019	1Q 2020	2Q 2020	3Q 2020	4Q 2020	1Q 2021**	2Q 2021	3Q 2021	4Q 2021	1Q 2022	2Q 2022	3Q 2022
Fed's AFE \$ Index	110.4	110.6	110.5	111.4	112.4	107.3	105.2	103.4	104.0	103.9	103.9	103.6	103.5	103.4
Real GDP	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.

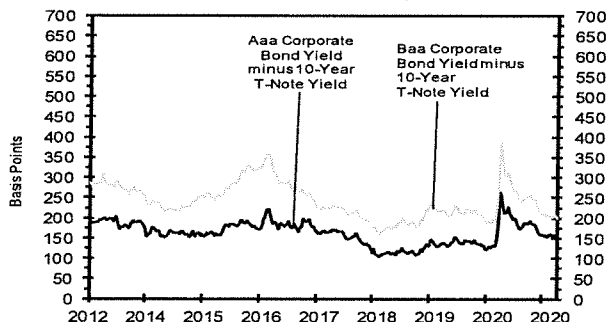
U.S. Treasury Yield Curve
 Week ended March 26, 2021 & Year Ago vs.
 2Q 2021 & 3Q 2022
 Consensus Forecasts



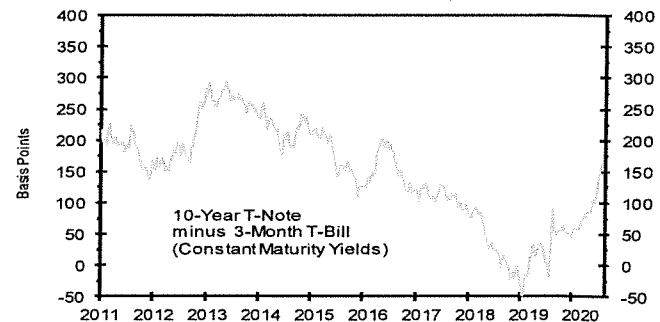
U.S. 3-Mo. T-Bills & 10-Yr. T-Note Yield
 (Quarterly Average) Forecast



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

Middlesex Water Company
 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)	5.70
6.	Average Equity Risk Premium (6)	<u>5.55 %</u>

- Notes: (1) Based on S&P Public Utility Index monthly total returns and Moody's Public Utility Bond average monthly yields from 1928-2019. Holding period returns are calculated based upon income received (dividends and interest) plus the relative change in the market value of a security over a one-year holding period.
- (2) This equity risk premium is based on a regression of the monthly equity risk premiums of the S&P Utility Index relative to Moody's A2 rated public utility bond yields from 1928 - 2019 referenced in note 1 above.
- (3) The Predictive Risk Premium Model (PRPM) is applied to the risk premium of the monthly total returns of the S&P Utility Index and the monthly yields on Moody's A2 rated public utility bonds from January 1928 - 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.

Middlesex Water Company
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			<u>0.78</u>			<u>10.19 %</u>	<u>10.72 %</u>	<u>10.45 %</u>
Median			<u>0.78</u>			<u>10.19 %</u>	<u>10.72 %</u>	<u>10.45 %</u>
Average of Mean and Median			<u>0.78</u>			<u>10.19</u>	<u>10.72</u>	<u>10.45 %</u>

Notes on page 2 of this Schedule.

Middlesex Water Company
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:	<u>5.05</u>
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):	<u>2.73</u>
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):	<u>2.73</u>
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):	<u>2.73</u>
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	<u>3.60</u>
	<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

Middlesex Water Company
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)

Middlesex Water Company
 Basis of Selection of Comparable Risk
Domestic Non-Price Regulated Companies

	[1]	[2]	[3]	[4]
	Value Line Adjusted Beta	Unadjusted Beta	Residual Standard Error of the Regression	Standard Deviation of Beta
<u>Proxy Group of Eight Water Companies</u>				
American States Water Company	0.65	0.41	2.5967	0.0648
American Water Works Company, Inc.	0.85	0.75	3.1587	0.0788
Artesian Resources Corporation	0.75	0.57	3.3189	0.0828
California Water Service Group	0.65	0.45	3.1469	0.0785
Global Water Resources, Inc.	0.75	0.58	3.4912	0.0882
Middlesex Water Company	0.70	0.54	3.4491	0.0861
SJW Group	0.85	0.70	3.5640	0.0889
The York Water Company	0.80	0.69	3.6408	0.0908
Average	<u>0.75</u>	<u>0.59</u>	<u>3.2958</u>	<u>0.0824</u>
Beta Range (+/- 2 std. Devs. of Beta)	0.43	0.75		
2 std. Devs. of Beta	0.16			
Residual Std. Err. Range (+/- 2 std. Devs. of the Residual Std. Err.)	3.0062	3.5854		
Std. dev. of the Res. Std. Err.	0.1448			
2 std. devs. of the Res. Std. Err.	0.2896			

Source of Information: Valueline Proprietary Database, March 2021

Middlesex Water Company
Proxy Group of Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Eight Water Companies

	[1]	[2]	[3]	[4]
<u>Proxy Group of Twenty Non-Price Regulated Companies</u>	<u>VL Adjusted Beta</u>	<u>Unadjusted Beta</u>	<u>Residual Standard Error of the Regression</u>	<u>Standard Deviation of Beta</u>
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	<u>0.76</u>	<u>0.60</u>	<u>3.2719</u>	<u>0.0818</u>
 Proxy Group of Eight Water Companies	 <u>0.75</u>	 <u>0.59</u>	 <u>3.2958</u>	 <u>0.0824</u>

Source of Information:

Valueline Proprietary Database, March 2021

Middlesex Water Company
 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

Principal Methods	Proxy Group of Twenty Non- Price Regulated Companies
Discounted Cash Flow Model (DCF) (1)	11.51 %
Risk Premium Model (RPM) (2)	10.94
Capital Asset Pricing Model (CAPM) (3)	<u>10.30</u>
	Mean <u>10.92 %</u>
	Median <u>10.94 %</u>
	Average of Mean and Median <u>10.93 %</u>

Notes:

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

Middlesex Water Company
 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]
<u>Proxy Group of Twenty Non-Price Regulated Companies</u>	<u>Average Dividend Yield</u>	<u>Value Line Projected Five Year Growth in EPS</u>	<u>Zack's Five Year Projected Growth Rate in EPS</u>	<u>Yahoo! Finance Projected Five Year Growth in EPS</u>	<u>Bloomberg Projected Five Year Growth in EPS</u>	<u>Average Projected Five Year Growth Rate in EPS</u>	<u>Adjusted Dividend Yield</u>	<u>Indicated Common Equity Cost Rate (1)</u>
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	<u>11.50</u> %
							Median	<u>11.51</u> %
							Average of Mean and Median	<u>11.51</u> %

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

Middlesex Water Company
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>6.71</u>
5.	Risk Premium Derived Common Equity Cost Rate	<u><u>10.94 %</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-7). 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.

Middlesex Water Company
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

<u>Proxy Group of Twenty Non-Price Regulated Companies</u>	<u>Moody's Long-Term Issuer Rating April 2021</u>		<u>Standard & Poor's Long-Term Issuer Rating April 2021</u>	
	<u>Long-Term Issuer Rating</u>	<u>Numerical Weighting (1)</u>	<u>Long-Term Issuer Rating</u>	<u>Numerical Weighting (1)</u>
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-7.

Source of Information:
Bloomberg Professional Services

Middlesex Water Company
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>0.77</u>
9.	Forecasted Equity Risk Premium	<u><u>6.71</u> %</u>

Notes:

- (1) From note 1 of page 9 of Schedule DWD-7.
- (2) From note 2 of page 9 of Schedule DWD-7.
- (3) From note 3 of page 9 of Schedule DWD-7.
- (4) From note 4 of page 9 of Schedule DWD-7.
- (5) From note 5 of page 9 of Schedule DWD-7.
- (6) From note 6 of page 9 of Schedule DWD-7.
- (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

Middlesex Water Company
 Traditional CAPM and ECAPM Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to
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'	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 Allianc	0.75	0.80	0.78	9.57	2.73	10.19	10.72	10.45
Werner Enterprise	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			<u>0.77</u>			<u>10.11 %</u>	<u>10.66 %</u>	<u>10.31 %</u>
Median			<u>0.76</u>			<u>10.00 %</u>	<u>10.57 %</u>	<u>10.29 %</u>
Average of Mean and Median			<u>0.77</u>			<u>10.06 %</u>	<u>10.62 %</u>	<u>10.30 %</u>

Notes:

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

Middlesex Water Company
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE/AMEX/NASDAQ

Line No.	[1]	[2]	[3]	[4]
Line No.	Market Capitalization on April 5, 2021 (1) (millions)	Applicable Decile of the NYSE/AMEX/ NASDAQ (2)	Applicable Size Premium (3)	Spread from Applicable Size Premium (4)
1.	\$ 1,409.357	7	1.54%	
2.	\$ 1,610.897	1.1 x 6	1.37%	0.17%
	[A]	[B]	[C]	[D]

Decile	Market Capitalization of Smallest Company (millions)	Market Capitalization of Largest Company (millions)	Size Premium (Return in Excess of CAPM)*	
Largest	1	\$ 29,025.803	\$ 1,966,078.882	-0.22%
	2	13,178.743	28,808.073	0.49%
	3	6,743.361	13,177.828	0.71%
	4	3,861.858	6,710.676	0.75%
	5	2,445.693	3,836.536	1.09%
	6	1,591.865	2,444.745	1.37%
	7	911.586	1,591.765	1.54%
	8	451.955	911.103	1.46%
	9	190.019	451.800	2.29%
Smallest	10	2.194	189.831	5.01%

*From Duff & Phelps Cost of Capital Navigator,
CRSP Size Premia as of 12/31/2020

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 0.17% in Column [4], Line No. 2 is derived as follows 0.17% = 1.54% - 1.37%.

Middlesex Water Company
Market Capitalization of Middlesex Water Company 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)
<u>Middlesex Water Company</u>	NA	NA	NA	\$ 349.977 (4)	NA		
<u>Based upon Proxy Group of Eight Water Companies</u>						402.7 (5)	\$ 1,409.357 (6)
<u>Proxy Group of Eight Water Companies</u>							
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
<u>Median</u>		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 Middlesex Water Company 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].

Source of Information: 2020 Annual Forms 10K
Bloomberg Financial Services

Middlesex Water Company
Derivation of the Flotation Cost Adjustment to the Cost of Common Equity

Equity Issuances and Flotation Costs of the Parent Since 2010

		[Column 1]	[Column 2]	[Column 3]	[Column 4]	[Column 5]	[Column 6]	[Column 7]	[Column 8]	[Column 9]	[Column 10]
Date	Transaction	Shares Issued (1)	Market Price per Share (1)	Offering Price per Share (1)	Market Pressure (2)	Total Offering Expense per Share	Net Proceeds per Share (3)	Gross Equity Issue before Costs (4)	Total Net Proceeds (5)	Total Flotation Costs (6)	Flotation Cost Percentage (7)
11/20/19	Equity Offering	760,330	\$ 60.5600	\$ 60.5000	\$ 0.06	\$ 2.854	\$ 57.65	\$ 46,045,585	\$ 43,829,966	\$ 2,215,618	4.81%
06/08/10	Primary Offering	1,955,000	\$ 15.2100	\$ 15.2100	\$ -	\$ 0.733	\$ 14.48	\$ 29,735,550	\$ 28,302,550	\$ 1,433,000	4.82%
								<u>\$ 75,781,135</u>	<u>\$ 72,132,516</u>	<u>\$ 3,648,618</u>	<u>4.81%</u>

Flotation Cost Adjustment

	Average Dividend Yield	Average Projected EPS Growth Rate	Adjusted Dividend Yield	Average DCF Cost Rate Unadjusted for Flotation (8)	DCF Cost Rate Adjusted for Flotation (9)	Flotation Cost Adjustment (10)
Proxy Group of Eight Water Companies	1.80 %	7.25 %	1.87 %	9.12 %	9.21 %	0.09 %

See page 2 of this Schedule for notes.

Middlesex Water Company
Notes to Accompany the
Derivation of the Flotation Cost Adjustment to the Cost of Common Equity

- (1) S&P Global Market Intelligence.
- (2) Column 2 – Column 3.
- (3) Column 2 – (Column 4 + Column 5).
- (4) Column 1 * Column 2.
- (5) Column 1 * Column 6.
- (6) Column 1 * (Column 4 + Column 5).
- (7) (Column 7 - Column 8) / Column 7.
- (8) Using the average growth rate and dividend yield from page 1 of Schedule DWD-6.
- (9) Adjustment for flotation costs based on adjusting the average DCF constant growth cost rate in accordance with the following:

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

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

- (10) Flotation cost adjustment of 0.09% equals the difference between the flotation adjusted average DCF cost rate of 9.21% and the unadjusted average DCF cost rate of 9.12% of the Utility Proxy Group.

Source of Information:

Company SEC Forms 424B