

BEFORE THE  
STATE OF NEW JERSEY  
BOARD OF PUBLIC UTILITIES

IN THE MATTER OF THE PETITION OF  
NEW JERSEY-AMERICAN WATER COMPANY, INC.  
FOR APPROVAL OF INCREASED TARIFF RATES AND  
CHARGES FOR WATER AND WASTEWATER SERVICE, AND  
OTHER TARIFF MODIFICATIONS

BPU Docket No. WR2201XXXX

**Direct Testimony of**

**ANN E. BULKLEY**

On Behalf of  
New Jersey-American Water Company, Inc.

January 14, 2022

**Exhibit P-9**

NEW JERSEY-AMERICAN WATER COMPANY, INC.**Table of Contents**

	<b>Page</b>
<b>I. WITNESS IDENTIFICATION AND QUALIFICATIONS .....</b>	<b>1</b>
<b>II. PURPOSE AND OVERVIEW OF TESTIMONY.....</b>	<b>2</b>
<b>III. SUMMARY OF ROE ANALYSES AND CONCLUSIONS.....</b>	<b>3</b>
<b>IV. REGULATORY PRINCIPLES.....</b>	<b>8</b>
<b>V. CAPITAL MARKET CONDITIONS.....</b>	<b>10</b>
A. Economic Recovery and Performance of the Utility Sector .....	12
B. Conclusion .....	23
<b>VI. PROXY GROUP SELECTION .....</b>	<b>24</b>
<b>VII. COST OF EQUITY ESTIMATION .....</b>	<b>31</b>
Importance of Multiple Analytical Approaches .....	32
Constant Growth DCF Model.....	36
CAPM Analysis .....	41
Bond Yield Plus Risk Premium Analysis .....	48
Expected Earnings Analysis .....	52
<b>VIII. RISK FACTORS.....</b>	<b>55</b>
<b>IX. CAPITAL STRUCTURE.....</b>	<b>60</b>
<b>X. CONCLUSIONS AND RECOMMENDATION .....</b>	<b>64</b>

NEW JERSEY-AMERICAN WATER COMPANY, INC.

**Direct Testimony of Ann E. Bulkley**

1           **I.     WITNESS IDENTIFICATION AND QUALIFICATIONS**

2   **1. Q. Please state your name, occupation and business address.**

3       A. My name is Ann E. Bulkley. I am employed by The Brattle Group (“Brattle”) as a  
4       Principal. My business address is One Beacon Street, Suite 2600 Boston, MA  
5       02108.

6   **2. Q. On whose behalf are you submitting this testimony?**

7       A. I am submitting this testimony on behalf of New Jersey-American Water Company,  
8       Inc. (“NJAWC,” or the “Company”), a wholly-owned subsidiary of American  
9       Water Works Company, Inc. (“AWK”).

10 **3. Q. Please describe your background and professional experience in the energy**  
11 **and utility industries.**

12       A. I hold a Bachelor’s degree in Economics and Finance from Simmons College and  
13       a Master’s degree in Economics from Boston University, with more than 25 years  
14       of experience consulting to the energy and utility industry. I have advised  
15       numerous energy and utility clients on a wide range of financial and economic  
16       issues with primary concentrations in valuation and utility rate matters. Many of  
17       these assignments have included the determination of the cost of capital for  
18       valuation and ratemaking purposes. My qualifications and testimony listing are  
19       presented in more detail in Appendix A.

NEW JERSEY-AMERICAN WATER COMPANY, INC.1 **II. PURPOSE AND OVERVIEW OF TESTIMONY**2 **4. Q. What is the purpose of your Direct Testimony?**

3 A. The purpose of my Direct Testimony is to present evidence and provide a  
4 recommendation regarding NJAWC's authorized return on equity ("ROE" or "cost  
5 of equity") and to assess the reasonableness of its capital structure for ratemaking  
6 purposes.

7 **5. Q. Are you sponsoring any schedules in support of your Direct Testimony?**

8 A. Yes. My analyses and recommendations are supported by the data presented in  
9 Schedules AEB-1 through AEB-10 which were prepared by me or under my  
10 direction.

11 **6. Q. How is the remainder of your testimony organized?**

12 A. Section III provides a summary of my analyses and conclusions. Section IV  
13 reviews the regulatory guidelines pertinent to the development of the cost of capital.  
14 Section V discusses current and projected capital market conditions and the effect  
15 of those conditions on NJAWC's cost of equity. Section VI explains my selection  
16 of a proxy group of risk comparable utilities. Section VII describes my analyses  
17 and the analytical basis for the recommendation of the appropriate ROE for  
18 NJAWC. Section VIII provides a discussion of specific regulatory, business, and  
19 financial risks that have a direct bearing on the ROE to be authorized for the  
20 Company in this case. Section IX assesses the Company's proposed capital  
21 structure as compared to the proxy group. Section X presents my conclusions and  
22 recommendations for the market cost of equity and capital structure.



NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 I considered each of them when determining where the Company's ROE should  
2 fall within the range of analytical results.

3 **8. Q. Please summarize the key factors considered in your analyses and upon which**  
4 **you base your recommended ROE.**

5 A. In developing my recommended ROE for NJAWC, I considered the following:

- 6 • The *Hope* and *Bluefield* decisions<sup>1</sup> that established the standards for  
7 determining a fair and reasonable allowed ROE, including consistency of  
8 the allowed return with the returns of other businesses having similar risk,  
9 adequacy of the return to provide access to capital and support credit  
10 quality, and the requirement that the end result lead to just and reasonable  
11 rates.
- 12 • The effect of current and projected capital market conditions on investors'  
13 return requirements.
- 14 • The results of several analytical approaches that provide estimates of the  
15 Company's cost of equity.
- 16 • The Company's regulatory, business and financial risks relative to the proxy  
17 group of comparable companies, and the implications of those risks.

18 **9. Q. Please explain how you assessed these factors.**

19 A. After considering these factors and the results of my analyses, I relied on the range  
20 of results produced by the Constant Growth DCF model, the CAPM, the ECAPM,  
21 the Risk Premium analysis and the Expected Earnings Analysis. As shown in

---

<sup>1</sup> Federal Power Commission v. *Hope Natural Gas Co.*, 320 U.S. 591 (1944); *Bluefield Waterworks & Improvement Co.*, v. Public Service Commission of West Virginia, 262 U.S. 679 (1923).

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 Figure 1, these ROE estimation models produce a wide range of results. My  
2 conclusion as to where, within that range of results, NJAWC's cost of equity falls  
3 is based on my assessment of market conditions, and the Company's business and  
4 financial risk relative to the proxy group. Although the companies in my proxy  
5 group are generally comparable to NJAWC, each company is unique, and no two  
6 companies have exactly the same business and financial risk profiles. Accordingly,  
7 I considered the Company's business and financial risk in the aggregate in  
8 comparison to that of the proxy group companies when determining where  
9 NJAWC's ROE falls within the reasonable range of analytical results to account  
10 for any residual differences in risk.

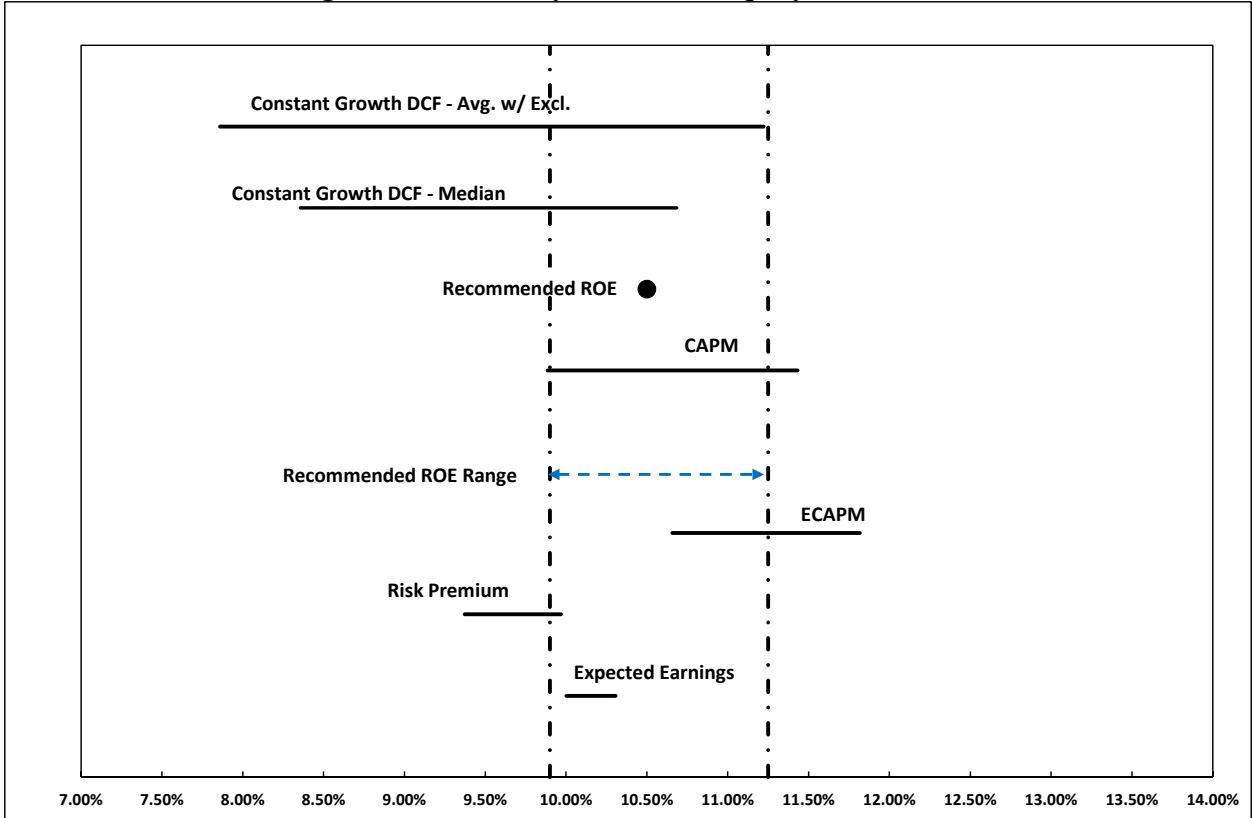
11 **10. Q. Please summarize the results of the ROE estimation models that you**  
12 **considered to establish the range of ROEs for NJAWC.**

13 A. Figure 1 summarizes the range of results produced by the Constant Growth DCF,  
14 CAPM, ECAPM, Risk Premium analysis and Expected Earnings Analysis.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1

**Figure 1: Summary of Cost of Equity Results**



2

3

4

5

6

7

8

9

10

11

As shown in Figure 1 (and in Schedule AEB-1), the range of results produced by the ROE estimation models is wide. While it is common to consider multiple models to estimate the cost of equity, it is particularly important when the range of results varies considerably across methodologies. As a result, my ROE recommendation considers the range of results of the Constant Growth DCF model, as well as the results of the CAPM, ECAPM, Risk Premium analysis and Expected Earnings analysis. My ROE recommendation also considers NJAWC's company-specific risk factors and current and prospective capital market conditions.



NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **11. Q. What is your conclusion regarding the appropriate authorized ROE for**  
2 **NJAWC in this proceeding?**

3 A. Considering the analytical results presented in Figure 1, the regulatory, business,  
4 and financial risk faced by NJAWC's water and wastewater operations relative to  
5 the proxy group, and current capital market conditions, I believe a range from 9.90  
6 to 11.25 percent is reasonable, and an authorized ROE of 10.50 percent for NJAWC  
7 is appropriate.

8 **12. Q. Please summarize the analysis you conducted in determining that NJAWC's**  
9 **requested capital structure is reasonable and appropriate.**

10 A. Based on the analysis presented in Section IX of my testimony, I conclude that  
11 NJAWC's proposed 54.56 percent common equity is reasonable. To determine if  
12 NJAWC's requested capital structure was reasonable, I reviewed the capital  
13 structures of the utility subsidiaries of the proxy companies. As shown in Schedule  
14 AEB-10, the results of that analysis demonstrate that the mean equity ratios for the  
15 utility operating companies of the proxy group range from 47.44 percent to 60.04  
16 percent, with a mean of 55.52 percent.<sup>2</sup> Comparing the recommended equity ratio  
17 to the proxy group demonstrates that the Company's requested equity ratio is  
18 approximately equal to, albeit slightly below the mean equity ratio for the utility  
19 operating subsidiaries of the proxy group companies.

---

<sup>2</sup> The median equity ratio for the proxy group is 55.64 percent.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1

**IV. REGULATORY PRINCIPLES**2 **13. Q. Please describe the principles that guide the establishment of the cost of capital**3 **for a regulated utility.**4 A. The United States Supreme Court's *Hope* and *Bluefield* decisions established the

5 standards for determining the fairness or reasonableness of a utility's authorized

6 ROE. Among the standards established by the Court in those cases are: (1)

7 consistency of the return with other businesses having similar or comparable risks;

8 (2) adequacy of the return to support credit quality and access to capital; and (3)

9 the principle that the specific means of arriving at a fair return are not important,

10 only that the end result leads to just and reasonable rates.<sup>3</sup>11 **14. Q. Has the State of New Jersey or the New Jersey Board of Public Utilities**12 **(“Board” or “BPU”) provided similar guidance in establishing the appropriate**13 **return on common equity?**

14 A. Yes. Section 48:2-21.25 of the 2020 New Jersey Revised Statutes states that a “Base

15 rate case” is defined as a means of “determining the level of revenues necessary to

16 afford the public utility an opportunity to earn a fair and reasonable rate of return

17 on prudently incurred capital investment in the public utility's rate base.”<sup>4</sup>

18 Furthermore, in its decision in Docket No. ER12111052 for Jersey Central Power

19 and Light Company (“JCP&amp;L”), the Board noted the following:

---

<sup>3</sup> *Bluefield Water Works Co. v. Public Serv. Comm'n* 262 U.S. 679, 692-93; *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591, 603.

<sup>4</sup> 2020 New Jersey Revised Statutes, Section 48:2-21.25.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1           Nevertheless, it is incumbent upon this Board to define a fair rate of  
2           return for JCP&L commensurate with risks faced by similar  
3           companies, sufficient to attract capital and maintain the financial  
4           integrity of the enterprise. As the New Jersey Supreme Court has  
5           recognized, a privately owned public utility is a complex mechanism  
6           that exists to serve a public need but to do so it must have investor  
7           appeal. It must be allowed a reasonable return on its investment so  
8           that it may have borrowing power at normal business rates to finance  
9           its day-to-day operations. See, *Daaleman v. Elizabethtown Gas Co.*,  
10          77 N.J. 267, 272 (1978).<sup>5</sup>

11          This guidance is in accordance with the *Hope* and *Bluefield* decisions and the  
12          principles that I employed to estimate the ROE for the Company, including the  
13          principle that an allowed rate of return must be sufficient to enable regulated  
14          companies such as NJAWC to attract capital on reasonable terms.

15      **15. Q. Why is it important for a utility to be allowed the opportunity to earn a return**  
16      **that is adequate to attract equity capital on reasonable terms?**

17      A. A return that is adequate to attract capital on reasonable terms enables NJAWC to  
18      continue providing safe, reliable and affordable water and wastewater service at  
19      just and reasonable rates while maintaining its financial integrity. This is especially  
20      important when a utility is embarked on such a significant capital expenditure  
21      program, as is NJAWC.

---

<sup>5</sup> BPU Docket No. ER12111052, OAL Docket No. PUC16310-12, Order Adopting Initial Decision with Modifications and Clarifications, March 18, 2015, at 71.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **16. Q. Is a utility's ability to attract capital also affected by the ROEs that are**  
2 **authorized for other utilities?**

3 A. Yes. Utilities compete directly for capital with other investments of similar risk,  
4 which include other water, natural gas and electric utilities. Therefore, the ROE  
5 awarded to a utility sends an important signal to investors regarding whether there  
6 is regulatory support for financial integrity, dividends, growth, and fair  
7 compensation for business and financial risk. The cost of capital represents an  
8 opportunity cost to investors. If higher returns are available for other investments  
9 of comparable risk, investors have an incentive to direct their capital to those  
10 investments. Thus, an authorized ROE significantly below authorized ROEs for  
11 other water, natural gas and electric utilities can inhibit the utility's ability to attract  
12 capital for investment in NJAWC at reasonable rates.

13 **V. CAPITAL MARKET CONDITIONS**

14 **17. Q. Why is it important to analyze capital market conditions?**

15 A. The ROE estimation models rely on market data that are either specific to the proxy  
16 group, in the case of the DCF model, or to the expectations of market risk, in the  
17 case of the CAPM. The results of the ROE estimation models can be affected by  
18 prevailing market conditions at the time the analysis is performed. While the ROE  
19 that is established in a rate proceeding is intended to be forward-looking, the analyst  
20 uses current and projected market data, specifically stock prices, dividends, growth  
21 rates and interest rates, in the ROE estimation models to estimate the required return  
22 for the subject company.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 As discussed in the remainder of this section, equity analysts and regulatory  
2 commissions have concluded that current market conditions have affected the  
3 results of the ROE estimation models. As a result, it is important to consider the  
4 effect of these conditions on the ROE estimation models when determining the  
5 appropriate range and recommended ROE for a future period. If investors do not  
6 expect current market conditions to be sustained in the future, it is possible that the  
7 ROE estimation models will not provide an accurate estimate of investors' required  
8 return during that rate period. Therefore, it is very important to consider projected  
9 market data to estimate the return for that forward-looking period.

10 **18. Q. What factors are affecting the cost of equity for regulated utilities in the**  
11 **current and prospective capital markets?**

12 A. The cost of equity for regulated utility companies is currently being affected by the  
13 dramatic shifts in market conditions during 2020, the economic recovery in 2021,  
14 and the expectations for 2022, and the effect of these changes on the assumptions  
15 used in the ROE estimation models. In this section, I discuss current and  
16 prospective capital market conditions and how it affects the models used to estimate  
17 the cost of equity for regulated utilities.

18 **19. Q. What effect do current and prospective market conditions have on the cost of**  
19 **equity for NJAWC?**

20 A. The economy is currently in the recovery phase of the business cycle. During the  
21 recovery phase, interest rates and inflation are expected to increase. In fact,  
22 inflation is currently at its highest level seen in approximately 30 years while

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 interest rates have increased from the pandemic lows seen in 2020. Utilities, which  
2 are a defensive sector, have historically underperformed the market during periods  
3 of economic expansion. Therefore, investors are currently expecting utilities to  
4 underperform over the near-term, which means the share prices of utilities will  
5 likely decline. A decline in share prices will increase the dividend yields of utilities  
6 and thus the cost of equity for utilities is expected to increase over the near-term.  
7 This is important because the cost of equity in this proceeding is being estimated  
8 for the period that NJAWC's rates will be in effect. Since the cost of equity is  
9 expected to increase over the near-term for utilities, ROE estimates based on current  
10 market conditions will understate the ROE during the period that the Company's  
11 rates will be in effect. For example, the DCF model, which relies on historical  
12 averages of share prices, is likely to understate the cost of equity for NJAWC over  
13 the near term.

14 **A. Economic Recovery and Performance of the Utility Sector**

15 **20. Q. Do recent economic projections indicate the expectation for a continued**  
16 **economic recovery in 2022?**

17 A. Yes. The Federal Open Market Committee ("FOMC") is composed of twelve  
18 members including the Board of Governors of the Federal Reserve system and  
19 presidents of the Federal Reserve Banks. The FOMC reviews economic and  
20 financial conditions, determines the appropriate stance for monetary policy and  
21 assesses the risks to its long-run goals of price stability and economic growth. The  
22 FOMC issued its Summary of Economic Projections in September 2021, where the

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 FOMC’s median projection for gross domestic product (“GDP”) growth from Q4  
2 2021 to Q4 2022 is 3.8 percent.<sup>6</sup> The Congressional Budget Office (“CBO”) issued  
3 an update to its outlook on economic conditions on July 1, 2021. In that report, the  
4 CBO projected strong GDP growth for 2021 and beyond and significant strength in  
5 overall economic conditions including:

- 6 • Real GDP growth of 7.4 percent in 2021 and 3.1 percent in 2022, which is  
7 a significant change from the negative 2.4 percent growth rate in 2020;
- 8 • Inflation indicators at or above the 2.0 percent threshold in 2021 and  
9 continuing through 2031;
- 10 • Labor force expected to be restored to pre-pandemic levels in 2022; and
- 11 • Interest rates on federal borrowing increasing through 2031.<sup>7</sup>

12 These trends indicate strong economic recovery over the next year.

13 **21. Q. Please summarize the monetary policy actions of the Federal Reserve in**  
14 **response to COVID-19.**

15 A. In response to the COVID-19 pandemic, the Federal Reserve:

- 16 • decreased the Federal Funds rate twice in March 2020, resulting in a target  
17 range of 0.00 percent to 0.25 percent;
- 18 • increased its holdings of both Treasury and mortgaged-back securities;

---

<sup>6</sup> Federal Open Market Committee, Summary of Economic Projections, September 22, 2021, at 2.

<sup>7</sup> Congressional Budget Office, An Update to the Budget and Economic Outlook 2021 to 2031, July 2021.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

- 1           • started expansive programs to support credit to large employers – the  
2           Primary Market Corporate Credit Facility to provide liquidity for new  
3           issuances of corporate bonds; and the Secondary Market Corporate Credit  
4           Facility to provide liquidity for outstanding corporate debt issuances; and
- 5           • supported the flow of credit to consumers and businesses through the Term  
6           Asset-Backed Securities Loan Facility.

7           In addition, Congress also passed the Coronavirus Aid, Relief, and Economic  
8           Security (“CARES”) Act in March 2020, the Consolidated Appropriations Act,  
9           2021 in December 2020 and the American Rescue Plan Act in March 2021, which  
10          included \$2.2 trillion, \$900 billion and \$1.9 trillion, respectively, in fiscal stimulus  
11          aimed at also mitigating the economic effects of COVID-19. These expansive  
12          monetary and fiscal programs mitigated the economic effects of the COVID-19  
13          pandemic and provided additional support as the economy recovers from the  
14          COVID-19 recession.

15   **22. Q. Are there indications the Federal Reserve has started to normalize monetary**  
16   **policy?**

17    A. Yes. Most recently at the December 15, 2021 meeting, in response to inflation  
18    exceeding the Federal Reserve’s target of 2 percent for a sustained period of time,  
19    the Federal Reserve decided to increase the pace of its taper of bond purchases.  
20    Beginning in January, the Federal Reserve will reduce asset purchases of Treasuries  
21    by \$20 billion and mortgage-backed securities by \$10 billion on a monthly basis.<sup>8</sup>

---

<sup>8</sup> Federal Reserve, Press Release, (Dec. 15, 2021).



NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 This change is double the initial plan outlined at the November 2, 2021 meeting  
2 which called for reducing asset purchases of Treasuries by \$10 billion and  
3 mortgage-backed securities by \$5 billion on a monthly.<sup>9</sup> Moreover, the Federal  
4 Reserves' FOMC is now forecasting three increases in the federal funds rate by the  
5 end of 2022<sup>10</sup> which is a substantial increase from the one increase that was  
6 forecasted by the FOMC at the September 22, 2021 meeting.<sup>11</sup>

7 **23. Q. Why has the Federal Reserve decided to normalize monetary policy?**

8 A. The Federal Reserve has accelerated plans to normalize monetary policy in  
9 response to increasing inflation. While the Federal Reserve initially viewed  
10 inflation as transitory, it has been higher and more persistent than the target levels  
11 and is expected to continue in 2022.

12 **24. Q. How significant is the increase in inflation in 2021?**

13 A. Very significant. As shown in Figure 2, the YOY change in the Consumer Price  
14 Index ("CPI") published by the Bureau of Labor statistics has increased steadily in  
15 2021 rising from 1.37 percent in January to 6.88 percent in November. The 6.288  
16 percent YOY in the CPI in November 2021 is significantly greater than any level  
17 seen since January 2008.

---

<sup>9</sup> Federal Reserve, Press Release, (Nov. 3, 2021).

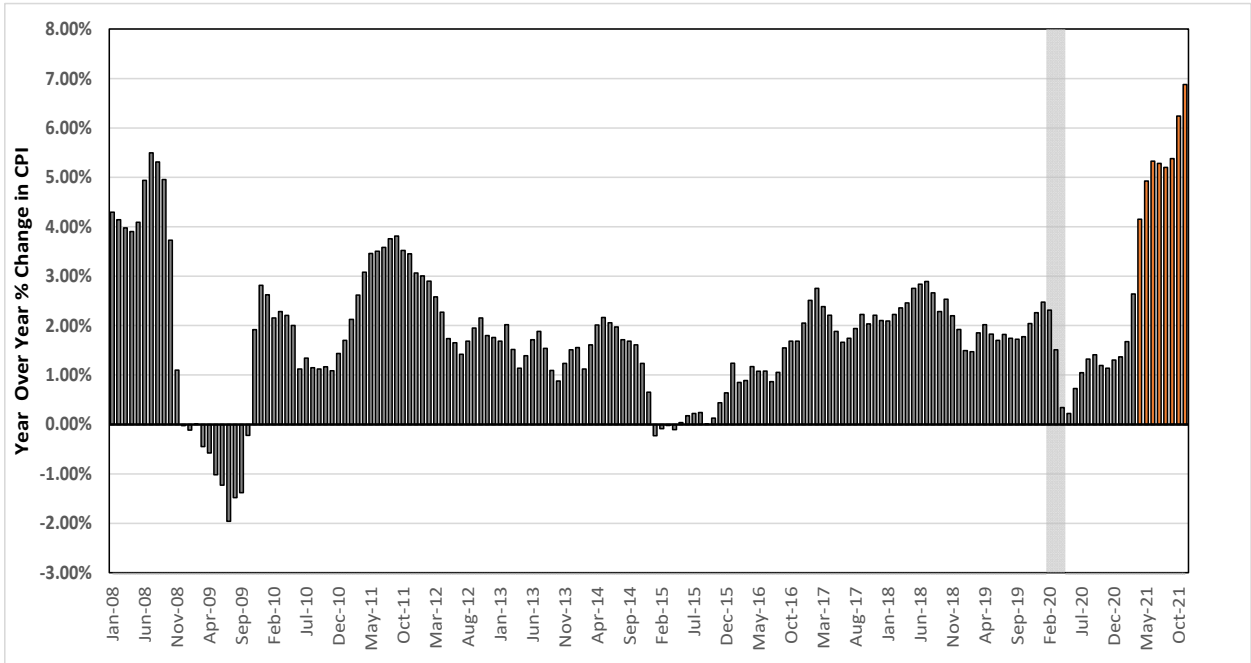
<sup>10</sup> Federal Reserve, Summary of Economic Projections, (Dec. 15, 2021).

<sup>11</sup> Federal Reserve, Summary of Economic Projections, (Sept. 22, 2021).

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1  
2  
3

**Figure 2: Consumer Price Index – YOY Percent Change – January 2008 – November 2021<sup>12</sup>**



4  
5  
6  
7  
8  
9  
10  
11  
12

**25. Q. What are investors’ expectations for inflation over the near-term?**

A. Investors expect inflation to persist into 2022. For example, Goldman Sachs forecasts consumer price inflation excluding food and energy costs to still be above 4 percent when the Federal Reserve ends their tapering of bond purchases in 2022.<sup>13</sup> Similarly, respondents to the recent CNBC Fed Survey, indicated the CPI is expected to rise 3.5 percent in 2022 which is an increase from the September Survey

<sup>12</sup> Source: Bureau of Labor Statistics, shaded area indicates the COVID-19 pandemic recession.

<sup>13</sup> Kennedy, Simon. “Goldman Now Sees Fed Hiking Rates in July as Inflation Lingers.” Bloomberg.com, Bloomberg, 30 Oct. 2021, <https://www.bloomberg.com/news/articles/2021-10-30/goldman-now-sees-fed-hiking-rates-in-july-as-inflation-lingers>.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 of 3.00 percent.<sup>14</sup> Finally, Kiplinger recently noted the following regarding  
2 inflation expectations over the near-term:

3 Inflation at the end of next year should be about 2.7%, down from  
4 6.6% at the end of 2021. It's expected that an easing of supply chain  
5 shortages next year will bring some price relief, especially to sky-  
6 high motor vehicle prices. But, these shortages are expected to only  
7 gradually resolve during 2022. Also, worker shortages may last  
8 longer than expected, keeping wage growth high and forcing  
9 businesses to pass some of those costs on to consumers. So, inflation  
10 should remain higher than its 1.7% average over the past ten years.<sup>15</sup>

11 According to Kiplinger, the higher levels of inflation will likely  
12 result in the Federal Reserve increasing the federal funds rate in  
13 2022 instead of 2023 as originally planned.<sup>16</sup>

14 **26. Q. What effect will inflation have on long-term interest rates?**

15 A. Inflation and the Federal Reserve's normalization of monetary policy will likely  
16 result in increases in long-term interest rates. Specifically, inflation reduces the  
17 purchasing power of the future interest payments an investor expects to receive over  
18 the duration of the bond. This risk increases the longer the duration of the bond.  
19 As a result, if investors expect increased levels of inflation, they will require higher  
20 yields to compensate for the increased risk of inflation which means interest rates  
21 will increase.

---

<sup>14</sup> Liesman, Steve. "Investors Expect a Faster Pace for Fed Rate Hikes, CNBC Survey Shows." CNBC, CNBC, 2 Nov. 2021, <https://www.cnbc.com/2021/11/02/investors-expect-a-faster-pace-for-fed-rate-hikes-cnbc-survey-shows.html>.

<sup>15</sup> Payne, David, "Inflation hits 30-year High," Kiplinger, November 11, 2021.

<sup>16</sup> Ibid.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **27. Q. What have equity analysts said about long-term government bond yields over**  
2 **the near term?**

3 A. Several equity analysts have noted that they expect economic conditions to continue  
4 to improve and thus the yields on long-term government bonds to continue to  
5 increase through the end of 2022. As shown in Figure 3, according to six different  
6 equity analysts, the yield on the 10-year Treasury Bond is expected to range from  
7 1.75 percent to 2.50 percent in 2022 which is 17 to 92 basis points greater than the  
8 current 30-day average yield on the 10-year Treasury Bond as of November 30,  
9 2021, of 1.58 percent. Specifically, Morgan Stanley recently noted the following  
10 regarding the expectation for long-term government bond yields in 2022:

11 Continued strong growth in 2022, alongside receding but above-  
12 target inflation, keeps the Fed patient, yet gradually moving toward  
13 rate hikes, and keeps Treasury yields moving higher.<sup>17</sup>

14 **Figure 3: Equity Analysts Forecast of the 10-year Treasury Yield<sup>18</sup>**

Bank	10-year U.S. Treasury Yield	
	30-day Average as of November 30, 2021	2022 Forecast
Barclays	1.58%	1.75%
Morgan Stanley	1.58%	2.10%
Goldman Sachs	1.58%	2.00%
JP Morgan	1.58%	2.10%
Wells Fargo Investment Institute	1.58%	2.00% - 2.50%
Amundi	1.58%	1.80% - 2.00%

17 “Factbox: Wall Street Forecasts for the U.S. Dollar and 10-Year Treasury Yield in 2022.” Reuters, Thomson Reuters, 18 Nov. 2021, <https://www.reuters.com/markets/us/wall-street-forecasts-us-dollar-10-year-treasury-yield-2022-2021-11-18/>.

18 “Factbox: Wall Street Forecasts for the U.S. Dollar and 10-Year Treasury Yield in 2022.” Reuters, Thomson Reuters, 18 Nov. 2021, <https://www.reuters.com/markets/us/wall-street-forecasts-us-dollar-10-year-treasury-yield-2022-2021-11-18/>.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

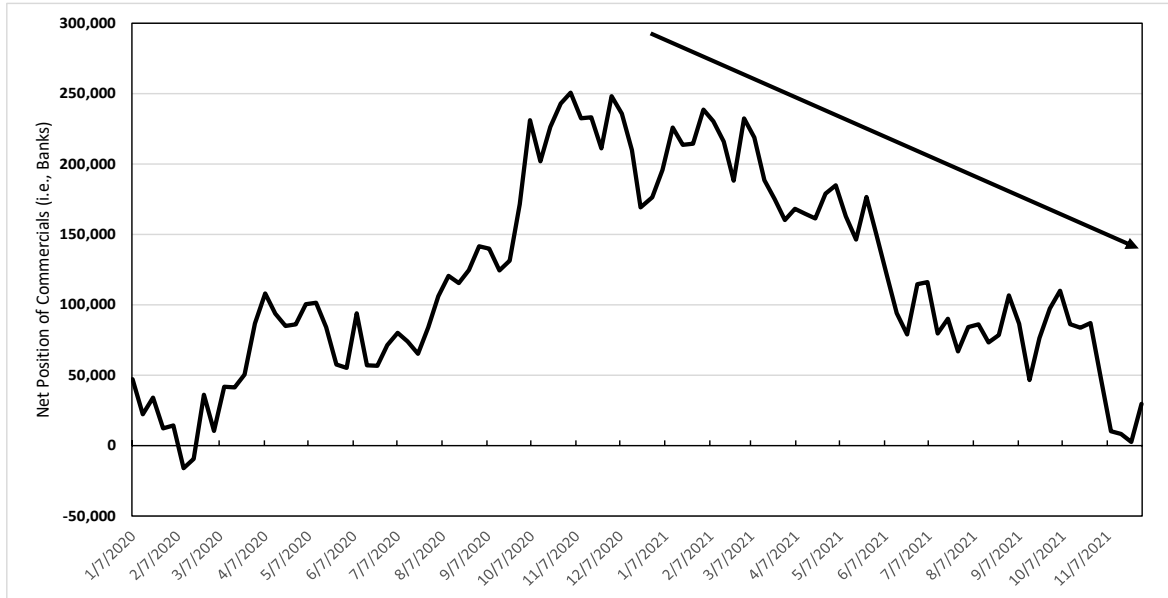
1 **28. Q. Have you considered any additional indicators which may imply long-term**  
2 **interest rates are expected to increase?**

3 A. Yes, I have. I considered the net position of commercials (i.e., banks) in U.S.  
4 Treasury Bond futures contracts as reported in the Commitment of Traders  
5 (“COT”) Report produced by the Commodity Futures Trading Commission  
6 (“CFTC”). A net position is defined as the total number of long positions in a  
7 futures contract minus the total number of short positions in a futures contract. A  
8 long position means that an investor agrees to purchase an asset in the future at a  
9 specified price today and therefore profits if the price of the underlying asset  
10 increases. Conversely, short position is when an investor agrees to sell an asset at  
11 a time in the future at a specified price today and profits if the price of the asset  
12 declines. Therefore, if banks are increasing the number of short positions and thus  
13 have a declining net position, the banks are assuming that the price of the asset will  
14 decline. As shown in Figure 4, the net position of banks in U.S. Treasury Bonds  
15 has been decreasing since the end of 2020. Therefore, banks are forecasting a  
16 decrease in the price of long-term government bonds and, thus, the yields (which  
17 are inversely related to the price) to increase over the near-term.

18

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **Figure 4: Commitment of Traders Report – Net Position of Commercials (i.e.,**  
 2 **Banks) in U.S. Treasury Bond Futures Contracts<sup>19</sup>**  
 3



4  
 5  
 6 **29. Q. Are utility share prices correlated to changes in the yields on long-term**  
 7 **government bonds?**

8 A. Yes, interest rates and utility share prices are inversely correlated which means, for  
 9 example, that an increase in interest rates will result in a decline in the share prices  
 10 of utilities. For example, Goldman Sachs and Deutsche Bank recently examined the  
 11 sensitivity of share prices of different industries to changes in interest rates over the  
 12 past five years. Both Goldman Sachs and Deutsche Bank found that utilities had  
 13 one of the strongest negative relationships with bond yields (i.e., increases in bond  
 14 yields resulted in the decline of utility share prices).<sup>20</sup> Charles Schwab also recently

<sup>19</sup> Commitment of Traders Report, as of October 29, 2021 - <https://www.cftc.gov/MarketReports/CommitmentsofTraders/HistoricalCompressed/index.htm>

<sup>20</sup> Lee, Justina. "Wall Street Is Rethinking the Treasury Threat to Big Tech Stocks." Bloomberg.com, 11 Mar. 2021, [www.bloomberg.com/news/articles/2021-03-11/wall-street-is-rethinking-the-treasury-threat-to-big-tech-stocks](http://www.bloomberg.com/news/articles/2021-03-11/wall-street-is-rethinking-the-treasury-threat-to-big-tech-stocks).

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 noted the inverse relationship between interest rates and utility share prices and  
2 concluded that the utility sector tends to underperform during periods of economic  
3 growth when interest rates are higher.<sup>21</sup>

4 **30. Q. How do equity analysts expect the utilities sector to perform in an increasing**  
5 **interest rate environment?**

6 A. Equity analysts project that utilities are expected to continue to underperform the  
7 broader market as interest rates increase. For example, in a recent article, Barron's  
8 conducted its Big Money poll of professional investors regarding the outlook for  
9 the next twelve months. Approximately 60 percent of respondents projected the  
10 yield on the 10-year Treasury Bond will be 2.00 percent or greater at the end of the  
11 next twelve months which is an increase from the current 30-day average 10-year  
12 Treasury Bond yield as of November 30, 2021 of 1.58 percent.<sup>22</sup> Furthermore, the  
13 professional investors surveyed by Barron's selected the utility sector as the sector  
14 which will perform the worst over the next twelve months indicating they are  
15 projecting that utilities will underperform the broader market in 2022.

16 Other equity analysts concur with this conclusion. Fidelity recently recommended  
17 underweighting the utility sector and noted that "[w]eak fundamentals and high  
18 valuations could be headwinds for utilities and real estate, especially if rates

---

<sup>21</sup> Charles Schwab, Schwab Sector Views: Too Early for Defensive Positioning, August 19, 2021.

<sup>22</sup> Jasinski, Nicholas. Stocks Are Still the Place to Be, Our Exclusive Big Money Poll Finds. Barron's, 16 Oct. 2021, <https://www.barrons.com/articles/stock-market-covid-economy-outlook-51634312012?mod=hpsubnav&tesla=y>.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 increase.”<sup>23</sup> In its 2022 Outlook, Well Fargo classified the utility sector as “most  
2 unfavorable” as economic growth continues to rebound and interest rates  
3 increase.<sup>24</sup> Finally, Charles Schwab has classified the utilities sector overall as  
4 “Underperform,” noting negatives for the sector that include “interest rates are  
5 expected to recover from recent decline” and “economic recovery makes the sector  
6 less attractive, relative to other sectors”.<sup>25</sup>

7 **31. Q. What is the significance of the inverse relationship between interest rates and**  
8 **utility share prices in the current market?**

9 A. As discussed above, the economy is currently in the recovery phase of the business  
10 cycle, which is characterized by improving economic growth, increasing inflation,  
11 and increasing interest rates. If interest rates increase as expected, then the share  
12 prices of utilities will decline. If the prices of utility stocks decline, then the DCF  
13 model, which relies on historical averages of share prices, is likely to understate the  
14 cost of equity. For example, Figure 5 below summarizes the effect of price on the  
15 dividend yield in the Constant Growth DCF model.

---

<sup>23</sup> Fidelity, “Q4 2021 sector scorecard,” October 27, 2021.

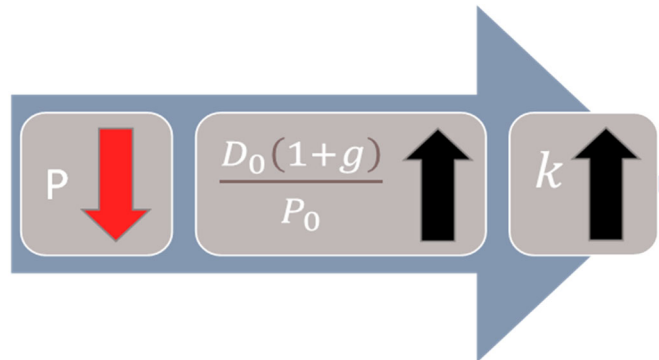
<sup>24</sup> Well Fargo Investment Institute, 2022 Outlook, December 2021.

<sup>25</sup> Charles Schwab, “Utilities Sector Rating: Underperform,” November 18, 2021.



NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **Figure 5: The Effect of a decline in Stock Prices on the Constant Growth DCF**  
 2 **model**



3  
 4  
 5 A decline in stock prices will increase the dividend yields and thus the estimate of  
 6 the ROE produced by the Constant Growth DCF model. Therefore, this expected  
 7 change in market conditions supports consideration of the range of ROE results  
 8 produced by the mean to mean-high DCF results since the mean DCF results would  
 9 likely understate the cost of equity during the period that the Company's rates will  
 10 be in effect. Moreover, prospective market conditions warrant consideration of  
 11 other ROE estimation models such as the CAPM, ECAPM, Risk Premium and  
 12 Expected Earnings which may better reflect expected market conditions. For  
 13 example, two out of three inputs to the CAPM (i.e., the market risk premium and  
 14 risk-free rate) are forward-looking.

15 **B. Conclusion**

16 **32. Q. What are your conclusions regarding the effect of current market conditions**  
 17 **on the cost of equity for the Company?**

18 A. Over the near-term, investors expect economic growth to continue to rebound and  
 19 thus inflation and interest rates to increase. Because the share prices of utilities are  
 20 inversely correlated to the interest rates, an increase in long-term government bond

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 yields will likely results in a decline in utility share prices which is the reason a  
2 number of equity analysts expect the utility sector to underperform over the near-  
3 term. The expected underperformance of utilities means that DCF models using  
4 recent historical data likely underestimate investors' required return over the period  
5 that rates will be in effect. This change in market conditions also support the use  
6 of other ROE estimation models such as the CAPM, ECAPM, Risk Premium and  
7 Expected Earnings which may better reflect expected market conditions.

8 **VI. PROXY GROUP SELECTION**

9 **33. Q. Please provide a brief profile of NJAWC.**

10 A. NJAWC, a wholly-owned subsidiary of AWK, provides water service to  
11 approximately 660,000 water and fire service customers and wastewater service to  
12 approximately 49,900 customers in 18 counties throughout the State of New  
13 Jersey.<sup>26</sup> In 2020, the Company had total operating revenues of \$796 million which  
14 for NJAWC's parent company, AWK, represented 24.50 percent of total regulated  
15 operating revenues.<sup>27</sup> The Company can access debt markets through American  
16 Water Capital Corp. ("AWCC") or independently, as NJAWC maintains its own  
17 credit ratings. The current credit ratings for NJAWC are as follows: (1) S&P - A  
18 (Outlook: Stable); and (2) Moody's – A3 (Outlook: Stable).<sup>28</sup> Additionally, the

---

<sup>26</sup> American Water Works Company, Inc., 2020 SEC Form 10-K, at 4.

<sup>27</sup> Ibid.

<sup>28</sup> S&P Capital IQ.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 current credit ratings on senior unsecured debt for AWK and AWCC are as follows:

2 (1) S&P - A (Outlook: Stable); and (2) Moody's – Baa1 (Outlook: Stable).<sup>29</sup>

3 **34. Q. Why have you used a group of proxy companies to estimate the cost of equity**  
4 **for NJAWC?**

5 A. In this proceeding, I am estimating the cost of equity for NJAWC, which is a rate  
6 regulated subsidiary of AWK. The proxy companies used in my analyses all  
7 possess a set of operating and financial risk characteristics that are substantially  
8 comparable to NJAWC, and, therefore, provide a reasonable basis for deriving the  
9 appropriate ROE.

10 **35. Q. How did you select the companies in your proxy group?**

11 A. I began with the group of U.S. utilities that Value Line classifies as “Water  
12 Utilities” and “Natural Gas Distribution Companies”. That combined group  
13 includes 17 domestic U.S. utilities. I simultaneously applied the following  
14 screening criteria to select companies that:

- 15 • pay consistent quarterly cash dividends because companies that do not
- 16 cannot be analyzed using the Constant Growth DCF model;
- 17 • have investment grade long-term issuer ratings from S&P and/or Moody's;
- 18 • are covered by at least two utility industry analysts;
- 19 • have positive long-term earnings growth forecasts from at least two utility
- 20 industry equity analysts;
- 21 • derive more than 60.00 percent of their total operating income from
- 22 regulated operations; and

---

<sup>29</sup> S&P Capital IQ.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

- 1           • were not parties to a merger or transformative transaction during the  
2           analytical periods relied on.

3   **36. Q. Did you consider any additional companies for inclusion in your proxy group?**

4    A. Yes. I also considered the group of 36 companies that Value Line classifies as  
5    “Electric Utilities”. In determining which electric utilities would qualify for  
6    inclusion in my proxy group, I started by relying on the criteria used to screen the  
7    water and natural gas utilities. I then applied two additional screening criteria to  
8    only include electric utilities that would be considered risk comparable to NJAWC:

- 9           • have owned generation comprising less than 10 percent of the Company’s  
10          MWh sales to ultimate customers to ensure that the electric utilities included  
11          did not own a substantial amount of generation and therefore had operations  
12          that were primarily transmission and distribution; and  
13          • own water and wastewater operations.

14   **37. Q. Did you include AWK in your proxy group?**

15    A. No. Consistent with my general practice of excluding the subject company, or its  
16    parent holding company, from the proxy group, I have excluded AWK from my  
17    proxy group for NJAWC.

18   **38. Q. What is the composition of your proxy group?**

19    A. The screening criteria discussed above resulted in a proxy group consisting of the  
20    companies in Figure .

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1

**Figure 6: Proxy Group**

<b>Company</b>	<b>Ticker</b>
American States Water Company	AWR
Atmos Energy Corporation	ATO
California Water Service Group	CWT
Essential Utilities, Inc.	WTRG
Eversource Energy	ES
Middlesex Water Company	MSEX
NiSource Inc.	NI
New Jersey Resources Corporation	NJR
Northwest Natural Gas Company	NWN
ONE Gas Inc.	OGS
SJW Group	SJW
South Jersey Industries, Inc.	SJI
Spire, Inc.	SR
York Water Company	YORW

2

3

4 **39. Q. Why did you include electric utilities and natural gas distribution companies**  
5 **in the proxy group?**

6 A. Value Line currently classifies only seven companies as water utilities. Therefore,  
7 the universe of water utilities is already small before a set of screening criteria are  
8 applied. Additionally, there is currently a trend towards consolidation in the utility  
9 industry, which reduces the number of available proxy companies.<sup>30</sup> Because there  
10 are a small number of companies that are available for inclusion in the proxy group,  
11 I also considered electric utilities and natural gas distribution companies that meet  
12 the screening criteria.

<sup>30</sup> Chediak, Mark, et al. "Utility M&A Is So Hot Not Even Berkshire's Billions Won a Bid." Bloomberg.com, Bloomberg, 3 Jan. 2018, www.bloomberg.com/news/articles/2018-01-03/utility-m-a-is-so-hot-not-even-berkshire-s-billions-won-a-bid.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **40. Q. Are electric utilities and natural gas distribution companies reasonably**  
2 **comparable to water utilities to be included in a proxy group used to estimate**  
3 **the cost of equity for a water utility?**

4 A. Yes, I believe that it is reasonable to rely on a combined proxy group. As noted  
5 above, due to consolidation in the water utility industry, there is only a small group  
6 of water companies that can be included in the proxy group. In addition, the  
7 screening criteria relied on for my proxy group require that a company derive more  
8 than 60 percent of their operating income from regulated operations. Therefore, the  
9 electric utilities and natural gas distribution companies included in my proxy group  
10 generate a large portion of their operating income from regulated operations similar  
11 to NJAWC and the water utilities that will be included in the proxy group. As a  
12 result, I believe that it is appropriate to include relevant natural gas and electricity  
13 distribution companies in my proxy group. Additionally, when determining the  
14 electric utilities to be included in the proxy group, I included only those electric  
15 utilities that are primarily responsible for the transmission and distribution of  
16 electricity to customers, and that own a water utility, which more closely  
17 approximates the risk of NJAWC, as a water and wastewater company.

18 **41. Q. Have other regulators considered the inclusion of natural gas distribution**  
19 **companies in the proxy group used to estimate the cost of equity for a water**  
20 **utility?**

21 A. Yes. The Massachusetts Department of Public Utilities (“MDPU”), the Florida  
22 Public Service Commission (“FPUC”), the Kentucky Public Service Commission

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 (“KYPSC”) and the Iowa Utilities Board (“IUB”) have considered the results of a  
2 proxy group that includes natural gas companies when determining the authorized  
3 ROE for water and wastewater utilities. In Docket No. 17-90, the MDPU  
4 determined that the use of a natural gas utility proxy group was appropriate for the  
5 purpose of demonstrating the comparability of the investment risk of the proxy  
6 group to Aquarion Water Company.<sup>31</sup>

7 In Docket No. 20180006-WS, the FPUC modified the methodology used to  
8 estimate the ROE for water and wastewater utilities in Florida to include a  
9 combined proxy group of natural gas and water utilities.<sup>32</sup> The FPUC has  
10 previously relied on a natural gas only proxy group to estimate the ROE for water  
11 and wastewater utilities<sup>33</sup>; however, to increase the size of the proxy group, the  
12 FPUC decided to rely on a combined proxy group. Specifically, the FPUC noted:

13 The leverage formula methodology shall be modified to include a  
14 combined proxy group of natural gas and WAW utilities as proxy  
15 companies in calculating the leverage formula. We find that the  
16 selected natural gas utilities and WAW utilities that derive at least  
17 50 percent of their revenue from regulated rates. These utilities have  
18 market power and are influenced significantly by economic  
19 regulation. In Attachment 1, the returns calculated using the proxy  
20 group are adjusted to reflect the risks faced by Florida WAW  
21 utilities. The updated index consists of five natural gas companies  
22 and seven WAW companies that derive at least 50 percent of their

---

<sup>31</sup> Massachusetts Department of Public Utilities, Docket No. 17-90, Petition of Aquarion Water Company of Massachusetts, Inc., pursuant to G.L. c. 164, § 94, and G.L. c. 165, § 2, for Approval of a General Rate Increase as set forth in M.D.P.U. No. 3., October 31, 2018, p. 286-287.

<sup>32</sup> Docket No. 20180006-WS, In re. Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S., Order No. PSC-2018-0327-PAA-WS, at 7.

<sup>33</sup> Docket No. 170006-WS, In re. Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S., Order No. PSC-17-0249-PAA-WS, at 2.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 total revenue from regulated operations. These companies have a  
2 median Standard and Poor's bond rating of "A"<sup>34</sup>

3 In Case No. 2018-00358 for Kentucky-American Water Company ("Kentucky  
4 American"), the KYPSC noted that the authorized ROE for Kentucky-American  
5 was within the range of DCF and CAPM results produced by Kentucky-American  
6 and the Attorney General.<sup>35</sup> To develop the DCF and CAPM models, Kentucky  
7 American and the Attorney General relied on two proxy groups: (1) a water only  
8 proxy group; and (2) a combined proxy group which included natural gas utilities.<sup>36</sup>  
9 Therefore, the KYPSC has also considered, when determining the authorized ROE  
10 for a water company, ROE results based on a proxy group that includes both natural  
11 gas and water utilities.

12 Finally, In Docket Nos. RPU-2020-00101, TF-2020-0250, the IUB relied on  
13 analyses based on proxy groups composed of water and natural gas companies.<sup>37</sup>

---

<sup>34</sup> Docket No. 20180006-WS, In re. Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f), F.S., Order No. PSC-2018-0327-PAA-WS, at 8.

<sup>35</sup> Case No. 2018-00358, In the matter of: Electronic Application of Kentucky-American Water Company for an Adjustment of Rates, Order, June 27, 2019, at 66.

<sup>36</sup> *Id.*, at 55-56.

<sup>37</sup> State of Iowa Department of Commerce Utilities Board, Docket Nos. RPU-2020-00101, TF -2020-0250, June 28, 2021, at 24-25.



NEW JERSEY-AMERICAN WATER COMPANY, INC.1 **VII. COST OF EQUITY ESTIMATION**

2 **42. Q. Please briefly discuss the ROE in the context of the regulated rate of return**  
3 **(“ROR”).**

4 A. The overall ROR for a regulated utility is based on its weighted average cost of  
5 capital, in which the costs of the individual sources of capital are weighted by their  
6 respective book values. While the costs of debt and preferred stock can be directly  
7 observed, the cost of equity is market-based and, therefore, must be estimated based  
8 on observable market data.

9 **43. Q. How is the required ROE determined?**

10 A. The required ROE is estimated by using multiple analytical techniques that rely on  
11 market-based data to quantify investor expectations regarding required equity  
12 returns, adjusted for certain incremental costs and risks. Quantitative models  
13 produce a range of reasonable results from which the market-required ROE is  
14 selected. That selection must be based on a comprehensive review of relevant data  
15 and information and does not necessarily lend itself to a strict mathematical  
16 solution. The key consideration in determining the cost of equity is to ensure that  
17 the methodologies employed reasonably reflect investors’ views of the financial  
18 markets in general and of the subject company (in the context of the proxy group)  
19 in particular.

20 **44. Q. What methods did you use to determine NJAWC’s cost of equity?**

21 A. I considered the results of the Constant Growth DCF model, the CAPM, the  
22 ECAPM, the Bond Yield Plus Risk Premium methodology and the Expected

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 Earnings Analysis. As discussed in more detail below, a reasonable ROE estimate  
2 appropriately considers alternative methodologies and the reasonableness of their  
3 individual and collective results.

4 **Importance of Multiple Analytical Approaches**

5 **45. Q. Why is it important to use more than one analytical approach?**

6 A. Because the cost of equity is not directly observable, it must be estimated based on  
7 both quantitative and qualitative information. When faced with the task of  
8 estimating the cost of equity, analysts and investors are inclined to gather and  
9 evaluate as much relevant data as reasonably can be analyzed. Several models have  
10 been developed to estimate the cost of equity, and I use multiple approaches to  
11 estimate the cost of equity. As a practical matter, however, all of the models  
12 available for estimating the cost of equity are subject to limiting assumptions or  
13 other methodological constraints. Consequently, many well-regarded finance texts  
14 recommend using multiple approaches when estimating the cost of equity. For  
15 example, Copeland, Koller, and Murrin<sup>38</sup> suggest using the CAPM and Arbitrage  
16 Pricing Theory model.

17 **46. Q. Is it important given the current market conditions to use more than one**  
18 **analytical approach?**

19 A. Yes. Low interest rates and the effects of the investor “flight to quality” can be  
20 seen in higher utility share valuations, relative to historical levels and relative to the

---

<sup>38</sup> Tom Copeland, Tim Koller and Jack Murrin, Valuation: Measuring and Managing the Value of Companies, 3rd Ed. (New York: McKinsey & Company, Inc., 2000), at 214.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 broader market. Higher utility stock valuations produce lower dividend yields and  
2 result in lower cost of equity estimates from a DCF analysis. Low interest rates  
3 also affect the CAPM in two ways: (1) the risk-free rate is lower, and (2) because  
4 the market risk premium is a function of interest rates, (i.e., it is the return on the  
5 broad stock market less the risk-free interest rate), the risk premium should move  
6 higher when interest rates are lower. Therefore, it is important to use multiple  
7 analytical approaches to moderate the impact that the current low interest rate  
8 environment is having on the ROE estimates for the proxy group and, where  
9 possible, consider using projected market data in the models to estimate the return  
10 for the forward-looking period.

11 **47. Q. Has the Board made similar findings regarding the reliance on multiple**  
12 **models?**

13 A. Yes. It is my understanding that in its order in Docket No. ER12111052 for Jersey  
14 Central Power and Light Company, the Board noted that rate of return experts use  
15 a number of models including the DCF, CAPM, Risk Premium and Comparable  
16 Earnings to estimate the return required by investors. Specifically, the Board noted:

17 In determining the cost of equity capital for a regulated utility, rate  
18 of return experts typically use a variety of financial models to  
19 simulate the returns assertedly required by investors. These include  
20 Discounted Cash Flow (DCF) models, Risk Premium models,  
21 Capital Asset Pricing Models (CAPM), Comparable Earnings  
22 models and variations thereof. However, it is widely acknowledged  
23 that these economic models constitute estimates, which, although  
24 probative, are not necessarily precise. The imprecision in the  
25 estimates provided by these models is more pronounced as a result  
26 of the current economic environment still recovering from the Great

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1           Recession, characterized by some as the worst economy since the  
2           Great Depression.<sup>39</sup>

3           In the order, the Board accepted an ROE of 9.75 percent for JCP&L which was  
4           supported by the ALJ and ultimately recommended by Staff based on a review of  
5           each of the model results presented by the witnesses in the case and recently  
6           authorized ROEs in other jurisdictions.<sup>40</sup> In supporting the recommendation of  
7           Staff, the ALJ concluded that the results of each model are affected by multiple  
8           factors including current market conditions. Specifically, the ALJ concluded that:

9                   [e]ach method has multiple factors, and the parties have offered  
10                   numerous criticisms of the choices made by opposing expert  
11                   witnesses. A key consideration concerns the time period used by the  
12                   experts in selecting a dividend yield under the DCF model or the  
13                   risk-free rate under the CAPM method due to the fact that interest  
14                   rates have been at historic lows in recent years. For example, with  
15                   the CAPM method, Ms. Ahern used interest rates on thirty-year  
16                   Treasury bonds going as far back as 1926 producing an average of  
17                   5.32 percent, which led to a risk free rate of 4.17 percent. As Mr.  
18                   Kahal points out, rates on thirty-year Treasury bonds have been  
19                   closer to 3.00 percent in recent years. In contrast, Mr. Kahal based  
20                   the dividend yield under his DCF analysis on results from the six  
21                   months ending April 2013. Development of the dividend yield from  
22                   data during a period of historically low interest rates may produce a  
23                   result which is lower than will prevail when the new rates are in  
24                   effect. Mr. O'Donnell's analysis in this respect is similar to that of  
25                   Mr. Kahal.<sup>41</sup>

26           Thus, the Board, an ALJ, and Board Staff have all recognized the importance of  
27           considering the results of each model presented in the rate case because market

---

<sup>39</sup> BPU Docket No. ER12111052, OAL Docket No. PUC16310-12, Order Adopting Initial Decision with Modifications and Clarifications, March 18, 2015, at 71.

<sup>40</sup> *Id.*, at 10.

<sup>41</sup> BPU Docket No. ER12111052, OAL Docket No. PUC16310-12, Initial Decision, January 8, 2015, at 27.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 conditions can have an effect on the results produced by each of the ROE estimation  
2 models.

3 **48. Q. What are your conclusions about the results of the DCF and CAPM models?**

4 A. Recent market data that is used as the basis for the assumptions for both models  
5 have been affected by market conditions. As a result, relying exclusively on  
6 historical assumptions in these models, without considering whether these  
7 assumptions are consistent with investors' future expectations, will underestimate  
8 the cost of equity that investors would require over the period that the rates in this  
9 case are to be in effect. In this instance, relying on the historically low dividend  
10 yields that are not expected to continue over the period that the new rates will be in  
11 effect will underestimate the ROE for NJAWC.

12 Furthermore, as discussed in Section V above, long-term interest rates have  
13 increased since August 2020 and this trend is expected to continue over the near-  
14 term as the economy continues to recover from the economic effects of COVID-  
15 19. Therefore, the use of current averages of Treasury bond yields as the estimate  
16 of the risk-free rate in the CAPM is not appropriate since recent market conditions  
17 are not expected to continue over the long-term. Instead, analysts should rely on  
18 projected yields of Treasury Bonds in the CAPM. The projected Treasury Bond  
19 yields results in CAPM estimates that are more reflective of the market conditions  
20 that investors expect during the period that the Company's rates will be in effect.

NEW JERSEY-AMERICAN WATER COMPANY, INC.1 **Constant Growth DCF Model**2 **49. Q. Please describe the DCF approach.**

3 A. The DCF approach is based on the theory that a stock's current price represents the  
4 present value of all expected future cash flows. In its most general form, the DCF  
5 model is expressed as follows:

$$6 \quad P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_\infty}{(1+k)^\infty} \quad [1]$$

7 Where  $P_0$  represents the current stock price,  $D_1 \dots D_\infty$  are all expected future  
8 dividends, and  $k$  is the discount rate, or required ROE. Equation [1] is a standard  
9 present value calculation that can be simplified and rearranged into the following  
10 form:

$$11 \quad k = \frac{D_0(1+g)}{P_0} + g \quad [2]$$

12 As discussed in Section V above, Equation [2] is often referred to as the Constant  
13 Growth DCF model in which the first term is the expected dividend yield and the  
14 second term is the expected long-term growth rate.

15 **50. Q. What assumptions are required for the Constant Growth DCF model?**

16 A. The Constant Growth DCF model requires the following assumptions: (1) a  
17 constant growth rate for earnings and dividends; (2) a stable dividend payout ratio;  
18 (3) a P/E ratio; and (4) a discount rate greater than the expected growth rate. To

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 the extent any of these assumptions is violated, considered judgment and/or specific  
2 adjustments should be applied to the results.

3 **51. Q. What market data did you use to calculate the dividend yield in your Constant**  
4 **Growth DCF model?**

5 A. The dividend yield in my Constant Growth DCF model is based on the proxy  
6 companies' current annual dividend and average closing stock prices over the 30-,  
7 90-, and 180-trading days as of November 30, 2021.

8 **52. Q. Why did you use three averaging periods for stock prices?**

9 A. In my Constant Growth DCF model, I use an average of recent trading days to  
10 calculate the price term ( $P_0$ ) in the DCF model to ensure that the ROE is not skewed  
11 by anomalous events that may affect stock prices on any given trading day. The  
12 averaging period should also be reasonably representative of expected capital  
13 market conditions over the long-term. However, by necessity, analysts rely on  
14 historical prices which, as discussed above, are currently at unsustainably high  
15 levels. Under these circumstances, where current market conditions cannot be  
16 expected to continue throughout the rate period, it is important to recognize that  
17 current average prices in the Constant Growth DCF model are not consistent with  
18 forward-looking market expectations. Therefore, the results of my Constant  
19 Growth DCF model using historical data may underestimate the forward-looking  
20 cost of equity. As a result, I place more weight on the mean to mean-high results  
21 produced by my Constant Growth DCF model.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **53. Q. Did you make any adjustments to the dividend yield to account for periodic**  
2 **growth in dividends?**

3 A. Yes. Since utility companies tend to increase their quarterly dividends at different  
4 times throughout the year, it is reasonable to assume that dividend increases will be  
5 evenly distributed over calendar quarters. Given that assumption, it is reasonable  
6 to apply one-half of the expected annual dividend growth rate for purposes of  
7 calculating the expected dividend yield component of the DCF model. This  
8 adjustment ensures that the expected first year dividend yield is, on average,  
9 representative of the coming twelve-month period, and does not overstate the  
10 aggregated dividends to be paid during that time.

11 **54. Q. Why is it important to select appropriate measures of long-term growth in**  
12 **applying the DCF model?**

13 A. In its Constant Growth form, the DCF model (i.e., Equation [2]) assumes a single  
14 long-term growth rate in perpetuity. In order to reduce the long-term growth rate  
15 to a single measure, one must assume that the dividend payout ratio remains  
16 constant and that earnings per share, dividends per share, and book value per share  
17 all grow at the same constant rate. Over the long run, however, dividend growth  
18 can only be sustained by earnings growth. For example, earnings growth rates tend  
19 to be least influenced by capital allocation decisions that companies may make in  
20 response to near-term changes in the business environment. Since such decisions  
21 may directly affect near-term dividend payout ratios, estimates of earnings growth



NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 are more indicative of long-term investor expectations than are dividend or book  
2 value growth estimates.

3 **55. Q. What sources of long-term growth rates did you rely on in your Constant**  
4 **Growth DCF model?**

5 A. My Constant Growth DCF model incorporates the following sources of long-term  
6 growth rates: (1) consensus long-term earnings growth estimates from Zacks  
7 Investment Research; (2) consensus long-term earnings growth estimates from  
8 Thomson First Call (provided by Yahoo! Finance); and (3) long-term earnings  
9 growth estimates from Value Line.

10 **56. Q. How did you calculate the expected dividend yield?**

11 A. I adjusted the dividend yield to reflect the growth rate that was being used in that  
12 particular scenario. This ensures that the growth rate used in the dividend yield  
13 calculation and the growth rate used as the “g” term of the DCF model are internally  
14 consistent.

15 **57. Q. How did you calculate the range of results for the Constant Growth DCF**  
16 **Models?**

17 A. I calculated the low result for my DCF model using the minimum growth rate (i.e.,  
18 the lowest of the First Call, Zacks, and Value Line earnings growth rates) for each  
19 of the proxy group companies. Thus, the low result reflects the minimum DCF  
20 result for the proxy group. I used a similar approach to calculate the high results,

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 using the highest growth rate for each proxy group company. The mean results were  
2 calculated using the average growth rates from all sources.

3 **58. Q. Please summarize the results of your Constant Growth DCF analyses.**

4 A. Figure 7 (see also Attachment AEB-4) presents the range of results produced by  
5 my proxy group. As shown in Figure 7, for the proxy group, the median and mean  
6 DCF results range from 9.45 percent to 9.79 percent, and the median high and mean  
7 high results are in the range of 10.60 percent to 11.26 percent. While I also  
8 summarize the median low and mean low DCF results, based on the expected  
9 underperformance of utility stocks and thus the likelihood that the DCF model is  
10 understating the cost of equity, I do not believe it is appropriate to consider the low  
11 DCF results at this time.

12 **Figure 7: Summary of Constant Growth DCF Results**  
13

<i>Constant Growth DCF – Mean</i>			
	Mean Low	Mean	Mean High
30-Day Average	7.90%	9.53%	11.26%
90-Day Average	7.86%	9.50%	11.23%
180-Day Average	7.82%	9.45%	11.18%
<i>Constant Growth DCF - Median</i>			
	Median Low	Median	Median High
30-Day Average	8.33%	9.79%	10.71%
90-Day Average	8.34%	9.66%	10.74%
180-Day Average	8.41%	9.60%	10.60%

14

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **59. Q. What are your conclusions about the results of the Constant Growth DCF**  
2 **model?**

3 A. As discussed previously, one primary assumption of the DCF model is a constant  
4 P/E ratio. That assumption is heavily influenced by the market price of utility  
5 stocks. Since utility stocks are expected to underperform the broader market over  
6 the near-term as interest rates increase, it is important to consider the results of the  
7 DCF models with caution because the DCF tends to understate the cost of equity in  
8 rising interest rate and higher inflationary environments, which, as discussed  
9 previously, currently exist. Therefore, while I have given weight to the results of  
10 the Constant Growth DCF model, my recommendation also gives weight to the  
11 results of other ROE estimation models.

12 **CAPM Analysis**

13 **60. Q. Please briefly describe the Capital Asset Pricing Model (“CAPM”).**

14 A. The CAPM is a risk premium approach that estimates the cost of equity for a given  
15 security as a function of a risk-free return plus a risk premium to compensate  
16 investors for the non-diversifiable or “systematic” risk of that security. Systematic  
17 risk is the risk inherent in the entire market or market segment. This form of risk  
18 cannot be diversified away using a portfolio of assets. Non-systematic risk is the  
19 risk of a specific company that can be mitigated through portfolio diversification.

20 The CAPM is defined by four components, each of which must theoretically be a  
21 forward-looking estimate:

NEW JERSEY-AMERICAN WATER COMPANY, INC.

$$K_e = r_f + \beta(r_m - r_f) \quad [3]$$

Where:

$K_e$  = the required market ROE;

$\beta$  = Beta coefficient of an individual security;

$r_f$  = the risk-free ROR; and

$r_m$  = the required return on the market as a whole.

In this specification, the term  $(r_m - r_f)$  represents the Market Risk Premium.

According to the theory underlying the CAPM, since unsystematic risk can be

diversified away, investors should only be concerned with systematic risk.

Systematic risk is measured by Beta. Beta is a measure of the volatility of a security

as compared to the market as a whole. Beta is defined as:

$$\beta = \frac{\text{Covariance}(r_e, r_m)}{\text{Variance}(r_m)} \quad [4]$$

The variance of the market return (i.e., Variance ( $r_m$ )) is a measure of the

uncertainty of the general market. The covariance between the return on a specific

security and the general market (i.e., Covariance ( $r_e, r_m$ )) reflects the extent to which

the return on that security will respond to a given change in the general market

return. Thus, Beta represents the risk of the security relative to the general market.

**61. Q. What risk-free rate did you use in your CAPM analysis?**

A. I relied on three sources for my estimate of the risk-free rate: (1) the current 30-day average yield on 30-year U.S. Treasury bonds (i.e., 1.97 percent);<sup>42</sup> (2) the

---

<sup>42</sup> Bloomberg Professional, as of November 30, 2021.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 projected 30-year U.S. Treasury bond yield for Q1 2022 through Q1 2023 (i.e., 2.46  
2 percent);<sup>43</sup> and (3) the projected 30-year U.S. Treasury bond yield for 2023 through  
3 2027 (i.e., 3.40 percent).<sup>44</sup>

4 **62. Q. Would you place more weight on one of these scenarios?**

5 A. Yes. Based on current market conditions, I place more weight on the results of the  
6 projected yields on the 30-year Treasury bonds. As discussed previously, the  
7 estimation of the cost of equity in this case should be forward-looking because it is  
8 the return that investors would receive over the future rate period. Therefore, the  
9 inputs and assumptions used in the CAPM analysis should reflect the expectations  
10 of the market at that time. While I have included the results of a CAPM analysis  
11 that relies on the current average risk-free rate, this analysis fails to take into  
12 consideration the effect of the market's expectations for interest rate increases on  
13 the cost of equity.

14 **63. Q. What Beta coefficients did you use in your CAPM analysis?**

15 A. As shown in Schedule AEB-4, I used the Beta coefficients for the proxy group  
16 companies as reported by Bloomberg and Value Line. The Beta coefficients  
17 reported by Bloomberg were calculated using ten years of weekly returns relative  
18 to the S&P 500 Index. Value Line's calculation is based on five years of weekly  
19 returns relative to the New York Stock Exchange Composite Index.

---

<sup>43</sup> Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 2.

<sup>44</sup> Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 14.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1           Additionally, as shown in Schedule AEB-4, I also considered an additional CAPM  
2           analysis which relies on the long-term average utility Beta coefficient for the  
3           companies in my proxy group. As shown in Schedule AEB-5, the long-term  
4           average utility Beta coefficient was calculated as an average of the Value Line Beta  
5           coefficients for the companies in my proxy group from 2016 through 2020.

6           **64. Q. How did you estimate the Market Risk Premium in the CAPM?**

7           A. I estimated the Market Risk Premium (“MRP”) as the difference between the  
8           implied expected equity market return and the risk-free rate. As shown in Schedule  
9           AEB-6, the expected return on the S&P 500 Index is calculated using the Constant  
10          Growth DCF model discussed earlier in my testimony for the companies in the S&P  
11          500 Index. In my calculation of the market return, I included companies in the S&P  
12          500 that: 1) had either a dividend yield or Value Line long-term earnings projection;  
13          and 2) had a Value Line long-term earnings growth rate that was greater than 0  
14          percent and less than or equal to 20 percent. Based on an estimated market  
15          capitalization-weighted dividend yield of 1.58 percent and a weighted long-term  
16          growth rate of 11.31 percent, the estimated required market return for the S&P 500  
17          Index is 12.97 percent.

18          **65. Q. Have other regulators endorsed the use of a forward-looking market risk**  
19          **premium?**

20          A. Yes. The Minnesota Department of Commerce (“Minnesota DOC”) has relied on  
21          the Constant Growth DCF model to estimate the market return. In Docket No. G-  
22          004/GR-19-511 for Great Plains Natural Gas Company, the Minnesota DOC relied

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 on a Constant Growth DCF analysis for the S&P 500 to estimate the market return  
2 for the CAPM. Specifically, the Minnesota DOC relied on the dividend yield  
3 reported by S&P for the S&P 500 and the three-five year earnings growth estimate  
4 for the State Street Global Advisors S&P 500 exchange traded fund (“ETF”) which  
5 resulted in a market return of 13.44 percent.<sup>45</sup> The Minnesota DOC has historically  
6 relied on the Constant Growth DCF model to estimate the market return for the  
7 CAPM which has in turn been considered by the Minnesota PUC in prior  
8 proceedings.<sup>46</sup>

9 **66. Q. How does the current expected market return of 12.97 percent compare to**  
10 **observed historical market returns?**

11 A. Given the range of annual equity returns that have been observed over the past 95  
12 years (shown in Figure 8 below), a current expected return of 12.97 percent is not  
13 unreasonable. In 49 of the past 95 years (i.e., in approximately half of all  
14 observations), the realized total equity return was at least 12.97 percent or greater.

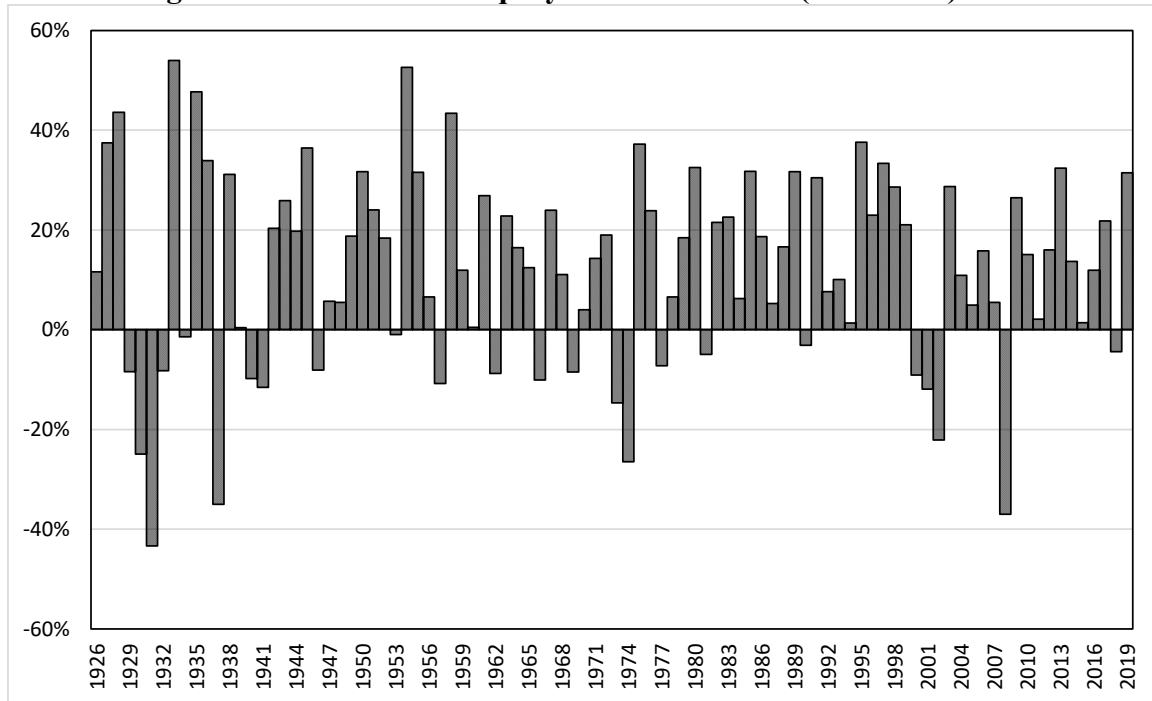
---

<sup>45</sup> Docket No. G-004/GR-19-511, In the Matter of the Petition By Great Plains Natural Gas Co., a Division of Montana-Dakota Utilities Co., for Authority to Increase Natural Gas Rates in Minnesota (March 3, 2020), at Ex. DER-9, CMA-S-8.

<sup>46</sup> See Docket No. E017/GR-15-1033, Findings of Fact, Conclusions and Order, May 1, 2017, at 54-56; and Docket No. E015/GR-16-664, Findings of Fact, Conclusions and Order, March 12, 2018, at 60-61.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1

**Figure 8: Realized U.S. Equity Market Returns (1926-2020)<sup>47</sup>**

2

3 **67. Q. Did you consider another form of the CAPM in your analysis?**

4 A. Yes. I have also considered the results of an Empirical CAPM (“ECAPM”)<sup>48</sup> in  
 5 estimating the cost of equity for NJAWC. The ECAPM calculates the product of  
 6 the adjusted Beta coefficient and the market risk premium and applies a weight of  
 7 75.00 percent to that result. The model then applies a 25.00 percent weight to the  
 8 market risk premium, without any effect from the Beta coefficient. The results of  
 9 the two calculations are summed, along with the risk-free rate, to produce the  
 10 ECAPM result, as noted in Equation [5] below:

$$11 \quad k_e = r_f + 0.75\beta(r_m - r_f) + 0.25(r_m - r_f) \quad [5]$$

12 Where:

<sup>47</sup> Depicts total annual returns on large company stocks, as reported in the 2021 Duff & Phelps SBBI Yearbook.

<sup>48</sup> See e.g., Roger A. Morin, *New Regulatory Finance, Public Utilities Reports, Inc.*, 2006, at 189.



NEW JERSEY-AMERICAN WATER COMPANY, INC.

1  $k_e$  = the required market ROE

2  $\beta$  = Adjusted Beta coefficient of an individual security

3  $r_f$  = the risk-free rate of return

4  $r_m$  = the required return on the market as a whole

5 In essence, the Empirical form of the CAPM addresses the tendency of the  
6 “traditional” CAPM to underestimate the cost of equity for companies with low  
7 Beta coefficients such as regulated utilities. In that regard, the ECAPM is not  
8 redundant to the use of adjusted Betas; rather, it recognizes the results of academic  
9 research indicating that the risk-return relationship is different (in essence, flatter)  
10 than estimated by the CAPM, and that the CAPM underestimates the “alpha,” or  
11 the constant return term.<sup>49</sup>

12 As with the CAPM, my application of the ECAPM uses the forward-looking market  
13 risk premium estimates, the three yields on 30-year Treasury securities noted earlier  
14 as the risk-free rate, and the Bloomberg, Value Line, and long-term average Beta  
15 coefficients.

16 **68. Q. What are the results of your CAPM analyses?**

17 A. As shown in Figure (see also Schedule AEB-4), my traditional CAPM analyses  
18 produces a range of returns from 9.89 percent to 11.43 percent. The ECAPM  
19 analysis results range from 10.66 percent to 11.82 percent.

---

<sup>49</sup> *Id.*, at 191.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1

**Figure 2: Forward-Looking CAPM Results**

	<b>Current Risk-Free Rate (1.97%)</b>	<b>Q1 2022- Q1 2023 Projected Risk-Free Rate (2.46%)</b>	<b>2023-2027 Projected Risk-Free Rate (3.40%)</b>
<b>CAPM</b>			
Value Line Beta	11.20%	11.28%	11.43%
Bloomberg Beta	10.69%	10.79%	10.98%
Long-term Avg Beta	9.89%	10.02%	10.29%
Mean	10.59%	10.70%	10.90%
<b>ECAPM</b>			
Value Line Beta	11.64%	11.70%	11.82%
Bloomberg Beta	11.26%	11.33%	11.48%
Long-term Avg Beta	10.66%	10.76%	10.96%
Mean	11.19%	11.26%	11.42%

2

3 **Bond Yield Plus Risk Premium Analysis**

4 **69. Q. Please describe the Bond Yield Plus Risk Premium approach.**

5 A. In general terms, this approach is based on the fundamental principle that equity  
6 investors bear the residual risk associated with equity ownership and therefore  
7 require a premium over the return they would have earned as a bondholder. That  
8 is, because returns to equity holders have greater risk than returns to bondholders,  
9 equity investors must be compensated to bear that risk. Risk premium approaches,  
10 therefore, estimate the cost of equity as the sum of the equity risk premium and the  
11 yield on a particular class of bonds. In my analysis, I used actual authorized returns  
12 for natural gas utility companies as the historical measure of the cost of equity to  
13 determine the risk premium.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 **70. Q. Why did you conduct this analysis based on the natural gas utility authorized**  
2 **ROEs?**

3 A. The data set that is available for the water utilities begins in 2012, which is not a  
4 sufficient time period for a time series study such as the Bond Yield Risk Premium  
5 analysis. Therefore, I determined that data for natural gas companies is a reasonable  
6 proxy since both natural gas distribution companies and water utilities provide a  
7 similar service and may be perceived by investor to have a similar risk profile.  
8 Furthermore, as I discussed above, I have relied on a combination proxy group that  
9 includes natural gas utilities to develop the results of my Constant Growth DCF,  
10 CAPM, ECAPM and Expected Earnings analyses under the premise that the risks  
11 of natural gas utilities and water utilities are sufficiently similar that the results of  
12 the ROE estimation methodologies including natural gas utilities could be used for  
13 a water utility. Therefore, I believe it is reasonable and appropriate to rely on this  
14 time series analysis of the natural gas utility industry segment.

15 **71. Q. Are there other considerations that should be addressed in conducting this**  
16 **analysis?**

17 A. Yes. It is important to recognize both academic literature and market evidence  
18 indicating that the equity risk premium (as used in this approach) is inversely  
19 related to the level of interest rates. That is, as interest rates increase (decrease),  
20 the equity risk premium decreases (increases). Consequently, it is important to  
21 develop an analysis that: (1) reflects the inverse relationship between interest rates  
22 and the equity risk premium; and (2) relies on recent and expected market

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 conditions. Such an analysis can be developed based on a regression of the risk  
2 premium as a function of U.S. Treasury bond yields. If we let authorized ROEs for  
3 natural gas utilities serve as the measure of required equity returns and define the  
4 yield on the long-term U.S. Treasury bond as the relevant measure of interest rates,  
5 the risk premium simply would be the difference between those two points.<sup>50</sup>

6 **72. Q. Is the Bond Yield Plus Risk Premium analysis relevant to investors?**

7 A. Yes. Investors are aware of ROE awards in other jurisdictions, and they consider  
8 those awards as a benchmark for a reasonable level of equity returns for utilities of  
9 comparable risk operating in other jurisdictions. Because my Bond Yield Plus Risk  
10 Premium analysis is based on authorized ROEs for utility companies relative to  
11 corresponding Treasury yields, it provides relevant information to assess the return  
12 expectations of investors.

13 **73. Q. What did your Bond Yield Plus Risk Premium analysis reveal?**

14 A. As shown in Figure 10 below, from 1992 through November 2021, there was a  
15 strong negative relationship between risk premia and interest rates. To estimate  
16 that relationship, I conducted a regression analysis using the following equation:

$$RP = a + b(T) [6]$$

17  
18 Where:

---

<sup>50</sup> See e.g., S. Keith Berry, *Interest Rate Risk and Utility Risk Premia during 1982-93*, Managerial and Decision Economics, Vol. 19, No. 2 (March 1998), in which the author used a methodology similar to the regression approach described below, including using allowed ROEs as the relevant data source, and came to similar conclusions regarding the inverse relationship between risk premia and interest rates. See also Robert S. Harris, *Using Analysts' Growth Forecasts to Estimate Shareholders Required Rates of Return*, Financial Management, Spring 1986, at 66.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 RP = Risk Premium (difference between allowed ROEs and the yield on 30-  
 2 year U.S. Treasury bonds)

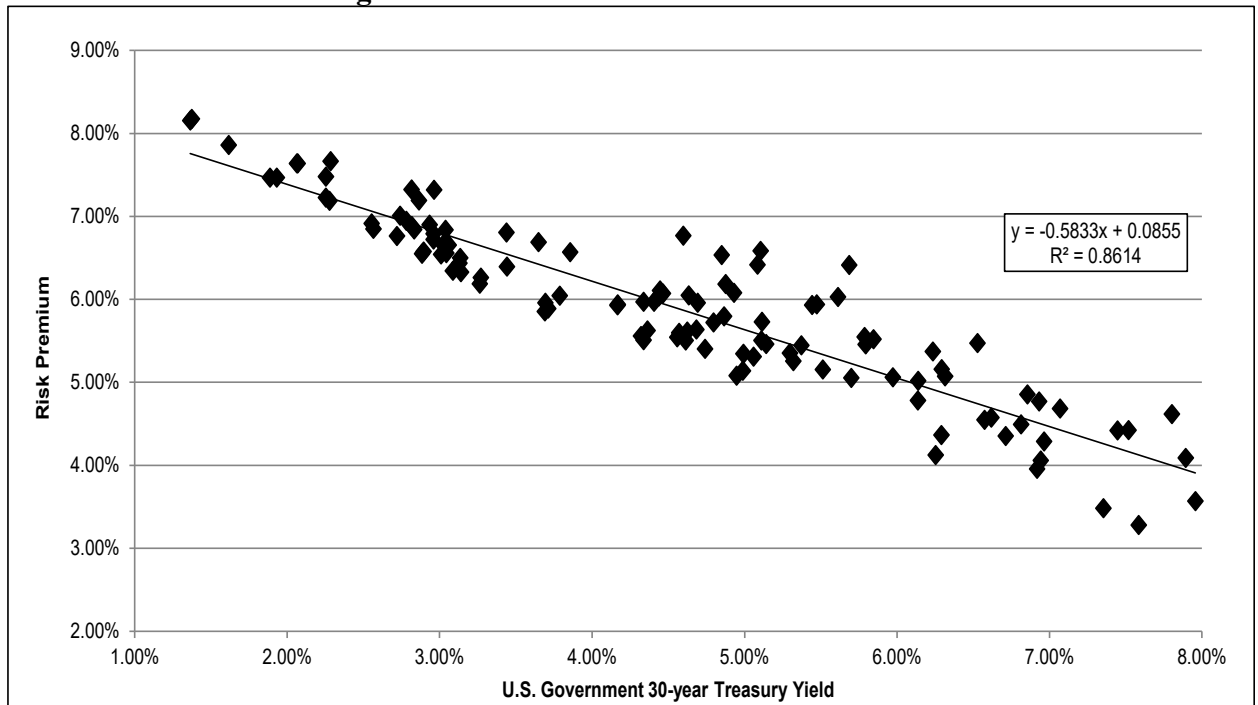
3 a = intercept term

4 b = slope term

5 T = 30-year U.S. Treasury bond yield

6 Data regarding allowed ROEs were derived from 701 natural gas utility rate cases  
 7 from 1992 through November 2021 as reported by Regulatory Research Associates  
 8 (“RRA”).<sup>51</sup> This equation’s coefficients were statistically significant at the 99.00  
 9 percent level.

10 **Figure 10: Risk Premium Results**



11  
 12

<sup>51</sup> This analysis began with a total of 1125 cases and was screened to eliminate limited issue rider cases, transmission-only cases, and cases that were silent with respect to the authorized ROE. After applying those screening criteria, the analysis was based on data for 701 cases.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 As shown on Schedule AEB-7, based on the current 30-day average of the 30-year  
2 U.S. Treasury bond yield (i.e., 1.97 percent), the risk premium would be 7.40  
3 percent, resulting in an estimated ROE of 9.37 percent. Based on the near-term  
4 (Q1 2022 – Q1 2023) projections of the 30-year U.S. Treasury bond yield (i.e., 2.46  
5 percent), the risk premium would be 7.12 percent, resulting in an estimated ROE of  
6 9.58 percent. Based on longer-term (2023-2027) projections of the 30-year U.S.  
7 Treasury bond yield (i.e., 3.40 percent), the risk premium would be 6.57 percent,  
8 resulting in an estimated ROE of 9.97 percent.

9 **74. Q. How did the results of the Bond Yield Risk Premium inform your**  
10 **recommended ROE for NJAWC?**

11 A. I have considered the results of the Bond Yield Risk Premium analysis in setting  
12 my recommended ROE for NJAWC. However, as discussed in Section V, of my  
13 Direct Testimony, the Federal Reserve's response to recent market events has  
14 affected yields on Treasury bonds, which understates the cost of equity using  
15 current and even short-term projected bond yields in this methodology.

16 **Expected Earnings Analysis**

17 **75. Q. Have you considered an additional analysis to estimate the cost of equity for**  
18 **NJAWC?**

19 A. Yes. I have considered an Expected Earnings analysis based on the projected ROEs  
20 for each of the proxy group companies.

NEW JERSEY-AMERICAN WATER COMPANY, INC.1 **76. Q. What is an Expected Earnings Analysis?**

2 A. The Expected Earnings methodology is a comparable earnings analysis that  
3 calculates the earnings that an investor expects to receive on the book value of a  
4 stock. The expected earnings analysis is a forward-looking estimate of investors'  
5 expected returns. The use of an Expected Earnings approach based on the proxy  
6 companies provides a range of the expected returns on a group of risk comparable  
7 companies to the subject company. This range is useful in helping to determine the  
8 opportunity cost of investing in the subject company, which is relevant in  
9 determining a company's ROE.

10 **77. Q. Have any other regulators considered the use of an Expected Earnings**  
11 **Analysis?**

12 A. Yes. The WUTC, in its order in Dockets UE-170485 and UG-170486, considered  
13 the results of the Comparable Earnings analysis<sup>52</sup> in establishing the authorized  
14 ROE for Avista Corporation. The WUTC noted that it tends to place more weight  
15 on the results of the DCF, CAPM and Risk Premium analyses; however, given the  
16 wide range of CAPM results presented by the ROE witnesses in the case, the  
17 WUTC decided to apply weight to the results of the Comparable Earnings  
18 analysis.<sup>53</sup> Specifically, the WUTC stated the following:

19 Finally, as additional data points for our consideration of  
20 establishing Avista's ROE, we note that two witness, Mr. McKenzie

---

<sup>52</sup> The Expected Earnings analysis is a form of the Comparable Earnings analysis that relies exclusively on forward-looking projections.

<sup>53</sup> *Wash. Utils. & Transp. Comm'n v. Avista Corp.*, Docket Nos. UE-170485 and UG-170486, Order 07, ¶ 65 (April 26, 2018). Comparable Earnings as discussed in this docket is similar to the Expected Earnings analysis developed in my Direct Testimony.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 for Avista and Mr. Parcell for Staff, employ the CE approach to two  
2 proxy groups of companies. The respective mid-points of each  
3 witnesses' CE analysis are 10.5 and 9.5 percent, respectively, with  
4 an average of 10.0 percent. Although we generally do not apply  
5 material weight to the CE method, having stronger reliance on the  
6 DCF, CAPM and RP methods, we are inclined to include the CE  
7 method here given the anomalous CAPM results described  
8 previously.<sup>54</sup>

9 **78. Q. How did you develop the Expected Earnings Approach?**

10 A. I relied primarily on the projected ROE capital for the proxy companies as reported  
11 by Value Line for the period from 2024-2026. The projected ROEs are adjusted to  
12 account for the fact that the ROEs reported by Value Line are calculated on the  
13 basis of common shares outstanding at the end of the period, as opposed to average  
14 shares outstanding over the period. As shown in Schedule AEB-8, the Expected  
15 Earnings analysis results in a mean of 10.31 percent and a median of 10.00 percent.

16 **79. Q. What are your conclusions as to the ROE derived from the DCF, CAPM**  
17 **ECAPM, Risk Premium and Expected Earnings analyses?**

18 A. Based the results from these methodologies and the qualitative analyses presented  
19 in my Direct Testimony, a reasonable range of ROE results for NJAWC is from  
20 9.90 percent to 11.25 percent. I am recommending, however, that the Board set the  
21 Company's rate of return on common equity at 10.50 percent. The recommended  
22 return of 10.50 percent considers NJAWC's company-specific risks relative to the  
23 proxy group. I discuss those company-specific risks below.

---

<sup>54</sup> *Ibid.*



NEW JERSEY-AMERICAN WATER COMPANY, INC.**VIII. RISK FACTORS**

1  
2 **80. Q. Do the DCF, CAPM, ECAPM and Expected Earnings results for the proxy**  
3 **group, taken alone, provide an appropriate estimate of the cost of equity for**  
4 **NJAWC?**

5 A. No, they do not. These results provide only a range of the appropriate estimate of  
6 the cost of equity for a proxy group of comparable companies. Several additional  
7 factors must be considered when determining where NJAWC's cost of equity falls  
8 within the range of results. These factors include, but are not limited to business  
9 risk, financial risk and regulatory risk. When all of these factors are examined, I  
10 conclude that NJAWC faces comparable, albeit slightly higher, risks than the proxy  
11 group as a whole.

12 **81. Q. Is NJAWC's risk profile affected by its substantial capital expenditure**  
13 **program?**

14 A. Yes. NJAWC projects that the Company will spend approximately \$2.01 billion on  
15 capital investments for the period from 2022-2026, including significant investment  
16 to replace aging infrastructure necessary to continue to meet the needs of its  
17 customers and to comply with various regulations. This is a substantial increase  
18 over the net plant value of \$4.88 billion on December 31, 2020.<sup>55</sup>

---

<sup>55</sup> NJAWC, 2020 Annual Report, at 11.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 From a credit perspective, the additional pressure on cash flows associated with  
2 high levels of capital expenditures exerts corresponding pressure on credit metrics  
3 and, therefore, credit ratings. An S&P report explains:

4 [T]here is little doubt that the U.S. electric industry needs to make  
5 record capital expenditures to comply with the proposed carbon  
6 pollution rules over the next several years, while maintaining safety  
7 standards and grid stability. We believe the higher capital spending  
8 and subsequent rise in debt levels could strain these companies'  
9 financial measures, resulting in an almost consistent negative  
10 discretionary cash flow throughout this higher construction period.  
11 To meet the higher capital spending requirements, companies will  
12 require ongoing and steady access to the capital markets,  
13 necessitating that the industry maintains its high credit quality. We  
14 expect that utilities will continue to effectively manage their  
15 regulatory risk by using various creative means to recover their costs  
16 and to finance their necessary higher spending.<sup>56</sup>

17 Although this S&P report refers to electric utilities, the same applies to water  
18 utilities, as it is generally regarded that they are the most capital intensive of the  
19 utilities. In an August 2016 report, S&P explained the importance of regulatory  
20 support for large capital projects:

21 Broad support for all capital spending is the most credit-sustaining.  
22 Support for only specific types of capital spending, such as specific  
23 environmental projects or system integrity plans, is less so, but still  
24 favorable for creditors. Allowance of a cash return on construction  
25 work-in-progress or similar ratemaking methods historically were  
26 extraordinary measures for use in unusual circumstances, but when  
27 construction costs are rising, cash flow support could be crucial to  
28 maintain credit quality through the spending program. Even more

---

<sup>56</sup> S&P, Ratings Direct, "U.S. Regulated Electric Utilities' Annual Capital Spending is Poised to Eclipse \$100 Billion," July 2014.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 favorable are those jurisdictions that present an opportunity for a  
2 higher return on capital projects as an incentive to investors.<sup>57</sup>

3 **82. Q. Does NJAWC have a capital tracking mechanism to recover some of the costs**  
4 **associated with its capital expenditures plan between rate cases?**

5 A. Yes. NJAWC has a Distribution System Improvement Charge (“DSIC”) which  
6 allows NJAWC to recover the costs associated with critical projects, including  
7 replacing and rehabilitating aging water mains, fire hydrants and service lines, as  
8 well as a newly established Wastewater System Improvement Charge (“WSIC”),  
9 which allows NJAWC to recovery costs associated with critical projects on the  
10 wastewater side, including replacing and rehabilitating aging collection mains,  
11 manholes, laterals and services. The presence of these clauses is certainly a positive  
12 aspect of New Jersey regulation however, they have become quite commonplace in  
13 utility regulation.

14 **83. Q. Do the proxy group companies also have the ability to recover capital**  
15 **investments through a capital tracking mechanism?**

16 A. Yes, the proxy companies have infrastructure and capital recovery mechanisms that  
17 address significant capital expenditure requirements. As shown in Schedule AEB-  
18 9, the companies in the proxy group have infrastructure replacement recovery  
19 mechanisms in approximately 83.33 percent of their operating jurisdictions.

---

<sup>57</sup> S&P Global Ratings, “Assessing U.S. Investor-Owned Utility Regulatory Environments,” August 10, 2016, at 7.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1           Consequently, the presence of the DSIC and the WISC, while positive regulatory  
2 mechanisms, do not reduce the Company's risk vis-à-vis that of the proxy group.

3 **84. Q. Have you examined the regulatory mechanisms employed in New Jersey**  
4 **compared to those employed by the regulators of your proxy group**  
5 **companies?**

6           A. Yes, I have. Exhibit AEB-9 is a compilation of the regulatory mechanism  
7 employed by regulators of the proxy group companies compared to the mechanisms  
8 employed in New Jersey. On the whole regulation in New Jersey, although  
9 supportive, appears to have certain negative ratemaking conventions that render it  
10 less supportive than in the jurisdictions regulating the proxy group companies.

11 **85. Q. Is regulation applied to a subject utility examined by rating agencies and other**  
12 **analysts?**

13           A. Yes. Both S&P and Moody's consider the overall regulatory framework in  
14 establishing credit ratings. Moody's establishes credit ratings based on four key  
15 factors: (1) business profile; (2) financial policy; (3) leverage and coverage; and (4)  
16 uplift for structural considerations. Within the business profile criteria, stability and  
17 predictability of regulatory environment and cost and investment recovery  
18 (sufficiency and timeliness) are each given a broad rating factor of 15.0 percent  
19 while revenue risk is given a rating factor of 5.0 percent. Therefore, Moody's

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 assigns regulatory risk a 35.0 percent weighting in the overall assessment of  
2 business and financial risk for regulated utilities.<sup>58</sup>

3 S&P also identifies the regulatory framework as an important factor in credit ratings  
4 for regulated utilities, stating: “One significant aspect of regulatory risk that  
5 influences credit quality is the regulatory environment in the jurisdictions in which  
6 a utility operates.”<sup>59</sup> S&P identifies four specific factors that it uses to assess the  
7 credit implications of the regulatory jurisdictions of investor-owned regulated  
8 utilities: (1) regulatory stability; (2) tariff-setting procedures and design; (3)  
9 financial stability; and (4) regulatory independence and insulation.”<sup>60</sup>

10 **86. Q. How does the regulatory environment in which a utility operates affect its**  
11 **access to and cost of capital?**

12 A. The regulatory environment can significantly affect both the access to, and cost of  
13 capital in several ways. First, the proportion and cost of debt capital available to  
14 utility companies are influenced by the rating agencies’ assessment of the  
15 regulatory environment. As noted by Moody’s, “the characteristics and  
16 transparency of the concession(s) and regulations under which the utility operates,  
17 the track record of the regulatory regime in setting tariffs and applying regulations

---

<sup>58</sup> Moody’s Investors Service, Rating Methodology: Regulated Water Utilities, June 8, 2018, at 4.

<sup>59</sup> Standard & Poor’s, Assessing U.S. Utility Regulatory Environments, August 10, 2016, at 2.

<sup>60</sup> *Ibid.*

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 consistently are key elements in assessing the overall stability of a water utility's  
2 business profile."<sup>61</sup>

3 **87. Q. What are your conclusions regarding the perceived risks related to the New**  
4 **Jersey regulatory environment?**

5 A. As discussed throughout this section of my testimony, both Moody's and S&P have  
6 identified the supportiveness of the regulatory environment as an important  
7 consideration in developing their overall credit ratings for regulated utilities.  
8 Considering the regulatory adjustment mechanisms, many of the companies in the  
9 proxy group have more timely cost recovery (through forecasted test years, cost  
10 recovery trackers and revenue decoupling mechanisms) than NJAWC has in New  
11 Jersey. Considering the business and financial risks faced by the Company, I  
12 conclude that the range of returns and the authorized ROE for NJAWC should be  
13 higher than the median results of the ROE estimation models using the proxy group  
14 companies.

15 **IX. CAPITAL STRUCTURE**

16 **88. Q. Is the capital structure of the Company an important consideration in the**  
17 **determination of the appropriate ROE?**

18 A. Yes, it is. Assuming other factors equal, a higher debt ratio increases the risk to  
19 investors. For debt holders, higher debt ratios result in a greater portion of the  
20 available cash flow being required to meet debt service, thereby increasing the risk

---

<sup>61</sup> Moody's Investors Service, Rating Methodology: Regulated Water Utilities, June 8, 2018, at 7.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 associated with the payments on debt. The result of increased risk is a higher  
2 interest rate. The incremental risk of a higher debt ratio is more significant for  
3 common equity shareholders, who are the residual claimants on the cash flow of  
4 the Company. Therefore, the greater the debt service requirement, the less cash  
5 flow is available for common equity holders.

6 **89. Q. What is the Company's proposed capital structure?**

7 A. NJAWC is proposing a rate-making capital structure composed of 54.56 percent  
8 common equity, and 45.44 percent long-term debt.<sup>62</sup>

9 **90. Q. Did you conduct any analysis to determine if the requested equity ratio was**  
10 **reasonable?**

11 A. Yes, I did. I reviewed the Company's proposed capital structure and the capital  
12 structures of the utility operating subsidiaries of the proxy companies.

13 **91. Q. Why is it appropriate to consider the equity ratio for the proxy companies?**

14 A. The determination of the ROE is based on the expected return for a proxy group of  
15 companies that are comparable in general risk to NJAWC. The equity ratio is a  
16 measure of the financial risk of the company, and the authorized ROE is the return  
17 to compensate investors for that risk. If the Board is going to rely on the ROE  
18 estimates for the proxy companies to establish the authorized ROE for NJAWC, it  
19 is important that the financial risk of NJAWC be similar to the financial risk of the

---

<sup>62</sup> Exhibit P-2, Schedule 16.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 proxy group. This is accomplished when the equity ratio of the subject company  
2 (in this case NJAWC) is within the range established by the proxy group.

3 **92. Q. Please discuss your analysis of the capital structures of the proxy group**  
4 **companies.**

5 A. I calculated the mean proportions of common equity, long-term debt and preferred  
6 equity for the most recent year for each of the companies in the proxy group at the  
7 operating subsidiary level.<sup>63</sup> My analysis of the capital structures of the proxy  
8 group companies is provided in Schedule AEB-10. As shown in Schedule AEB-  
9 10, the mean common equity ratio for the proxy group at the operating subsidiary  
10 level was 55.52 percent, within a range from 47.44 percent to 60.04 percent.  
11 Comparing NJAWC's proposed common equity ratio of 54.56 percent to the equity  
12 ratios of proxy group, NJAWC's equity ratio is somewhat below the mean equity  
13 ratio and well within the range of equity ratios established by the proxy group.

14 **93. Q. Are there other factors to be considered in setting the Company's capital**  
15 **structure?**

16 A. Yes. The importance of maintaining the financial strength of the Company must  
17 be considered in setting the capital structure. Since tax reform occurred in 2017,  
18 the credit rating agencies have identified and acted on the deterioration in the  
19 financial ratios of utilities, downgrading many utilities that had suffered declines in  
20 coverage ratios. S&P and Fitch specifically identified increasing the equity ratio as

---

<sup>63</sup> Long-term debt includes the current portion of long-term debt, assuming that the current portion would be refinanced with debt at maturity.



NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 one approach to ensure that utilities have sufficient cash flows following the federal  
2 income tax rate reductions and the loss of bonus depreciation. As S&P noted  
3 “[r]egulators must also recognize that tax reform is a strain on utility credit quality,  
4 and we expect companies to request stronger capital structures and other means to  
5 offset some of the negative impact”.<sup>64</sup> Furthermore, Moody’s downgraded the  
6 rating outlook for the entire utilities sector in June 2018 and has continued to  
7 downgrade the ratings of utilities based in part on the negative effects of the TCJA  
8 on cash flows.

9 S&P has continued to maintain a negative outlook for the utility industry in 2021.<sup>65</sup>  
10 S&P expects continued pressure on cash flows over the near-term as utilities  
11 continue to increase leverage to fund capital expenditure plans necessary to reduce  
12 greenhouse gas emission and improve safety and reliability.<sup>66</sup> Furthermore, S&P  
13 recently highlighted that prolonged inflation and rising interests could further  
14 constrain the credit metrics for utilities over the near-term:

15           Given these observations, and the added concern that inflationary  
16           pressure could be accompanied by a rising interest rate environment  
17           and wider spreads, we believe that a period of prolonged inflation  
18           could further constrain credit metrics for some utilities. Higher rates  
19           will also pressure unhedged variable rate borrowings and raise the  
20           costs of refinancing fixed-rate debt maturities. This comes as  
21           companies in the sector have already added record levels of debt to  
22           offset historically high capital spending aimed at modernizing the

---

<sup>64</sup> Standard & Poor’s Ratings, “U.S. Tax Reform: For Utilities’ Credit Quality, Challenges Abound”, January 24, 2018, at 5.

<sup>65</sup> S&P Global Ratings, “North American Regulated Utilities’ Credit Quality Begins the Year on A Downward Path,” April 7, 2021.

<sup>66</sup> *Ibid.*

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1 grid, building new transmission lines, reducing coal generation, and  
2 adding renewable power investments.<sup>67</sup>

3 As a result, the credit ratings agencies continued concerns over the negative effects  
4 or the TCJA, inflation, and increased capital expenditures underscores the  
5 importance of maintaining adequate cash flow metrics for the industry, as a whole,  
6 and NJAWC, particularly, in the context of this proceeding.

7 **94. Q. What are your conclusions about NJAWC's proposed capital structure?**

8 A. Considering the actual capital structures of the proxy group operating companies, I  
9 believe that NJAWC's proposed common equity ratio of 54.56 percent is  
10 reasonable. The proposed equity ratio is well within the range established by the  
11 capital structures of the utility operating subsidiaries of the proxy companies albeit  
12 slightly below the mean equity ratio of the group as a whole.

13 **X. CONCLUSIONS AND RECOMMENDATION**

14 **95. Q. What is your conclusion regarding a fair ROE for NJAWC?**

15 A. Figure 11 below provides a summary of my analytical results. Based on these  
16 results and the qualitative analyses presented in my Direct Testimony, a reasonable  
17 range of ROE results for NJAWC is from 9.90 percent to 11.25 percent. I am  
18 recommending that the Board set the Company's rate of return on common equity  
19 at 10.50 percent. The recommended return of 10.50 percent considers NJAWC's  
20 company-specific risks relative to the proxy group, as discussed in my Direct

---

<sup>67</sup> S&P Global Ratings, "Will Rising Inflation Threaten North American Investor-Owned Regulated Utilities' Credit Quality?," July 20, 2021.

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1           Testimony. In addition, the recommended ROE takes into consideration the current  
2           conditions in capital markets including the expectation for rising interest rates, and  
3           increase in inflationary pressures, both of which increase the cost of capital. This  
4           ROE would enable the Company to maintain its financial integrity and therefore its  
5           ability to attract capital at reasonable terms under a variety of economic and  
6           financial market conditions, while continuing to provide safe, reliable and  
7           affordable water and wastewater service to customers in New Jersey.

8

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1  
2

**Figure 11: Summary of Analytical Results**

<b><i>Constant Growth DCF – Mean</i></b>			
	Mean Low	Mean	Mean High
30-Day Average	7.90%	9.53%	11.26%
90-Day Average	7.86%	9.50%	11.23%
180-Day Average	7.82%	9.45%	11.18%
Mean	7.86%	9.49%	11.22%
<b><i>Constant Growth DCF - Median</i></b>			
	Median Low	Median	Median High
30-Day Average	8.33%	9.79%	10.71%
90-Day Average	8.34%	9.66%	10.74%
180-Day Average	8.41%	9.60%	10.60%
Mean	8.36%	9.68%	10.68%
<b><i>CAPM</i></b>			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.20%	11.28%	11.43%
Bloomberg Beta	10.69%	10.79%	10.98%
Long-term Avg. Beta	9.89%	10.02%	10.29%
Mean	10.59%	10.70%	10.90%
<b><i>ECAPM</i></b>			
Value Line Beta	11.64%	11.70%	11.82%
Bloomberg Beta	11.26%	11.33%	11.48%
Long-term Avg. Beta	10.66%	10.76%	10.96%
Mean	11.19%	11.26%	11.42%
<b><i>Bond Yield Plus Risk Premium</i></b>			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Results	9.37%	9.58%	9.97%
<b><i>Expected Earnings Analysis</i></b>			
	Mean		Median
Expected Earnings Analysis	10.31%		10.00%

NEW JERSEY-AMERICAN WATER COMPANY, INC.

1

2 **96. Q. What is your conclusion with respect to NJAWC's proposed capital structure?**

3 A. I conclude that NJAWC's proposed rate-making capital structure composed of  
4 54.56 percent common equity, and 45.44 percent long-term debt is reasonable when  
5 compared to the capital structures of the companies in the proxy group and taking  
6 in consideration the effect of the TCJA, and increased capital expenditures on cash  
7 flows and therefore should be adopted.

8 **97. Q. Does this conclude your Direct Testimony?**

9 A. Yes.



Ann E. Bulkley  
PRINCIPAL

---

Boston

508.981.0866

[Ann.Bulkley@brattle.com](mailto:Ann.Bulkley@brattle.com)

With more than 25 years of experience in the energy industry, Ms. Bulkley specializes in regulatory economics for the electric and natural gas sectors, including rate of return, cost of equity, and capital structure issues.

Ms. Bulkley has extensive state and federal regulatory experience, and she has provided expert testimony on the cost of capital in nearly 100 regulatory proceedings before 32 state regulatory commissions and the Federal Energy Regulatory Commission (FERC).

In addition to her regulatory experience, Ms. Bulkley has provided valuation and appraisal services for a variety of purposes, including the sale or acquisition of utility assets, regulated ratemaking, ad valorem tax disputes, and other litigation purposes. In addition, she has experience in the areas of contract and business unit valuation, strategic alliances, market restructuring, and regulatory and litigation support.

Ms. Bulkley is a Certified General Appraiser licensed in the Commonwealth of Massachusetts and the State of New Hampshire.

Prior to joining Brattle, Ms. Bulkley was a Senior Vice President at an economic consultancy, and also held senior positions at several consulting firms.

---

#### AREAS OF EXPERTISE

- Regulatory Economics, Finance & Rates
- Regulatory Investigations & Enforcement
- Tax Controversy & Transfer Pricing
- Electricity Litigation & Regulatory Disputes
- M&A Litigation

---

## EDUCATION

- **Boston University**  
MA in Economics
- **Simmons College**  
BA in Economics and Finance

---

## PROFESSIONAL EXPERIENCE

- **The Brattle Group (2002–Present)**  
Principal
- **Concentric Energy Advisors, Inc. (2002–2001)**  
Senior Vice President  
Vice President  
Assistant Vice President  
Project Manager
- **Navigant Consulting, Inc. (1995–2002)**  
Project Manager
- **Cahners Publishing Company (1995)**  
Economist

---

## SELECTED CONSULTING EXPERIENCE & EXPERT TESTIMONY

### REGULATORY ANALYSIS AND RATEMAKING

Have provided a range of advisory services relating to regulatory policy analysis and many aspects of utility ratemaking, with specific services including:

- Cost of capital and return on equity testimony, cost of service and rate design analysis and testimony, development of ratemaking strategies
- Development of merchant function exit strategies
- Analysis and program development to address residual energy supply and/or provider of last resort obligations
- Stranded costs assessment and recovery
- Performance-based ratemaking analysis and design

- Many aspects of traditional utility ratemaking (e.g., rate design, rate base valuation)

### **COST OF CAPITAL**

Have provided expert testimony on the cost of capital and capital structure in nearly 100 regulatory proceedings before state and federal regulatory commissions in the United States.

### **RATEMAKING**

Have assisted several clients with analysis to support investor-owned and municipal utility clients in the preparation of rate cases. Sample engagements include:

- Assisted several investor-owned and municipal clients on cost allocation and rate design issues including the development of expert testimony supporting recommended rate alternatives.
- Worked with Canadian regulatory staff to establish filing requirements for a rate review of a newly regulated electric utility. Along with analyzing and evaluating rate application, attended hearings and conducted investigation of rate application for regulatory staff. And prepared, supported, and defended recommendations for revenue requirements and rates for the company. Additionally, developed rates for gas utility for transportation program and ancillary services.

### **VALUATION**

Have provided valuation services to utility clients, unregulated generators, and private equity clients for a variety of purposes, including ratemaking, fair value, ad valorem tax, litigation and damages, and acquisition. Appraisal practices are consistent with the national standards established by the Uniform Standards of Professional Appraisal Practice.

Representative projects/clients have included:

- Prepared appraisals of electric utility transmission and distribution assets for ad valorem tax purposes.
- Prepared appraisals of several hydroelectric generating facilities for ad valorem tax purposes.
- Conducted appraisals of fossil fuel generating facilities for ad valorem tax purposes.
- Conducted appraisals of generating assets for the purposes of unwinding sale-leaseback agreements.
- For a confidential utility client, prepared valuation of fossil and nuclear generation assets for financing purposes for regulated utility client.



- Prepared a valuation of a portfolio of generation assets for a large energy utility to be used for strategic planning purposes. Valuation approach included an income approach, a real options analysis, and a risk analysis.
- Assisted clients in the restructuring of NUG contracts through the valuation of the underlying assets. Performed analysis to determine the option value of a plant in a competitively priced electricity market following the settlement of the NUG contract.
- Prepared market valuations of several purchase power contracts for large electric utilities in the sale of purchase power contracts. Assignment included an assessment of the regional power market, analysis of the underlying purchase power contracts, and a traditional discounted cash flow valuation approach, as well as a risk analysis. Analyzed bids from potential acquirers using income and risk analysis approaches. Prepared an assessment of the credit issues and value at risk for the selling utility.
- Prepared appraisal of a portfolio of generating facilities for a large electric utility to be used for financing purposes.
- Prepared fair value rate base analyses for Northern Indiana Public Service Company for several electric rate proceedings. Valuation approaches used in this project included income, cost, and comparable sales approaches.
- Prepared an appraisal of a fleet of fossil generating assets for a large electric utility to establish the value of assets transferred from utility property.
- Conducted due diligence on an electric transmission and distribution system as part of a buy-side due diligence team.
- Provided analytical support for and prepared appraisal reports of generation assets to be used in ad valorem tax disputes.
- Provided analytical support and prepared testimony regarding the valuation of electric distribution system assets in five communities in a condemnation proceeding.
- Prepared feasibility reports analyzing the expected net benefits resulting from municipal ownership of investor-owned utility operations.
- Prepared independent analyses of proposal for the proposed government condemnation of the investor-owned utilities in Maine and the formation of a public power district.
- Valued purchase power agreements in the transfer of assets to a deregulated electric market.

### **STRATEGIC AND FINANCIAL ADVISORY SERVICES**

Have assisted several clients across North America with analytically-based strategic planning, due diligence, and financial advisory services.

Representative projects include:

- Preparation of feasibility studies for bond issuances for municipal and district steam clients.
- Assisted in the development of a generation strategy for an electric utility. Analyzed various NERC regions to identify potential market entry points. Evaluated potential competitors and alliance partners. Assisted in the development of gas and electric price forecasts. Developed a framework for the implementation of a risk management program.
- Assisted clients in identifying potential joint venture opportunities and alliance partners. Contacted interviewed and evaluated potential alliance candidates based on company-established criteria for several LDCs and marketing companies. Worked with several LDCs and unregulated marketing companies to establish alliances to enter into the retail energy market. Prepared testimony in support of several merger cases and participated in the regulatory process to obtain approval for these mergers.
- Assisted clients in several buy-side due diligence efforts, providing regulatory insight and developing valuation recommendations for acquisitions of both electric and gas properties.

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
<b>Arizona Corporation Commission</b>				
Southwest Gas Corporation	12/21	Southwest Gas Corporation	Docket No. G-01551A-21-0368	Return on Equity
Arizona Public Service Company	10/19	Arizona Public Service Company	Docket No. E-01345A-19-0236	Return on Equity
Tucson Electric Power Company	04/19	Tucson Electric Power Company	Docket No. E-01933A-19-0028	Return on Equity
Tucson Electric Power Company	11/15	Tucson Electric Power Company	Docket No. E-01933A-15-0322	Return on Equity
UNS Electric	05/15	UNS Electric	Docket No. E-04204A-15-0142	Return on Equity
UNS Electric	12/12	UNS Electric	Docket No. E-04204A-12-0504	Return on Equity
<b>Arkansas Public Service Commission</b>				
Oklahoma Gas and Electric Co	10/21	Oklahoma Gas and Electric Co	Docket No. D-18-046-FR	Return on Equity

Appendix A

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Arkansas Oklahoma Gas Corporation	10/13	Arkansas Oklahoma Gas Corporation	Docket No. 13-078-U	Return on Equity
<b>California Public Utilities Commission</b>				
San Jose Water Company	05/21	San Jose Water Company	A2105004	Return on Equity
<b>Colorado Public Utilities Commission</b>				
Public Service Company of Colorado	07/21	Public Service Company of Colorado	21AL-0317E	Return on Equity
Public Service Company of Colorado	02/20	Public Service Company of Colorado	20AL-0049G	Return on Equity
Public Service Company of Colorado	05/19	Public Service Company of Colorado	19AL-0268E	Return on Equity
Public Service Company of Colorado	01/19	Public Service Company of Colorado	19AL-0063ST	Return on Equity
Atmos Energy Corporation	05/15	Atmos Energy Corporation	Docket No. 15AL-0299G	Return on Equity
Atmos Energy Corporation	04/14	Atmos Energy Corporation	Docket No. 14AL-0300G	Return on Equity
Atmos Energy Corporation	05/13	Atmos Energy Corporation	Docket No. 13AL-0496G	Return on Equity
<b>Connecticut Public Utilities Regulatory Authority</b>				
United Illuminating	05/21	United Illuminating	Docket No. 17-12-03RE11	Return on Equity
Connecticut Water Company	01/21	Connecticut Water Company	Docket No. 20-12-30	Return on Equity
Connecticut Natural Gas Corporation	06/18	Connecticut Natural Gas Corporation	Docket No. 18-05-16	Return on Equity

Appendix A

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Yankee Gas Services Co. d/b/a Eversource Energy	06/18	Yankee Gas Services Co. d/b/a Eversource Energy	Docket No. 18-05-10	Return on Equity
The Southern Connecticut Gas Company	06/17	The Southern Connecticut Gas Company	Docket No. 17-05-42	Return on Equity
The United Illuminating Company	07/16	The United Illuminating Company	Docket No. 16-06-04	Return on Equity
<b>Federal Energy Regulatory Commission</b>				
Florida Gas Transmission	02/21	Florida Gas Transmission	Docket No. RP21-441	Return on Equity
TransCanyon	01/21	TransCanyon	Docket No. ER21-1065	Return on Equity
Duke Energy	12/20	Duke Energy	Docket No. EL21-9-000	Return on Equity
Wisconsin Electric Power Company	08/20	Wisconsin Electric Power Company	Docket No. EL20-57-000	Return on Equity
Panhandle Eastern Pipe Line Company, LP	10/19	Panhandle Eastern Pipe Line Company, LP	Docket Nos. RP19-78-000 RP19-78-001	Return on Equity
Panhandle Eastern Pipe Line Company, LP	08/19	Panhandle Eastern Pipe Line Company, LP	Docket Nos. RP19-1523	Return on Equity
Sea Robin Pipeline Company LLC	11/18	Sea Robin Pipeline Company LLC	Docket# RP19-352-000	Return on Equity
Tallgrass Interstate Gas Transmission	10/15	Tallgrass Interstate Gas Transmission	RP16-137	Return on Equity
<b>Idaho Public Utilities Commission</b>				

## Appendix A

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
PacifiCorp d/b/a Rocky Mountain Power	05/21	PacifiCorp d/b/a Rocky Mountain Power	Case No. PAC-E-21-07	Return on Equity
<b>Illinois Commerce Commission</b>				
North Shore Gas Company	02/21	North Shore Gas Company	No. 20-0810	Return on Equity
<b>Indiana Utility Regulatory Commission</b>				
Indiana Michigan Power Co.	07/21	Indiana Michigan Power Co.	IURC Cause No. 45576	Return on Equity
Indiana Gas Company Inc.	12/20	Indiana Gas Company Inc.	IURC Cause No. 45468	Return on Equity
Southern Indiana Gas and Electric Company	10/20	Southern Indiana Gas and Electric Company	IURC Cause No. 45447	Return on Equity
Indiana and Michigan American Water Company	09/18	Indiana and Michigan American Water Company	IURC Cause No. 45142	Return on Equity
Indianapolis Power and Light Company	12/17	Indianapolis Power and Light Company	Cause No. 45029	Fair Value
Northern Indiana Public Service Company	09/17	Northern Indiana Public Service Company	Cause No. 44988	Fair Value
Indianapolis Power and Light Company	12/16	Indianapolis Power and Light Company	Cause No.44893	Fair Value
Northern Indiana Public Service Company	10/15	Northern Indiana Public Service Company	Cause No. 44688	Fair Value
Indianapolis Power and Light Company	09/15	Indianapolis Power and Light Company	Cause No. 44576 Cause No. 44602	Fair Value

Appendix A

<b>SPONSOR</b>	<b>DATE</b>	<b>CASE/APPLICANT</b>	<b>DOCKET /CASE NO.</b>	<b>SUBJECT</b>
Kokomo Gas and Fuel Company	09/10	Kokomo Gas and Fuel Company	Cause No. 43942	Fair Value
Northern Indiana Fuel and Light Company, Inc.	09/10	Northern Indiana Fuel and Light Company, Inc.	Cause No. 43943	Fair Value
<b>Iowa Department of Commerce Utilities Board</b>				
Iowa-American Water Company	08/20	Iowa-American Water Company	Docket No. RPU-2020-0001	Return on Equity
<b>Kansas Corporation Commission</b>				
Atmos Energy Corporation	08/15	Atmos Energy Corporation	Docket No. 16-ATMG-079-RTS	Return on Equity
<b>Kentucky Public Service Commission</b>				
Kentucky American Water Company	11/18	Kentucky American Water Company	Docket No. 2018-00358	Return on Equity
<b>Maine Public Utilities Commission</b>				
Central Maine Power	10/18	Central Maine Power	Docket No. 2018-194	Return on Equity
<b>Maryland Public Service Commission</b>				
Maryland American Water Company	06/18	Maryland American Water Company	Case No. 9487	Return on Equity
<b>Massachusetts Appellate Tax Board</b>				
Hopkinton LNG Corporation	03/20	Hopkinton LNG Corporation	Docket No.	Valuation of LNG Facility

Appendix A

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
FirstLight Hydro Generating Company	06/17	FirstLight Hydro Generating Company	Docket No. F- 325471 Docket No. F- 325472 Docket No. F- 325473 Docket No. F- 325474	Valuation of Electric Generation Assets
<b>Massachusetts Department of Public Utilities</b>				
National Grid USA	11/20	Boston Gas Company	DPU 20-120	Return on Equity
Berkshire Gas Company	05/18	Berkshire Gas Company	DPU 18-40	Return on Equity
Unitil Corporation	01/04	Fitchburg Gas and Electric	DTE 03-52	Integrated Resource Plan; Gas Demand Forecast
<b>Michigan Public Service Commission</b>				
Michigan Gas Utilities Corporation	03/21	Michigan Gas Utilities Corporation	Case No. U-20718	Return on Equity
Wisconsin Electric Power Company	12/11	Wisconsin Electric Power Company	Case No. U-16830	Return on Equity
<b>Michigan Tax Tribunal</b>				
New Covert Generating Co., LLC.	03/18	The Township of New Covert Michigan	MTT Docket No. 000248TT and 16- 001888-TT	Valuation of Electric Generation Assets
Covert Township	07/14	New Covert Generating Co., LLC.	Docket No. 399578	Valuation of Electric Generation Assets

Appendix A

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
<b>Minnesota Public Utilities Commission</b>				
CenterPoint Energy Resources	11/21	CenterPoint Energy Resources	D-G-008/GR-21-435	Return on Equity
Allete, Inc. d/b/a Minnesota Power	11/21	Allete, Inc. d/b/a Minnesota Power	D-E-015/GR-21-630	Return on Equity
Otter Tail Power Company	11/20	Otter Tail Power Company	E017/GR-20-719	Return on Equity
Allete, Inc. d/b/a Minnesota Power	11/19	Allete, Inc. d/b/a Minnesota Power	E015/GR-19-442	Return on Equity
CenterPoint Energy Resources Corporation d/b/a CenterPoint Energy Minnesota Gas	10/19	CenterPoint Energy Resources Corporation d/b/a CenterPoint Energy Minnesota Gas	G-008/GR-19-524	Return on Equity
Great Plains Natural Gas Co.	09/19	Great Plains Natural Gas Co.	Docket No. G004/GR-19-511	Return on Equity
Minnesota Energy Resources Corporation	10/17	Minnesota Energy Resources Corporation	Docket No. G011/GR-17-563	Return on Equity
<b>Missouri Public Service Commission</b>				
Ameren Missouri	03/21	Ameren Missouri	Docket No. ER-2021-0240 Docket No. GR-2021-0241	Return on Equity
Missouri American Water Company	06/20	Missouri American Water Company	Case No. WR-2020-0344 Case No. SR-2020-0345	Return on Equity



Appendix A

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Missouri American Water Company	06/17	Missouri American Water Company	Case No. WR-17-0285 Case No. SR-17-0286	Return on Equity
<b>Montana Public Service Commission</b>				
Montana-Dakota Utilities Co.	06/20	Montana-Dakota Utilities Co.	D2020.06.076	Return on Equity
Montana-Dakota Utilities Co.	09/18	Montana-Dakota Utilities Co.	D2018.9.60	Return on Equity
<b>New Hampshire - Board of Tax and Land Appeals</b>				
Public Service Company of New Hampshire d/b/a Eversource Energy	11/19 12/19	Public Service Company of New Hampshire d/b/a Eversource Energy	Master Docket No. 28873-14-15-16-17PT	Valuation of Utility Property and Generating Assets
<b>New Hampshire Public Utilities Commission</b>				
Public Service Company of New Hampshire	05/19	Public Service Company of New Hampshire	DE-19-057	Return on Equity
<b>New Hampshire-Merrimack County Superior Court</b>				
Northern New England Telephone Operations, LLC d/b/a FairPoint Communications, NNE	04/18	Northern New England Telephone Operations, LLC d/b/a FairPoint Communications, NNE	220-2012-CV-1100	Valuation of Utility Property
<b>New Hampshire-Rockingham Superior Court</b>				
Eversource Energy	05/18	Public Service Commission of New Hampshire	218-2016-CV-00899 218-2017-CV-00917	Valuation of Utility Property
<b>New Jersey Board of Public Utilities</b>				

Appendix A

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Public Service Electric and Gas Company	10/20	Public Service Electric and Gas Company	EO18101115	Return on Equity
New Jersey American Water Company, Inc.	12/19	New Jersey American Water Company, Inc.	WR19121516	Return on Equity
Public Service Electric and Gas Company	04/19	Public Service Electric and Gas Company	EO18060629 GO18060630	Return on Equity
Public Service Electric and Gas Company	02/18	Public Service Electric and Gas Company	GR17070776	Return on Equity
Public Service Electric and Gas Company	01/18	Public Service Electric and Gas Company	ER18010029 GR18010030	Return on Equity
<b>New Mexico Public Regulation Commission</b>				
Southwestern Public Service Company	07/19	Southwestern Public Service Company	19-00170-UT	Return on Equity
Southwestern Public Service Company	10/17	Southwestern Public Service Company	Case No. 17-00255-UT	Return on Equity
Southwestern Public Service Company	12/16	Southwestern Public Service Company	Case No. 16-00269-UT	Return on Equity
Southwestern Public Service Company	10/15	Southwestern Public Service Company	Case No. 15-00296-UT	Return on Equity
Southwestern Public Service Company	06/15	Southwestern Public Service Company	Case No. 15-00139-UT	Return on Equity
<b>New York State Department of Public Service</b>				
Corning Natural Gas Corporation	07/21	Corning Natural Gas Corporation	Case No. 21-G-0394	Return on Equity
Central Hudson Gas and Electric Corporation	08/20	Central Hudson Gas and Electric Corporation	Electric 20-E-0428 Gas 20-G-0429	Return on Equity
Niagara Mohawk Power Corporation	07/20	National Grid USA	Case No. 20-E-0380 20-G-0381	Return on Equity

Appendix A

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Corning Natural Gas Corporation	02/20	Corning Natural Gas Corporation	Case No. 20-G-0101	Return on Equity
New York State Electric and Gas Company  Rochester Gas and Electric	05/19	New York State Electric and Gas Company  Rochester Gas and Electric	19-E-0378 19-G-0379 19-E-0380 19-G-0381	Return on Equity
Brooklyn Union Gas Company d/b/a National Grid NY KeySpan Gas East Corporation d/b/a National Grid	04/19	Brooklyn Union Gas Company d/b/a National Grid NY KeySpan Gas East Corporation d/b/a National Grid	19-G-0309 19-G-0310	Return on Equity
Central Hudson Gas and Electric Corporation	07/17	Central Hudson Gas and Electric Corporation	Electric 17-E-0459 Gas 17-G-0460	Return on Equity
Niagara Mohawk Power Corporation	04/17	National Grid USA	Case No. 17-E-0238 17-G-0239	Return on Equity
Corning Natural Gas Corporation	06/16	Corning Natural Gas Corporation	Case No. 16-G-0369	Return on Equity
National Fuel Gas Company	04/16	National Fuel Gas Company	Case No. 16-G-0257	Return on Equity
KeySpan Energy Delivery	01/16	KeySpan Energy Delivery	Case No. 15-G-0058 Case No. 15-G-0059	Return on Equity
New York State Electric and Gas Company Rochester Gas and Electric	05/15	New York State Electric and Gas Company Rochester Gas and Electric	Case No. 15-E-0283 Case No. 15-G-0284 Case No. 15-E-0285 Case No. 15-G-0286	Return on Equity
<b>North Dakota Public Service Commission</b>				

## Appendix A

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Montana-Dakota Utilities Co.	08/20	Montana-Dakota Utilities Co.	C-PU-20-379	Return on Equity
Northern States Power Company	12/12	Northern States Power Company	C-PU-12-813	Return on Equity
Northern States Power Company	12/10	Northern States Power Company	C-PU-10-657	Return on Equity
<b>Oklahoma Corporation Commission</b>				
Arkansas Oklahoma Gas Corporation	01/13	Arkansas Oklahoma Gas Corporation	Cause No. PUD 201200236	Return on Equity
<b>Oregon Public Service Commission</b>				
PacifiCorp d/b/a Pacific Power & Light	02/20	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-374	Return on Equity
<b>Pennsylvania Public Utility Commission</b>				
American Water Works Company Inc.	04/20	Pennsylvania-American Water Company	Docket No. R-2020-3019369 (water) Docket No. R-2020-3019371 (wastewater)	Return on Equity
American Water Works Company Inc.	04/17	Pennsylvania-American Water Company	Docket No. R-2017-2595853	Return on Equity
<b>South Dakota Public Utilities Commission</b>				
Northern States Power Company	06/14	Northern States Power Company	Docket No. EL14-058	Return on Equity
<b>Texas Public Utility Commission</b>				
Southwestern Public Service Commission	08/19	Southwestern Public Service Commission	Docket No. D-49831	Return on Equity
Southwestern Public Service Company	01/14	Southwestern Public Service Company	Docket No. 42004	Return on Equity

## Appendix A

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
<b>Utah Public Service Commission</b>				
PacifiCorp d/b/a Rocky Mountain Power	05/20	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20-035-04	Return on Equity
<b>Virginia State Corporation Commission</b>				
Virginia American Water Company, Inc.	11/21	Virginia American Water Company, Inc.	Docket No. PUR-2021-00255	Return on Equity
Virginia American Water Company, Inc.	11/18	Virginia American Water Company, Inc.	Docket No. PUR-2018-00175	Return on Equity
<b>Washington Utilities Transportation Commission</b>				
Cascade Natural Gas Corporation	06/20	Cascade Natural Gas Corporation	Docket No. UG-200568	Return on Equity
PacifiCorp d/b/a Pacific Power & Light	12/19	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-191024	Return on Equity
Cascade Natural Gas Corporation	04/19	Cascade Natural Gas Corporation	Docket No. UG-190210	Return on Equity
<b>West Virginia Public Service Commission</b>				
West Virginia American Water Company	04/21	West Virginia American Water Company	Case No. 21-02369-W-42T	Return on Equity
West Virginia American Water Company	04/18	West Virginia American Water Company	Case No. 18-0573-W-42T Case No. 18-0576-S-42T	Return on Equity
<b>Wisconsin Public Service Commission</b>				
Wisconsin Electric Power Company and Wisconsin Gas LLC	03/19	Wisconsin Electric Power Company and Wisconsin Gas LLC	Docket No. 05-UR-109	Return on Equity
Wisconsin Public Service Corp.	03/19	Wisconsin Public Service Corp.	6690-UR-126	Return on Equity

Appendix A

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
<b>Wyoming Public Service Commission</b>				
PacifiCorp d/b/a Rocky Mountain Power	03/20	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20000-578-ER-20	Return on Equity
Montana-Dakota Utilities Co.	05/19	Montana-Dakota Utilities Co.	30013-351-GR-19	Return on Equity

---

CERTIFICATIONS/ACCREDITATIONS

Certified General Appraiser, licensed in the Commonwealth of Massachusetts and the State of New Hampshire

SUMMARY OF ROE ANALYSES RESULTS

<b>Constant Growth DCF - Mean</b>			
	Mean Low	Mean	Mean High
30-Day Average	7.90%	9.53%	11.26%
90-Day Average	7.86%	9.50%	11.23%
180-Day Average	7.82%	9.45%	11.18%
Constant Growth Average	7.86%	9.49%	11.22%
	Median Low	Median	Median High
30-Day Average	8.33%	9.79%	10.71%
90-Day Average	8.34%	9.66%	10.74%
180-Day Average	8.41%	9.60%	10.60%
Constant Growth Average	8.36%	9.68%	10.68%
<b>CAPM</b>			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	11.20%	11.28%	11.43%
Bloomberg Beta	10.69%	10.79%	10.98%
Long-term Avg. Beta	9.89%	10.02%	10.29%
Average	10.59%	10.70%	10.90%
<b>ECAPM</b>			
Value Line Beta	11.64%	11.70%	11.82%
Bloomberg Beta	11.26%	11.33%	11.48%
Long-term Avg. Beta	10.66%	10.76%	10.96%
Average	11.19%	11.26%	11.42%
<b>Treasury Yield Plus Risk Premium</b>			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Analysis	9.37%	9.58%	9.97%
Risk Premium Mean Result	9.64%		
<b>Expected Earnings Analysis</b>			
	Mean	Median	
Expected Earnings Analysis	10.31%	10.00%	

**Notes:**

[1] Constant Growth DCF analysis - Average w/ Exclusions represents the DCF results excluding the results for individual companies that did not meet the minimum threshold of 7 percent.

PROXY GROUP SCREENING DATA AND RESULTS - FINAL PROXY GROUP

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	
Company	Ticker	Dividends	S&P Credit Rating Between BBB- and AAA	% Regulated Operating Income > 60%	Announced Merger	Covered by More Than 1 Analyst	Positive Growth Rates from at least two sources (Value Line, Yahoo! First Call, and Zacks)	Electric Companies with < 10% Generation	Electric Companies with Water Operations
American States Water Company	AWR	Yes	A+	81.80%	No	Yes	Yes	n/a	n/a
Atmos Energy Corporation	ATO	Yes	A-	100.00%	No	Yes	Yes	n/a	n/a
California Water Service Group	CWT	Yes	A+	97.67%	No	Yes	Yes	n/a	n/a
Essential Utilities, Inc.	WTRG	Yes	A	97.13%	No	Yes	Yes	n/a	n/a
Eversource Energy	ES	Yes	A-	91.88%	No	Yes	Yes	0.28%	Yes
Middlesex Water Company	MSEX	Yes	A	91.37%	No	Yes	Yes	n/a	n/a
NiSource Inc.	NI	Yes	BBB+	99.56%	No	Yes	Yes	n/a	n/a
New Jersey Resources Corporation	NJR	Yes	A+	67.77%	No	Yes	Yes	n/a	n/a
Northwest Natural Gas Company	NWN	Yes	A+	99.84%	No	Yes	Yes	n/a	n/a
ONE Gas, Inc.	OGS	Yes	BBB+	100.00%	No	Yes	Yes	n/a	n/a
SJW Group	SJW	Yes	A-	99.71%	No	Yes	Yes	n/a	n/a
South Jersey Industries, Inc.	SJI	Yes	BBB	97.52%	No	Yes	Yes	n/a	n/a
Spire, Inc.	SR	Yes	A-	97.04%	No	Yes	Yes	n/a	n/a
York Water Company	YORW	Yes	A-	100.00%	No	Yes	Yes	n/a	n/a

Notes:

[1] Source: Bloomberg Professional

[2] Source: Bloomberg Professional

[3] Source: Form 10-K's for 2020, 2019, and 2018

[4] Source: S&P Capital IQ Pro Financial News Releases

[5] Source: Yahoo! Finance and Zacks

[6] Source: Yahoo! Finance, Value Line Investment Survey, and Zacks

[7] Source: S&P Capital IQ Pro

[8] Source: S&P Capital IQ Pro



30-DAY CONSTANT GROWTH DCF -- NJAWC PROXY GROUP

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	All Proxy Group		
		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE	
American States Water Company	AWR	\$1.46	\$92.43	1.58%	1.63%	6.50%	6.70%	n/a	6.60%	8.13%	8.23%	8.33%	
Atmos Energy Corporation	ATO	\$2.72	\$93.79	2.90%	3.00%	7.00%	7.40%	7.20%	7.20%	10.00%	10.20%	10.41%	
California Water Service Group	CWT	\$0.92	\$62.62	1.47%	1.54%	7.00%	11.70%	n/a	9.35%	8.52%	10.89%	13.26%	
Essential Utilities, Inc.	WTRG	\$1.07	\$47.39	2.26%	2.35%	10.00%	6.40%	6.20%	7.53%	8.53%	9.88%	12.38%	
Eversource Energy	ES	\$2.41	\$84.47	2.85%	2.94%	6.50%	6.47%	6.30%	6.42%	9.24%	9.37%	9.45%	
Middlesex Water Company	MSEX	\$1.16	\$105.96	1.09%	1.12%	5.00%	2.70%	n/a	3.85%	3.81%	4.97%	6.12%	
NiSource Inc.	NI	\$0.88	\$25.07	3.51%	3.62%	8.50%	3.52%	6.70%	6.24%	7.09%	9.86%	12.16%	
New Jersey Resources Corporation	NJR	\$1.45	\$38.30	3.79%	3.88%	1.50%	6.00%	7.10%	4.87%	5.31%	8.74%	11.02%	
Northwest Natural Gas Company	NWN	\$1.93	\$45.93	4.20%	4.32%	5.50%	5.70%	5.00%	5.40%	9.31%	9.72%	10.02%	
ONE Gas, Inc.	OGS	\$2.32	\$67.96	3.41%	3.50%	6.50%	2.90%	5.00%	4.80%	6.36%	8.30%	10.02%	
SJW Group	SJW	\$1.36	\$69.78	1.95%	2.04%	13.00%	5.70%	n/a	9.35%	7.70%	11.39%	15.08%	
South Jersey Industries, Inc.	SJI	\$1.21	\$23.42	5.17%	5.36%	11.50%	5.20%	5.60%	7.43%	10.50%	12.79%	16.96%	
Spire, Inc.	SR	\$2.60	\$62.88	4.13%	4.29%	10.00%	7.31%	5.30%	7.54%	9.54%	11.83%	14.34%	
York Water Company	YORW	\$0.75	\$48.12	1.56%	1.60%	6.50%	4.90%	n/a	5.70%	6.50%	7.30%	8.11%	
Mean				2.85%	2.94%	7.50%	5.90%	6.04%	6.59%	7.90%	9.53%	11.26%	
Median				2.88%	2.97%	6.75%	5.85%	6.20%	6.51%	8.33%	9.79%	10.71%	

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional, equals 30-day average as of November 30, 2021
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.50 x [8])
- [5] Source: Value Line
- [6] Source: Yahoo! Finance
- [7] Source: Zacks
- [8] Equals Average ([5], [6], [7])
- [9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
- [10] Equals [4] + [8]
- [11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

90-DAY CONSTANT GROWTH DCF -- NJAWC PROXY GROUP

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	All Proxy Group		
		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE	
American States Water Company	AWR	\$1.46	\$90.33	1.62%	1.67%	6.50%	6.70%	n/a	6.60%	8.17%	8.27%	8.37%	
Atmos Energy Corporation	ATO	\$2.72	\$94.57	2.88%	2.98%	7.00%	7.40%	7.20%	7.20%	9.98%	10.18%	10.38%	
California Water Service Group	CWT	\$0.92	\$62.25	1.48%	1.55%	7.00%	11.70%	n/a	9.35%	8.53%	10.90%	13.26%	
Essential Utilities, Inc.	WTRG	\$1.07	\$48.01	2.23%	2.32%	10.00%	6.40%	6.20%	7.53%	8.50%	9.85%	12.35%	
Eversource Energy	ES	\$2.41	\$86.41	2.79%	2.88%	6.50%	6.47%	6.30%	6.42%	9.18%	9.30%	9.38%	
Middlesex Water Company	MSEX	\$1.16	\$106.33	1.09%	1.11%	5.00%	2.70%	n/a	3.85%	3.81%	4.96%	6.12%	
NiSource Inc.	NI	\$0.88	\$24.90	3.53%	3.64%	8.50%	3.52%	6.70%	6.24%	7.12%	9.88%	12.18%	
New Jersey Resources Corporation	NJR	\$1.45	\$37.60	3.86%	3.95%	1.50%	6.00%	7.10%	4.87%	5.39%	8.82%	11.09%	
Northwest Natural Gas Company	NWN	\$1.93	\$48.65	3.97%	4.07%	5.50%	5.70%	5.00%	5.40%	9.07%	9.47%	9.78%	
ONE Gas, Inc.	OGS	\$2.32	\$69.27	3.35%	3.43%	6.50%	2.90%	5.00%	4.80%	6.30%	8.23%	9.96%	
SJW Group	SJW	\$1.36	\$68.63	1.98%	2.07%	13.00%	5.70%	n/a	9.35%	7.74%	11.42%	15.11%	
South Jersey Industries, Inc.	SJI	\$1.21	\$23.70	5.10%	5.29%	11.50%	5.20%	5.60%	7.43%	10.44%	12.73%	16.90%	
Spire, Inc.	SR	\$2.60	\$65.38	3.98%	4.13%	10.00%	7.31%	5.30%	7.54%	9.38%	11.66%	14.18%	
York Water Company	YORW	\$0.75	\$48.04	1.56%	1.60%	6.50%	4.90%	n/a	5.70%	6.50%	7.30%	8.11%	
Mean				2.82%	2.91%	7.50%	5.90%	6.04%	6.59%	7.86%	9.50%	11.23%	
Median				2.83%	2.93%	6.75%	5.85%	6.20%	6.51%	8.34%	9.66%	10.74%	

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional, equals 90-day average as of November 30, 2021
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.50 x [8])
- [5] Source: Value Line
- [6] Source: Yahoo! Finance
- [7] Source: Zacks
- [8] Equals Average ([5], [6], [7])
- [9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7]))
- [10] Equals [4] + [8]
- [11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7]))

180-DAY CONSTANT GROWTH DCF -- NJAWC PROXY GROUP

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	All Proxy Group		
		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE	
American States Water Company	AWR	\$1.46	\$84.96	1.72%	1.78%	6.50%	6.70%	n/a	6.60%	8.27%	8.38%	8.48%	
Atmos Energy Corporation	ATO	\$2.72	\$97.01	2.80%	2.90%	7.00%	7.40%	7.20%	7.20%	9.90%	10.10%	10.31%	
California Water Service Group	CWT	\$0.92	\$59.87	1.54%	1.61%	7.00%	11.70%	n/a	9.35%	8.59%	10.96%	13.33%	
Essential Utilities, Inc.	WTRG	\$1.07	\$47.32	2.27%	2.35%	10.00%	6.40%	6.20%	7.53%	8.54%	9.89%	12.38%	
Eversource Energy	ES	\$2.41	\$85.28	2.83%	2.92%	6.50%	6.47%	6.30%	6.42%	9.22%	9.34%	9.42%	
Middlesex Water Company	MSEX	\$1.16	\$94.90	1.22%	1.25%	5.00%	2.70%	n/a	3.85%	3.94%	5.10%	6.25%	
NiSource Inc.	NI	\$0.88	\$25.04	3.51%	3.62%	8.50%	3.52%	6.70%	6.24%	7.10%	9.86%	12.16%	
New Jersey Resources Corporation	NJR	\$1.45	\$39.56	3.67%	3.75%	1.50%	6.00%	7.10%	4.87%	5.19%	8.62%	10.90%	
Northwest Natural Gas Company	NWN	\$1.93	\$51.09	3.78%	3.88%	5.50%	5.70%	5.00%	5.40%	8.87%	9.28%	9.59%	
ONE Gas, Inc.	OGS	\$2.32	\$72.71	3.19%	3.27%	6.50%	2.90%	5.00%	4.80%	6.14%	8.07%	9.79%	
SJW Group	SJW	\$1.36	\$66.56	2.04%	2.14%	13.00%	5.70%	n/a	9.35%	7.80%	11.49%	15.18%	
South Jersey Industries, Inc.	SJI	\$1.21	\$24.54	4.93%	5.11%	11.50%	5.20%	5.60%	7.43%	10.26%	12.55%	16.71%	
Spire, Inc.	SR	\$2.60	\$69.62	3.73%	3.88%	10.00%	7.31%	5.30%	7.54%	9.13%	11.41%	13.92%	
York Water Company	YORW	\$0.75	\$48.46	1.55%	1.59%	6.50%	4.90%	n/a	5.70%	6.48%	7.29%	8.10%	
Mean				2.77%	2.86%	7.50%	5.90%	6.04%	6.59%	7.82%	9.45%	11.18%	
Median				2.81%	2.91%	6.75%	5.85%	6.20%	6.51%	8.41%	9.60%	10.60%	

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional, equals 180-day average as of November 30, 2021
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.50 x [8])
- [5] Source: Value Line
- [6] Source: Yahoo! Finance
- [7] Source: Zacks
- [8] Equals Average ([5], [6], [7])
- [9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
- [10] Equals [4] + [8]
- [11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VL BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]
		Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	ECAPM ROE
American States Water Company	AWR	1.97%	0.65	12.97%	11.00%	9.12%	10.08%
Atmos Energy Corporation	ATO	1.97%	0.80	12.97%	11.00%	10.77%	11.32%
California Water Service Group	CWT	1.97%	0.65	12.97%	11.00%	9.12%	10.08%
Essential Utilities, Inc.	WTRG	1.97%	1.00	12.97%	11.00%	12.97%	12.97%
Eversource Energy	ES	1.97%	0.90	12.97%	11.00%	11.87%	12.14%
Middlesex Water Company	MSEX	1.97%	0.70	12.97%	11.00%	9.67%	10.49%
NISource Inc.	NI	1.97%	0.85	12.97%	11.00%	11.32%	11.73%
New Jersey Resources Corporation	NJR	1.97%	1.00	12.97%	11.00%	12.97%	12.97%
Northwest Natural Gas Company	NWN	1.97%	0.85	12.97%	11.00%	11.32%	11.73%
ONE Gas, Inc.	OGS	1.97%	0.80	12.97%	11.00%	10.77%	11.32%
SJW Group	SJW	1.97%	0.80	12.97%	11.00%	10.77%	11.32%
South Jersey Industries, Inc.	SJI	1.97%	1.05	12.97%	11.00%	13.52%	13.38%
Spire, Inc.	SR	1.97%	0.85	12.97%	11.00%	11.32%	11.73%
York Water Company	YORW	1.97%	0.85	12.97%	11.00%	11.32%	11.73%
Mean			0.84			11.20%	11.64%
Median						11.32%	11.73%

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Value Line reports
- [3] Source: Schedule AEB-6
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VL BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]
		Near-term projected 30-year U.S. Treasury bond yield (Q1 2022 - Q1 2023)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	ECAPM ROE
American States Water Company	AWR	2.46%	0.65	12.97%	10.51%	9.29%	10.21%
Atmos Energy Corporation	ATO	2.46%	0.80	12.97%	10.51%	10.87%	11.39%
California Water Service Group	CWT	2.46%	0.65	12.97%	10.51%	9.29%	10.21%
Essential Utilities, Inc.	WTRG	2.46%	1.00	12.97%	10.51%	12.97%	12.97%
Eversource Energy	ES	2.46%	0.90	12.97%	10.51%	11.92%	12.18%
Middlesex Water Company	MSEX	2.46%	0.70	12.97%	10.51%	9.82%	10.60%
NISource Inc.	NI	2.46%	0.85	12.97%	10.51%	11.39%	11.79%
New Jersey Resources Corporation	NJR	2.46%	1.00	12.97%	10.51%	12.97%	12.97%
Northwest Natural Gas Company	NWN	2.46%	0.85	12.97%	10.51%	11.39%	11.79%
ONE Gas, Inc.	OGS	2.46%	0.80	12.97%	10.51%	10.87%	11.39%
SJW Group	SJW	2.46%	0.80	12.97%	10.51%	10.87%	11.39%
South Jersey Industries, Inc.	SJI	2.46%	1.05	12.97%	10.51%	13.49%	13.36%
Spire, Inc.	SR	2.46%	0.85	12.97%	10.51%	11.39%	11.79%
York Water Company	YORW	2.46%	0.85	12.97%	10.51%	11.39%	11.79%
Mean						11.28%	11.70%
Median						11.39%	11.79%

Notes:

- [1] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 2
- [2] Source: Value Line reports
- [3] Source: Schedule AEB-6
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VL BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]
		Projected 30-year U.S. Treasury bond yield (2023 - 2027)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	ECAPM ROE
American States Water Company	AWR	3.40%	0.65	12.97%	9.57%	9.62%	10.46%
Atmos Energy Corporation	ATO	3.40%	0.80	12.97%	9.57%	11.06%	11.53%
California Water Service Group	CWT	3.40%	0.65	12.97%	9.57%	9.62%	10.46%
Essential Utilities, Inc.	WTRG	3.40%	1.00	12.97%	9.57%	12.97%	12.97%
Eversource Energy	ES	3.40%	0.90	12.97%	9.57%	12.01%	12.25%
Middlesex Water Company	MSEX	3.40%	0.70	12.97%	9.57%	10.10%	10.82%
NISource Inc.	NI	3.40%	0.85	12.97%	9.57%	11.53%	11.89%
New Jersey Resources Corporation	NJR	3.40%	1.00	12.97%	9.57%	12.97%	12.97%
Northwest Natural Gas Company	NWN	3.40%	0.85	12.97%	9.57%	11.53%	11.89%
ONE Gas, Inc.	OGS	3.40%	0.80	12.97%	9.57%	11.06%	11.53%
SJW Group	SJW	3.40%	0.80	12.97%	9.57%	11.06%	11.53%
South Jersey Industries, Inc.	SJI	3.40%	1.05	12.97%	9.57%	13.45%	13.33%
Spire, Inc.	SR	3.40%	0.85	12.97%	9.57%	11.53%	11.89%
York Water Company	YORW	3.40%	0.85	12.97%	9.57%	11.53%	11.89%
Mean						11.43%	11.82%
Median						11.53%	11.89%

Notes:

- [1] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 14
- [2] Source: Value Line reports
- [3] Source: Schedule AEB-6
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL – CURRENT RISK-FREE RATE & BLOOMBERG BETA

$$K = Rf + \beta (Rm - Rf)$$

$$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	ECAPM ROE
American States Water Company	AWR	1.97%	0.64	12.97%	11.00%	9.05%	10.03%
Atmos Energy Corporation	ATO	1.97%	0.76	12.97%	11.00%	10.29%	10.96%
California Water Service Group	CWT	1.97%	0.68	12.97%	11.00%	9.46%	10.34%
Essential Utilities, Inc.	WTRG	1.97%	0.85	12.97%	11.00%	11.30%	11.72%
Eversource Energy	ES	1.97%	0.82	12.97%	11.00%	11.04%	11.52%
Middlesex Water Company	MSEX	1.97%	0.78	12.97%	11.00%	10.53%	11.14%
NISource Inc.	NI	1.97%	0.82	12.97%	11.00%	10.99%	11.48%
New Jersey Resources Corporation	NJR	1.97%	0.83	12.97%	11.00%	11.14%	11.60%
Northwest Natural Gas Company	NWN	1.97%	0.73	12.97%	11.00%	10.00%	10.75%
ONE Gas, Inc.	OGS	1.97%	0.83	12.97%	11.00%	11.14%	11.60%
SJW Group	SJW	1.97%	0.85	12.97%	11.00%	11.29%	11.71%
South Jersey Industries, Inc.	SJI	1.97%	0.84	12.97%	11.00%	11.24%	11.68%
Spire, Inc.	SR	1.97%	0.78	12.97%	11.00%	10.54%	11.15%
York Water Company	YORW	1.97%	0.87	12.97%	11.00%	11.57%	11.92%
Mean						10.69%	11.26%
Median						11.01%	11.50%

Notes:  
 [1] Source: Bloomberg Professional  
 [2] Source: Bloomberg Professional  
 [3] Source: Schedule AEB-6  
 [4] Equals [3] - [1]  
 [5] Equals [1] + [2] x [4]  
 [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL – NEAR-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

$$K = Rf + \beta (Rm - Rf)$$

$$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q1 2022 - Q1 2023)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	ECAPM ROE
American States Water Company	AWR	2.46%	0.64	12.97%	10.51%	9.23%	10.16%
Atmos Energy Corporation	ATO	2.46%	0.76	12.97%	10.51%	10.41%	11.05%
California Water Service Group	CWT	2.46%	0.68	12.97%	10.51%	9.62%	10.46%
Essential Utilities, Inc.	WTRG	2.46%	0.85	12.97%	10.51%	11.38%	11.77%
Eversource Energy	ES	2.46%	0.82	12.97%	10.51%	11.13%	11.59%
Middlesex Water Company	MSEX	2.46%	0.78	12.97%	10.51%	10.64%	11.22%
NISource Inc.	NI	2.46%	0.82	12.97%	10.51%	11.08%	11.55%
New Jersey Resources Corporation	NJR	2.46%	0.83	12.97%	10.51%	11.22%	11.66%
Northwest Natural Gas Company	NWN	2.46%	0.73	12.97%	10.51%	10.14%	10.84%
ONE Gas, Inc.	OGS	2.46%	0.83	12.97%	10.51%	11.23%	11.66%
SJW Group	SJW	2.46%	0.85	12.97%	10.51%	11.37%	11.77%
South Jersey Industries, Inc.	SJI	2.46%	0.84	12.97%	10.51%	11.32%	11.73%
Spire, Inc.	SR	2.46%	0.78	12.97%	10.51%	10.65%	11.23%
York Water Company	YORW	2.46%	0.87	12.97%	10.51%	11.63%	11.96%
Mean						10.79%	11.33%
Median						11.10%	11.57%

Notes:  
 [1] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 2  
 [2] Source: Bloomberg Professional  
 [3] Source: Schedule AEB-6  
 [4] Equals [3] - [1]  
 [5] Equals [1] + [2] x [4]  
 [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL – LONG-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

$$K = Rf + \beta (Rm - Rf)$$

$$K = Rf + 0.25 \times (Rm - Rf) + 0.75 \times \beta \times (Rm - Rf)$$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2023 - 2027)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	ECAPM ROE
American States Water Company	AWR	3.40%	0.64	12.97%	9.57%	9.56%	10.41%
Atmos Energy Corporation	ATO	3.40%	0.76	12.97%	9.57%	10.64%	11.22%
California Water Service Group	CWT	3.40%	0.68	12.97%	9.57%	9.92%	10.68%
Essential Utilities, Inc.	WTRG	3.40%	0.85	12.97%	9.57%	11.52%	11.88%
Eversource Energy	ES	3.40%	0.82	12.97%	9.57%	11.29%	11.71%
Middlesex Water Company	MSEX	3.40%	0.78	12.97%	9.57%	10.85%	11.38%
NISource Inc.	NI	3.40%	0.82	12.97%	9.57%	11.25%	11.68%
New Jersey Resources Corporation	NJR	3.40%	0.83	12.97%	9.57%	11.38%	11.77%
Northwest Natural Gas Company	NWN	3.40%	0.73	12.97%	9.57%	10.39%	11.03%
ONE Gas, Inc.	OGS	3.40%	0.83	12.97%	9.57%	11.38%	11.78%
SJW Group	SJW	3.40%	0.85	12.97%	9.57%	11.51%	11.88%
South Jersey Industries, Inc.	SJI	3.40%	0.84	12.97%	9.57%	11.47%	11.84%
Spire, Inc.	SR	3.40%	0.78	12.97%	9.57%	10.85%	11.38%
York Water Company	YORW	3.40%	0.87	12.97%	9.57%	11.75%	12.05%
Mean						10.98%	11.48%
Median						11.27%	11.69%

Notes:  
 [1] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 14  
 [2] Source: Bloomberg Professional  
 [3] Source: Schedule AEB-6  
 [4] Equals [3] - [1]  
 [5] Equals [1] + [2] x [4]  
 [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	ECAPM ROE
American States Water Company	AWR	1.97%	0.71	12.97%	11.00%	9.78%	10.58%
Atmos Energy Corporation	ATO	1.97%	0.68	12.97%	11.00%	9.45%	10.33%
California Water Service Group	CWT	1.97%	0.73	12.97%	11.00%	10.00%	10.74%
Essential Utilities, Inc.	WTRG	1.97%	0.73	12.97%	11.00%	10.00%	10.74%
Eversource Energy	ES	1.97%	0.68	12.97%	11.00%	9.45%	10.33%
Middlesex Water Company	MSEX	1.97%	0.73	12.97%	11.00%	10.00%	10.74%
NISource Inc.	NI	1.97%	0.63	12.97%	11.00%	8.84%	9.88%
New Jersey Resources Corporation	NJR	1.97%	0.79	12.97%	11.00%	10.66%	11.24%
Northwest Natural Gas Company	NWN	1.97%	0.66	12.97%	11.00%	9.23%	10.16%
ONE Gas, Inc.	OGS	1.97%	0.70	12.97%	11.00%	9.67%	10.49%
SJW Group	SJW	1.97%	0.70	12.97%	11.00%	9.67%	10.49%
South Jersey Industries, Inc.	SJI	1.97%	0.86	12.97%	11.00%	11.43%	11.81%
Spire, Inc.	SR	1.97%	0.71	12.97%	11.00%	9.78%	10.58%
York Water Company	YORW	1.97%	0.77	12.97%	11.00%	10.44%	11.07%
Mean						9.89%	10.66%
Median						9.78%	10.58%

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Schedule AEB-5
- [3] Source: Schedule AEB-6
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x (4) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q1 2022 - Q1 2023)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	ECAPM ROE
American States Water Company	AWR	2.46%	0.71	12.97%	10.51%	9.92%	10.68%
Atmos Energy Corporation	ATO	2.46%	0.68	12.97%	10.51%	9.61%	10.45%
California Water Service Group	CWT	2.46%	0.73	12.97%	10.51%	10.13%	10.84%
Essential Utilities, Inc.	WTRG	2.46%	0.73	12.97%	10.51%	10.13%	10.84%
Eversource Energy	ES	2.46%	0.68	12.97%	10.51%	9.61%	10.45%
Middlesex Water Company	MSEX	2.46%	0.73	12.97%	10.51%	10.13%	10.84%
NISource Inc.	NI	2.46%	0.63	12.97%	10.51%	9.03%	10.01%
New Jersey Resources Corporation	NJR	2.46%	0.79	12.97%	10.51%	10.76%	11.31%
Northwest Natural Gas Company	NWN	2.46%	0.66	12.97%	10.51%	9.40%	10.29%
ONE Gas, Inc.	OGS	2.46%	0.70	12.97%	10.51%	9.82%	10.60%
SJW Group	SJW	2.46%	0.70	12.97%	10.51%	9.82%	10.60%
South Jersey Industries, Inc.	SJI	2.46%	0.86	12.97%	10.51%	11.50%	11.87%
Spire, Inc.	SR	2.46%	0.71	12.97%	10.51%	9.92%	10.68%
York Water Company	YORW	2.46%	0.77	12.97%	10.51%	10.55%	11.16%
Mean						10.02%	10.76%
Median						9.92%	10.68%

Notes:

- [1] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 2
- [2] Source: Schedule AEB-5
- [3] Source: Schedule AEB-6
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x (4) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

		[1]	[2]	[3]	[4]	[5]	[6]
Company	Ticker	Projected 30-year U.S. Treasury bond yield (2023 - 2027)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	ECAPM ROE
American States Water Company	AWR	3.40%	0.71	12.97%	9.57%	10.19%	10.89%
Atmos Energy Corporation	ATO	3.40%	0.68	12.97%	9.57%	9.91%	10.67%
California Water Service Group	CWT	3.40%	0.73	12.97%	9.57%	10.39%	11.03%
Essential Utilities, Inc.	WTRG	3.40%	0.73	12.97%	9.57%	10.39%	11.03%
Eversource Energy	ES	3.40%	0.68	12.97%	9.57%	9.91%	10.67%
Middlesex Water Company	MSEX	3.40%	0.73	12.97%	9.57%	10.39%	11.03%
NISource Inc.	NI	3.40%	0.63	12.97%	9.57%	9.38%	10.28%
New Jersey Resources Corporation	NJR	3.40%	0.79	12.97%	9.57%	10.96%	11.46%
Northwest Natural Gas Company	NWN	3.40%	0.66	12.97%	9.57%	9.72%	10.53%
ONE Gas, Inc.	OGS	3.40%	0.70	12.97%	9.57%	10.10%	10.82%
SJW Group	SJW	3.40%	0.70	12.97%	9.57%	10.10%	10.82%
South Jersey Industries, Inc.	SJI	3.40%	0.86	12.97%	9.57%	11.63%	11.96%
Spire, Inc.	SR	3.40%	0.71	12.97%	9.57%	10.19%	10.89%
York Water Company	YORW	3.40%	0.77	12.97%	9.57%	10.77%	11.32%
Mean						10.29%	10.96%
Median						10.19%	10.89%

Notes:

- [1] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 14
- [2] Source: Schedule AEB-5
- [3] Source: Schedule AEB-6
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x (4) + 0.75 x ([2] x [4])

HISTORICAL BETA - 2016 - 2020

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]
		12/31/2016	12/31/2017	12/31/2018	12/31/2019	12/31/2020	Average
American States Water Company	AWR	0.70	0.80	0.75	0.65	0.65	0.71
Atmos Energy Corporation	ATO	0.70	0.70	0.60	0.60	0.80	0.68
California Water Service Group	CWT	0.75	0.80	0.75	0.70	0.65	0.73
Essential Utilities, Inc.	WTRG	0.70	0.70	0.70	0.65	0.90	0.73
Eversource Energy	ES	0.70	0.65	0.60	0.55	0.90	0.68
Middlesex Water Company	MSEX	0.70	0.80	0.75	0.70	0.70	0.73
NiSource Inc.	NI	NMF	0.60	0.50	0.55	0.85	0.63
New Jersey Resources Corporation	NJR	0.80	0.80	0.70	0.70	0.95	0.79
Northwest Natural Gas Company	NWN	0.60	0.70	0.60	0.60	0.80	0.66
ONE Gas, Inc.	OGS	N/A	0.70	0.65	0.65	0.80	0.70
SJW Group	SJW	0.70	0.75	0.65	0.60	0.80	0.70
South Jersey Industries, Inc.	SJI	0.80	0.85	0.80	0.80	1.05	0.86
Spire, Inc.	SR	0.70	0.70	0.65	0.65	0.85	0.71
York Water Company	YORW	0.70	0.80	0.80	0.75	0.80	0.77
<b>Mean</b>		<b>0.71</b>	<b>0.74</b>	<b>0.68</b>	<b>0.65</b>	<b>0.82</b>	<b>0.72</b>

Notes:

[1] Value Line, dated October 16, 2016, November 18, 2016 and December 2, 2016.

[2] Value Line, dated October 13, 2017, November 17, 2017 and December 1, 2017.

[3] Value Line, dated October 12, 2018, November 16, 2018 and November 30, 2018.

[4] Value Line, dated October 11, 2019, November 15, 2019 and November 29, 2019.

[5] Value Line, dated October 9, 2020, November 13, 2020 and November 27, 2020.

[6] Average ([1] - [5])

## MARKET RISK PREMIUM DERIVED FROM ANALYSTS' LONG-TERM GROWTH ESTIMATES

[1] Estimated Weighted Average Dividend Yield 1.58%[2] Estimated Weighted Average Long-Term Growth Rate 11.31%[3] S&P 500 Estimated Required Market Return 12.97%

## STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outstg	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
LyondellBasell Industries NV	LYB	332.78	87.13	28,995.47	0.10%	5.19%	0.00%	8.00%	0.01%
American Express Co	AXP	774.56	152.30	117,964.88	0.39%	1.13%	0.00%	8.50%	0.03%
Verizon Communications Inc	VZ	4,197.76	50.27	211,021.40	0.70%	5.09%	0.04%	3.50%	0.02%
Broadcom Inc	AVGO	411.62	553.68	227,903.55		2.60%		27.00%	
Boeing Co/The	BA	587.70	197.85	116,276.25		n/a		n/a	
Caterpillar Inc	CAT	540.94	193.35	104,591.14	0.35%	2.30%	0.01%	9.50%	0.03%
JPMorgan Chase & Co	JPM	2,955.27	158.83	469,384.90	1.55%	2.52%	0.04%	7.50%	0.12%
Chevron Corp	CVX	1,927.69	112.87	217,577.92		4.75%		24.00%	
Coca-Cola Co/The	KO	4,319.42	52.45	226,553.58	0.75%	3.20%	0.02%	7.00%	0.05%
AbbVie Inc	ABBV	1,767.88	115.28	203,801.21		4.89%	0.03%	6.50%	0.04%
Walt Disney Co/The	DIS	1,817.66	144.90	263,378.35	0.87%	n/a		14.00%	0.12%
FleetCor Technologies Inc	FLT	81.20	207.13	16,818.75	0.06%	n/a		11.00%	0.01%
Extra Space Storage Inc	EXR	133.89	200.00	26,778.40	0.09%	2.50%	0.00%	5.00%	0.00%
Exxon Mobil Corp	XOM	4,233.57	59.84	253,336.65		5.88%		n/a	
Phillips 66	PSX	438.17	69.17	30,308.22	0.10%	5.32%	0.01%	20.00%	0.02%
General Electric Co	GE	1,098.14	94.99	104,312.03	0.35%	0.34%	0.00%	15.00%	0.05%
HP Inc	HPQ	1,152.52	35.28	40,660.87	0.13%	2.83%	0.00%	12.50%	0.02%
Home Depot Inc/The	HD	1,044.24	400.61	418,332.59	1.38%	1.65%	0.02%	8.50%	0.12%
Monolithic Power Systems Inc	MPWR	46.09	553.46	25,510.63		0.43%		20.50%	
International Business Machines Corp	IBM	896.80	117.10	105,015.28	0.35%	5.60%	0.02%	1.50%	0.01%
Johnson & Johnson	JNJ	2,632.60	155.93	410,500.85	1.36%	2.72%	0.04%	10.00%	0.14%
McDonald's Corp	MCD	747.25	244.60	182,776.13	0.60%	2.26%	0.01%	10.50%	0.06%
Merck & Co Inc	MRK	2,525.94	74.91	189,218.47	0.63%	3.68%	0.02%	7.50%	0.05%
3M Co	MMM	576.25	170.04	97,986.06	0.32%	3.48%	0.01%	6.00%	0.02%
American Water Works Co Inc	AWK	181.54	168.57	30,601.86	0.10%	1.43%	0.00%	8.50%	0.01%
Bank of America Corp	BAC	8,184.08	44.47	363,946.22	1.20%	1.89%	0.02%	7.50%	0.09%
Baker Hughes Co	BKR	871.08	23.34	20,331.01	0.07%	3.08%	0.00%	6.00%	0.00%
Pfizer Inc	PFE	5,612.87	53.73	301,579.34	1.00%	2.90%	0.03%	8.00%	0.08%
Procter & Gamble Co/The	PG	2,419.95	144.58	349,876.08	1.16%	2.41%	0.03%	7.00%	0.08%
AT&T Inc	T	7,141.00	22.83	163,029.03	0.54%	9.11%	0.05%	2.50%	0.01%
Travelers Cos Inc/The	TRV	246.01	146.95	36,151.02	0.12%	2.40%	0.00%	8.00%	0.01%
Raytheon Technologies Corp	RTX	1,496.78	80.92	121,119.28	0.40%	2.52%	0.01%	1.50%	0.01%
Analog Devices Inc	ADI	537.41	180.25	96,868.33	0.32%	1.53%	0.00%	11.00%	0.04%
Walmart Inc	WMT	2,788.50	140.63	392,146.47	1.30%	1.56%	0.02%	7.50%	0.10%
Cisco Systems Inc/Delaware	CSCO	4,217.61	54.84	231,293.57	0.77%	2.70%	0.02%	7.00%	0.05%
Intel Corp	INTC	4,067.00	49.20	200,096.40	0.66%	2.83%	0.02%	7.00%	0.05%
General Motors Co	GM	1,451.86	57.87	84,019.14	0.28%	n/a		12.00%	0.03%
Microsoft Corp	MSFT	7,507.98	330.59	2,482,063.11	8.21%	0.75%	0.06%	15.00%	1.23%
Dollar General Corp	DG	233.31	221.30	51,631.50	0.17%	0.76%	0.00%	10.50%	0.02%
Cigna Corp	CI	331.43	191.90	63,601.03	0.21%	2.08%	0.00%	10.00%	0.02%
Kinder Morgan Inc	KMI	2,267.43	15.46	35,054.41	0.12%	6.99%	0.01%	19.00%	0.02%
Citigroup Inc	C	1,984.27	63.70	126,397.81	0.42%	3.20%	0.01%	7.00%	0.03%
American International Group Inc	AIG	830.30	52.60	43,673.67		2.43%		13.50%	
Altria Group Inc	MO	1,836.99	42.64	78,329.21	0.26%	8.44%	0.02%	6.00%	0.02%
HCA Healthcare Inc	HCA	311.02	225.59	70,163.68	0.23%	0.85%	0.00%	13.50%	0.03%
Under Armour Inc	UA	188.65	23.59	4,450.16		n/a		33.00%	
International Paper Co	IP	387.26	45.52	17,628.21	0.06%	4.06%	0.00%	12.00%	0.01%
Hewlett Packard Enterprise Co	HPE	1,308.05	14.35	18,770.52	0.06%	3.34%	0.00%	6.50%	0.00%
Abbott Laboratories	ABT	1,768.29	125.77	222,397.46	0.74%	1.43%	0.01%	11.50%	0.08%
Aflac Inc	AFL	661.53	54.14	35,815.13	0.12%	2.96%	0.00%	11.00%	0.01%
Air Products and Chemicals Inc	APD	221.46	287.44	63,656.46	0.21%	2.09%	0.00%	12.50%	0.03%
Royal Caribbean Cruises Ltd	RCL	254.79	69.82	17,789.44		n/a		n/a	
Hess Corp	HES	309.73	74.52	23,080.86		1.34%		n/a	
Archer-Daniels-Midland Co	ADM	559.44	62.21	34,802.82	0.12%	2.38%	0.00%	9.50%	0.01%
Automatic Data Processing Inc	ADP	421.38	230.89	97,293.35	0.32%	1.80%	0.01%	8.50%	0.03%
Verisk Analytics Inc	VRSK	161.16	224.87	36,240.27	0.12%	0.52%	0.00%	11.50%	0.01%
AutoZone Inc	AZO	20.97	1,817.07	38,100.32	0.13%	n/a		15.00%	0.02%
Avery Dennison Corp	AVY	82.80	205.07	16,978.98	0.06%	1.33%	0.00%	9.00%	0.01%
Enphase Energy Inc	ENPH	134.91	250.00	33,728.00		n/a		40.00%	
MSCI Inc	MSCI	82.45	629.45	51,896.26	0.17%	0.66%	0.00%	16.00%	0.03%
Ball Corp	BLL	323.89	93.45	30,267.89		0.86%		21.00%	
Ceridian HCM Holding Inc	CDAY	151.33	109.40	16,555.61		n/a		n/a	
Carrier Global Corp	CARR	866.59	54.12	46,899.58		0.89%		n/a	
Bank of New York Mellon Corp/The	BK	825.82	54.79	45,246.73	0.15%	2.48%	0.00%	5.00%	0.01%
Otis Worldwide Corp	OTIS	424.77	80.40	34,151.43		1.19%		n/a	
Baxter International Inc	BAX	500.69	74.57	37,336.68	0.12%	1.50%	0.00%	8.50%	0.01%
Becton Dickinson and Co	BDX	284.02	237.14	67,353.45	0.22%	1.47%	0.00%	7.50%	0.02%
Berkshire Hathaway Inc	BRK/B	1,303.48	276.69	360,659.05		n/a		n/a	
Best Buy Co Inc	BBY	245.96	106.86	26,283.71	0.09%	2.62%	0.00%	8.50%	0.01%
Boston Scientific Corp	BSX	1,424.99	38.07	54,249.45	0.18%	n/a		17.50%	0.03%
Bristol-Myers Squibb Co	BYM	2,219.65	53.63	119,039.56	0.39%	3.65%	0.01%	12.50%	0.05%
Fortune Brands Home & Security Inc	FBHS	135.73	100.53	13,645.34	0.05%	1.03%	0.00%	11.00%	0.00%
Brown-Forman Corp	BF/B	309.72	70.36	21,791.62	0.07%	1.07%	0.00%	13.00%	0.01%
Coterra Energy Inc	CTRA	813.58	20.08	16,336.65		2.49%		n/a	
Campbell Soup Co	CPB	302.11	40.33	12,184.02	0.04%	3.67%	0.00%	5.50%	0.00%
Kansas City Southern	KSU	91.20	290.85	26,524.07	0.09%	0.74%	0.00%	10.50%	0.01%
Hilton Worldwide Holdings Inc	HLT	278.72	135.07	37,646.98		n/a		n/a	
Carnival Corp	CCL	981.05	17.62	17,286.07		n/a		n/a	
Qorvo Inc	QRVO	110.22	146.23	16,117.91		n/a		27.00%	
Lumen Technologies Inc	LUMN	1,023.89	12.34	12,634.85	0.04%	8.10%	0.00%	2.50%	0.00%



## STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outstg	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
UDR Inc	UDR	309.19	56.73	17,540.12	0.06%	2.56%	0.00%	6.00%	0.00%
Clorox Co/The	CLX	122.86	162.85	20,008.24	0.07%	2.85%	0.00%	5.00%	0.00%
Paycom Software Inc	PAYC	60.03	437.48	26,260.17	0.09%	n/a		19.50%	0.02%
CMS Energy Corp	CMS	289.70	58.85	17,048.67	0.06%	2.96%	0.00%	6.00%	0.00%
Newell Brands Inc	NWL	425.40	21.47	9,133.34		4.29%		n/a	
Colgate-Palmolive Co	CL	842.85	75.02	63,230.53	0.21%	2.40%	0.01%	4.50%	0.01%
Comerica Inc	CMA	131.15	82.53	10,823.73	0.04%	3.30%	0.00%	2.50%	0.00%
IPG Photonics Corp	IPGP	53.31	164.19	8,752.80	0.03%	n/a		17.00%	0.00%
Conagra Brands Inc	CAG	479.69	30.55	14,654.53	0.05%	4.09%	0.00%	4.50%	0.00%
Consolidated Edison Inc	ED	353.75	77.64	27,465.07	0.09%	3.99%	0.00%	3.00%	0.00%
Corning Inc	GLW	853.41	37.09	31,652.90	0.10%	2.59%	0.00%	20.00%	0.02%
Cummins Inc	CMI	143.03	209.75	30,000.96	0.10%	2.77%	0.00%	7.00%	0.01%
Caesars Entertainment Inc	CZR	213.77	90.07	19,254.62		n/a		n/a	
Danaher Corp	DHR	714.58	321.64	229,836.55		0.26%		21.00%	
Target Corp	TGT	479.12	243.84	116,829.60	0.39%	1.48%	0.01%	15.00%	0.06%
Deere & Co	DE	310.06	345.54	107,138.48		1.22%		21.50%	
Dominion Energy Inc	D	809.91	71.20	57,665.45	0.19%	3.54%	0.01%	12.00%	0.02%
Dover Corp	DOV	143.99	163.85	23,591.94	0.08%	1.22%	0.00%	7.00%	0.01%
Alliant Energy Corp	LNT	250.36	54.79	13,717.28	0.05%	2.94%	0.00%	5.50%	0.00%
Duke Energy Corp	DUK	769.00	97.01	74,600.69	0.25%	4.06%	0.01%	7.00%	0.02%
Regency Centers Corp	REG	171.21	69.34	11,871.91	0.04%	3.61%	0.00%	16.00%	0.01%
Eaton Corp PLC	ETN	398.60	162.06	64,597.12	0.21%	1.88%	0.00%	9.00%	0.02%
Ecolab Inc	ECL	286.57	221.47	63,465.99	0.21%	0.87%	0.00%	6.00%	0.01%
PerkinElmer Inc	PKI	126.20	182.16	22,988.59	0.08%	0.15%	0.00%	12.00%	0.01%
Emerson Electric Co	EMR	594.90	87.84	52,256.02	0.17%	2.35%	0.00%	10.50%	0.02%
EOG Resources Inc	EOG	585.09	87.00	50,902.83	0.17%	3.45%	0.01%	16.00%	0.03%
Aon PLC	AON	220.33	295.77	65,167.60	0.22%	0.69%	0.00%	7.00%	0.02%
Entergy Corp	ETR	200.98	100.34	20,166.43	0.07%	4.03%	0.00%	3.00%	0.00%
Equifax Inc	EFX	122.00	278.65	33,995.86	0.11%	0.56%	0.00%	11.00%	0.01%
IQVIA Holdings Inc	IQV	191.04	259.13	49,504.20	0.16%	n/a		15.50%	0.03%
Gartner Inc	IT	82.24	312.25	25,679.13		n/a		20.50%	
FedEx Corp	FDX	265.65	230.37	61,197.79	0.20%	1.30%	0.00%	13.00%	0.03%
FMC Corp	FMC	126.75	100.19	12,699.18	0.04%	1.92%	0.00%	9.50%	0.00%
Brown & Brown Inc	BRO	282.43	64.41	18,191.12	0.06%	0.64%	0.00%	9.50%	0.01%
Ford Motor Co	F	3,925.39	19.19	75,328.21		2.08%		47.50%	
NextEra Energy Inc	NEE	1,962.14	86.78	170,274.25	0.56%	1.77%	0.01%	10.50%	0.06%
Franklin Resources Inc	BEN	501.80	32.40	16,258.16	0.05%	3.46%	0.00%	8.50%	0.00%
Freeport-McMoRan Inc	FCX	1,468.47	37.08	54,451.02		0.81%		37.50%	
Gap Inc/The	GPS	373.40	16.53	6,172.35		2.90%		27.00%	
Dexcom Inc	DXCM	96.92	562.59	54,527.35		n/a		n/a	
General Dynamics Corp	GD	279.22	188.97	52,764.77	0.17%	2.52%	0.00%	6.00%	0.01%
General Mills Inc	GIS	605.69	61.77	37,413.59	0.12%	3.30%	0.00%	3.50%	0.00%
Genuine Parts Co	GPC	142.42	127.74	18,192.99	0.06%	2.55%	0.00%	7.00%	0.00%
Atmos Energy Corp	ATO	132.43	90.32	11,960.72	0.04%	3.01%	0.00%	7.00%	0.00%
WW Grainger Inc	GWV	51.52	481.41	24,802.24	0.08%	1.35%	0.00%	5.50%	0.00%
Halliburton Co	HAL	895.12	21.59	19,325.55	0.06%	0.83%	0.00%	9.00%	0.01%
L3Harris Technologies Inc	LHX	196.23	209.08	41,026.72		1.95%		n/a	
Healthpeak Properties Inc	PEAK	539.07	32.86	17,713.91		3.65%		-12.00%	
Catalent Inc	CTLT	171.19	128.66	22,025.05		n/a		21.00%	
Fortive Corp	FTV	358.58	73.87	26,488.16	0.09%	0.38%	0.00%	6.00%	0.01%
Hershey Co/The	HSY	145.39	177.49	25,805.27	0.09%	2.03%	0.00%	6.00%	0.01%
Synchrony Financial	SYF	547.26	44.79	24,511.73	0.08%	1.96%	0.00%	9.50%	0.01%
Hormel Foods Corp	HRL	542.56	41.40	22,461.86	0.07%	2.51%	0.00%	9.00%	0.01%
Arthur J Gallagher & Co	AJG	207.28	162.90	33,765.59	0.11%	1.18%	0.00%	13.50%	0.02%
Mondelez International Inc	MDLZ	1,394.97	58.94	82,219.65	0.27%	2.38%	0.01%	8.00%	0.02%
CenterPoint Energy Inc	CNP	628.87	25.91	16,293.92	0.05%	2.62%	0.00%	9.50%	0.01%
Humana Inc	HUM	128.53	419.71	53,947.01	0.18%	0.67%	0.00%	12.00%	0.02%
Willis Towers Watson PLC	WLTW	124.61	225.84	28,141.02	0.09%	1.42%	0.00%	8.00%	0.01%
Illinois Tool Works Inc	ITW	313.88	232.15	72,867.47	0.24%	2.10%	0.01%	10.50%	0.03%
CDW Corp/DE	CDW	135.72	189.36	25,700.51	0.09%	1.06%	0.00%	10.00%	0.01%
Trane Technologies PLC	TT	237.54	186.65	44,336.84		1.26%		n/a	
Interpublic Group of Cos Inc/The	IPG	393.76	33.19	13,068.73	0.04%	3.25%	0.00%	12.00%	0.01%
International Flavors & Fragrances Inc	IFF	254.55	142.17	36,188.95	0.12%	2.22%	0.00%	7.50%	0.01%
Jacobs Engineering Group Inc	J	128.95	142.56	18,382.97	0.06%	0.59%	0.00%	15.00%	0.01%
Generac Holdings Inc	GNRC	63.09	421.24	26,576.03		n/a		23.50%	
NXP Semiconductors NV	NXPI	265.93	223.36	59,398.79	0.20%	1.01%	0.00%	11.00%	0.02%
Hanesbrands Inc	HBI	349.21	16.15	5,639.66	0.02%	3.72%	0.00%	6.00%	0.00%
Kellogg Co	K	341.12	61.18	20,869.91	0.07%	3.79%	0.00%	3.50%	0.00%
Broadridge Financial Solutions Inc	BR	116.58	168.57	19,651.55	0.07%	1.52%	0.00%	9.50%	0.01%
Kimberly-Clark Corp	KMB	336.72	130.31	43,877.59	0.15%	3.50%	0.01%	5.50%	0.01%
Kimco Realty Corp	KIM	616.43	22.42	13,820.32	0.05%	3.03%	0.00%	10.50%	0.00%
Oracle Corp	ORCL	2,733.69	90.74	248,054.67	0.82%	1.41%	0.01%	10.00%	0.08%
Kroger Co/The	KR	743.64	41.53	30,883.29	0.10%	2.02%	0.00%	6.00%	0.01%
Leggett & Platt Inc	LEG	133.38	40.39	5,387.10	0.02%	4.16%	0.00%	10.00%	0.00%
Lennar Corp	LEN	271.85	105.05	28,558.05	0.09%	0.95%	0.00%	12.00%	0.01%
Eli Lilly & Co	LLY	956.59	248.04	237,273.08	0.79%	1.37%	0.01%	11.00%	0.09%
Bath & Body Works Inc	BBWI	264.37	75.13	19,862.34		0.80%		26.00%	
Charter Communications Inc	CHTR	179.29	646.28	115,872.19		n/a		27.50%	
Lincoln National Corp	LNC	180.71	66.33	11,986.43	0.04%	2.71%	0.00%	9.00%	0.00%
Loews Corp	L	253.68	53.46	13,561.95	0.04%	0.47%	0.00%	12.50%	0.01%
Lowe's Cos Inc	LOW	673.75	244.59	164,791.78	0.55%	1.31%	0.01%	14.50%	0.08%
IDEX Corp	IEX	76.03	224.59	17,075.80	0.06%	0.96%	0.00%	8.00%	0.00%
Marsh & McLennan Cos Inc	MMC	504.90	164.02	82,812.88	0.27%	1.30%	0.00%	12.00%	0.03%
Masco Corp	MAS	244.09	65.90	16,085.33	0.05%	1.43%	0.00%	9.50%	0.01%
S&P Global Inc	SPGI	241.00	455.73	109,830.93	0.36%	0.68%	0.00%	10.50%	0.04%
Medtronic PLC	MDT	1,344.86	106.70	143,496.78	0.47%	2.36%	0.01%	9.00%	0.04%
Viatis Inc	VTRS	1,209.39	12.31	14,887.63		3.57%		n/a	
CVS Health Corp	CVS	1,320.06	89.06	117,564.45	0.39%	2.25%	0.01%	6.00%	0.02%
DuPont de Nemours Inc	DD	518.10	73.96	38,318.97		1.62%		n/a	
Micron Technology Inc	MU	1,118.62	84.00	93,964.42	0.31%	0.48%	0.00%	11.50%	0.04%
Motorola Solutions Inc	MSI	168.90	253.18	42,761.34	0.14%	1.25%	0.00%	7.00%	0.01%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
		Shares Outstg	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	Value Line Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
Cboe Global Markets Inc	CBOE	106.64	128.94	13,750.55	0.05%	1.49%	0.00%	12.00%	0.01%
Laboratory Corp of America Holdings	LH	95.70	285.33	27,306.08	0.09%	n/a		6.00%	0.01%
Newmont Corp	NEM	797.44	54.92	43,795.13	0.14%	4.01%	0.01%	14.00%	0.02%
NIKE Inc	NKE	1,277.81	169.24	216,255.89		0.72%		27.00%	
NiSource Inc	NI	392.71	24.51	9,625.20	0.03%	3.59%	0.00%	8.50%	0.00%
Norfolk Southern Corp	NSC	243.35	265.27	64,552.13	0.21%	1.64%	0.00%	10.50%	0.02%
Principal Financial Group Inc	PFG	265.07	68.58	18,178.43	0.06%	3.73%	0.00%	6.00%	0.00%
Eversource Energy	ES	343.81	82.27	28,284.92	0.09%	2.93%	0.00%	6.50%	0.01%
Northrop Grumman Corp	NOC	158.54	348.80	55,298.05	0.18%	1.80%	0.00%	8.50%	0.02%
Wells Fargo & Co	WFC	3,987.23	47.78	190,509.99	0.63%	1.67%	0.01%	5.50%	0.03%
Nucor Corp	NUE	285.80	106.26	30,369.00	0.10%	1.52%	0.00%	12.00%	0.01%
PVH Corp	PVH	71.05	106.78	7,586.93	0.03%	0.14%	0.00%	13.50%	0.00%
Occidental Petroleum Corp	OXY	933.98	29.65	27,692.54		0.13%		36.50%	
Omnicom Group Inc	OMC	212.56	67.31	14,307.35	0.05%	4.16%	0.00%	6.00%	0.00%
ONEOK Inc	OKE	445.94	59.84	26,684.87	0.09%	6.25%	0.01%	10.00%	0.01%
Raymond James Financial Inc	RJF	206.16	98.29	20,263.66	0.07%	1.06%	0.00%	6.50%	0.00%
Parker-Hannifin Corp	PH	128.52	302.06	38,819.24	0.13%	1.36%	0.00%	14.00%	0.02%
Rollins Inc	ROL	492.05	33.28	16,375.39	0.05%	1.20%	0.00%	11.50%	0.01%
PPL Corp	PPL	750.72	27.83	20,892.43		5.96%		n/a	
ConocoPhillips	COP	1,318.95	70.13	92,497.75	0.31%	2.62%	0.01%	13.50%	0.04%
PulteGroup Inc	PHM	253.19	50.03	12,666.90	0.04%	1.12%	0.00%	12.50%	0.01%
Pinnacle West Capital Corp	PNW	112.82	65.05	7,338.88		5.23%		0.00%	
PNC Financial Services Group Inc/The	PNC	422.64	197.00	83,260.28	0.28%	2.54%	0.01%	11.50%	0.03%
PPG Industries Inc	PPG	237.40	154.17	36,600.11	0.12%	1.53%	0.00%	3.00%	0.00%
Progressive Corp/The	PGR	584.40	92.94	54,314.14	0.18%	0.43%	0.00%	5.00%	0.01%
Public Service Enterprise Group Inc	PEG	505.66	62.49	31,598.94	0.10%	3.26%	0.00%	3.50%	0.00%
Robert Half International Inc	RHI	111.33	111.17	12,376.56	0.04%	1.37%	0.00%	7.50%	0.00%
Edison International	EIX	379.91	65.28	24,800.39		4.06%		n/a	
Schlumberger NV	SLB	1,402.63	28.68	40,227.51	0.13%	1.74%	0.00%	8.50%	0.01%
Charles Schwab Corp/The	SCHW	1,811.31	77.39	140,176.97	0.46%	0.93%	0.00%	7.00%	0.03%
Sherwin-Williams Co/The	SHW	262.20	331.24	86,849.80	0.29%	0.66%	0.00%	10.50%	0.03%
West Pharmaceutical Services Inc	WST	74.08	442.66	32,792.25	0.11%	0.16%	0.00%	17.00%	0.02%
J M Smucker Co/The	SJM	108.36	126.47	13,704.67	0.05%	3.13%	0.00%	4.00%	0.00%
Snap-on Inc	SNA	53.73	205.91	11,062.51	0.04%	2.76%	0.00%	4.50%	0.00%
AMETEK Inc	AME	231.33	136.50	31,575.86	0.10%	0.59%	0.00%	9.00%	0.01%
Southern Co/The	SO	1,059.80	61.10	64,754.02	0.21%	4.32%	0.01%	6.00%	0.01%
Truist Financial Corp	TFC	1,334.89	59.31	79,172.44	0.26%	3.24%	0.01%	7.00%	0.02%
Southwest Airlines Co	LUV	591.92	44.40	26,281.25		n/a		34.00%	
W R Berkley Corp	WRB	176.64	76.64	13,537.69	0.04%	0.68%	0.00%	14.50%	0.01%
Stanley Black & Decker Inc	SWK	163.03	174.76	28,491.65	0.09%	1.81%	0.00%	6.00%	0.01%
Public Storage	PSA	175.36	327.38	57,407.72	0.19%	2.44%	0.00%	4.00%	0.01%
Arista Networks Inc	ANET	307.28	124.06	38,121.65	0.13%	n/a		4.50%	0.01%
Sysco Corp	SY	512.66	70.04	35,906.43	0.12%	2.68%	0.00%	17.00%	0.02%
Corteva Inc	CTVA	730.27	45.00	32,862.02		1.24%		n/a	
Texas Instruments Inc	TXN	923.53	192.37	177,658.70	0.59%	2.39%	0.01%	9.00%	0.05%
Textron Inc	TXT	220.43	70.80	15,606.09	0.05%	0.11%	0.00%	8.50%	0.00%
Thermo Fisher Scientific Inc	TMO	394.05	632.83	249,365.40	0.83%	0.16%	0.00%	15.00%	0.12%
TJX Cos Inc/The	TJX	1,192.88	69.40	82,785.73	0.27%	1.50%	0.00%	20.00%	0.05%
Globe Life Inc	GL	100.98	86.54	8,738.72	0.03%	0.91%	0.00%	8.00%	0.00%
Johnson Controls International plc	JCI	704.33	74.76	52,655.86	0.17%	1.44%	0.00%	10.00%	0.02%
Ulta Beauty Inc	ULTA	54.36	383.95	20,870.75	0.07%	n/a		15.00%	0.01%
Union Pacific Corp	UNP	642.88	235.64	151,487.30	0.50%	1.82%	0.01%	10.50%	0.05%
Keysight Technologies Inc	KEYS	181.90	194.48	35,375.91	0.12%	n/a		17.00%	0.02%
UnitedHealth Group Inc	UNH	941.85	444.22	418,389.05	1.38%	1.31%	0.02%	12.00%	0.17%
Marathon Oil Corp	MRO	778.54	15.49	12,059.54		1.55%		n/a	
Bio-Rad Laboratories Inc	BIO	24.84	753.20	18,706.48	0.06%	n/a		11.50%	0.01%
Ventas Inc	VTR	399.18	46.92	18,729.34	0.06%	3.84%	0.00%	4.50%	0.00%
VF Corp	VFC	392.78	71.73	28,174.25	0.09%	2.79%	0.00%	9.50%	0.01%
Vornado Realty Trust	VNO	191.68	40.14	7,694.08		5.28%		-19.00%	
Vulcan Materials Co	VMC	132.71	191.64	25,431.59	0.08%	0.77%	0.00%	10.00%	0.01%
Weyerhaeuser Co	WY	749.05	37.61	28,171.58		1.81%		22.00%	
Whirlpool Corp	WHR	60.74	217.74	13,226.18	0.04%	2.57%	0.00%	9.50%	0.00%
Williams Cos Inc/The	WMB	1,215.03	26.79	32,550.65	0.11%	6.12%	0.01%	10.50%	0.01%
WEC Energy Group Inc	WEC	315.44	86.93	27,420.76	0.09%	3.12%	0.00%	6.50%	0.01%
Adobe Inc	ADBE	475.80	669.85	318,714.63	1.05%	n/a		15.50%	0.16%
AES Corp/The	AES	666.71	23.38	15,587.77		2.57%		24.00%	
Amgen Inc	AMGN	563.27	198.88	112,022.34	0.37%	3.54%	0.01%	5.50%	0.02%
Apple Inc	AAPL	16,406.40	165.30	2,711,977.42	8.98%	0.53%	0.05%	17.00%	1.53%
Autodesk Inc	ADSK	219.85	254.19	55,883.67	0.18%	n/a		18.00%	0.03%
Cintas Corp	CTAS	103.41	422.19	43,657.82	0.14%	0.90%	0.00%	13.50%	0.02%
Comcast Corp	CMCSA	4,559.48	49.98	227,882.76	0.75%	2.00%	0.02%	11.00%	0.08%
Molson Coors Beverage Co	TAP	200.59	44.44	8,914.00		3.06%		41.00%	
KLA Corp	KLAC	151.62	408.13	61,881.49	0.20%	1.03%	0.00%	19.50%	0.04%
Marriott International Inc/MD	MAR	325.68	147.56	48,057.78	0.16%	n/a		17.50%	0.03%
McCormick & Co Inc/MD	MKC	249.35	85.82	21,399.39	0.07%	1.72%	0.00%	6.00%	0.00%
PACCAR Inc	PCAR	347.18	83.42	28,961.51	0.10%	1.63%	0.00%	5.00%	0.00%
Costco Wholesale Corp	COST	441.82	539.38	238,311.03	0.79%	0.59%	0.00%	10.50%	0.08%
First Republic Bank/CA	FRC	179.06	209.66	37,541.72	0.12%	0.42%	0.00%	13.50%	0.02%
Stryker Corp	SYK	377.24	236.63	89,266.30	0.30%	1.06%	0.00%	11.00%	0.03%
Tyson Foods Inc	TSN	294.77	78.96	23,275.12	0.08%	2.33%	0.00%	6.00%	0.00%
Lamb Weston Holdings Inc	LW	146.07	51.92	7,583.85	0.03%	1.81%	0.00%	6.00%	0.00%
Applied Materials Inc	AMAT	902.93	147.19	132,901.97	0.44%	0.65%	0.00%	16.50%	0.07%
American Airlines Group Inc	AAL	647.52	17.69	11,454.54		n/a		n/a	
Cardinal Health Inc	CAH	281.79	46.23	13,027.06	0.04%	4.25%	0.00%	12.00%	0.01%
Cerner Corp	CERN	294.22	70.45	20,728.01	0.07%	1.25%	0.00%	11.00%	0.01%
Cincinnati Financial Corp	CINF	161.14	113.90	18,353.96	0.06%	2.21%	0.00%	17.50%	0.01%
ViacomCBS Inc	VIAC	606.71	30.95	18,777.55	0.06%	3.10%	0.00%	7.00%	0.00%
DR Horton Inc	DHI	358.53	97.70	34,832.98	0.12%	0.92%	0.00%	15.50%	0.02%
Electronic Arts Inc	EA	282.81	124.22	35,130.41	0.12%	0.55%	0.00%	12.50%	0.01%
Expeditors International of Washington Inc	EXPD	169.40	121.62	20,602.91	0.07%	0.95%	0.00%	10.00%	0.01%
Fastenal Co	FAST	575.16	59.17	34,032.39	0.11%	1.89%	0.00%	9.00%	0.01%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outstg	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
M&T Bank Corp	MTB	128.69	146.61	18,866.51	0.06%	3.27%	0.00%	8.00%	0.00%
Xcel Energy Inc	XEL	538.68	63.73	34,329.82	0.11%	2.87%	0.00%	6.00%	0.01%
Fiserv Inc	FISV	660.23	96.52	63,725.59	0.21%	n/a	n/a	13.00%	0.03%
Fifth Third Bancorp	FITB	683.76	42.15	28,820.36	0.10%	2.85%	0.00%	9.50%	0.01%
Gilead Sciences Inc	GILD	1,254.38	68.93	86,464.69	0.29%	4.12%	0.01%	3.50%	0.01%
Hasbro Inc	HAS	137.95	96.91	13,368.44	0.04%	2.81%	0.00%	11.50%	0.01%
Huntington Bancshares Inc/OH	HBAN	1,446.46	14.84	21,465.48	0.07%	4.18%	0.00%	9.00%	0.01%
Welltower Inc	WELL	435.28	79.62	34,656.60	n/a	3.06%	n/a	-1.50%	n/a
Biogen Inc	BIIB	146.89	235.74	34,628.56	0.11%	n/a	n/a	7.00%	0.01%
Northern Trust Corp	NTRS	207.66	115.70	24,026.38	0.08%	2.42%	0.00%	7.00%	0.01%
Packaging Corp of America	PKG	94.99	130.59	12,404.87	0.04%	3.06%	0.00%	5.00%	0.00%
Paychex Inc	PAYX	360.59	119.20	42,982.45	0.14%	2.21%	0.00%	8.00%	0.01%
People's United Financial Inc	PBCT	428.03	17.04	7,293.55	0.02%	4.28%	0.00%	4.00%	0.00%
QUALCOMM Inc	QCOM	1,120.00	180.56	202,227.20	0.67%	1.51%	0.01%	14.00%	0.09%
Roper Technologies Inc	ROP	105.49	464.15	48,960.86	0.16%	0.53%	0.00%	8.00%	0.01%
Ross Stores Inc	ROST	355.37	109.09	38,766.88	0.13%	1.05%	0.00%	14.00%	0.02%
IDEXX Laboratories Inc	IDXX	84.79	608.07	51,560.69	0.17%	n/a	n/a	14.50%	0.02%
Starbucks Corp	SBUX	1,173.20	109.64	128,629.65	0.43%	1.79%	0.01%	16.00%	0.07%
KeyCorp	KEY	931.06	22.44	20,892.94	0.07%	3.48%	0.00%	9.50%	0.01%
Fox Corp	FOXA	320.35	35.71	11,439.59	n/a	1.34%	n/a	n/a	n/a
Fox Corp	FOX	249.24	33.60	8,374.46	n/a	1.43%	n/a	n/a	n/a
State Street Corp	STT	365.63	88.97	32,530.01	0.11%	2.56%	0.00%	7.50%	0.01%
Norwegian Cruise Line Holdings Ltd	NCLH	370.03	19.51	7,219.34	n/a	n/a	n/a	n/a	n/a
US Bancorp	USB	1,482.80	55.34	82,058.04	0.27%	3.32%	0.01%	6.50%	0.02%
A O Smith Corp	AOS	133.19	79.05	10,528.43	0.03%	1.42%	0.00%	10.00%	0.00%
NortonLifeLock Inc	NLOK	581.77	24.85	14,457.06	0.05%	2.01%	0.00%	11.00%	0.01%
T Rowe Price Group Inc	TROW	224.75	199.95	44,938.96	0.15%	2.16%	0.00%	12.00%	0.02%
Waste Management Inc	WM	418.32	160.67	67,210.83	0.22%	1.43%	0.00%	7.50%	0.02%
Constellation Brands Inc	STZ	164.26	225.33	37,013.61	0.12%	1.35%	0.00%	7.00%	0.01%
Xilinx Inc	XLNX	247.88	228.45	56,628.19	0.19%	0.65%	0.00%	8.00%	0.01%
DENTSPLY SIRONA Inc	XRAY	218.61	48.74	10,654.91	0.04%	0.90%	0.00%	5.50%	0.00%
Zions Bancorp NA	ZION	156.46	63.08	9,869.69	0.03%	2.41%	0.00%	7.50%	0.00%
Alaska Air Group Inc	ALK	125.31	48.57	6,086.36	n/a	n/a	n/a	n/a	n/a
Invesco Ltd	IVZ	461.21	22.33	10,298.75	0.03%	3.05%	0.00%	15.50%	0.01%
Linde PLC	LIN	511.75	318.14	162,808.78	n/a	1.33%	n/a	n/a	n/a
Intuit Inc	INTU	283.17	652.30	184,709.83	0.61%	0.42%	0.00%	15.00%	0.09%
Morgan Stanley	MS	1,794.41	94.82	170,146.15	0.56%	2.95%	0.02%	8.50%	0.05%
Microchip Technology Inc	MCHP	554.87	83.43	46,292.89	0.15%	1.11%	0.00%	10.50%	0.02%
Chubb Ltd	CB	430.74	179.47	77,305.09	0.26%	1.78%	0.00%	12.50%	0.03%
Hologic Inc	HOLX	251.42	74.73	18,788.69	n/a	n/a	n/a	25.00%	n/a
Citizens Financial Group Inc	CFG	426.20	47.27	20,146.47	0.07%	3.30%	0.00%	8.50%	0.01%
O'Reilly Automotive Inc	ORLY	67.38	638.16	42,997.94	0.14%	n/a	n/a	13.00%	0.02%
Allstate Corp/The	ALL	286.68	108.72	31,167.41	0.10%	2.98%	0.00%	5.00%	0.01%
Equity Residential	EQR	375.02	85.31	31,992.61	0.11%	2.82%	0.00%	2.00%	0.00%
BorgWarner Inc	BWA	239.77	43.28	10,377.29	0.03%	1.57%	0.00%	9.50%	0.00%
Organon & Co	OGN	253.55	29.23	7,411.27	n/a	3.83%	n/a	n/a	n/a
Host Hotels & Resorts Inc	HST	714.04	15.70	11,210.35	0.04%	n/a	n/a	10.00%	0.00%
Incyte Corp	INCY	220.89	67.72	14,958.74	n/a	n/a	n/a	n/a	n/a
Simon Property Group Inc	SPG	328.61	152.84	50,224.91	0.17%	4.32%	0.01%	1.50%	0.00%
Eastman Chemical Co	EMN	134.44	104.29	14,020.75	0.05%	2.65%	0.00%	10.50%	0.00%
Twitter Inc	TWTR	799.61	43.94	35,134.86	n/a	n/a	n/a	39.00%	n/a
AvalonBay Communities Inc	AVB	139.74	238.87	33,379.93	0.11%	2.66%	0.00%	1.50%	0.00%
Prudential Financial Inc	PRU	378.00	102.26	38,654.28	0.13%	4.50%	0.01%	4.50%	0.01%
United Parcel Service Inc	UPS	729.16	198.37	144,643.07	0.48%	2.06%	0.01%	11.50%	0.06%
Walgreens Boots Alliance Inc	WBA	865.61	44.80	38,779.42	0.13%	4.26%	0.01%	7.50%	0.01%
STERIS PLC	STE	100.02	218.53	21,858.03	0.07%	0.79%	0.00%	12.00%	0.01%
McKesson Corp	MCK	152.68	216.76	33,095.35	0.11%	0.87%	0.00%	9.50%	0.01%
Lockheed Martin Corp	LMT	275.79	333.32	91,924.99	0.30%	3.36%	0.01%	7.50%	0.02%
AmerisourceBergen Corp	ABC	208.13	115.75	24,091.39	0.08%	1.59%	0.00%	6.50%	0.01%
Capital One Financial Corp	COF	425.62	140.53	59,812.66	n/a	1.71%	n/a	n/a	n/a
Waters Corp	WAT	61.04	328.07	20,024.08	0.07%	n/a	n/a	6.00%	0.00%
Dollar Tree Inc	DLTR	224.96	133.83	30,105.86	0.10%	n/a	n/a	8.50%	0.01%
Darden Restaurants Inc	DRI	129.79	137.95	17,903.84	0.06%	3.19%	0.00%	19.50%	0.01%
Match Group Inc	MTCH	283.09	129.99	36,798.22	0.12%	n/a	n/a	18.50%	0.02%
Domino's Pizza Inc	DPZ	36.39	524.14	19,071.88	0.06%	0.72%	0.00%	15.00%	0.01%
NVR Inc	NVR	3.48	5,225.34	18,199.86	0.06%	n/a	n/a	9.00%	0.01%
NetApp Inc	NTAP	223.63	88.88	19,876.15	0.07%	2.25%	0.00%	6.50%	0.00%
Citrix Systems Inc	CTXS	124.72	80.43	10,031.47	0.03%	1.84%	0.00%	8.00%	0.00%
DXC Technology Co	DXC	252.24	29.99	7,564.65	0.03%	n/a	n/a	6.50%	0.00%
Old Dominion Freight Line Inc	ODFL	115.01	355.17	40,848.46	0.14%	0.23%	0.00%	11.50%	0.02%
DaVita Inc	DVA	101.90	94.50	9,629.55	0.03%	n/a	n/a	16.00%	0.01%
Hartford Financial Services Group Inc/The	HIG	340.35	66.10	22,497.33	0.07%	2.33%	0.00%	6.50%	0.00%
Iron Mountain Inc	IRM	289.55	45.44	13,157.11	0.04%	5.44%	0.00%	8.50%	0.00%
Estee Lauder Cos Inc/The	EL	231.71	332.07	76,942.28	0.25%	0.72%	0.00%	11.50%	0.03%
Cadence Design Systems Inc	CDNS	277.14	177.46	49,181.44	0.16%	n/a	n/a	12.00%	0.02%
Tyler Technologies Inc	TYL	40.98	518.98	21,265.72	0.07%	n/a	n/a	14.00%	0.01%
Universal Health Services Inc	UHS	73.12	118.73	8,681.54	0.03%	0.67%	0.00%	11.00%	0.00%
Skyworks Solutions Inc	SWKS	165.39	151.66	25,082.59	0.08%	1.48%	0.00%	13.50%	0.01%
Quest Diagnostics Inc	DGX	122.68	148.68	18,239.32	0.06%	1.67%	0.00%	7.50%	0.00%
Activision Blizzard Inc	ATVI	778.89	58.60	45,642.90	0.15%	0.80%	0.00%	13.00%	0.02%
Rockwell Automation Inc	ROK	115.98	336.20	38,993.15	0.13%	1.33%	0.00%	7.50%	0.01%
Kraft Heinz Co/The	KHC	1,224.04	33.61	41,140.05	0.14%	4.76%	0.01%	1.50%	0.00%
American Tower Corp	AMT	455.41	262.48	119,537.07	0.40%	2.00%	0.01%	9.50%	0.04%
Regeneron Pharmaceuticals Inc	REGN	105.72	636.53	67,293.95	0.22%	n/a	n/a	12.50%	0.03%
Amazon.com Inc	AMZN	507.15	3,507.07	1,778,603.54	n/a	n/a	n/a	30.00%	n/a
Jack Henry & Associates Inc	JKHY	74.04	151.63	11,226.84	0.04%	1.21%	0.00%	10.50%	0.00%
Ralph Lauren Corp	RL	48.74	116.04	5,655.33	0.02%	2.37%	0.00%	11.50%	0.00%
Boston Properties Inc	BXP	156.21	107.84	16,845.36	n/a	3.64%	n/a	-2.00%	n/a
Amphenol Corp	APH	598.03	80.58	48,189.10	0.16%	0.99%	0.00%	10.50%	0.02%
Howmet Aerospace Inc	HWM	427.22	28.13	12,017.64	0.04%	0.28%	0.00%	12.00%	0.00%
Pioneer Natural Resources Co	PXD	244.13	178.32	43,533.97	0.14%	1.39%	0.00%	20.00%	0.03%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
		Shares Outstg	Price	Market Capitalization	Weight in Index	Estimated Dividend Yield	Cap-Weighted Dividend Yield	Value Line Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
Valero Energy Corp	VLO	408.84	66.94	27,367.48	0.09%	5.86%	0.01%	13.00%	0.01%
Synopsys Inc	SNPS	152.50	341.00	52,003.52	0.17%	n/a		13.00%	0.02%
Western Union Co/The	WU	402.01	15.82	6,359.75	0.02%	5.94%	0.00%	8.00%	0.00%
Etsy Inc	ETSY	126.78	274.58	34,811.53		n/a		29.00%	
CH Robinson Worldwide Inc	CHRW	129.99	95.09	12,360.46	0.04%	2.15%	0.00%	9.00%	0.00%
Accenture PLC	ACN	656.74	357.40	234,718.52	0.78%	1.09%	0.01%	10.00%	0.08%
TransDigm Group Inc	TDG	55.25	578.05	31,936.68	0.11%	n/a		16.50%	0.02%
Yum! Brands Inc	YUM	293.13	122.84	36,008.46	0.12%	1.63%	0.00%	11.00%	0.01%
Prologis Inc	PLD	739.75	150.75	111,516.56	0.37%	1.67%	0.01%	8.50%	0.03%
FirstEnergy Corp	FE	544.42	37.66	20,502.86	0.07%	4.14%	0.00%	11.50%	0.01%
VeriSign Inc	VRSN	111.08	239.91	26,648.72	0.09%	n/a		8.50%	0.01%
Quanta Services Inc	PWR	142.50	113.78	16,213.54	0.05%	0.21%	0.00%	12.50%	0.01%
Henry Schein Inc	HSIC	138.67	71.06	9,854.17	0.03%	n/a		6.50%	0.00%
Ameren Corp	AEE	255.41	81.59	20,838.90	0.07%	2.70%	0.00%	6.50%	0.00%
ANSYS Inc	ANSS	87.25	391.48	34,157.80	0.11%	n/a		8.00%	0.01%
NVIDIA Corp	NVDA	2,500.00	326.76	816,900.00	2.70%	0.05%	0.00%	17.00%	0.46%
Sealed Air Corp	SEE	148.16	62.12	9,203.51	0.03%	1.29%	0.00%	13.50%	0.00%
Cognizant Technology Solutions Corp	CTSH	525.25	77.98	40,959.15	0.14%	1.23%	0.00%	7.00%	0.01%
SVB Financial Group	SIVB	58.69	692.33	40,630.77	0.13%	n/a		5.00%	0.01%
Intuitive Surgical Inc	ISRG	357.24	324.34	115,866.25	0.38%	n/a		16.00%	0.06%
Take-Two Interactive Software Inc	TTWO	115.30	165.88	19,125.96	0.06%	n/a		12.00%	0.01%
Republic Services Inc	RSG	317.10	132.26	41,938.98	0.14%	1.39%	0.00%	11.00%	0.02%
eBay Inc	EBAY	626.00	67.46	42,230.23	0.14%	1.07%	0.00%	16.50%	0.02%
Goldman Sachs Group Inc/The	GS	334.79	380.99	127,552.79	0.42%	2.10%	0.01%	7.00%	0.03%
SBA Communications Corp	SBAC	108.78	343.80	37,398.91		0.67%		45.00%	
Sempra Energy	SRE	315.07	119.87	37,767.56	0.12%	3.67%	0.00%	10.00%	0.01%
Moody's Corp	MCO	185.90	390.64	72,619.98	0.24%	0.63%	0.00%	10.00%	0.02%
Booking Holdings Inc	BKNG	41.06	2,101.85	86,308.27	0.29%	n/a		14.00%	0.04%
F5 Inc	FFIV	61.23	227.58	13,934.50	0.05%	n/a		7.00%	0.00%
Akamai Technologies Inc	AKAM	162.48	112.70	18,311.50	0.06%	n/a		9.50%	0.01%
Charles River Laboratories International Inc	CRL	50.46	365.87	18,463.26	0.06%	n/a		7.00%	0.00%
MarketAxess Holdings Inc	MKTX	38.03	352.69	13,411.39	0.04%	0.75%	0.00%	14.00%	0.01%
Devon Energy Corp	DVN	677.00	42.06	28,474.62		7.99%		n/a	
Alphabet Inc	GOOGL	300.81	2,837.95	853,683.74		n/a		n/a	
Bio-Techne Corp	TECH	39.30	472.03	18,548.42	0.06%	0.27%	0.00%	13.00%	0.01%
Teleflex Inc	TFX	46.85	297.42	13,932.64	0.05%	0.46%	0.00%	15.00%	0.01%
Netflix Inc	NFLX	442.95	641.90	284,330.89		n/a		23.50%	
Allegiant plc	ALLE	89.70	123.64	11,090.01	0.04%	1.16%	0.00%	9.50%	0.00%
Agilent Technologies Inc	A	302.00	150.90	45,571.80	0.15%	0.56%	0.00%	12.50%	0.02%
Anthem Inc	ANTM	242.72	406.23	98,598.11	0.33%	1.11%	0.00%	13.00%	0.04%
Trimble Inc	TRMB	251.01	85.87	21,554.06	0.07%	n/a		14.00%	0.01%
CME Group Inc	CME	359.40	220.52	79,254.01	0.26%	1.63%	0.00%	8.50%	0.02%
Juniper Networks Inc	JNPR	325.18	31.13	10,122.88	0.03%	2.57%	0.00%	7.00%	0.00%
BlackRock Inc	BLK	151.92	904.61	137,425.64	0.45%	1.83%	0.01%	11.00%	0.05%
DTE Energy Co	DTE	193.75	108.34	20,991.09	0.07%	3.27%	0.00%	2.00%	0.00%
Nasdaq Inc	NASDAQ	167.22	203.23	33,984.53	0.11%	1.06%	0.00%	6.50%	0.01%
Celanese Corp	CE	108.87	151.36	16,478.71	0.05%	1.80%	0.00%	6.50%	0.00%
Philip Morris International Inc	PM	1,556.83	85.94	133,793.80	0.44%	5.82%	0.03%	7.00%	0.03%
salesforce.com Inc	CRM	979.00	284.96	278,975.84	0.92%	n/a		20.00%	0.18%
Ingersoll Rand Inc	IR	407.59	58.34	23,778.51		0.14%		n/a	
Huntington Ingalls Industries Inc	HII	40.06	177.51	7,111.23	0.02%	2.66%	0.00%	7.00%	0.00%
MetLife Inc	MET	841.16	58.66	49,342.45	0.16%	3.27%	0.01%	6.50%	0.01%
Under Armour Inc	UA	253.02	20.07	5,078.09		n/a		n/a	
Tapestry Inc	TPR	275.14	40.12	11,038.74	0.04%	2.49%	0.00%	10.00%	0.00%
CSX Corp	CSX	2,217.98	34.66	76,875.29	0.25%	1.08%	0.00%	11.50%	0.03%
Edwards Lifesciences Corp	EW	624.33	107.31	66,997.28	0.22%	n/a		13.00%	0.03%
Ameriprise Financial Inc	AMP	111.89	289.60	32,403.34	0.11%	1.56%	0.00%	13.50%	0.01%
Zebra Technologies Corp	ZBRA	53.44	588.78	31,464.99	0.10%	n/a		13.00%	0.01%
Zimmer Biomet Holdings Inc	ZBH	208.91	119.60	24,985.40	0.08%	0.80%	0.00%	8.50%	0.01%
CBRE Group Inc	CBRE	334.67	95.57	31,984.03	0.11%	n/a		10.50%	0.01%
Mastercard Inc	MA	974.71	314.92	306,955.36	1.02%	0.62%	0.01%	13.00%	0.13%
CarMax Inc	KMX	162.11	141.25	22,898.46	0.08%	n/a		12.50%	0.01%
Intercontinental Exchange Inc	ICE	563.40	130.72	73,648.17	0.24%	1.01%	0.00%	8.00%	0.02%
Fidelity National Information Services Inc	FIS	608.94	104.50	63,633.92		1.49%		28.00%	
Chipotle Mexican Grill Inc	CMG	28.14	1,643.41	46,237.34		n/a		22.00%	
Wynn Resorts Ltd	WYNN	115.66	81.01	9,369.45		n/a		27.00%	
Live Nation Entertainment Inc	LYV	224.66	106.65	23,959.99		n/a		n/a	
Assurant Inc	AIZ	56.98	152.10	8,666.20	0.03%	1.79%	0.00%	15.50%	0.00%
NRG Energy Inc	NRG	244.84	36.02	8,819.10		3.61%		-1.50%	
Regions Financial Corp	RF	953.28	22.75	21,687.19	0.07%	2.99%	0.00%	9.50%	0.01%
Monster Beverage Corp	MNST	529.14	83.78	44,331.27	0.15%	n/a		11.50%	0.02%
Mosaic Co/The	MOS	370.41	34.22	12,675.43		0.88%		33.50%	
Expedia Group Inc	EXPE	146.00	161.09	23,519.78		n/a		n/a	
Evergy Inc	EVRG	226.99	63.30	14,368.66	0.05%	3.62%	0.00%	8.00%	0.00%
Discovery Inc	DISCA	169.21	23.27	3,937.45	0.01%	n/a		13.50%	0.00%
CF Industries Holdings Inc	CF	214.48	60.59	12,995.04	0.04%	1.98%	0.00%	19.50%	0.01%
Leidos Holdings Inc	LDOS	140.34	87.91	12,337.20	0.04%	1.64%	0.00%	9.00%	0.00%
APA Corp	APA	363.27	25.77	9,361.57		1.94%		n/a	
Alphabet Inc	GOOG	317.74	2,849.04	905,248.27		n/a		23.50%	
TE Connectivity Ltd	TEL	326.31	153.93	50,229.36	0.17%	1.30%	0.00%	9.00%	0.01%
Cooper Cos Inc/The	COO	49.30	376.47	18,561.48	0.06%	0.02%	0.00%	19.00%	0.01%
Discover Financial Services	DFS	293.08	107.85	31,608.25	0.10%	1.85%	0.00%	16.00%	0.02%
Visa Inc	V	1,669.73	193.77	323,543.78	1.07%	0.77%	0.01%	12.00%	0.13%
Mid-America Apartment Communities Inc	MAA	115.14	206.25	23,747.21	0.08%	1.99%	0.00%	9.00%	0.01%
Xylem Inc/NY	XYL	180.33	121.11	21,839.16	0.07%	0.92%	0.00%	6.50%	0.00%
Marathon Petroleum Corp	MPC	615.59	60.85	37,458.53		3.81%		n/a	
Tractor Supply Co	TSCO	113.82	225.33	25,645.93	0.08%	0.92%	0.00%	11.00%	0.01%
Advanced Micro Devices Inc	AMD	1,207.61	158.37	191,249.20		n/a		29.00%	
ResMed Inc	RMD	145.72	254.85	37,137.51	0.12%	0.66%	0.00%	8.50%	0.01%
Mettler-Toledo International Inc	MTD	22.99	1,514.13	34,803.79	0.12%	n/a		12.50%	0.01%
Copart Inc	CPRT	237.19	145.16	34,430.21	0.11%	n/a		12.00%	0.01%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[4] Shares Outstg	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Value Line Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
Albemarle Corp	ALB	116.98	266.49	31,172.93	0.10%	0.59%	0.00%	6.50%	0.01%
Fortinet Inc	FTNT	163.50	332.11	54,299.99		n/a		21.00%	
Moderna Inc	MRNA	405.45	352.43	142,892.74		n/a		n/a	
Essex Property Trust Inc	ESS	65.09	339.44	22,093.47		2.46%		-0.50%	
Realty Income Corp	O	565.81	67.92	38,430.02	0.13%	4.35%	0.01%	6.50%	0.01%
Westrock Co	WRK	265.00	43.39	11,498.44	0.04%	2.30%	0.00%	8.00%	0.00%
IHS Markit Ltd	INFO	398.84	127.82	50,979.86	0.17%	0.63%	0.00%	10.50%	0.02%
Westinghouse Air Brake Technologies Corp	WAB	188.82	88.77	16,584.10	0.05%	0.54%	0.00%	9.50%	0.01%
Pool Corp	POOL	40.09	554.12	22,213.56	0.07%	0.58%	0.00%	17.00%	0.01%
Western Digital Corp	WDC	311.62	57.84	18,024.27	0.06%	n/a		1.00%	0.00%
PepsiCo Inc	PEP	1,382.65	159.78	220,920.30	0.73%	2.69%	0.02%	6.50%	0.05%
Diamondback Energy Inc	FANG	181.18	106.73	19,336.81		1.87%		n/a	
ServiceNow Inc	NOW	199.00	647.70	128,892.30		n/a		44.50%	
Church & Dwight Co Inc	CHD	244.15	89.38	21,821.95	0.07%	1.13%	0.00%	8.00%	0.01%
Duke Realty Corp	DRE	380.85	58.33	22,214.98		1.92%		-1.00%	
Federal Realty Investment Trust	FRT	77.79	122.67	9,542.38	0.03%	3.49%	0.00%	1.00%	0.00%
MGM Resorts International	MGM	468.96	39.58	18,561.44		0.03%		25.00%	
American Electric Power Co Inc	AEP	503.65	81.05	40,820.99	0.14%	3.85%	0.01%	6.50%	0.01%
PTC Inc	PTC	117.87	109.58	12,916.41		n/a		n/a	
JB Hunt Transport Services Inc	JBHT	105.01	191.16	20,074.48	0.07%	0.63%	0.00%	10.00%	0.01%
Lam Research Corp	LRCX	140.80	679.85	95,722.20	0.32%	0.88%	0.00%	17.50%	0.06%
Mohawk Industries Inc	MHK	67.73	167.87	11,370.17	0.04%	n/a		10.50%	0.00%
Pentair PLC	PNR	165.48	73.69	12,194.07	0.04%	1.09%	0.00%	12.00%	0.00%
Vertex Pharmaceuticals Inc	VRTX	254.25	186.94	47,529.87	0.16%	n/a		18.50%	0.03%
Amcor PLC	AMCR	1,533.17	11.32	17,355.47	0.06%	4.24%	0.00%	15.00%	0.01%
Meta Platforms Inc	FB	2,366.28	324.46	767,762.56		n/a		21.50%	
T-Mobile US Inc	TMUS	1,249.05	108.81	135,909.57	0.45%	n/a		8.50%	0.04%
United Rentals Inc	URI	72.39	338.74	24,522.74	0.08%	n/a		10.50%	0.01%
ABIOMED Inc	ABMD	45.50	314.78	14,321.55	0.05%	n/a		9.50%	0.00%
Honeywell International Inc	HON	688.42	202.24	139,226.67	0.46%	1.94%	0.01%	10.00%	0.05%
Alexandria Real Estate Equities Inc	ARE	154.96	200.07	31,003.65	0.10%	2.24%	0.00%	12.00%	0.01%
Delta Air Lines Inc	DAL	640.01	36.20	23,168.51		n/a		49.00%	
Seagate Technology Holdings PLC	STX	222.64	102.67	22,858.04	0.08%	2.73%	0.00%	4.00%	0.00%
United Airlines Holdings Inc	UAL	323.61	42.26	13,675.80		n/a		n/a	
News Corp	NWS	199.63	21.55	4,302.03		0.93%		n/a	
Centene Corp	CNC	583.50	71.41	41,667.95	0.14%	n/a		9.50%	0.01%
Martin Marietta Materials Inc	MLM	62.38	403.51	25,171.76	0.08%	0.60%	0.00%	7.00%	0.01%
Teradyne Inc	TER	163.00	152.87	24,918.42	0.08%	0.26%	0.00%	13.50%	0.01%
PayPal Holdings Inc	PYPL	1,174.93	184.89	217,232.81	0.72%	n/a		16.00%	0.12%
Tesla Inc	TSLA	1,004.27	1,144.76	1,149,642.40		n/a		n/a	
DISH Network Corp	DISH	290.36	31.25	9,073.66	0.03%	n/a		2.50%	0.00%
Dow Inc	DOW	739.61	54.93	40,627.00		5.10%		n/a	
Penn National Gaming Inc	PENN	169.51	51.23	8,684.20		n/a		30.00%	
Everest Re Group Ltd	RE	39.37	256.38	10,093.42	0.03%	2.42%	0.00%	11.00%	0.00%
Teledyne Technologies Inc	TDY	46.66	415.29	19,375.35	0.06%	n/a		15.00%	0.01%
News Corp	NWSA	393.04	21.62	8,497.48		0.93%		n/a	
Exelon Corp	EXC	976.76	52.73	51,504.55	0.17%	2.90%	0.00%	5.50%	0.01%
Global Payments Inc	GPN	290.15	119.04	34,539.58	0.11%	0.84%	0.00%	16.50%	0.02%
Crown Castle International Corp	CCI	432.20	181.65	78,509.67	0.26%	3.24%	0.01%	8.50%	0.02%
Aptiv PLC	APTIV	270.51	160.35	43,376.92	0.14%	n/a		15.50%	0.02%
Advance Auto Parts Inc	AAP	62.36	220.72	13,763.00	0.05%	1.81%	0.00%	11.00%	0.01%
Align Technology Inc	ALGN	78.85	611.53	48,220.98	0.16%	n/a		17.00%	0.03%
Illumina Inc	ILMN	156.30	365.33	57,101.08	0.19%	n/a		10.00%	0.02%
LKQ Corp	LKQ	291.49	55.90	16,294.35	0.05%	1.79%	0.00%	12.00%	0.01%
Nielsen Holdings PLC	NLSN	358.93	19.16	6,877.04		1.25%		n/a	
Garmin Ltd	GRMN	192.32	133.54	25,682.68	0.08%	2.01%	0.00%	10.00%	0.01%
Zoetis Inc	ZTS	473.13	222.04	105,052.90	0.35%	0.45%	0.00%	11.00%	0.04%
Equinix Inc	EQIX	90.04	812.20	73,131.30	0.24%	1.41%	0.00%	17.00%	0.04%
Digital Realty Trust Inc	DLR	283.79	167.74	47,602.43	0.16%	2.77%	0.00%	8.00%	0.01%
Las Vegas Sands Corp	LVS	763.99	35.62	27,213.32	0.09%	n/a		17.00%	0.02%
Discovery Inc	DISCK	330.15	22.71	7,497.62		n/a		n/a	

Notes:

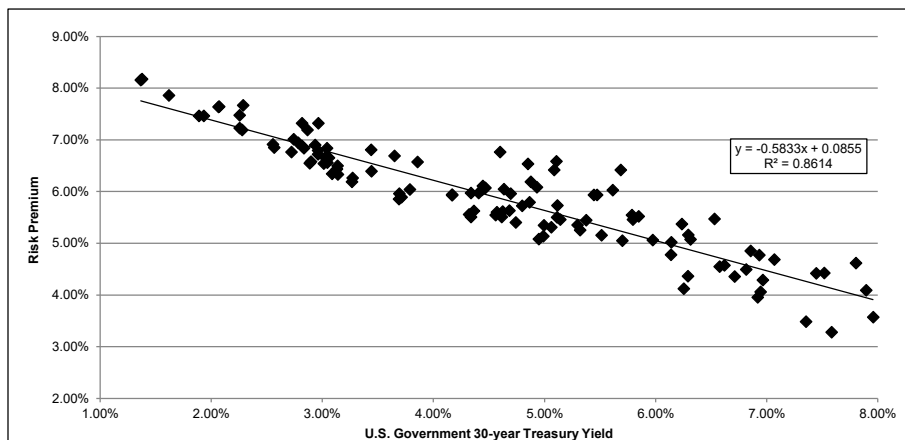
- [1] Equals sum of Col. [9]
- [2] Equals sum of Col. [11]
- [3] Equals  $([1] \times (1 + (0.5 \times [2]))) + [2]$
- [4] Source: Bloomberg Professional as of November 30, 2021
- [5] Source: Bloomberg Professional as of November 30, 2021
- [6] Equals [4] x [5]
- [7] Equals weight in S&P 500 based on market capitalization [6] if Growth Rate >0% and <20%
- [8] Source: Bloomberg Professional, as of November 30, 2021
- [9] Equals [7] x [8]
- [10] Source: Value Line, as of November 30, 2021
- [11] Equals [7] x [10]

Risk Premium -- Natural Gas Utilities

	[1]	[2]	[3]
	Average Authorized Gas ROE	U.S. Govt. 30-year Treasury	Risk Premium
1992.1	12.42%	7.80%	4.62%
1992.2	11.98%	7.89%	4.09%
1992.3	11.87%	7.45%	4.42%
1992.4	11.94%	7.52%	4.42%
1993.1	11.75%	7.07%	4.68%
1993.2	11.71%	6.86%	4.85%
1993.3	11.39%	6.31%	5.07%
1993.4	11.16%	6.14%	5.02%
1994.1	11.12%	6.57%	4.55%
1994.2	10.84%	7.35%	3.48%
1994.3	10.87%	7.58%	3.28%
1994.4	11.53%	7.96%	3.57%
1995.2	11.00%	6.94%	4.06%
1995.3	11.07%	6.71%	4.35%
1995.4	11.61%	6.23%	5.37%
1996.1	11.45%	6.29%	5.16%
1996.2	10.88%	6.92%	3.96%
1996.3	11.25%	6.96%	4.29%
1996.4	11.19%	6.62%	4.58%
1997.1	11.31%	6.81%	4.49%
1997.2	11.70%	6.93%	4.77%
1997.3	12.00%	6.53%	5.47%
1997.4	10.92%	6.14%	4.78%
1998.2	11.37%	5.85%	5.52%
1998.3	11.41%	5.47%	5.94%
1998.4	11.69%	5.10%	6.59%
1999.1	10.82%	5.37%	5.44%
1999.2	11.25%	5.79%	5.46%
1999.4	10.38%	6.25%	4.12%
2000.1	10.66%	6.29%	4.36%
2000.2	11.03%	5.97%	5.06%
2000.3	11.33%	5.79%	5.55%
2000.4	12.10%	5.69%	6.41%
2001.1	11.38%	5.44%	5.93%
2001.2	10.75%	5.70%	5.05%
2001.4	10.65%	5.30%	5.35%
2002.1	10.67%	5.51%	5.15%
2002.2	11.64%	5.61%	6.03%
2002.3	11.50%	5.08%	6.42%
2002.4	11.01%	4.93%	6.08%
2003.1	11.38%	4.85%	6.53%
2003.2	11.36%	4.60%	6.76%
2003.3	10.61%	5.11%	5.50%
2003.4	10.84%	5.11%	5.73%
2004.1	11.06%	4.88%	6.18%
2004.2	10.57%	5.32%	5.25%
2004.3	10.37%	5.06%	5.31%
2004.4	10.66%	4.86%	5.79%
2005.1	10.65%	4.69%	5.96%
2005.2	10.54%	4.47%	6.07%
2005.3	10.47%	4.44%	6.03%
2005.4	10.32%	4.68%	5.63%
2006.1	10.68%	4.63%	6.05%
2006.2	10.60%	5.14%	5.46%
2006.3	10.34%	4.99%	5.34%
2006.4	10.14%	4.74%	5.40%
2007.1	10.52%	4.80%	5.72%
2007.2	10.13%	4.99%	5.14%
2007.3	10.03%	4.95%	5.08%
2007.4	10.12%	4.61%	5.50%
2008.1	10.38%	4.41%	5.97%
2008.2	10.17%	4.57%	5.60%
2008.3	10.55%	4.44%	6.11%
2008.4	10.34%	3.65%	6.69%
2009.1	10.24%	3.44%	6.81%
2009.2	10.11%	4.17%	5.94%
2009.3	9.88%	4.32%	5.56%
2009.4	10.31%	4.34%	5.97%
2010.1	10.24%	4.62%	5.61%
2010.2	9.99%	4.36%	5.62%
2010.3	10.43%	3.86%	6.57%
2010.4	10.09%	4.17%	5.93%
2011.1	10.10%	4.56%	5.54%
2011.2	9.85%	4.34%	5.51%
2011.3	9.65%	3.69%	5.96%
2011.4	9.88%	3.04%	6.84%
2012.1	9.63%	3.14%	6.50%
2012.2	9.83%	2.93%	6.90%
2012.3	9.75%	2.74%	7.01%
2012.4	10.06%	2.86%	7.19%

Risk Premium -- Natural Gas Utilities

	[1]	[2]	[3]
	Average Authorized Gas ROE	U.S. Govt. 30-year Treasury	Risk Premium
2013.1	9.57%	3.13%	6.44%
2013.2	9.47%	3.14%	6.33%
2013.3	9.60%	3.71%	5.89%
2013.4	9.83%	3.79%	6.04%
2014.1	9.54%	3.69%	5.85%
2014.2	9.84%	3.44%	6.39%
2014.3	9.45%	3.26%	6.19%
2014.4	10.28%	2.96%	7.32%
2015.1	9.47%	2.55%	6.91%
2015.2	9.43%	2.88%	6.55%
2015.3	9.75%	2.96%	6.79%
2015.4	9.68%	2.96%	6.72%
2016.1	9.48%	2.72%	6.76%
2016.2	9.42%	2.57%	6.85%
2016.3	9.47%	2.28%	7.19%
2016.4	9.67%	2.83%	6.84%
2017.1	9.60%	3.04%	6.56%
2017.2	9.47%	2.90%	6.58%
2017.3	10.14%	2.82%	7.32%
2017.4	9.70%	2.82%	6.88%
2018.1	9.68%	3.02%	6.66%
2018.2	9.43%	3.09%	6.34%
2018.3	9.71%	3.06%	6.65%
2018.4	9.53%	3.27%	6.26%
2019.1	9.55%	3.01%	6.54%
2019.2	9.73%	2.78%	6.94%
2019.3	9.95%	2.29%	7.66%
2019.4	9.73%	2.25%	7.48%
2020.1	9.35%	1.89%	7.46%
2020.2	9.55%	1.38%	8.17%
2020.3	9.52%	1.37%	8.15%
2020.4	9.47%	1.62%	7.86%
2021.1	9.71%	2.07%	7.64%
2021.2	9.48%	2.25%	7.22%
2021.3	9.40%	1.93%	7.46%
2021.4	9.70%	2.06%	7.64%
AVERAGE	10.45%	4.54%	5.90%
MEDIAN	10.34%	4.61%	5.95%



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.928097
R Square	0.861364
Adjusted R Square	0.860147
Standard Error	0.003878
Observations	116

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	0.010654	0.010654	708.294437	0.000000
Residual	114	0.001715	0.000015		
Total	115	0.012369			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.08552	0.00106	80.76	0.000000	0.083425	0.087620	0.083425	0.087620
U.S. Govt. 30-year Treasury	(0.58330)	0.02192	(26.61)	0.000000	(0.626714)	(0.539879)	(0.626714)	(0.539879)

	[7]	[8]	[9]
	U.S. Govt. 30-year Treasury	Risk Premium	ROE
Current 30-day average of 30-year U.S. Treasury bond yield [4]	1.97%	7.40%	9.37%
Blue Chip Near-Term Projected Forecast (Q1 2022 - Q1 2023) [5]	2.46%	7.12%	9.58%
Blue Chip Long-Term Projected Forecast (2023-2027) [6]	3.40%	6.57%	9.97%
<b>AVERAGE</b>			<b>9.64%</b>

Notes:

- [1] Source: Regulatory Research Associates, rate cases through November 30, 2021
- [2] Source: Bloomberg Professional, quarterly bond yields are the average of each trading day in the quarter
- [3] Equals Column [1] - Column [2]
- [4] Source: Bloomberg Professional, 30-day average as of November 30, 2021
- [5] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 2
- [6] Source: Blue Chip Financial Forecasts, Vol. 40, No. 12, December 1, 2021, at 14
- [7] See notes [4], [5] & [6]
- [8] Equals 0.085522 + (-0.583297 x Column [7])
- [9] Equals Column [7] + Column [8]



EXPECTED EARNINGS ANALYSIS

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
		Value Line ROE 2024-2026	Value Line Total Capital 2020	Value Line Common Equity Ratio 2020	Total Equity 2020	Value Line Total Capital 2024-2026	Value Line Common Equity Ratio 2024-2026	Total Equity 2024-2026	Compound Annual Growth Rate	Adjustment Factor	Adjusted Return on Common Equity
American States Water Company	AWR	13.00%	1216	52.80%	642	1,620	46.50%	753	3.24%	1.016	13.21%
Atmos Energy Corporation	ATO	7.50%	11323	60.00%	6,794	22,700	60.00%	13,620	14.92%	1.069	8.02%
California Water Service Group	CWT	11.50%	1702	54.10%	921	1,825	59.00%	1,077	3.17%	1.016	11.68%
Essential Utilities, Inc.	WTRG	8.50%	10192	46.00%	4,688	14,500	45.00%	6,525	6.83%	1.033	8.78%
Eversource Energy	ES	9.50%	29842	47.10%	14,056	40,200	44.50%	17,889	4.94%	1.024	9.73%
Middlesex Water Company	MSEX	13.00%	622	55.70%	346	630	60.00%	378	1.77%	1.009	13.11%
NiSource Inc.	NI	11.00%	15058	32.90%	4,954	18,180	40.00%	7,272	7.98%	1.038	11.42%
New Jersey Resources Corporation	NJR	10.00%	4104	44.90%	1,843	5,215	46.50%	2,425	5.64%	1.027	10.27%
Northwest Natural Gas Company	NWN	7.00%	1749	50.80%	888	2,550	57.00%	1,454	10.35%	1.049	7.34%
ONE Gas, Inc.	OGS	6.50%	3816	58.50%	2,232	8,000	53.00%	4,240	13.69%	1.064	6.92%
SJW Group	SJW	9.00%	2205	41.60%	917	1,975	62.00%	1,225	5.95%	1.029	9.26%
South Jersey Industries, Inc.	SJI	13.00%	4437	37.40%	1,660	6,425	37.50%	2,409	7.74%	1.037	13.48%
Spire, Inc.	SR	7.50%	4946	51.00%	2,522	7,500	55.00%	4,125	10.34%	1.049	7.87%
York Water Company	YORW	13.00%	267	53.70%	143	265	62.50%	166	2.94%	1.014	13.19%
Mean											10.31%
Median											10.00%

Notes:

[1] Source: Value Line, October 8, 2021, November 12, 2021, and November 26, 2021

[2] Source: Value Line, October 8, 2021, November 12, 2021, and November 26, 2022

[3] Source: Value Line, October 8, 2021, November 12, 2021, and November 26, 2023

[4] Equals [2] x [3]

[5] Source: Value Line, October 8, 2021, November 12, 2021, and November 26, 2021

[6] Source: Value Line, October 8, 2021, November 12, 2021, and November 26, 2021

[7] Equals [5] x [6]

[8] Equals  $([7] / [4])^{(1/5)} - 1$

[9] Equals  $2 \times (1 + [8]) / (2 + [8])$

[10] Equals [1] x [9]

COMPARISON OF NJAWC AND PROXY GROUP COMPANIES  
RISK ASSESSMENT

Company	Ticker	State	Utility Type	Revenue Requirement Test Year	Rate Base Valuation	Infrastructure Cost Recovery Mechanism	Revenue Stabilization or Decoupling	Citations			
American States Water Co	AWR	California	Water	Fully Forecast	Average	Yes	Full	2020 10-K, page 50 (test year), 39 (Decoupling), 27-28 (capital tracker); S&P Global Market Intelligence, Commission Profiles (Rate Base Valuation).			
	AWR	California	Electric	Fully Forecast	Average	Yes	Full				
Atmos Energy Corporation	ATO	Colorado	Gas	Historical	Average	Yes	No	2020 10-K, pages 7-8, 10; S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated November 12, 2019; S&P Global - Market Intelligence Rate Case History (Past Rate Cases), accessed 11/18/21; Atmos - Louisiana Tariff; Atmos - Mississippi Tariff; Atmos - Tennessee Tariff; Atmos - Texas Tariff; Atmos - Virginia Tariff; Atmos VA - Case			
	ATO	Kansas	Gas	Historical	Year End	Yes	Partial				
	ATO	Kentucky	Gas	Fully Forecast	Average	Yes	Partial				
	ATO	Louisiana	Gas	Historical	Year End	Yes	FRP				
	ATO	Mississippi	Gas	Partially Forecast	Average	Yes	FRP				
	ATO	Tennessee	Gas	Historical	Year End	Yes	FRP				
	ATO	Texas	Gas	Historical	Year End	Yes	FRP				
	ATO	Virginia	Gas	Historical	Year End	Yes	Partial				
California Water Service Group	CWT	California	Water	Fully Forecast	Average	Yes	Full	2020 10-K, page 8-12; S&P Global Market Intelligence, Commission Profiles; Kona Water Service, Docket No. 2018-0388, Order No. 37124; Washington Water Tariff; New Mexico			
	CWT	Hawaii	Water	Fully Forecast	Average	No	No				
	CWT	New Mexico	Water	Historical	Year End	No	No				
	CWT	Washington	Water	Historical	Year End	Yes	No				
Essential Utilities, Inc.	WTRG	Pennsylvania	Water	Fully Forecast	Year End	Yes	No	2020 10-K, page 8-9; S&P Global Market Intelligence, Commission Profiles.			
	WTRG	Pennsylvania	Gas	Fully Forecast	Year End	Yes	No				
	WTRG	Ohio	Water	Partially Forecast	Year End	Yes	No				
	WTRG	Illinois	Water	Fully Forecast	Average	Yes	Full				
	WTRG	Texas	Water	Historical	Year End	No	No				
	WTRG	New Jersey	Water	Partially Forecast	Year End	Yes	No				
	WTRG	North Carolina	Water	Historical	Year End	Yes	No				
	WTRG	Indiana	Water	Fully Forecast	Year End	Yes	No				
	WTRG	Virginia	Water	Historical	Year End	Yes	No				
	WTRG	Kentucky	Gas	Fully Forecast	Average	Yes	Partial				
	WTRG	West Virginia	Gas	Historical	Average	No	No				
Eversource Energy	ES	Connecticut	Electric	Fully Forecast	Average	Yes	Full	S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated November 12, 2019; S&P Global Market Intelligence, Commission Profiles; S&P Global - Market Intelligence Rate Case History (Past Rate Cases), accessed 11/18/21; 2020 10-K, page 11-			
	ES	Connecticut	Gas	Fully Forecast	Average	Yes	Full				
	ES	Connecticut	Water	Fully Forecast	Average	Yes	Full				
	ES	Massachusetts	Electric	Historical	Year End	Yes	Full				
	ES	Massachusetts	Gas	Historical	Year End	Yes	Full				
	ES	Massachusetts	Water	Historical	Year End	Yes	No				
	ES	New Hampshire	Electric	Historical	Year End	Yes	Partial				
	ES	New Hampshire	Water	Historical	Year End	Yes	No				
Middlesex Water Company	MSEX	New Jersey	Water	Partially Forecast	Year End	Yes	No	S&P Global Market Intelligence, Commission Profiles; Middlesex Water Company, Twin Lake Utilities, and Tidewater Utilities Tariffs.			
	MSEX	Delaware	Water	Historical	Average	Yes	No				
	MSEX	Pennsylvania	Water	Fully Forecast	Year End	No	No				
NiSource Inc.	NI	Indiana	Electric	Fully Forecast	Year End	Yes	Partial	S&P Global - Market Intelligence Rate Case History (Past Rate Cases), accessed 11/18/21; S&P Global Market Intelligence, Commission Profiles; S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated November 12, 2019;			
	NI	Indiana	Gas	Fully Forecast	Year End	Yes	No				
	NI	Kentucky	Gas	Fully Forecast	Average	Yes	Partial				
	NI	Maryland	Gas	Partially Forecast	Average	Yes	Partial				
	NI	Ohio	Gas	Partially Forecast	Year End	Yes	SFV				
	NI	Pennsylvania	Gas	Fully Forecast	Year End	Yes	Partial				
	NI	Virginia	Gas	Historical	Average	Yes	Partial				
									S&P Global - Market Intelligence Rate Case History (Past Rate Cases), accessed 11/18/21; S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated November 12, 2019.		
New Jersey Resources Corporation	NJR	New Jersey	Gas	Partially Forecast	Year End	Yes	Full				
Northwest Natural Gas Company	NWN	Oregon	Gas	Fully Forecast	Average	No	Partial	S&P Global - Market Intelligence Rate Case History (Past Rate Cases), accessed 11/18/21; S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated November			
	NWN	Washington	Gas	Historical	Average	No	No				
ONE Gas, Inc.	OGS	Kansas	Gas	Historical	Year End	Yes	Partial	S&P Global - Market Intelligence Rate Case History (Past Rate Cases), accessed 11/18/21; S&P Global Market Intelligence, Commission Profiles; S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated November 12, 2019			
	OGS	Oklahoma	Gas	Historical	Year End	No	Partial				
	OGS	Texas	Gas	Historical	Year End	Yes	Partial				
SJW Group	SJW	California	Water	Fully Forecast	Average	Yes	No	2020 10-K, pages 5-9; S&P Global Market Intelligence, Commission Profiles.			
	SJW	Connecticut	Water	Fully Forecast	Average	Yes	Full				
	SJW	Maine	Water	Partially Forecast	Average	Yes	No				
	SJW	Texas	Water	Historical	Year End	No	No				
South Jersey Industries, Inc.	SJI	New Jersey (SJI)	Gas	Partially Forecast	Year End	Yes	Full	S&P Global - Market Intelligence Rate Case History (Past Rate Cases), accessed 11/18/21; S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated November			
	SJI	New Jersey (ET)	Gas	Partially Forecast	Year End	Yes	Partial				
Spire, Inc.	SR	Alabama	Gas	Fully Forecast	Average	Yes	FRP	Spire Alabama and Mississippi Tariffs, 2020 10-K pages 128-132; S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated November 12, 2019; S&P Global - Market Intelligence Rate Case History (Past Rate Cases), accessed 11/18/21.			
	SR	Mississippi	Gas	Historical	Year End	No	FRP				
	SR	Missouri - East	Gas	Historical	Year End	Yes	Partial				
	SR	Missouri - West	Gas	Historical	Year End	Yes	No				
York Water Company	YORW	Pennsylvania	Water	Fully Forecast	Year End	Yes	No	S&P Global Market Intelligence, Commission Profiles; 2020 10-K, page 41.			
Proxy Group Totals				Fully Forecast	23	Year End	37	Yes	50	Full	12
				Partially Forecast	10	Average	23	No	10	Partial	16
				Historical	27					FRP	6
										SFV	1
										No	25
				Forecast	55.00%	Year End	61.67%	CCRM	83.33%	NVRD	58.33%
NJAWC		New Jersey	Water	Partially Forecast		Year End		Yes		No	

CAPITAL STRUCTURE ANALYSIS

COMMON EQUITY RATIO [1]				
Proxy Group Company	Ticker	2020	2019	MRY
American States Water Company	AWR	56.76%	65.94%	56.76%
Atmos Energy Corporation	ATO	58.31%	58.43%	58.31%
California Water Service Group	CWT	52.23%	46.73%	52.23%
Essential Utilities, Inc.	WTRG	55.83%	54.82%	55.83%
Eversource Energy	ES	54.99%	54.39%	54.99%
Middlesex Water Company	MSEX	59.21%	62.71%	59.21%
NiSource Inc.	NI	54.43%	54.33%	54.43%
New Jersey Resources Corporation	NJR	55.45%	58.87%	55.45%
Northwest Natural Gas Company	NWN	47.44%	49.19%	47.44%
One Gas Inc.	OGS	60.04%	63.28%	60.04%
SJW Corporation	SJW	56.03%	55.13%	56.03%
South Jersey Industries, Inc.	SJI	54.73%	52.88%	54.73%
Spire Inc.	SR	58.52%	60.85%	58.52%
York Water Company	YORW	53.27%	56.50%	53.27%
<b>Proxy Group</b>				
MEAN		55.52%	56.72%	55.52%
LOW		47.44%	46.73%	47.44%
HIGH		60.04%	65.94%	60.04%

COMMON EQUITY RATIO - UTILITY OPERATING COMPANIES				
Company Name	Ticker	2020	2019	MRY
Golden State Water / Bear Valley	AWR	56.76%	65.94%	56.76%
Atmos Energy Corporation	ATO	58.31%	58.43%	58.31%
California Water Service	CWT	51.34%	46.46%	51.34%
New Mexico Water Service Water Division	CWT	67.06%	65.26%	67.06%
New Mexico Water Service Sewer Division	CWT	59.47%	56.79%	59.47%
Washington Water Service	CWT	71.93%	52.53%	71.93%
Hawaii Water Service Kaanapali Division	CWT	46.93%	49.76%	48.93%
Hawaii Water Service Pukalani Division	CWT	64.56%	65.06%	64.56%
Aqua Pennsylvania Water	WTRG	51.14%	51.03%	51.14%
Aqua Pennsylvania Wastewater	WTRG	97.07%	95.39%	97.07%
Peoples Natural Gas Company	WTRG	61.48%	56.71%	61.48%
Peoples Gas Company	WTRG	79.59%	71.96%	79.59%
Aqua Ohio Water	WTRG	64.62%	61.27%	64.62%
Aqua Ohio Wastewater	WTRG	72.82%	60.35%	72.82%
Aqua Illinois	WTRG	54.57%	57.96%	54.57%
Aqua Texas	WTRG	50.17%	48.96%	50.17%
Aqua New Jersey, Inc. Water	WTRG	50.28%	59.64%	50.28%
Aqua New Jersey, Inc. Wastewater	WTRG	100.00%	100.00%	100.00%
Aqua North Carolina	WTRG	50.62%	50.65%	50.62%
Aqua Indiana Aboite Division	WTRG	100.00%	100.00%	100.00%
Aqua Indiana Consumers Indiana Div.	WTRG	100.00%	100.00%	100.00%
Aqua Indiana Darlington Div.	WTRG	100.00%	100.00%	100.00%
Aqua Indiana Heir Division	WTRG	100.00%	100.00%	100.00%
Aqua Indiana Sani Tech, Inc.	WTRG	100.00%	100.00%	100.00%
Aqua Indiana Southeastern Utilities	WTRG	100.00%	100.00%	100.00%
Aqua Indiana Wedgewood Park	WTRG	100.00%	100.00%	100.00%
Aqua Indiana White Oak Div.	WTRG	100.00%	100.00%	100.00%
Aqua Indiana Wildwood Shores Div.	WTRG	100.00%	100.00%	100.00%
Aqua Indiana Wymberly Division	WTRG	100.00%	100.00%	100.00%
Aqua Virginia	WTRG	55.23%	49.44%	55.23%
Delta Gas	WTRG	56.93%	60.20%	56.93%
Peoples Gas of WV	WTRG	48.44%	48.10%	48.44%
Connecticut Light and Power Company	ES	55.42%	54.53%	55.42%
Yankee Gas Company	ES	61.97%	60.83%	61.97%
Aquarion Water Company	ES	58.76%	56.60%	58.76%
NSTAR Electric Company	ES	54.95%	55.00%	54.95%
NSTAR Gas Company	ES	55.54%	55.53%	55.54%
Aquarion Water Company	ES	58.76%	56.60%	58.76%
Public Service Company of NH	ES	48.66%	47.77%	48.66%
Aquarion Water Company	ES	58.76%	56.60%	58.76%
Middlesex Water Company	MSEX	59.03%	62.54%	59.03%
Pinelands Water	MSEX	100.00%	100.00%	100.00%
Pinelands WW	MSEX	100.00%	100.00%	100.00%
Twin Lakes Util.	MSEX		100.00%	100.00%
Northern Indiana Public Service Company LLC	NI	58.01%	56.43%	58.01%
Columbia Gas of Kentucky, Inc.	NI	54.68%	54.23%	54.68%
Columbia Gas of Maryland, Inc.	NI	54.95%	52.38%	54.95%
Columbia Gas of Ohio, Inc.	NI	50.45%	53.00%	50.45%
Columbia Gas of Pennsylvania, Inc.	NI	55.68%	55.59%	55.68%
Columbia Gas of Virginia, Inc.	NI	43.69%	42.53%	43.69%
New Jersey Natural Gas Company	NJR	55.45%	58.87%	55.45%
Northwest Natural Gas Company	NWN	47.44%	49.19%	47.44%
Kansas Gas Service Company, Inc.	OGS	60.33%	63.55%	60.33%
Oklahoma Natural Gas Company	OGS	59.85%	63.10%	59.85%
Texas Gas Service Company, Inc.	OGS	59.99%	63.23%	59.99%
San Jose Water	SJW	54.02%	51.46%	54.02%
CT Water	SJW	59.12%	56.58%	59.12%
Avon Water	SJW		92.15%	92.15%
Heritage Village Water	SJW		80.56%	80.56%
Maine Water Co.	SJW	58.39%	54.21%	58.39%
Canyon Lake Water Service Company	SJW		71.88%	71.88%
South Jersey Gas Company	SJI	54.73%	52.88%	54.73%
Spire Alabama Inc.	SR	64.35%	66.82%	64.35%
Spire Gulf Inc.	SR	40.55%	37.18%	40.55%
Spire Mississippi Inc.	SR	100.00%	100.00%	100.00%
Spire Missouri Inc.	SR	56.68%	59.05%	56.68%
York Water Company	YORW	53.27%	56.50%	53.27%

Notes:

[1] Ratios are weighted by actual common capital, preferred equity, and long-term debt of Operating Subsidiaries.

[2] Natural Gas and Water operating subsidiaries where data was unable to be obtained for 2020 and 2019 were removed from the analysis.

CAPITAL STRUCTURE ANALYSIS

Proxy Group Company	LONG-TERM DEBT RATIO [1]			
	Ticker	2020	2019	MRY
American States Water Company	AWR	43.24%	34.06%	43.24%
Atmos Energy Corporation	ATO	41.69%	41.57%	41.69%
California Water Service Group	CWT	47.77%	53.27%	47.77%
Essential Utilities, Inc.	WTRG	44.17%	45.18%	44.17%
Eversource Energy	ES	44.35%	44.88%	44.35%
Middlesex Water Company	MSEX	40.43%	36.89%	40.43%
NISource Inc	NI	45.57%	45.67%	45.57%
New Jersey Resources Corporation	NJR	44.55%	41.13%	44.55%
Northwest Natural Gas Company	NWN	52.56%	50.81%	52.56%
One Gas Inc.	OGS	39.96%	36.72%	39.96%
SJW Corporation	SJW	43.97%	44.87%	43.97%
South Jersey Industries, Inc.	SJI	45.27%	47.12%	45.27%
Spire Inc.	SR	41.48%	39.15%	41.48%
York Water Company	YORW	46.73%	43.50%	46.73%
<b>Proxy Group</b>				
MEAN		44.41%	43.20%	44.41%
LOW		39.96%	34.06%	39.96%
HIGH		52.56%	53.27%	52.56%

LONG-TERM DEBT RATIO - UTILITY OPERATING COMPANIES				
Company Name	Ticker	2020	2019	MRY
Golden State Water / Bear Valley	AWR	43.24%	34.06%	43.24%
Atmos Energy Corporation	ATO	41.69%	41.57%	41.69%
California Water Service	CWT	48.66%	53.54%	48.66%
New Mexico Water Service Water Division	CWT	32.94%	34.74%	32.94%
New Mexico Water Service Sewer Division	CWT	40.53%	43.21%	40.53%
Washington Water Service	CWT	28.07%	47.47%	28.07%
Hawaii Water Service Kaanapali Division	CWT	51.07%	50.24%	51.07%
Hawaii Water Service Pukalani Division	CWT	35.44%	34.94%	35.44%
Aqua Pennsylvania Water	WTRG	48.86%	48.97%	48.86%
Aqua Pennsylvania Wastewater	WTRG	2.93%	4.61%	2.93%
Peoples Natural Gas Company	WTRG	38.52%	43.29%	38.52%
Peoples Gas Company	WTRG	20.41%	28.04%	20.41%
Aqua Ohio Water	WTRG	35.38%	38.73%	35.38%
Aqua Ohio Wastewater	WTRG	27.18%	39.65%	27.18%
Aqua Illinois	WTRG	45.43%	42.04%	45.43%
Aqua Texas	WTRG	49.83%	51.04%	49.83%
Aqua New Jersey, Inc. Water	WTRG	49.72%	40.36%	49.72%
Aqua New Jersey, Inc. Wastewater	WTRG	0.00%	0.00%	0.00%
Aqua North Carolina	WTRG	49.38%	49.35%	49.38%
Aqua Indiana Aboite Division	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Consumers Indiana Div.	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Darlington Div.	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Heir Division	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Sani Tech, Inc.	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Southeastern Utilities	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Wedgewood Park	WTRG	0.00%	0.00%	0.00%
Aqua Indiana White Oak Div.	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Wildwood Shores Div.	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Wymberly Division	WTRG	0.00%	0.00%	0.00%
Aqua Virginia	WTRG	44.77%	50.56%	44.77%
Delta Gas	WTRG	43.07%	39.80%	43.07%
Peoples Gas of WV	WTRG	51.56%	51.90%	51.56%
Connecticut Light and Power Company	ES	43.30%	44.03%	43.30%
Yankee Gas Company	ES	38.03%	39.17%	38.03%
Aquarion Water Company	ES	41.24%	43.40%	41.24%
NSTAR Electric Company	ES	44.52%	44.43%	44.52%
NSTAR Gas Company	ES	44.46%	44.47%	44.46%
Aquarion Water Company	ES	41.24%	43.40%	41.24%
Public Service Company of NH	ES	51.34%	52.23%	51.34%
Aquarion Water Company	ES	41.24%	43.40%	41.24%
Middlesex Water Company	MSEX	40.62%	37.05%	40.62%
Pinelands Water	MSEX	0.00%	0.00%	0.00%
Pinelands WW	MSEX	0.00%	0.00%	0.00%
Twin Lakes Util.	MSEX		0.00%	0.00%
Northern Indiana Public Service Company LLC	NI	41.99%	43.57%	41.99%
Columbia Gas of Kentucky, Inc.	NI	45.32%	45.77%	45.32%
Columbia Gas of Maryland, Inc.	NI	45.05%	47.62%	45.05%
Columbia Gas of Ohio, Inc.	NI	49.55%	47.00%	49.55%
Columbia Gas of Pennsylvania, Inc.	NI	44.32%	44.41%	44.32%
Columbia Gas of Virginia, Inc.	NI	56.31%	57.47%	56.31%
New Jersey Natural Gas Company	NJR	44.55%	41.13%	44.55%
Northwest Natural Gas Company	NWN	52.56%	50.81%	52.56%
Kansas Gas Service Company, Inc.	OGS	39.67%	36.45%	39.67%
Oklahoma Natural Gas Company	OGS	40.15%	36.90%	40.15%
Texas Gas Service Company, Inc.	OGS	40.01%	36.77%	40.01%
San Jose Water	SJW	45.98%	48.54%	45.98%
CT Water	SJW	40.88%	43.42%	40.88%
Avon Water	SJW		7.85%	7.85%
Heritage Village Water	SJW		19.44%	19.44%
Maine Water Co.	SJW	41.61%	45.79%	41.61%
Canyon Lake Water Service Company	SJW		28.12%	28.12%
South Jersey Gas Company	SJI	45.27%	47.12%	45.27%
Spire Alabama Inc.	SR	35.65%	33.18%	35.65%
Spire Gulf Inc.	SR	59.45%	62.82%	59.45%
Spire Mississippi Inc.	SR	0.00%	0.00%	0.00%
Spire Missouri Inc.	SR	43.32%	40.95%	43.32%
York Water Company	YORW	46.73%	43.50%	46.73%

Notes:

[1] Ratios are weighted by actual common capital, preferred equity, and long-term debt of Operating Subsidiaries.

[2] Natural Gas and Water operating subsidiaries where data was unable to be obtained for 2020 and 2019 were removed from the analysis.

CAPITAL STRUCTURE ANALYSIS

PREFERRED EQUITY RATIO [1]

Proxy Group Company	Ticker	2020	2019	MRY
American States Water Company	AWR	0.00%	0.00%	0.00%
Atmos Energy Corporation	ATO	0.00%	0.00%	0.00%
California Water Service Group	CWT	0.00%	0.00%	0.00%
Essential Utilities, Inc.	WTRG	0.00%	0.00%	0.00%
Eversource Energy	ES	0.66%	0.72%	0.66%
Middlesex Water Company	MSEX	0.35%	0.40%	0.35%
NiSource Inc	NI	0.00%	0.00%	0.00%
New Jersey Resources Corporation	NJR	0.00%	0.00%	0.00%
Northwest Natural Gas Company	NWN	0.00%	0.00%	0.00%
One Gas Inc.	OGS	0.00%	0.00%	0.00%
SJW Corporation	SJW	0.00%	0.00%	0.00%
South Jersey Industries, Inc.	SJI	0.00%	0.00%	0.00%
Spire Inc.	SR	0.00%	0.00%	0.00%
York Water Company	YORW	0.00%	0.00%	0.00%

Proxy Group	2020	2019	MRY
MEAN	0.07%	0.08%	0.07%
LOW	0.00%	0.00%	0.00%
HIGH	0.66%	0.72%	0.66%

PREFERRED EQUITY RATIO - UTILITY OPERATING COMPANIES

Company Name	Ticker	2020	2019	MRY
Golden State Water / Bear Valley	AWR	0.00%	0.00%	0.00%
Atmos Energy Corporation	ATO	0.00%	0.00%	0.00%
California Water Service	CWT	0.00%	0.00%	0.00%
New Mexico Water Service Water Division	CWT	0.00%	0.00%	0.00%
New Mexico Water Service Sewer Division	CWT	0.00%	0.00%	0.00%
Washington Water Service	CWT	0.00%	0.00%	0.00%
Hawaii Water Service Kaaanapali Division	CWT	0.00%	0.00%	0.00%
Hawaii Water Service Pukalani Division	CWT	0.00%	0.00%	0.00%
Aqua Pennsylvania Water	WTRG	0.00%	0.00%	0.00%
Aqua Pennsylvania Wastewater	WTRG	0.00%	0.00%	0.00%
Peoples Natural Gas Company	WTRG	0.00%	0.00%	0.00%
Peoples Gas Company	WTRG	0.00%	0.00%	0.00%
Aqua Ohio Water	WTRG	0.00%	0.00%	0.00%
Aqua Ohio Wastewater	WTRG	0.00%	0.00%	0.00%
Aqua Illinois	WTRG	0.00%	0.00%	0.00%
Aqua Texas	WTRG	0.00%	0.00%	0.00%
Aqua New Jersey, Inc. Water	WTRG	0.00%	0.00%	0.00%
Aqua New Jersey, Inc. Wastewater	WTRG	0.00%	0.00%	0.00%
Aqua North Carolina	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Aboite Division	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Consumers Indiana Div.	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Darlington Div.	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Heir Division	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Sani Tech, Inc.	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Southeastern Utilities	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Wedgewood Park	WTRG	0.00%	0.00%	0.00%
Aqua Indiana White Oak Div.	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Wildwood Shores Div.	WTRG	0.00%	0.00%	0.00%
Aqua Indiana Wymberly Division	WTRG	0.00%	0.00%	0.00%
Aqua Virginia	WTRG	0.00%	0.00%	0.00%
Delta Gas	WTRG	0.00%	0.00%	0.00%
Peoples Gas of WV	WTRG	0.00%	0.00%	0.00%
Connecticut Light and Power Company	ES	1.28%	1.44%	1.28%
Yankee Gas Company	ES	0.00%	0.00%	0.00%
Aquarion Water Company	ES	0.00%	0.00%	0.00%
NSTAR Electric Company	ES	0.52%	0.57%	0.52%
NSTAR Gas Company	ES	0.00%	0.00%	0.00%
Aquarion Water Company	ES	0.00%	0.00%	0.00%
Public Service Company of NH	ES	0.00%	0.00%	0.00%
Aquarion Water Company	ES	0.00%	0.00%	0.00%
Middlesex Water Company	MSEX	0.36%	0.40%	0.36%
Pinelands Water	MSEX	0.00%	0.00%	0.00%
Pinelands WW	MSEX	0.00%	0.00%	0.00%
Twin Lakes Util.	MSEX	0.00%	0.00%	0.00%
Northern Indiana Public Service Company LLC	NI	0.00%	0.00%	0.00%
Columbia Gas of Kentucky, Inc.	NI	0.00%	0.00%	0.00%
Columbia Gas of Maryland, Inc.	NI	0.00%	0.00%	0.00%
Columbia Gas of Ohio, Inc.	NI	0.00%	0.00%	0.00%
Columbia Gas of Pennsylvania, Inc.	NI	0.00%	0.00%	0.00%
Columbia Gas of Virginia, Inc.	NI	0.00%	0.00%	0.00%
New Jersey Natural Gas Company	NJR	0.00%	0.00%	0.00%
Northwest Natural Gas Company	NWN	0.00%	0.00%	0.00%
Kansas Gas Service Company, Inc.	OGS	0.00%	0.00%	0.00%
Oklahoma Natural Gas Company	OGS	0.00%	0.00%	0.00%
Texas Gas Service Company, Inc.	OGS	0.00%	0.00%	0.00%
San Jose Water	SJW	0.00%	0.00%	0.00%
CT Water	SJW	0.00%	0.00%	0.00%
Avon Water	SJW	0.00%	0.00%	0.00%
Heritage Village Water	SJW	0.00%	0.00%	0.00%
Maine Water Co.	SJW	0.00%	0.00%	0.00%
Canyon Lake Water Service Company	SJW	0.00%	0.00%	0.00%
South Jersey Gas Company	SJI	0.00%	0.00%	0.00%
Spire Alabama Inc.	SR	0.00%	0.00%	0.00%
Spire Gulf Inc.	SR	0.00%	0.00%	0.00%
Spire Mississippi Inc.	SR	0.00%	0.00%	0.00%
Spire Missouri Inc.	SR	0.00%	0.00%	0.00%
York Water Company	YORW	0.00%	0.00%	0.00%

Notes:

[1] Ratios are weighted by actual common capital, preferred equity, and long-term debt of Operating Subsidiaries.

[2] Natural Gas and Water operating subsidiaries where data was unable to be obtained for 2020 and 2019 were removed from the analysis.