I&E Statement No. 2
Witness: Anthony Spadaccio

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

AQUA PENNSYLVANIA, INC.
&
AQUA PENNSYLVANIA WASTEWATER, INC.

Docket Nos. R-2021-3027385 & R-2021-3027386

Direct Testimony

of

Anthony Spadaccio, CRRA

Bureau of Investigation & Enforcement

Concerning:

Rate of Return

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INTRODUCTION OF WITNESS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Anthony Spadaccio. My business address is Pennsylvania Public Utility Commission, Commonwealth Keystone Building, 400 North Street, Harrisburg, PA 17120.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by the Pennsylvania Public Utility Commission (Commission) in the Bureau of Investigation & Enforcement (I&E) as a Fixed Utility Financial Analyst.

Q. WHAT IS YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE?

A. My educational and professional experience is set forth in the attached Appendix A.

Q. PLEASE DESCRIBE THE ROLE OF I&E IN RATE PROCEEDINGS.

A. I&E is responsible for representing the public interest in rate and other proceedings before the Commission. I&E's analysis in this proceeding is based on its responsibility to represent the public interest. This responsibility requires balancing the interests of ratepayers, the utility company, and the regulated community as a whole.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my direct testimony is to address rate of return, including capital structure, the cost of long-term debt, the cost of equity, and the overall fair rate of return for Aqua Pennsylvania, Inc. and Aqua Pennsylvania Wastewater, Inc., (referred to collectively as Aqua or Company).

Q. DOES YOUR TESTIMONY INCLUDE AN EXHIBIT?

A. Yes. I&E Exhibit No. 2 contains schedules that support my direct testimony.

<u>BACKGROUND</u>

Q. WHAT IS THE GENERAL DEFINITION OF RATE OF RETURN IN THE CONTEXT OF A RATE CASE?

A. Rate of return is one of the components of the revenue requirement formula. Rate of return is the amount of revenue an investment generates in the form of net income and is usually expressed as a percentage of the amount of capital invested over a given period of time.

Q. WHAT IS THE REVENUE REQUIREMENT FORMULA?

A. The revenue requirement formula used in base rate cases is as follows:

$$RR = E + D + T + (RB \times ROR)$$

Where:

RR	=	Revenue Requirement
E	=	Operating Expenses
D	=	Depreciation Expense
T	=	Taxes
RB	=	Rate Base
ROR	=	Overall Rate of Return

In the above formula, the rate of return is expressed as a percentage. The calculation of that percentage is independent of the determination of the appropriate rate base value for ratemaking purposes. As such, the appropriate total dollar return is dependent upon the proper computation of the rate of return and the proper valuation of the Company's rate base.

Q. WHAT CONSTITUTES A FAIR AND REASONABLE OVERALL RATE OF RETURN?

A. A fair and reasonable overall rate of return is one that will allow the utility an *opportunity* to recover those costs prudently incurred by all classes of capital used to finance the rate base during the prospective period in which its rates will be in effect.

The *Bluefield Water Works & Improvements Co. v. Public Service Comm. of West Virginia,* 262 U.S. 679, 692-93 (1923), and the *FPC v. Hope Natural Gas Co.,* 320 U.S. 591, 603 (1944) cases set forth the principles that are generally

accepted by Pennsylvania regulators and regulators throughout the country as the appropriate criteria for measuring a fair rate of return:

1. A utility is entitled to a return similar to that being earned by other enterprises with corresponding risks and uncertainties, but not as high as those earned by highly profitable or speculative ventures.
2. A utility is entitled to a return level reasonably sufficient to assure financial soundness.
3. A utility is entitled to a return sufficient to maintain and support its credit and raise necessary capital.
4. A fair return can change (increase or decrease) along with economic conditions and capital markets.

Q. EXPLAIN HOW THE OVERALL RATE OF RETURN IS TRADITIONALLY CALCULATED IN BASE RATE PROCEEDINGS.

A. In base rate proceedings, the overall rate of return is traditionally calculated using the weighted average cost of capital method. To calculate the weighted average cost of capital, a company's capital structure must first be determined by comparing the percentage of each capitalization component, which has financed rate base, to total capital. In Aqua's case, the capital components consist of long-term debt and common equity. Next, the effective cost rate of each capital structure component must be determined. The historical component of the cost rate of debt can be computed accurately, and any future debt issuances are based

on estimates and reasonable assumptions. The cost rate of common equity is not fixed and is more difficult to measure. Because of this difficulty, a proxy group is used as discussed later in this testimony. Next, each capital structure component percentage is multiplied by its corresponding effective cost rate to determine the weighted capital component cost rate. The I&E table in the *"I&E Position"* section below demonstrates the interaction of each capital structure component and its corresponding effective cost rate. Finally, the sum of the weighted cost rates produces the overall rate of return. This overall rate of return is multiplied by the rate base to determine the return portion of a company's revenue requirement.

<u>COMPANY'S RATE OF RETURN CLAIM</u>

Q. WHO IS THE COMPANY'S RATE OF RETURN WITNESS?

A. Paul R. Moul is the primary witness addressing rate of return. Throughout his direct testimony (AP Statement No. 7), Mr. Moul provides analysis for the claimed capital structure, long-term debt, and cost of common equity for Aqua.

Q. PLEASE SUMMARIZE THE COMPANY'S RATE OF RETURN CLAIM.

A. Mr. Moul recommends the following rate of return based on the Fully Projected

1 Future Test Year (FPFTY) ending March 31, 2023:[1]

Aqua Pennsylvania Summary of Cost of Capital			
Type of Capital	**Ratio**	**Cost Rate**	**Weighted Cost**
	Aqua Pennsylvania		
Long-Term Debt	46.05%	4.00%	1.84%
Common Equity	53.95%	10.75%	5.80%
Total	100.00%		**7.64%**

2

3

4 **I&E POSITION**

5 **Q. PLEASE SUMMARIZE YOUR RATE OF RETURN RECOMMENDATION.**

6 A. I recommend the following rate of return for the Company:[2]

I&E Summary of Cost of Capital			
Type of Capital	**Ratio**	**Cost Rate**	**Weighted Cost**
	Aqua Pennsylvania		
Long-Term Debt	46.05%	4.00%	1.84%
Common Equity	53.95%	8.90%	4.80%
Total	100.00%		**6.64%**

7

[1] AP Exhibit 4-A, Schedule 1, p. 1.
[2] I&E Exhibit No. 2, Schedule 1.

1 **PROXY GROUP**

2 **Q. WHAT IS A PROXY GROUP AS USED IN BASE RATE CASES?**

3 A. A proxy group is a group of companies that acts as a benchmark for determining
4 the subject utility's rate of return in a base rate case.

5

6 **Q. WHAT ARE THE REASONS FOR USING A PROXY GROUP?**

7 A. A proxy group's cost of equity is used as a benchmark to satisfy the long-
8 established guideline of utility regulation that seeks to provide the subject utility
9 with the opportunity to earn a return similar to that of enterprises with
10 corresponding risks and uncertainties.

11 A proxy group is typically utilized since the use of data exclusively from
12 one company may be less reliable. The lower reliability occurs because the data
13 for one company may be subject to events that can cause short-term anomalies in
14 the marketplace. The rate of return on common equity for a single company could
15 become distorted in these circumstances and would therefore not be representative
16 of similarly situated companies. Therefore, a proxy group has the effect of
17 smoothing out potential anomalies associated with a single company.

Q. DO ANY OF THE CRITERIA YOU USE TO SELECT YOUR PROXY GROUP COMPANIES REQUIRE THAT THE PROXY GROUP COMPANY IS EXCLUSIVELY A WATER OR WASTEWATER-ONLY UTILITY COMPANY?

A. No. Few, if any, publicly held 'wastewater-only' companies exist because most water companies diversified their businesses to include wastewater operations. Accordingly, this type of criterion produces an insufficient sample of companies for my proxy group, adversely affecting the calculation of a fair rate of return for the subject utility. Further, Value Line does not offer a wastewater utilities industry category as an option so, instead, my proxy group begins with a search of the regulated water utility companies.

Q. WHAT CRITERIA DID YOU USE IN SELECTING YOUR PROXY GROUP?

A. The criteria for my proxy group was designed to select companies that are representative of Aqua. I applied the following criteria to Value Line's "Water Utility" company group:

1. Fifty percent or more of the company's revenues must be generated from the water utility industry.
2. The company's stock must be publicly traded.
3. Investment information for the company must be available from more than one source, which includes Value Line.

4. The company must not be currently involved in an announced merger or the target of an acquisition.

5. The company must have four consecutive years of historic earnings data.

Q. WHAT CRITERIA DID MR. MOUL USE IN SELECTING HIS PROXY GROUP THAT HE LABLES THE "WATER GROUP"?

A. Mr. Moul determined his Water Group consisting of eight water utilities by employing the following criteria:[3]

1. They are listed in the "Water Utility Industry" section (basic and expanded) of The Value Line Investment Survey.

2. Their stock is publicly traded.

Q. WHAT PROXY GROUP DID YOU USE IN YOUR ANALYSIS?

A. I included the following seven companies in my proxy group:

American Water Works	AWK
American States Water Co.	AWR
California Water Service Group	CWT
Middlesex Water Co.	MSEX
SJW Group	SJW
Essential Utilities	WTRG
York Water Company	YORW

[3] AP Statement No. 7, p. 13, lines 16-18.

1 **Q. WHAT PROXY GROUP DID MR. MOUL USE IN HIS ANALYSIS?**

2 A. Mr. Moul's "Water Group" consists of the following eight companies:[4]

Artesian Resources Corporation	ARTNA
American Water Works	AWK
American States Water Co.	AWR
California Water Service Group	CWT
Middlesex Water Co.	MSEX
SJW Group	SJW
Essential Utilities	WTRG
York Water Company	YORW

3

4

5 **Q. DO YOU AGREE WITH MR. MOUL'S WATER GROUP?**

6 A. Not entirely. While Mr. Moul's Water Group includes all seven companies in my

7 proxy group, he also employs Artesian Resources Corporation, which I do not.

8

9 **Q. PLEASE EXPLAIN WHY YOU HAVE EXCLUDED ARTESIAN**

10 **RESOURCES CORPORATION FROM YOUR PROXY GROUP.**

11 A. I have excluded Artesian Resources Corporation from my proxy group because it

12 violates my third proxy group criterion which dictates that investment information

13 for the company must be available from more than one source, which includes

14 Value Line. Artesian Resources Corporation does not have a Value Line report,

[4] AP Statement No. 7, p. 13, lines 19-21 and AP Exhibit 4-A, Schedule 3, p. 2.

1 and therefore, does not have the projected dividend per share or projected earnings
2 growth rate information.
3
4 **CAPITAL STRUCTURE**
5 **Q. WHAT IS A CAPITAL STRUCTURE?**
6 A. A capital structure represents how a firm has financed its rate base with different
7 sources of funds. The primary sources of funding are long-term debt and common
8 equity. A capital structure may also include short-term debt and preferred stock,
9 which is not the case for Aqua.
10
11 **Q. WHAT IS THE COMPANY'S CLAIMED CAPITAL STRUCTURE?**
12 A. The Company's claimed capital structure is summarized in the table below:[5]

Aqua Pennsylvania Capital Structure - March 31, 2023	
Long-Term Debt	46.05%
Common Equity	53.95%
	100.00%

13

[5] AP Statement No. 7, p. 20, lines 2-4 and AP Exhibit 4-A, Schedule 5.

Q. WHAT IS THE BASIS FOR THE COMPANY'S CLAIMED CAPITAL STRUCTURE?

A. Mr. Moul explains that because Aqua raises its own debt directly in the capital markets, the actual capital structure for the Company should be used in determining the overall rate of return.[6]

Q. WHAT IS YOUR RECOMMENDATION REGARDING THE COMPANY'S CAPITAL STRUCTURE?

A. I recommend using the Company's claimed capital structure as presented in the table above.

Q. WHAT IS THE BASIS FOR YOUR CAPITAL STRUCTURE RECOMMENDATION?

A. I recommend using the Company's claimed capital structure as it falls within the range of my proxy group's 2020 (most recently available) capital structures. The most recent five-year average range contains individual company capital structure ratios from 39.93% to 56.33% debt and 43.67% to 59.54% equity, with an overall five-year average of 46.88% debt and 53.05% common equity.[7] This five-year average capital structure is almost identical to the Company's claimed capital structure; therefore, I am not recommending that it be adjusted.

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[6] AP Statement No. 7, p. 18, ln. 22 through p. 19, ln. 8.
[7] I&E Exhibit No. 2, Schedule 2.

1 **COST RATE OF LONG-TERM DEBT**

2 **Q. WHAT IS YOUR RECOMMENDATION REGARDING THE**

3 **COMPANY'S COST RATE OF LONG-TERM DEBT?**

4 A. I recommend using the Company's claimed long-term debt cost rate of 4.00% for

5 the FPFTY.[8]

6

7 **Q. WHAT IS THE BASIS FOR YOUR RECOMMENDATION TO USE THE**

8 **COMPANY'S CLAIMED COST RATE OF LONG-TERM DEBT?**

9 A. The Company's claimed cost rate of long-term debt is reasonable, as it is

10 representative of the industry. It falls within my proxy group's implied long-term

11 debt cost range of 2.69% to 5.67%, with an average implied long-term debt cost of

12 4.04%.[9] Additionally, the Company's forecasted cost of long-term debt is

13 gradually trending downward from the historic test year ending March 31, 2021,

14 through the FPFTY.[10] This downward trend is beneficial to ratepayers; therefore,

15 I recommend the claimed cost rate of long-term debt be used.

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8 AP Statement No. 7, p. 21, lines 15-16 and AP Exhibit 4-A, Schedule 6, p. 3.
9 I&E Exhibit No. 2, Schedule 3.
10 AP Exhibit 4-A, Schedule 6.

COST OF COMMON EQUITY

COMMON METHODS

Q. WHAT METHODS ARE COMMONLY PRESENTED BY UTILITIES IN DETERMINING THE COST OF COMMON EQUITY?

A. Four methods commonly presented to estimate the cost of common equity are the Discounted Cash Flow (DCF), the Capital Asset Pricing Model (CAPM), the Risk Premium (RP) Method, and the Comparable Earnings (CE) Method.

Q. WHAT IS THE THEORETICAL BASIS FOR THE DCF METHOD?

A. The DCF method is the "dividend discount model" of financial theory, which maintains that the value (price) of any security or commodity is the discounted present value of all future cash flows. The DCF method assumes that investors evaluate stocks in the classical economic framework, which maintains that the value of a financial asset is determined by its earning power, or its ability to generate future cash flows.

Q. WHAT IS THE THEORETICAL BASIS FOR THE CAPM?

A. The CAPM describes the relationship of a stock's investment risk and its market rate of return. It identifies the rate of return investors expect so that it is comparable with returns of other stocks of similar risk. This method hypothesizes that the investor-required return on a company's stock is equal to the return on a "risk free" asset plus an equity premium reflecting the company's investment risk.

In the CAPM, two types of risk are associated with a stock: (1) firm-specific risk (unsystematic risk); and (2) market risk (systematic risk), which is measured by a firm's beta. The CAPM allows for investors to receive a return only for bearing systematic risk. Unsystematic risk is assumed to be diversified away, and therefore, does not earn a return.

Q. WHAT IS THE THEORETICAL BASIS FOR THE RP METHOD?

A. The theoretical basis for the RP method is a simplified version of the CAPM. The RP method's theory is that common stock is riskier than debt, thus, investors require a higher expected return on stocks than bonds. In the RP approach, the cost of equity is made up of the cost of debt and a risk premium. While the CAPM uses the market risk premium, it also directly measures the systematic risk of the company group using beta. The RP method does not measure the specific risk of the company.

Q. WHAT IS THE THEORETICAL BASIS FOR THE CE METHOD?

A. The CE method utilizes the concept of opportunity cost. This means that investors will likely dedicate their capital to the investment offering the highest return with similar risk to alternative investments. Unlike the DCF, CAPM, and the RP methods, the CE method is not market-based and relies upon historic accounting data. The most problematic issue with the CE method is determining what constitutes comparable companies.

1 **Q. WHAT METHOD DO YOU RECOMMEND USING TO DETERMINE AN**
2 **APPROPRIATE COST OF COMMON EQUITY FOR AQUA?**
3 A. I recommend using the DCF method as the primary method to determine the cost
4 of common equity. Additionally, I recommend using the results of the CAPM as a
5 comparison to the DCF results. This is consistent with the methodology
6 historically used by the Commission in base rate proceedings, but also as recently
7 as 2017, 2018, 2020, and 2021.[11]
8
9 **Q. PLEASE EXPLAIN WHY YOU CHOSE TO USE THE DCF IN YOUR**
10 **ANALYSIS.**
11 A. I have used the DCF as the primary method for a variety of reasons. The DCF is
12 appealing to investors since it is based upon the concept that the receipt of
13 dividends in addition to expected appreciation is the total return requirement
14 determined by the market.[12] The use of a growth rate and expected dividend yield
15 are also strengths of the DCF, as this recognizes the time value of money and is
16 forward-looking. The use of the utilities' own, or in this case the proxy group's,

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[11] *Pa. PUC v. City of DuBois – Bureau of Water*, Docket No. R-2016-2554150, pp. 96-98 (Order Entered March 28, 2017) (Disposition of Cost Rate Models); *Pa. PUC v. UGI Utilities, Inc. – Electric Division*, Docket No. R-2017-2640058, p. 119 (Order Entered October 25, 2018) (Disposition of Cost of Common Equity); *Pa. PUC v. Wellsboro Electric Company*, Docket No. R-2019-3008208, pp. 80-82 (Order Entered April 29, 2020) (Disposition of Primary Methodology to Determine ROE); *Pa. PUC v. Citizens' Electric Company of Lewisburg, PA*, Docket No. R-2019-3008212, pp. 91-93 (Order Entered April 27, 2020) (Disposition of Cost of Common Equity); *Pa. PUC v. Valley Energy, Inc.*; Docket No. R-2019-3008209, pp. 102-104 (Order Entered April 27, 2020) (Disposition of Methods for Determining the Cost of Common Equity); *Pa. PUC v. Columbia Gas of Pennsylvania, Inc.*, Docket No. R-2020-3018835, p. 131 (Order Entered February 19, 2021) (Disposition of Methods for Determining the Cost of Common Equity).

[12] David C. Parcell, "The Cost of Capital – A Practitioner's Guide," 2010 Edition, p. 151.

stock prices and growth rates directly in the calculation also causes the DCF to be industry and company specific. The DCF method is superior for determining the rate of return for the current economic market because it measures the cost of equity directly.

Q. PLEASE EXPLAIN WHY YOU ALSO CHOSE TO USE THE CAPM IN YOUR ANALYSIS.

A. I have included a CAPM analysis as a comparison because the CAPM and the DCF include inputs that allow the results to be specific to the utility industry, although the CAPM is far less responsive to changes in the industry than the DCF. The CAPM is based on the performance of U.S. Treasury bonds and the performance of the market as measured through the S&P 500 and is company-specific only through the use of beta. Beta reflects a stock's volatility relative to the overall market, thereby incorporating an industry-specific aspect to the CAPM, but only as a measure of how reactive the industry is compared to the market as a whole. Although changes in the utility industry are more likely to be accurately reflected in the DCF, which uses the companies' actual prices, dividends, and growth rates, I have included the results of my CAPM analysis because changes in the market, whether as a whole or specific to the utility industry, affect the outcome of each method in different ways. Although I have chosen to use the CAPM as a secondary method, it does have several disadvantages and should not be used as a primary method.

Q. EXPLAIN THE DISADVANTAGES OF THE CAPM.

A. The CAPM, and the RP method by virtue of its similarities to the CAPM, give results that indicate to an investor what the equity cost rate should be if current economic and regulatory conditions are the same as those present during the historical period in which the risk premiums were determined. This is because beta, which is the only company-specific variable in the CAPM model, measures the *historical* volatility of a stock compared to the *historical* overall market return. Reliance on historical values is especially problematic now given the recent impact of the COVID-19 pandemic on economic conditions. Although the CAPM and RP results can be useful to investors in making rational buy and sell decisions within their portfolios, the DCF method is the superior method for determining the rate of return for the current economic market and measuring the cost of equity directly. The CAPM and the RP methods are less reliable indicators because they measure the cost of equity indirectly and risk premiums vary depending on the debt and equity being compared. Also, regulators can never be certain that economic and regulatory conditions underlying the historical period during which the risk premiums were calculated are the same today or will be the same in the future.

Q. IS THERE ANY ACADEMIC EVIDENCE THAT QUESTIONS THE CREDIBILITY OF THE CAPM MODEL?

A. Yes. An article, "Market Place; A Study Shakes Confidence in the Volatile-Stock

Theory," which appeared in the *New York Times* on February 18, 1992, summarized a CAPM study conducted by professors Eugene F. Fama and Kenneth R. French.[13] Their study examined the importance of beta, CAPM's risk factor, in explaining returns on common stock. In CAPM theory a stock with a higher beta should have a higher expected return. They found that the model did not do well in predicting actual returns and suggested the use of more elaborate multi-factor models.

A more recent article, "The Capital Asset Pricing Model: Theory and Evidence," which appeared in the *Journal of Economic Perspectives,* states that "the attraction of the CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk. Unfortunately, the empirical record of the model is poor, poor enough to invalidate the way it is used in applications."[14] As a result, I conclude that the CAPM's relevance to the investment decision making process does not carry over into the regulatory rate setting process.

Q. PLEASE EXPLAIN WHY YOU HAVE CHOSEN TO EXCLUDE THE RP METHOD FROM YOUR ANALYSIS.

A. The RP method is excluded because it is a simplified version of the CAPM and is

[13] Berg, Eric N. "Market Place; A Study Shakes Confidence in the Volatile-Stock Theory" *The New York Times*, 18 Feb 1992: *nytimes.com* Web. 23 Mar 2016.

[14] Fama, Eugene F. and French, Kenneth R., "The Capital Asset Pricing Model: Theory and Evidence." *Journal of Economic Perspectives* (2004): Volume 18, Number 3, pp. 25-46.

subject to the same faults explained above. Most importantly, unlike the CAPM, the RP method does not recognize company-specific risk through beta.

Q. EXPLAIN WHY YOU HAVE CHOSEN TO EXCLUDE THE CE METHOD IN YOUR ANALYSIS.

A. The CE method is excluded because the choice of which companies are comparable is highly subjective, and it is debatable whether historic accounting values are representative of the future. Moreover, its historical usage in this regulatory forum has been minimal.

SUMMARY OF THE COMPANY'S RESULTS

Q. WHAT ARE THE RESULTS OF THE COMPANY'S COST OF EQUITY ANALYSES?

A. Mr. Moul employed the DCF, CAPM, RP, and CE methods in analyzing the Company's cost of equity. He makes several adjustments to his results, which include consideration of risk, leverage, and size.[15] Ultimately, Mr. Moul opines that a cost of equity of 10.75% is warranted due to Aqua's risk characteristics, general condition of the capital markets, and the exemplary performance of the Company's management.[16]

[15] AP Exhibit 4-A, Schedule 1, p. 2.
[16] AP Statement No. 7, p. 46, ln. 22 through p. 47, ln. 7.

I&E RECOMMENDATION

Q. WHAT IS YOUR RECOMMENDED COST OF COMMON EQUITY FOR AQUA?

A. Based upon my analysis, I recommend a cost of common equity of 8.90%.

Q. WHAT IS THE BASIS FOR YOUR RECOMMENDATION?

A. I arrived at this equity return using the DCF method. As explained above, I used my CAPM result only to present to the Commission a comparison to my DCF results. My DCF analysis employed a spot dividend yield, a 52-week dividend yield, and earnings growth forecasts.

DISCOUNTED CASH FLOW (DCF)

Q. PLEASE EXPLAIN YOUR DCF ANALYSIS.

A. My analysis employs the constant growth DCF model as portrayed in the following formula:

$$K = D_1/P_0 + g$$

Where:

K	=	Cost of equity
D_1	=	Dividend expected during the year
P_0	=	Current price of the stock
g	=	Expected growth rate

When a forecast of D_1 is not available, D_0 (the current dividend) must be adjusted by one half of the expected growth rate to account for changes in the dividend paid in period one. As forecasts for each company in my barometer group were available from Value Line, no dividends were adjusted for the purpose of my analysis.

Q. PLEASE EXPLAIN HOW YOU DEVELOPED THE DIVIDEND YIELDS USED IN YOUR DCF ANALYSIS.

A. A representative dividend yield must be calculated over a time frame that avoids the problems of both short-term anomalies and stale data series. For my DCF analysis, the dividend yield calculation places equal emphasis on the most recent spot and the 52-week average dividend yields. The following table summarizes my dividend yield computations for the proxy group:[17]

Seven-Company Proxy Group	Dividend Yield
Spot	1.62%
52-Week Average	1.87%
Average	**1.75%**

[17] I&E Exhibit No. 2, Schedule 4.

Q. WHAT INFORMATION DID YOU RELY UPON TO DETERMINE YOUR EXPECTED GROWTH RATE?

A. I have used five-year projected growth rate estimates from Value Line, Yahoo! Finance, Morningstar, and Zacks.

Q. WHAT WERE THE RESULTS OF YOUR FORECASTED EARNINGS GROWTH RATES?

A. The expected average growth rates for the seven-company proxy group ranged from 3.60% to 9.90% with an average of 7.15%.[18]

Q. WHAT IS THE RESULT OF YOUR DCF ANALYSIS BASED ON YOUR RECOMMENDED DIVIDEND YIELD AND GROWTH RATE?

A. The results of my DCF analysis are calculated as follows:[19]

K	=	D_1/P_0	+	g
8.90%	=	1.75%	+	7.15%

<u>CAPITAL ASSET PRICING MODEL (CAPM)</u>

Q. PLEASE EXPLAIN YOUR CAPM ANALYSIS.

A. My analysis employs the standard CAPM as portrayed in the following formula:

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

[18] I&E Exhibit No. 2, Schedule 5.
[19] I&E Exhibit No. 2, Schedule 6.

Where:

K	=	Cost of equity
R_f	=	Risk-free rate of return
R_m	=	Expected rate of return on the overall stock market
β	=	Beta measures the systematic risk of an asset

Q. WHAT IS BETA AS EMPLOYED IN YOUR CAPM ANALYSIS?

A. Beta is a measure of the systematic risk of a stock in relation to the rest of the stock market. A stock's beta is estimated by calculating the linear regression of a stock's return against the return on the overall stock market. The beta of a stock with a price pattern identical to that of the overall stock market will equal one. A stock with a price movement that is greater than the overall stock market will have a beta that is greater than one and would be described as having more investment risk than the market. Conversely, a stock with a price movement that is less than the overall stock market will have a beta of less than one and would be described as having less investment risk than the market.

Q. WHAT BETA DID YOU CHOOSE FOR YOUR CAPM ANALYSIS?

A. In estimating an equity cost rate for my proxy group, I used the average of the

betas for the companies as provided in the Value Line Investment Survey. The average beta for my proxy group is 0.78.[20]

Q. WHAT RISK-FREE RATE OF RETURN HAVE YOU CHOSEN FOR YOUR FORECASTED CAPM ANALYSIS?

A. I have chosen to use the risk-free rate of return (R_f) from the projected yield on 10-year Treasury Notes. While the yield on the short-term T-Bill is a more theoretically correct parameter to represent a risk-free rate of return, it can be extremely volatile. The volatility of short-term T-Bills is directly influenced by Federal Reserve policy. At the other extreme, the 30-year Treasury Bond exhibits more stability but is not risk-free. Long-term Treasury Bonds have substantial maturity risk associated with market risk and the risk of unexpected inflation. Long-term treasuries normally offer higher yields to compensate investors for these risks. As a result, I chose to use the yield on the 10-year Treasury Note because it mitigates the shortcomings of the other two alternatives. Additionally, the Commission recently agreed with I&E and recognized the 10-year Treasury Note as the superior measure of the risk-free rate of return.[21] The forecasted yield on the 10-year Treasury Note, as seen in Blue Chip Financial Forecasts, is expected to range between 1.60% and 2.00% from the fourth quarter of 2021 through the fourth quarter of 2022, and it is forecasted to be 2.90% from 2023-

[20] I&E Exhibit No. 2, Schedule 7.

[21] *Pa. PUC v. UGI Utilities, Inc. – Electric Division;* Docket No. R-2017-2640058 (Order Entered October 25, 2018), p. 99 (Disposition of Capital Asset Pricing Model (CAPM)).

2027. For my forecasted CAPM analysis, I chose 1.98%, which is the average of all the yield forecasts I observed.[22]

Q. HOW DID YOU DETERMINE THE RETURN ON THE OVERALL STOCK MARKET EMPLOYED IN YOUR FORECASTED CAPM ANALYSIS?

A. To arrive at a representative expected return on the overall stock market, I observed Value Line's 1700 stocks and the S&P 500. Value Line expects its universe of 1700 stocks to have an average yearly return of 9.59% over the next three to five years, based on a forecasted dividend yield of 1.80% and a yearly index appreciation of 35%. The S&P 500 Index is expected to have an average yearly return of 14.70% over the next five years, based upon Barron's forecasted dividend yield of 1.31% and Morningstar's expected increase in the S&P 500 Index of 13.30%.[23]

Q. WHAT IS THE EXPECTED RETURN ON THE OVERALL STOCK MARKET BASED ON YOUR FORECASTED ANALYSIS?

A. The expected return on the overall market is 12.14% for my forecasted analysis.[24]

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[22] I&E Exhibit No. 2, Schedule 8.
[23] I&E Exhibit No. 32, Schedule 9.
[24] I&E Exhibit No. 2, Schedule 9.

Q. WHAT IS THE COST OF EQUITY RESULT FROM YOUR CAPM ANALYSIS?

A. The result of my analysis is as follows:[25]

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

$$9.89\% = 1.98\% + 0.78(12.14\% - 1.98\%)$$

<u>CRITIQUE OF AQUA'S COST OF EQUITY CLAIM</u>

Q. DO YOU AGREE WITH MR. MOUL'S CLAIMED COST OF EQUITY?

A. No. I disagree with Mr. Moul's proposed cost of equity analysis for several reasons. First, I disagree with the weights given to the results of Mr. Moul's CAPM, RP, and CE analyses in his claimed cost of equity. Second, I take issue with certain aspects of Mr. Moul's risk analysis of Aqua. Third, I disagree with his application of the DCF including the forecasted growth rate and leverage adjustment he uses. Fourth, I do not agree with his use of the 30-year Treasury Bond in place of the 10-year Treasury Note, his inclusion of a size adjustment, and use of an inflated beta in his CAPM analysis. Finally, I disagree with Mr. Moul's recommendation to include an adjustment to the cost of equity for recognition of management performance.

[25] I&E Exhibit No. 2, Schedule 10.

1 **WEIGHTS GIVEN TO THE CAPM, RP, AND CE METHODS**

2 **Q. DO YOU AGREE WITH MR. MOUL'S RELIANCE ON THE CAPM AND**
3 **RP MODELS?**

4 A. No. While I am not opposed to providing the Commission the results of the
5 CAPM methodology for a point of comparison to the results of the DCF
6 calculation, I am opposed to giving the CAPM and RP considerable weight. For
7 the reasons previously discussed in this testimony, it is inappropriate to give the
8 CAPM and RP models similar weight to the DCF as Mr. Moul has done in
9 creating his recommended cost of equity range.[26] As discussed above, the CAPM
10 measures the cost of equity indirectly and can be manipulated by the time period
11 chosen. Since the RP is a simplified version of the CAPM, it suffers these same
12 flaws.

13

14 **Q. DO YOU AGREE WITH MR. MOUL'S USE OF THE CE METHOD?**

15 A. No. The companies in Mr. Moul's analysis are not utilities, and therefore, they are
16 too dissimilar to be used in a CE analysis. The companies in Mr. Moul's CE
17 proxy group are simply not comparable to water utilities in terms of their business
18 risk or financial risk profile. Water utilities are monopolies, which are subject to
19 very little competition, if any at all. Due to this minimal competition, utilities in
20 general have very low business risk and can maintain higher financial risk profiles

[26] AP Statement No. 7, p. 6, ln. 19 through p. 7, ln. 5.

by employing more leverage. Conversely, since the companies in Mr. Moul's CE proxy group operate in an unregulated competitive environment with a higher level of business risk, they must maintain lower financial risk profiles by employing a smaller amount of leverage.

Further, in his CE analysis, Mr. Moul states, "I used 20% as the point where those returns could be viewed as highly profitable and should be excluded from the Comparable Earnings approach."[27] I do not believe this arbitrary use of 20% is justified, as I am unaware of any water utility company that has been granted a Commission authorized or regularly earns a 20% return.

RISK ANALYSIS

Q. PLEASE SUMMARIZE MR. MOUL'S CLAIMS REGARDING RISK FACTORS THE COMPANY FACES.

A. Mr. Moul describes Aqua's claimed risk factors in two different sub-sections. In the first section, labeled "Water Utility Risk Factors," he describes the *qualitative* risk factors. In this section, Mr. Moul largely discusses the business risks associated with regulatory policies along with capital intensity and Aqua's capital expenditure program.[28] In the second section of his risk analysis, labeled "Fundamental Risk Analysis," he describes the *quantitative* risk factors. In this section, Mr. Moul discusses Aqua's credit quality, as well as many different

[27] AP Statement No. 7, p. 46, lines 11-13.
[28] AP Statement No. 7, p. 8, ln. 12 through p. 12, ln. 16.

1 financial metrics including common equity ratios, return on book equity, operating
2 ratios, interest coverage, quality of earnings, internally generated funds, and
3 betas.[29]
4
5 **Q. WHAT RISKS DOES AQUA FACE THAT MR. MOUL CLAIMS ARE**
6 **ASSOCIATED WITH REGULATORY POLICIES?**
7 A. Mr. Moul explains that the Safe Drinking Water Act (SDWA) Amendments of
8 1996 that re-authorized the SDWA for the second time since its original passage in
9 1974, institutes policies and procedures governing water quality. The 1996
10 amendments empower the Environmental Protection Agency (EPA), along with
11 other interested parties, to develop a list of contaminants for possible regulation,
12 which must be updated every five years. From that list, the EPA must select at
13 least five contaminants and determine whether to regulate them. The EPA can
14 bypass the process and develop interim regulations for contaminants posing an
15 urgent health threat.[30]
16
17 **Q. WHAT IS YOUR OBSERVATION REGARDING MR. MOUL'S CLAIMED**
18 **RISKS RESULTING FROM REGULATORY POLICIES?**
19 A. Aqua faces the same regulatory risk as its peers contained in both my proxy group
20 and Mr. Moul's Water Group. In fact, Mr. Moul even states that "most of these

[29] AP Statement No. 7, p. 12, ln. 17 through p. 18, ln. 20.
[30] AP Statement No. 7, p. 8, lines 15-25.

1 regulations affect the entire water industry in contrast with the disparate impact on
2 electric utilities of regulations issued under the Clean Air Act, which may affect
3 only a subset of the individual companies in that industry."[31] Additionally, the
4 legislation Mr. Moul references was passed in 1996, so even though the legislation
5 carries provisions that may change regulatory requirements every five years, by
6 now, analysts and investors following the regulated water utility industry must
7 certainly be well aware of this type of risk.
8
9 **Q. WHAT ADDITIONAL BUSINESS RISKS DOES MR. MOUL CLAIM**
10 **AFFECT THE COMPANY?**
11 A. Mr. Moul indicates lead contamination has risen to prominence as a national
12 concern because of the drinking water crisis that garnered news media attention in
13 Flint, Michigan.[32] He continues, enumerating additional environmental and
14 regulatory issues such as the integrity of water supply sources, threats from
15 terrorists, changing land use, and permissible levels of discharged contaminants
16 established by state and federal agencies.[33] Further, Mr. Moul claims the high
17 fixed costs of water utilities make earnings vulnerable to variation due to
18 fluctuation with water usage in accordance with the weather, the economy, and
19 conservation efforts.[34]

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[31] AP Statement No. 7, p. 9, lines 7-10.
[32] AP Statement No. 7, p. 9, lines 17-21.
[33] AP Statement No. 7, p. 10, lines 18-22.
[34] AP Statement No. 7, p. 11, lines 17-19.

Q. WHAT IS YOUR RESPONSE TO THE ISSUES CITED BY MR. MOUL IN TERMS OF HOW THEY AFFECT THE COMPANY'S BUSINESS RISK?

A. The issues referenced by Mr. Moul affect the entire water utility industry, therefore, Aqua faces the same exposure to these issues as do all the other companies in our respective proxy groups. Investors voluntarily buy and hold shares of stocks in water utility companies, indicating they are aware of these risks and the returns. The cost of equity I present for Aqua in this proceeding is adequately measured by my proxy group, and therefore, adequately compensates investors for these risks.

Q. WHAT DOES MR. MOUL CLAIM REGARDING THE COMPANY'S CAPITAL EXPENDITURES?

A. According to Mr. Moul, the Company's net plant investment to revenue is 8.20x, compared with his Water Group, which is 4.42x.[35] Additionally, Mr. Moul outlines Aqua's projected capital expenditure plan for 2021-2025, which is expected to total $1,476,639,000. The anticipated capital expenditures for the FPFTY are $294,299,000.[36]

[35] AP Statement No. 7. p. 11, lines 12-14.
[36] AP Statement No. 7, p. 12, lines 3-5.

Q. WHAT IS YOUR RESPONSE TO MR. MOUL'S CLAIM REGARDING RISK CREATED BY THE COMPANY'S PROJECTED CAPITAL EXPENDITURES?

A. High levels of capital expenditures and high capital intensity are typical of the water utility industry, as every water utility faces the same issues of upgrading or replacing its aging infrastructure. Also, while Aqua may have a higher net plant to revenue ratio than the Water Group as Mr. Moul suggests, it must be recognized that capital expenditures which are used to fund plant investment are passed on to ratepayers via base rates such as those claimed in the instant proceeding. So, as costs for replacing infrastructure increase, Aqua, as well as any other company, has the option to file a base rate case at any time to address revenue inadequacy due to increasing costs, infrastructure replacement, or any associated issues. Base rate cases allow a utility to recover its costs and provide it the *opportunity* to earn a reasonable return on capital investments. The Commission also offers risk reducing mechanisms such as the Distribution System Improvement Charge (DSIC) and the FPFTY to help reduce any lag in recovery of infrastructure investment or other unforeseen expenditures. It is worth mentioning that these mechanisms were not designed to eliminate the need for base rate cases, but only to mitigate regulatory lag and support increasing infrastructure replacement needs.

Q. PLEASE DISCUSS THE CLAIMS MR. MOUL MAKES REGARDING QUANTITATIVE RISK FACTORS IN THE SECTION HE LABELS "FUNDAMENTAL RISK ANALYSIS."

A. Mr. Moul explains that it is necessary to establish a company's relative risk position within its industry through an analysis of quantitative and qualitative factors. In this section, Mr. Moul used various financial metrics to compare Aqua to the S&P Public Utilities Index and his Water Group.[37]

Q. WHAT ARE YOUR COMMENTS REGARDING MR. MOUL'S "FUNDAMENTAL RISK ANALYSIS?"

A. Throughout Mr. Moul's "fundamental risk analysis," he makes several statements to indicate that Aqua has no more of a risk than any other company in his Water Group. First, Mr. Moul identifies the Company's long-term bond rating from Standard and Poor's (S&P) to be A+, which categorizes Aqua to be investment grade with a strong capacity to meet its financial obligations. By comparison, the average S&P ratings of Mr. Moul's Water Group and the S&P Public Utilities Index are A and BBB+ respectively.[38] These ratings indicate that Aqua has a lower credit risk than both Mr. Moul's Water Group and the S&P Public Utilities Index.

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[37] AP Statement No. 7, p. 13, lines 2-8.
[38] AP Statement No. 7, p. 14, lines 8-17.

Next, while discussing common equity ratios, Mr. Moul states, "The five-year average common equity ratios, based on permanent capital, were 52.8% for the Company, 52.8% for the Water Group, and 41.3% for the S&P Public Utilities." He concludes that the financial risk of Aqua and the Water Group is identical.[39]

Then, regarding operating ratios, Mr. Moul states, "The five-year operating ratios were 50.9% for the Company, 69.4% for the Water Group, and 78.8% for the S&P Public Utilities".[40] As Mr. Moul explains, the operating ratio illustrates the percentage of revenue required to cover operating expenses. The lower the operating ratio is, the higher the operating margin becomes.[41] In this case, Aqua's lower operating ratio implies less risk than the Water Group and the S&P Public Utilities.

Regarding quality of earnings, Mr. Moul opines, "On balance, AP, the Water Group and the S&P Public Utilities all have similar quality of earnings".[42]

Concerning internally generated funds (IGF), Mr. Moul shows the five-year average percentage of IGF to capital expenditures to be 66.4% for Aqua, 55.6% for the Water Group, and 69.5% for the S&P Public Utilities. He opines that "historically, the Company's cash flow to construction has been better than the Water Group, but weaker than the S&P Public Utilities".[43]

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[39] AP Statement No. 7, p. 15, lines 21-24.
[40] AP Statement No. 7, p. 16, lines 11-12.
[41] AP Statement No. 7, p. 16, lines 9-11 and Footnote 3.
[42] AP Statement No. 7, p. 17, lines 13-14.
[43] AP Statement No. 7, p. 17, lines 15-22.

In his risk evaluation summary, Mr. Moul states, "The Company's size and financial risk are fairly similar to the Water Group"[44] and "the Water Group provides a reasonable basis for measuring the Company's cost of equity"[45]. Through his own analysis and testimony, Mr. Moul proves and acknowledges that Aqua has very similar risk to that of his Water Group, therefore, any additional consideration for the Company's risk profile is unnecessary.

Finally, and most importantly, Mr. Moul explains that the Company has received two equity infusions totaling $100 million from Essential Utilities in 2021. These funds were used to repay Aqua's outstanding revolving credit balance to improve the capital structure ratio and reduce financial risk.[46]

COST OF EQUITY ADJUSTMENTS

INFLATED GROWTH RATES USED IN DCF ANALYSIS

Q. WHAT GROWTH RATE HAS MR. MOUL USED IN HIS DCF ANALYSIS?

A. Mr. Moul has chosen a growth rate of 7.50%.

Q. WHAT IS THE BASIS FOR MR. MOUL'S GROWTH RATE?

A. Mr. Moul states, "Schedule 9 shows the prospective five-year earnings per share

[44] AP Statement No. 7, p. 18, ln. 10.
[45] AP Statement No. 7, p. 18, lines 19-20.
[46] I&E Exhibit No. 2, Schedule 11.

growth rates projected for the Water Group by IBES/First Call (6.31%), Zacks (7.15%), and Value Line (7.93%)."[47] Although the average of his sources for the growth rate is 7.13%,[48] Mr. Moul chooses to use 7.50% claiming that DCF growth rates should not be established by mathematical formulation and that the reasonableness of his chosen growth rate is justified by investor-expected growth for the Water Group and continuation of elevated infrastructure spending.[49]

Q. DO YOU AGREE WITH MR. MOUL'S GROWTH RATE ANALYSIS?

A. No. Contrary to Mr. Moul's belief that DCF growth rates *should not* be established by mathematical formulation, I feel that any alternative is subjective and introduces additional and unnecessary bias and should be avoided when possible. The use of a higher growth rate than the average of his proxy group ignores the fact that analysts making earnings per share growth forecasts are already aware of the economic conditions and the state of the water utility industry. The reasons Mr. Moul has given for choosing 7.50% are factors that are already included in the earnings per share growth forecasts; thus, choosing a growth rate higher than the average of his proxy group would account for the same factors twice.

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[47] AP Statement No. 7, p. 29, lines 3-5.
[48] (6.31% + 7.15% + 7.93%) ÷ 3 = 7.13%.
[49] AP Statement No. 7, p. 30, lines 3-9.

1 **Q. DO YOU HAVE ANY ADDITIONAL COMMENTS REGARDING THE**
2 **RESULTS OF MR. MOUL'S PROJECTED GROWTH RATES?**
3 A. Yes. While the five-year projected growth rates can be used in analyses, one must
4 be aware that analysts' estimates may be biased. This bias has been observed in
5 literature. An article authored by Professors Ciciretti, Dwyer, and Hasan in 2009
6 observed strong support of earnings forecast being higher than actual earnings.[50]
7 In spring of 2010, McKinsey on Finance presented an article reporting that after a
8 decade of stricter regulation analysts' forecasts are still overly optimistic.[51]
9 Analysts' estimates are an attempt to forecast future cash flows and thus
10 expected earnings growth. However, it should be kept in mind that prudent
11 judgment must be exercised as to the sustainability of forecasted growth rates with
12 respect to the base earnings. If the base year earnings are abnormally high, the
13 growth rates from which they are calculated will be biased downward. Similarly,
14 if the base year earnings are abnormally low, the growth rates from which they are
15 calculated will be biased upward. As a result, it is typically necessary to employ a
16 methodology to smooth out the abnormally high or low base year earnings.
17 In summary, since analysts' projected growth forecasts are most often
18 overly optimistic, there is no need to arbitrarily and non-formulaically increase the
19 estimates used in a DCF analysis.

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[50] Ciciretti, Rocco; Dwyer, Gerald R; and Iftekhan Hasan. "Investment Analysts' Forecasts of Earnings" Federal Reserve Bank of St. Louis *Review*, September/October 2009, 91 (5, part 2) pp. 545-67.

[51] Goedhart, Marc J; Raj, Rishi; and Abhishek Saxena. "Equity analyst: Still too bullish" McKinsey on Finance Number 35 Spring 2010, pp. 14-17.

1 **LEVERAGE ADJUSTMENT APPLIED TO DCF ANALYSIS**

2 **Q. HAS MR. MOUL MADE ANY ADDITIONAL ADJUSTMENTS TO THE**
3 **RESULT OF HIS DCF ANALYSIS?**

4 A. Yes. Mr. Moul proposes to make a 234-basis point "leverage" adjustment[52] to the
5 results of his DCF analysis to account for applying a market valued cost of equity
6 to a book value capital structure.[53]

7

8 **Q. WHAT IS FINANCIAL LEVERAGE?**

9 A. Financial leverage is the use of debt capital to supplement equity capital. A firm
10 with significantly more debt than equity is considered to be highly leveraged.

11

12 **Q. WHAT IS A MARKET-TO-BOOK (M/B) RATIO?**

13 A. A market-to-book ratio is used to evaluate a public firm's equity value by
14 comparing the market value and book value of a company's equity. One way of
15 doing this is to divide the current price per share of stock by the book value per
16 share. A M/B result of above one (1) is desired.

17

18 **Q. IS MR. MOUL ADJUSTING THE RESULT OF HIS DCF ANALYSIS TO**
19 **RECOGNIZE HOW THE COMPANY IS LEVERAGED?**

20 A. No. Mr. Moul does not propose to change the capital structure of the utility (a

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[52] AP Exhibit 4-A, Schedule 1, p. 2.
[53] AP Statement No. 7, p. 31, lines 4-6.

leverage adjustment), nor does he propose to apply the market-to-book ratio to the DCF model (a market-to-book adjustment). Instead, Mr. Moul proposes to make an adjustment to account for applying the market value cost rate of equity to the book value of the utility's equity. I am not aware of any term in academic journals, textbooks, or other literature that describes this type of adjustment.

Q. WHAT IS THE BASIS FOR MR. MOUL'S PROPOSED LEVERAGE ADJUSTMENT?

A. As stated above, Mr. Moul theorizes that to make the DCF results relevant to a book value capital structure, the market-derived cost of equity needs to be adjusted to take into consideration the difference in financial risk.[54] Mr. Moul opines this is because market valuations of equity are based on market value capital structures, which in general have more equity, less debt, and therefore, less risk than book value capital structures.[55]

Q. HOW DOES MR. MOUL CALCULATE THE LEVERAGE ADJUSTMENT USED IN HIS ANALYSIS?

A. Mr. Moul simply states:

> I know of no means to mathematically solve for the 0.97% [*sic*] leverage adjustment by expressing it in the terms of any particular relationship of market price to book value. The 2.34% adjustment is merely a convenient way to compare the

[54] AP Statement No. 7, p. 31, lines 4-6.
[55] AP Statement No. 7, p. 30, ln. 23 through p. 31, ln. 2.

> 11.78% return computed using the Modigliani & Miller formulas to the 9.44% return generated by the DCF model based on a market-value capital structure.[56]

Q. DO YOU AGREE WITH MR. MOUL'S "LEVERAGE ADJUSTMENT?"

A. No. Mr. Moul's adjustment is inappropriate for a couple of reasons, including the characterization of financial risk and its inconsistency with Commission precedent.

Q. PLEASE EXPLAIN HOW RATING AGENCIES ASSESS FINANCIAL RISK.

A. Rating agencies assess financial risk based upon a company's booked debt obligations and the ability of its cash flow to cover the interest payments on those obligations. The agencies use a company's financial statements for their analysis, not market capital structure. The income statement reflects the financial risk of a company because it represents the performance of the company over a certain period of time. A change in the market value of the stock is not reflected in the income statement nor is a change in market value capital structure reflected in the book value capital structure unless treasury stock is purchased. It is a company's financial statements that affect the market value of the stock, and, therefore, the financial statements and the book value capital structure are relied upon in an analysis such as that done by rating agencies.

[56] AP Statement No. 7, p. 34, lines 6-12.

1 **Q. WHAT ARE THE MOST RECENT COMMISSION DECISIONS**
2 **REGARDING A LEVERAGE ADJUSTMENT?**
3 A. The following cases are the most recent instances where the Commission has
4 addressed the use of a "leverage adjustment." In these cases, this adjustment has
5 been rejected.
6 First, in *Pennsylvania Public Utility Commission v. Aqua Pennsylvania,*
7 *Inc.*, at Docket No. R-00072711 (Order Entered July 31, 2008), p. 38, the
8 Commission rejected the ALJ's recommendation for a leverage adjustment stating,
9 "[t]he fact that we have granted leverage adjustments in the past does not mean
10 that such adjustments are indicated in all cases."
11 Second, in *Pennsylvania Public Utility Commission, et al v. City of*
12 *Lancaster – Bureau of Water*, at Docket No. R-2010-2179103 (Order Entered
13 July 14, 2011), p. 79, the Commission agreed with the I&E position and stated,
14 "any adjustment to the results of the market based DCF are unnecessary and will
15 harm ratepayers. Consistent with our determination in *Aqua 2008* there is no need
16 to add a leverage adjustment."
17 Third, in *Pennsylvania Public Utility Commission, et al v. UGI Utilities,*
18 *Inc. – Electric Division*, at Docket No. R-2017-2640058 (Order Entered
19 October 25, 2018), pp. 93-94, the Commission agreed with the I&E position and
20 stated, "we conclude that an artificial adjustment in this proceeding is unnecessary
21 and contrary to the public interest. Accordingly, we decline to include a leverage
22 adjustment in our calculation of the DCF cost of equity."

Finally, in the most recent case of *Pennsylvania Public Utility Commission, et. al v. Columbia Gas of Pennsylvania, Inc.*, at Docket R-2020-3018835 (Order Entered February 19, 2021), pp. 137-141, the Commission adopted the ALJ's recommendation to use I&E's DCF methodology, which excluded the use of a leverage adjustment.

Q. BASED ON THE COMPANY'S FILED RATE BASE AND CLAIMED CAPITAL STRUCTURE, WHAT IS THE VALUE OF AN ADDITIONAL 234 BASIS POINTS FOR THE LEVERAGE ADJUSTMENT TO THE COST OF EQUITY?

A. The example below illustrates the impact of 234 additional basis points for the leverage adjustment to the Company's cost of equity:

Aqua Pennsylvania	
Claimed Equity Percentage of Capital Structure	53.95%
Additional Basis Points to Calculated Cost of Equity	234
Claimed Rate Base*	$3,818,296,012
Impact Prior to Gross Up (0.5395 x 0.0234 x $3,818,296,012)	$48,203,314
Gross Revenue Conversion Factor**	1.4227
Total Impact ($48,203,314 x 1.4227)	**$68,578,855**
*AP Exhibit 1-A, Schedule G-1, ln. 15. **AP Exhibit 1-A, Schedule A-5, ln. 14.	

In this example, an addition of 234 basis points for the leverage adjustment to the cost of equity would force ratepayers to fund an unwarranted additional amount of $68,578,855 annually to cover the increase of the inflated rate of return along with the associated impact resulting from increases to income taxes, gross receipts tax, uncollectibles, and assessments.

Q. PLEASE SUMMARIZE YOUR RECOMMENDATION REGARDING THE LEVERAGE ADJUSTMENT.

A. I recommend that Mr. Moul's proposed 234-basis point leverage adjustment be rejected because true financial risk is a function of the amount of interest expense, and capital structure information provided to investors through Value Line is that of book values, not market values. This demonstrates that investors base their decisions on book value debt and equity ratios for the regulated utilities, therefore, no adjustment is needed. Mr. Moul's proposed adjustment serves only to manipulate the DCF's market-based methodology and causes substantial harm to ratepayers.

Q. DO YOU HAVE ANY FURTHER COMMENTS REGARDING MR. MOUL'S DCF CALCULATION?

A. Yes. While I am not directly disputing Mr. Moul's adjusted dividend yields, it is important to recognize that, as cited above, the Commission has recently agreed with I&E's DCF methodology which includes the appropriate calculation of

1 dividend yields. Although it is acceptable to adjust historical dividend yields as
2 Mr. Moul has done, it is preferable to use forecasted dividends to calculate the
3 dividend yields when available, such as the ones offered by Value Line that I have
4 employed.
5
6 **Q. WHAT WOULD MR. MOUL'S DCF BE WITHOUT ANY**
7 **ADJUSTMENTS?**
8 A. Without Mr. Moul's use of inflated growth rates and a leverage adjustment, his
9 DCF would consist of a dividend yield of 1.94% and an average growth rate of
10 7.13%, which results in an 9.07% cost of equity. This result is comparable to my
11 DCF result of 8.90% and is much more reasonable than his originally calculated
12 and inappropriately inflated result of 11.78%.
13
14 **RISK-FREE RATE OF RETURN**
15 **Q. HOW HAS MR. MOUL CALCULATED HIS RISK-FREE RATE FOR USE**
16 **IN HIS CAPM MODEL?**
17 A. Mr. Moul's calculation of his risk-free rate is similar to mine. He considered
18 Treasury yield estimates published by Blue Chip Financial Forecasts over the next
19 six quarters, from the time of his analysis, as well as long-range, five-year
20 averages. However, he used the 30-year Treasury Bond while I employed the 10-
21 year Treasury Note. Also, where I used a long-range, five-year average, future
22 data point accounting for years 2023-2027 predictions, Mr. Moul used two future

data points accounting for not only years 2022-2026, but also included an estimate for years 2027-2031. His calculation resulted in a 2.75% risk-free rate as opposed to the 1.98% I used.[57]

Q. WHAT COMMENTS DO YOU HAVE REGARDING MR. MOUL'S CALCULATION OF THE RISK-FREE RATE?

A. First, I must reiterate my earlier statements that long-term Treasury Bonds have substantial maturity risk associated with the market risk and the risk of unexpected inflation and normally offer higher yields to compensate investors for these risks. Using the 10-year Treasury Note is more appropriate to balance the short-term volatility risk and the long-term inflation risk.

The Commission has recently recognized the 10-year Treasury Note as the superior measure for the risk-free rate by stating the following: [58]

> We agree with I&E and the ALJs that using the yield on the 10-year Treasury Note provides a better measure of the risk-free rate of return than using the yield on the 30-year Treasury Bond, as recommended by UGI. In our view, using the 10-year Treasury Note balances the shortcomings of the short-term T-Bill and the 30-year Treasury Bond. Although long-term Treasury Bonds have less risk of being influenced by federal policies, they have substantial maturity risk associated with the market risk. In addition, long-term Treasury Bonds bear the risk of unexpected inflation.

[57] AP Statement No. 7, p. 41, ln. 22 through p. 42, ln. 5 and AP Exhibit 4-A, Schedule 13, p. 2.

[58] *Pa. PUC v. UGI Utilities, Inc. – Electric Division;* Docket No. R-2017-2640058 (Order entered October 25, 2018), p. 99. (Disposition of Capital Asset Pricing Model (CAPM)).

Additionally, the further out into the future one projects, the less reliable the information becomes. Using the projection for 2027-2031 is an unreliable measure and this should not be included in the risk-free rate. The Company's FPFTY ends March 31, 2023, and in my opinion using an estimated risk-free rate that is up to eight years beyond the FPFTY is unreasonable and unnecessary.

<u>INFLATED BETAS USED IN CAPM ANALYSIS</u>

Q. HOW HAS MR. MOUL INFLATED THE BETAS EMPLOYED IN HIS CAPM ANALYSIS?

A. Mr. Moul has used the same logic for inflating his CAPM betas from 0.78 to 1.07 that he used to enhance his DCF returns, through a financial risk or "leverage" adjustment.[59]

Q. DO YOU AGREE WITH MR. MOUL'S USE OF ADJUSTED BETAS?

A. No. Such enhancements are unwarranted for beta in a CAPM analysis for the same reasons that the "leverage" adjustment is unwarranted for DCF results.

Additionally, if the unadjusted *Value Line* betas do not reflect an accurate investment risk as Mr. Moul contends, the question naturally arises as to why *Value Line* does not publish betas that are adjusted for leverage. Until this type of

[59] AP Statement No. 7, p. 39, ln. 22 through p. 41, ln. 2.

adjustment is demonstrated in the academic literature to be valid, such leverage adjusted betas in a CAPM model should be rejected.

Finally, as described in my CAPM analysis above, a stock with a price movement that is greater than the overall stock market will have a beta that is greater than one and would be described as having more investment risk than the market. Due to being regulated and the monopolistic nature of utilities, particularly water utilities, rarely do they have a beta greater than one. Therefore, in this case, to apply an adjusted beta of 1.07 to the entire industry or water proxy group is irrational.

<u>SIZE ADJUSTMENT</u>

Q. WHAT IS MR. MOUL'S SIZE ADJUSTMENT?

A. Mr. Moul adds 102 basis points to his CAPM indicated cost of common equity because he believes that as the size of a firm decreases, its risk and required return increases. Mr. Moul relies upon technical literature including the Stocks, Bonds, Bills, and Inflation Yearbook, a Fama and French study entitled "The Cross-Section of Expected Stock Returns," and an article published in Public Utilities Fortnightly entitled "Equity and the Small-Stock Effect."[60]

[60] AP Statement No. 7, p. 42, ln. 21 through p. 43 ln. 11.

Q. EXPLAIN WHY MR. MOUL'S SIZE ADJUSTMENT IS UNNECESSARY?

A. Mr. Moul's size adjustment is unnecessary because the technical literature he cites supporting investment adjustments relating to the size of a company is not specific to the utility industry, and therefore, has no relevance in this proceeding.

Q. IS THERE ACADEMIC EVIDENCE THAT SUPPORTS YOUR CONCLUSION THAT THE SIZE ADJUSTMENT FOR RISK IS NOT APPLICABLE TO UTILITY COMPANIES?

A. Yes. In the article "Utility Stocks and the Size Effect: An Empirical Analysis," Dr. Annie Wong concludes:

> The objective of this study is to examine if the size effect exists in the utility industry. After controlling for equity values, there is some weak evidence that firm size is a missing factor from the CAPM for the industrial but not for utility stocks. This implies that although the size phenomenon has been strongly documented for the industriales, the findings suggest that there is no need to adjust for the firm size in utility rate regulation.[61]

Aqua presents no evidence to support application of a non-utility study regarding a size adjustment for risk to a utility setting. Absent any credible article to refute Dr. Wong's findings, Mr. Moul's size adjustment to his CAPM results should be rejected.

[61] Dr. Annie Wong, "Utility Stocks and the Size Effect: An Empirical Analysis," *Journal of Midwest Finance Association* 1993, pp. 95-101.

1 Additionally, Mr. Moul in effect admits that Aqua's size is of little concern
2 by stating, "The Company's size and financial risk are fairly similar to the Water
3 Group".[62]
4 Further, the Commission has recently rejected the application of a size
5 adjustment to the CAPM cost of equity calculation where it agreed that the same
6 literature the Company cites is not specific to the utility industry.[63]
7 Finally, as mentioned above, it is important to recognize the $100 million
8 equity infusion the Company received from Essential Utilities. Most smaller
9 companies do not have access to the same benefit of being handed such large sums
10 to improve their balance sheet and reduce financial risk.
11
12 **Q. WHAT WOULD MR. MOUL'S CAPM RESULT BE USING YOUR**
13 **CALCULATED 10-YEAR TREASURY NOTE FOR HIS RISK-FREE**
14 **RATE AND WITHOUT HIS SIZE ADJUSTMENT AND INFLATED**
15 **BETAS?**
16 A. Mr. Moul's CAPM result would be 9.30%. This is 410 basis points lower than his
17 originally calculated 13.40% result, yet it is comparable to my CAPM result of
18 9.89% detailed above. The calculation is repeated below without Mr. Moul's

[62] AP Statement No. 7, p. 18, ln. 10.
[63] *Pa. PUC v. UGI Utilities, Inc. – Electric Division;* Docket No. R-2017-2640058 (Order Entered October 25, 2018), p. 100 (Disposition of Cost of Common Equity).

unnecessary adjustments:

Rf	+	ß	*	(Rm-Rf)	+	Size	=	K
1.98%	+	0.78	*	9.39%	+	0	=	9.30%

<u>MANAGEMENT PERFORMANCE</u>

Q. DISCUSS THE COMPANY'S CLAIMS SPECIFIC TO MANAGEMENT PERFORMANCE.

A. Mr. Moul points to the direct testimony of Mr. Packer to support the consideration of additional basis points for Aqua's management performance. Although he declines to quantify what he believes to be an appropriate level of additional basis points, he notes that the Commission granted the Company 22 basis points for superior management performance in its 2008 base rate case.[64]

Q. WHAT INFORMATION DOES MR. PACKER PROVIDE TO SUPPORT THE COMPANY'S CLAIM OF EXEMPLARY MANAGEMENT PERFORMANCE?

A. Mr. Packer claims that Aqua's exemplary management performance is demonstrated through among other things, providing excellent water quality, wastewater treatment compliance, system reliability, cost containment, COVID-19 response, high level customer service, acquisition of troubled water and

[64] AP Statement No. 7, p. 7, ln. 15 through p. 8, ln. 11.

1 wastewater systems, its 'A Helping Hand' low-income customer assistance
2 program, infrastructure rehabilitation program, tax programs, environmental
3 initiatives, and various awards the Company received since its last filing.[65]
4
5 **Q. DO YOU AGREE WITH THE COMPANY'S CLAIMS REGARDING**
6 **MANAGEMENT PERFORMANCE?**
7 A. No. First, many of the topics presented by Mr. Packer fall within the categories of
8 reliability, customer satisfaction, and safety which are required of every public
9 utility company under 66 Pa C.S.A. §1501. Second, the Company passes capital
10 expenditures to its ratepayers via base rates and is proposing to pass the cost of the
11 proposed Universal Service Plan (which would encompass the Helping Hand
12 program) via a reconcilable surcharge mechanism,[66] or it can utilize a DSIC for
13 capital expenditure recovery. Third, if the Company is as effective at controlling
14 operating and maintenance costs as Mr. Packer summarizes,[67] those savings
15 should flow through to ratepayers and/or investors. These claimed savings would
16 likely be offset by the addition of basis points for management performance as
17 ratepayers would have to fund the additional costs. This defeats the purpose of
18 cutting expenses to benefit ratepayers. Fourth, Aqua's 2008 base rate case that
19 Mr. Moul refers to was well over a decade ago, therefore, should be given no
20 consideration in this proceeding. Finally, Mr. Moul states that the Company

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[65] AP Statement No. 1, p. 31, ln. 5 through p. 45, ln. 5.
[66] I&E Exhibit No. 2, Schedule 12.
[67] AP Statement No. 1, p. 37, lines 1-11.

decided to select an equity return at the lower end of his calculated range in order to moderate the customer impact of its proposed rate increase.[68] The addition of basis points for management performance is antithetical to this very argument.

Q. WHAT IS YOUR RECOMMENDATION REGARDING THE CONSIDERATION OF ADDITIONAL BASIS POINTS FOR THE COMPANY'S MANAGEMENT PERFORMANCE?

A. Ultimately, as alluded to above, true strong management performance is earning a higher return through its efficient use of resources and cost cutting measures. The greater net income resulting from cost savings and true efficiency in management and operations is available to be passed on to both ratepayers and shareholders. I do not believe that Aqua, or any utility should be gifted additional basis points for doing what they are required to do to provide adequate, efficient, safe, and reasonable service under 66 Pa C.S.A. §1501.

For these reasons, I recommend that any addition of basis points to the cost of equity for management performance be disallowed.

[68] AP Statement No. 7, p. 3, lines 3-6.

1 **OVERALL RATE OF RETURN RECOMMENDATION**

2 **Q. WHAT IS THE COMPANY'S PROPOSED COST OF EQUITY AND**
3 **OVERALL RATE OF RETURN?**

4 A. The Company recommends a cost of equity of 10.75% and an overall rate of
5 return of 7.64%.

6

7 **Q. WHAT IS I&E'S RECOMMENDED COST OF EQUITY AND OVERALL**
8 **RATE OF RETURN?**

9 A. I&E Exhibit No. 2, Schedule 1, shows the calculation of an appropriate cost of
10 equity to be 8.90% with an overall rate of return for the Company to be 6.64%.

11

12 **Q. DO YOU HAVE ANY FINAL COMMENTS REGARDING THE**
13 **COMPANY'S PROPOSED COST OF EQUITY AND OVERALL RATE OF**
14 **RETURN?**

15 A. Yes. I believe my recommended, market determined cost of equity is fair,
16 particularly considering the financial impacts COVID-19 has had on utilities,
17 ratepayers, and the economy as a whole. Although many ratepayers are feeling
18 financial pressure from the pandemic, the Company is asking for a return on
19 equity well above the industry norm. Additionally, while investors typically view
20 utilities as safe investments due to the regulation that all but guarantees covering
21 the costs of doing business and the steady and secure revenues due to having a
22 captive customer base, high profits are not and should not be guaranteed,

especially in a volatile economic environment. As explained above, the Hope and Bluefield cases set forth the principle that a fair return can change (increase or decrease) along with economic conditions and capital markets. Finally, when asked, Mr. Moul indicated he was unaware if any water distribution utilities throughout the United States were granted a Commission authorized return of 10.75% or higher cost of common equity in the past two years.[69]

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

[69] I&E Exhibit No. 2, Schedule 13.

ANTHONY D. SPADACCIO, CRRA

PROFESSIONAL EXPERIENCE AND EDUCATION

EMPLOYMENT

Fixed Utility Financial Analyst 2014 – Present	PA Public Utility Commission Bureau of Investigation & Enforcement
Auditor 2012 – 2014	Public School Employee's Retirement System Bureau of Benefits Administration
Tax Technician 2010 – 2012	PA Department of Labor and Industry Unemployment Compensation Tax Services
Staff Accountant 2006 – 2009	Boyer & Ritter Certified Public Accountants

EDUCATION & TRAINING

EDUCATION/CERTIFICATIONS:

Society of Utility and Regulatory Financial Analysts (SURFA) – 2018
Certified Rate of Return Analyst (CRRA)

Indiana University of Pennsylvania, A.A. Accounting - 2006

The Pennsylvania State University, B.S. Labor and Industrial Relations – 2003

The Pennsylvania State University - The Smeal College of Business - 2003
Certificates of Completion:
Business Management - 20 credits of instruction
General Business - 20 credits of instruction

UTILITY SPECIFIC TRAINING/CONFERENCES:

SURFA Annual Financial Forum – New Orleans, LA – 2018

SURFA Annual Financial Forum – Indianapolis, IN - 2016

Western NARUC Utility Rate School – San Diego, CA - 2015

Pennsylvania Public Utility Commission Rate School – Harrisburg, PA – 2014

ANTHONY D. SPADACCIO, CRRA

PROFESSIONAL EXPERIENCE AND EDUCATION

EXPERIENCE

I have submitted testimony or provided assistance in the following proceedings:

- Docket Nos. R-2021-3024773, R-2021-3024774 & R-2021-3024779 – Pittsburgh Water & Sewer Authority*
- Docket No. R-2021-3024601 - PECO Energy Company – Electric Division*
- Docket No. R-2021-3023618 – UGI Utilities, Inc. – Electric Division*
- Docket No. R-2020-3022135 – Pike County Light & Power Company (Electric)*
- Docket No. R-2020-3022135 – Pike County Light & Power Company (Gas)*
- Docket No. R-2020-3020919 – Audubon Water Company*
- Docket No. R-2020-3020256 – City of Bethlehem – Bureau of Water*
- Docket Nos. R-2020-3019369 & R-2020-3019371 - Pennsylvania-American Water Company*
- Docket Nos. R-2020-3017951, R-2020-3017970 & P-2020-3019019 – Pittsburgh Water & Sewer Authority*
- Docket No. R-2020-3017206 – Philadelphia Gas Works*
- Docket No. R-2020-3017850 - Peoples Natural Gas Company, LLC 1307(f)*
- Docket No. R-2020-3017846 - Peoples Gas Company, LLC 1307(f)*
- Docket No. R-2019-3010955 – City of Lancaster – Sewer Fund*
- Docket No. R-2019-3008208 - Wellsboro Electric Company*
- Docket No. R-2019-3008212 - Citizens' Electric Company of Lewisburg, PA*
- Docket No. R-2019-3008948 – Community Utilities of PA, Inc. – Wastewater Division*
- Docket No. R-2019-3008947 – Community Utilities of PA, Inc. – Water Division*
- Docket No. A-2019-3006880 – Pennsylvania-American Water Company – Acquisition of the Water Treatment and Distribution System Assets of Steelton Borough Authority (§1329)*
- Docket No. R-2018-3006814 – UGI Utilities, Inc. – Gas Division*
- Docket Nos. M-2018-2640802 & 2640803 – Pittsburgh Water & Sewer Authority (Compliance Plan)*
- Docket Nos. R-2018-3002645 & 3002647 - Pittsburgh Water & Sewer Authority*
- Docket Nos. A-2018-3003517 & 3003519 - SUEZ Water Pennsylvania, Inc. – Acquisition of the Water and Wastewater Assets of Mahoning Township (§1329)*
- Docket No. R-2018-3000124 - Duquesne Light Company*
- Docket No. R-2018-3000164 - PECO Energy Company – Electric Division*
- Docket No. R-2018-2645296 - Peoples Gas Company LLC 1307(f)*
- Docket No. R-2018-3000236 - Peoples Natural Gas – Equitable Division 1307(f)*

ANTHONY D. SPADACCIO, CRRA

PROFESSIONAL EXPERIENCE AND EDUCATION

- Docket No. R-2018-2645278 - Peoples Natural Gas Company, LLC 1307(f)*
- Docket No. R-2017-2640058 - UGI Utilities, Inc. – Electric Division*
- Docket No. R-2017-2595853 - Pennsylvania-American Water Company*
- Docket No. A-2017-2606103 - Pennsylvania-American Water Company – Acquisition of Assets of the Municipal Authority of the City of McKeesport (§1329)*
- Docket No. A-2016-2580061 - Aqua PA Wastewater, Inc. – Acquisition of the Wastewater System Assets of New Garden Township and the New Garden Township Sewer Authority (§1329)
- Docket No. R-2016-2531551 - Wellsboro Electric Company*
- Docket No. R-2016-2531550 - Citizens' Electric Company of Lewisburg, PA*
- Docket No. R-2016-2542923 - PNG, LLC – Equitable Division (Rate MLX)*
- Docket No. R-2016-2542918 - Peoples Natural Gas Company, LLC (Rate MLX)*
- Docket No. P-2016-2543140 - Duquesne Light Company (DSP VIII)*
- Docket No. R-2016-2529660 - Columbia Gas of PA, Inc.*
- Docket No. R-2016-2538660 - Community Utilities of PA, Inc.
- Docket No. P-2016-2521993 - Columbia Gas of PA, Inc. (DSIC)*
- Docket No. R-2015-2506337 - Twin Lakes Utilities, Inc.
- Docket No. R-2015-2479955 - Allied Utility Services, Inc.
- Docket No. R-2015-2479962 - Corner Water Supply & Service Corp.
- Docket No. R-2015-2470184 - Borough of Schuylkill Haven – Water Dept.
- Docket No. R-2014-2452705 - Delaware Sewer Company*
- Docket No. R-2014-2430945 - Plumer Water Company
- Docket No. R-2014-2427189 - B.E. Rhodes Sewer Company
- Docket No. R-2014-2427035 - Venango Water Company
- Docket No. R-2014-2428745 - Metropolitan Edison Company
- Docket No. R-2014-2428744 - Pennsylvania Power Company
- Docket No. R-2014-2428743 - Pennsylvania Electric Company
- Docket No. R-2014-2428742 - West Penn Power Company

*Testimony Submitted