AP STATEMENT NO. 7R

AQUA PENNSYLVANIA, INC. and AQUA PENNSYLVANIA WASTEWATER, INC.

Docket No. R-2021-3027385 and R-2021-3027386

REBUTTAL TESTIMONY OF
PAUL R. MOUL
WITH REGARD TO
COST OF CAPITAL

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

December 2, 2021

REBUTTAL TESTIMONY OF PAUL R. MOUL

INTRODUCTION

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

A. My name is Paul Ronald Moul. My business address is 251 Hopkins Road, Haddonfield, New Jersey 08033-3062. I am Managing Consultant at the firm P. Moul & Associates, an independent financial and regulatory consulting firm.

2. Q. Did you previously submit testimony in this proceeding on behalf of Aqua Pennsylvania, Inc. and Aqua Pennsylvania Wastewater, Inc. ("AP" or the "Company")?

A. Yes. I submitted my direct testimony, AP Statement No. 7, on August 20, 2021.

3. Q. What is the purpose of your rebuttal testimony?

A. My rebuttal testimony responds to the direct testimony submitted by David J. Garrett, a witness appearing on behalf of the Office of Consumer Advocate ("OCA"), and Anthony Spadaccio, a witness appearing on behalf of the Bureau of Investigation and Enforcement ("I&E"). If I fail to address each and every issue in the testimonies of Mr. Garrett and Mr. Spadaccio, it does not imply agreement with those issues.

4. Q. What are the key aspects of the rate of return issue that the Pennsylvania Public Utility Commission ("Commission") should consider when deciding this issue in this case?

A. The primary issue involves the Company's the cost of equity. Mr. Spadaccio has accepted the Company's proposed capital structure ratios. Mr. Garrett has opposed the actual capital structure, and instead proposed a hypothetical capital structure. All the witnesses have accepted the embedded cost of debt for AP. In each instance, the equity returns proposed by the opposing witnesses are entirely too low to reflect the risks of AP and the prospective cost of equity. Aside from technical issues that I will discuss later in my rebuttal testimony, the Commission should take into consideration a rate of return that will reflect and be supportive of the Company's

financial and risk profile. As I explain below, the opposing party recommendations fail to adequately consider this point and thereby significantly understate the required cost of common equity in this proceeding.

5. Q. Please summarize the key points of your rebuttal testimony.

A. My key points are:

- o Capital Structure Ratio – Mr. Garrett's use of a hypothetical capital structure, rather than the Company's projected actual capital structure for the FPFTY, is improper and contrary to standard practice in Pennsylvania.
- o Comparable Companies – Mr. Spadaccio has made an erroneous deletion from my water company barometer group by eliminating Artesian Resources.
- o Discounted Cash Flow ("DCF") – A variety of DCF results are clearly too low to provide a reliable measure of the cost of equity. This can be traced to the formulaic approach taken by Mr. Spadaccio in applying this model (see pages 21-23 of I&E Statement No. 2). In addition, Mr. Garrett fails to adequately reflect investor expectations of growth that are specific to the water/wastewater industry. As such, alternative measures should be considered as has been Commission practice in other proceedings.
- o DCF Leverage Adjustment – Mr. Spadaccio has not refuted the accuracy of the Company's leverage adjustments to the DCF and beta component of the Capital Asset Pricing Model ("CAPM"). Mr. Garrett claims that my leverage adjustment is "inaccurate" (see page 38 of OCA Statement 3). But he has not shown that the capital structure ratios that I calculated are in any way inaccurate.
- o CAPM – A reasonable application of the CAPM mandates using 30-year

Treasury bond yields, leverage adjusted betas, and size adjustment and indicates an equity cost rate that is near 11% in this case.

- Additional methods should also be considered when establishing the cost of equity for AP.

6. Q. How should the rate of return set by the Commission support the Company's financial profile?

A. The Commission should set the Company's return on equity at a level that will attract investment in the Company to ensure the Company's financial ability to render safe and reliable service. Applying this principle, the Commission should reject the proposals by Messrs. Spadaccio and Garrett to cut the Company's return on common equity to 8.90% and 8.00%, respectively. These proposed returns are unreasonable because they are much too low to allow AP to achieve the level of returns that meet investor expectations. Equity returns of this magnitude would be viewed by investors as unsupportive of the Company's financial condition. Rather, based on the factors listed below, and for technical reasons set forth later in my rebuttal testimony, the Commission should adopt a substantially higher equity return for AP.

7. Q. As you noted, Mr. Garrett has proposed an 8.00% equity return for AP. Is this proposal reasonable given other recent testimony that Mr. Garrett has submitted?

A. No. In another rate case (South Carolina Docket No. 2021-153-S), Mr. Garrett submitted testimony using the same proxy group of water companies as here, and he proposed an 8.9% equity return for the utility. The South Carolina testimony was submitted on September 30, 2021. Just six-weeks later, Mr. Garrett now proposes in this case an equity return of just 8.0% for AP. Given the trend toward higher capital costs, a higher not lower return should be the case for AP at this time.

8. Q. Are there additional issues that the Commission should consider when setting the Company's return?

A. Yes. The investment community would be very concerned if the Commission were to adopt either of the positions of the I&E or OCA. If it were to do so, investors would see Pennsylvania regulation as less supportive of the Company at a time of high levels of capital investment. Over the next five years, AP expects capital expenditures to be nearly $1.5 billion. At present, Pennsylvania regulation is currently ranked Above Average/3 by Regulatory Research Associates ("RRA"), which reflects an upgrade that occurred on May 10, 2017. The rating system used by RRA includes three principal categories (*i.e.*, Above Average, Average and Below Average with more refined positions within the categories designated by the numbers 1, 2 and 3). If the Commission were to follow the proposals of I&E or the OCA, the regulatory ranking of Pennsylvania would certainly be jeopardized. The return on equity used by the Commission to set rates embodies in a single numerical value a clear signal of regulatory support for the financial strength of the utilities that it regulates. Although cost allocations, rate design issues, and regulatory policies relative to the cost of service are important considerations, the opportunity to achieve a reasonable return on equity represents a direct signal to the investment community of regulatory support (or lack thereof) for the utility's financial strength. In a single figure, the return on equity utilized to set rates provides a common and widely understood benchmark that can be compared from one company to another and is the basis by which returns on all financial assets (stocks – both utility and non-regulated, bonds, money market instruments, and so forth) can be measured. So, while varying degrees of sophistication are required to interpret the meaning of specific Commission policies on technical matters, the return on equity figure is universally understood and communicates to investors the types of returns that they

can reasonably expect from an investment in utilities operating in Pennsylvania.

9. Q. How do the cost of equity proposals by Mr. Garrett and Mr. Spadaccio compare to the utility returns recently authorized by the Commission?

A. Technical disputes about methodology and data aside, the proposed costs of equity proposed by Mr. Garrett and Mr. Spadaccio are simply not representative of the returns that the Commission has been awarding. Indeed, the Commission established a 9.85% equity return for the Electric Division rate case for UGI Utilities, inc. at Docket No. R-2017-2640058. Since that time, the Commission granted equity returns of 9.54% for Citizens' Electric Company at Docket No. R-2019-3008212, 9.31% for Wellsboro Electric Company at Docket No. R-2019-3008208, 9.73% for Valley Energy at Docket No. R-2019-3008209, 9.86% for Columbia Gas of Pennsylvania at Docket No. R-2020-3018835, and 10.24% for the Gas Division of PECO Energy at Docket No. R-2020-3018929. Moreover, for purposes of setting the Distribution System Improvement Charge ("DSIC"), the Commission has set a 9.80% equity return for water utilities at Docket No. M-2021-3028488 (adopted at Public Meeting held October 7, 2021). In the DSIC proceedings, DSIC recoveries are reconciled and therefore the 9.80% is guaranteed. In a base rate case such as this, a higher equity return is required because that return provides only an opportunity and not a guarantee.

The rates of return on common equity of 8.00% proposed by Mr. Garrett and 8.90% proposed by Mr. Spadaccio are seriously deficient and will not provide AP with the opportunity to earn its investor required cost of capital for the fully projected future test year ending March 31, 2023 ("FPFTY"). As explained below, this is not the time for the Commission to be reducing the Company's authorized return when there is a compelling need for capital investment to rehabilitate aging infrastructures.

10. Q. Should the Commission consider the future trend in capital costs when deciding the return on equity in this case?

A. Yes. Unlike Mr. Garrett, who takes a backward view of interest rates, accommodative Federal Open Market Committee ("FOMC") policy is nearing an end and prospectively higher interest rates will increase capital costs for utilities. A transition in FOMC policy will prospectively produce higher interest rates that should be incorporated into the cost of equity in this case. A forward-looking assessment of the capital markets is especially relevant here because the Company's rates will be based on a fully projected future test year ("FPFTY"). Higher inflation expectations are a contributing factor that points to higher interest rates. Indeed, higher inflation today is revealed by a 5.9% increase in social security payments announced on October 13, 2021, the largest one-year increase in nearly four decades. FOMC has signaled that it plans to taper its bond buying program (i.e., quantitative easing) in November 2021 and to end it completely by mid-2022. The Fed Funds rate is also likely to increase from very low levels that existed during the pandemic. Higher interest rates clearly point to higher capital costs prospectively. I will describe the forecasts of interest rates and the trend below.

To gain a consensus view of future interest rates, I tabulated the forecasts of yields on 10-year Treasury notes published by a variety of well recognized and investor-influencing sources. I chose the 10-year Treasury note because it is available on a consistent basis across all sources. The comparisons are:

	2021	2022	2023	2024	2025	2026	Change in Basis Points
Blue Chip	1.50%	1.30%	1.70%	2.00%	2.40%	2.60%	110
Value Line	1.30%	1.60%	2.00%	2.30%	2.50%		120
EIA	0.76%	1.09%	1.36%	1.57%	1.80%	2.03%	127
CBO	1.61%	1.90%	2.03%	2.29%	2.57%	2.79%	118

The universal consensus is that interest rates will increase in the future. The FOMC policy is in the process of moving from an extremely accommodative to more normal monetary policy. The rising level of interest rates represents one key factor that adds to the risk of common equity. It is apparent that the trough in interest rates has passed and the forecasts show interest rates will rise in the future. The Commission should take the forecast trend toward higher interest rates into account when it sets the cost of equity for AP. Mr. Garrett's testimony considers only a 30-day historical average of 30-year Treasury bond yields. As such, his cost of equity analysis is defective because he has not taken into account the general consensus that interest rates will increase in the future from current levels. It is therefore indicated that a higher authorized return is warranted in the face of higher expected interest rates.

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

A. I will cover the issues of (i) capital structure, (ii) the composition of the proxy (*i.e.*, barometer) group, (iii) the weight to be given to the DCF method, (iv) the DCF growth rate, (v) the leverage adjustment to the DCF and CAPM methods, (vi) the CAPM method, (vii) the Risk Premium analysis, (viii) Comparable Earnings, and (ix) management performance as part of the return on equity consideration.

CAPITAL STRUCTURE RATIOS

12. Q. Is there a difference in the proposed capital structure ratios utilized by the rate of return witnesses in this case?

A. Yes. Mr. Garrett is alone in advocating an erroneous capital structure for AP. Mr. Spadaccio has accepted the Company's proposed capital structure, as it falls within the range of capital structures of the proxy group. Mr. Garrett's position is clearly contrary to long-standing Commission policy concerning capital structure ratios, most recently articulated in the Gas Division rate case of PECO Energy at Docket No. R-2020-3018929 (Order Entered June 22, 2021).

13. Q. What capital structure ratios do Mr. Garrett propose?

A. Mr. Garrett proposes a hypothetical capital structure for AP without ever demonstrating that the Company's proposed capital structure is unreasonable. Rather, his proposed capital structure merely lowers the Company's revenue requirements.

In reaching his conclusion on capital structure ratios, Mr. Garrett performed three analyses. These are: (i) a calculation of the cost of capital at various debt ratios, (ii) the debt ratios of the companies in his proxy group, and (iii) the debt ratios of thousands of other companies. He seems to favor option (ii).

His approach essentially involves the use of a hypothetical capital structure that violates Commission precedent on the use of the actual capital structure. Under the facts of this case, the use of the AP actual capital structure ratios comports with Commission precedent.

14. Q. Is there any basis to deviate from the Company's actual capital structure to set the rate of return in this case?

A. No. As Mr. Spadaccio explained (see page 12 of I&E Statement No. 2), the Company's actual capital structure ratios (including the 53.95% common equity ratio)

fall within the range of the proxy group. This is sufficient to meet the Commission standard that makes the actual AP capital structure appropriate in this case.

Rather than altering the Company's actual capital structure, Mr. Garrett might have been led to a different conclusion if he had considered the common equity ratios utilized by the Commission in recent rate case decisions. Indeed, in its Order Entered on October 25, 2018 in Docket No. R-2017-2640058, the Commission adopted a 54.02% common equity ratio for the Electric Division of UGI Utilities. Furthermore, the Commission accepted a 54.19% common equity ratio in the Columbia Gas of Pennsylvania rate case at Docket No. R-2020-3018835 (Order Entered February 19, 2021) and 53.38% common equity ratio for the Gas Division of PECO Energy at Docket No. R-2020-3018929 (Order Entered June 22, 2021). Indeed, the Company's proposed common equity ratio of 53.95% is entirely reasonable based on prior Commission action. Hence, the Company's actual common equity ratio conforms with Commission policy, i.e., that the actual, not hypothetical, common equity ratio should be employed.

15. Q. Does Mr. Garrett provide clear justification for rejecting the Company's actual capital structure and substituting a different capital structure?

A. No. In addition to his proxy group comparisons, Mr. Garrett also performs a "quantitative analysis" that he says supports a 50% debt ratio with a 6.69% cost of equity calculation (see Exhibit DJG-17). There are a variety of deficiencies with his analysis. First, a 6.69% cost of equity is clearly outside the range of reasonable returns for reasons I will explain below. Second, Mr. Garrett never established that his analysis is applicable for AP in the FPFTY. I have verified the reasonableness of the Company's common equity ratio by considering the historical capital structure ratios for the Water Group and analysts' forecasts, which influence investor expectations. Historically, the Water Group has had a 52.8% common equity ratio. I

have also compared the Company's proposed common equity ratio to that of the Water Group based upon forecast data widely available to investors from Value Line. Those ratios are**:**

Company	2024-26
American States Water	46.5%
American Water Works	39.0%
California Water	59.0%
Essential Utilities	45.0%
Middlesex Water	60.0%
SJW Group	62.0%
York Water Company	62.5%
Average	53.4%

Source: The Value Line Investment Survey, October 8, 2021

This shows that AP is within the range and its actual capital structure has adequate support.

COST OF COMMON EQUITY - DISCOUNTED CASH FLOW (DCF)

16. Q. The DCF model has been used by Mr. Spadaccio, Mr. Garrett and you as one method to measure the cost of equity. What is your position concerning the usefulness of the DCF method?

A. While the results of a DCF analysis should certainly be given weight, the use of more than one method provides a superior foundation for the cost of equity determination. Since all cost of equity methods contain certain unrealistic and overly restrictive assumptions, the use of more than one method will capture the multiplicity of factors that motivate investors to commit capital to an enterprise (*i.e.*, current income, capital appreciation, preservation of capital, level of risk bearing). The simplified DCF model makes the assumption that there is a single constant growth rate, there is a constant

dividend payout ratio, that price – earnings multiples do not change, and that the price of stock, earnings per share, dividends per share and book value per share all have the same growth rate. We know from experience that those assumptions are not realistic, because the stock market reveals performance that is very different from the assumptions of the DCF.[1] The use of multiple methods provides a more comprehensive and reliable basis to establish a reasonable equity return for AP. The Commission has acknowledged the usefulness of other methods, such as CAPM and Risk Premium, as a check on the reasonableness of the DCF return.

Indeed, the influence of other methods must have an impact on the Commission's attitude toward the DCF model because the Commission's selection of the rate of return on equity for use in the DSIC is usually set well above the cost of equity indicated by the DCF model alone. For example, in the Quarterly Earnings Report at Docket No. M-2021-3028488, the Commission set the DSIC return at 9.80% for the Water Companies, while the DCF returns were just 8.50% using current stock prices and 8.61% using 52-week average stock prices. It is clear that the Commission has been guided by the results of other models and other factors aside from DCF when setting the DSIC return. As an apparent check on the reasonableness of the DCF result, the CAPM result was 9.99% for the Water Company Barometer Group as calculated in the Commission's Quarterly Earnings Report dated June 30, 2021 (Docket Number M-2021-3028488).

17. Q. What form of the DCF model has been employed in this case?

A. The constant growth form of the DCF model has been used by Mr. Spadaccio, Mr. Garrett, and me.

18. Q. Do the DCF results proposed by Mr. Spadaccio provide a reasonable

[1] The growth rate variables shown on Schedules 8 and 9 of AP Exhibit B shows that the assumption associated with the simplified DCF model are not reasonable.

representation of the cost of equity?

A. Not in my opinion. The principal purpose of assembling a barometer group is to avoid relying on data for a single company that may not be representative and to thereby smooth out any abnormalities. That said, when some of the DCF results for companies in the barometer group are unreasonable on their face, the reliability of the method being used, or the witness' application of that method, must be questioned. As indicated below, DCF results used by Mr. Spadaccio fall into that category:

Company	Average: 52 wk & Spot Yield	+	Growth	=	Total
American States Water	1.74%	+	6.00%	=	7.74%
Middlesex Water	1.17%	+	3.60%	=	4.77%
York Water	1.66%	+	5.70%	=	7.36%

It is a fundamental tenet of finance that the cost of equity must be higher than the cost of debt by a meaningful margin to compensate for the higher risk associated with a common equity investment. Yet, each of the companies listed above have DCF returns calculated by Mr. Spadaccio that fail to provide a sufficient spread over the six-month average yield of 3.07% on A-rated public utility bonds, or the October 2021 yield that was 3.09%. As I have demonstrated in my direct testimony (AP St. No. 5 at pages 38-39), the spread between the cost of debt and cost of equity should be 6.75% in this market environment. As such, none of the returns listed above can come close to meeting this standard.

DCF GROWTH RATE

19. Q. As to the DCF growth component, what financial variables should be given greatest weight when assessing investor expectations?

A. The theory of the DCF holds that (1) the value of a firm's equity (*i.e.*, share price) will grow at the same rate as earnings per share with a constant P-E ratio and (2) dividend growth will equal earnings growth with a constant payout ratio. Therefore, to properly reflect investor expectations within the limitations of the DCF model, earnings per share growth, which is the basis for the capital gains yield and the source of dividend payments, must be given greatest weight. The reason that earnings per share growth is the primary determinant of investor expectations rests with the fact that the capital gains yield (*i.e.*, price appreciation) will track earnings growth with a constant price earnings multiple (a key assumption of the DCF model). It is also important to recognize that analysts' earnings growth rate forecasts significantly influence investor growth expectations. It is for this reason that GDP growth rates submitted by Mr. Garrett are an inappropriate representation of investor growth rate expectations. Moreover, it is instructive to note that Professor Myron Gordon, the foremost proponent of the DCF model in public utility rate cases, has established that the best measure of growth for use in the DCF model are forecasts of earnings per share growth.[2]

20. Q. Please summarize the DCF growth rate analysis performed by Mr. Spadaccio.

A. As shown on page 23 of I&E St. No. 1, Mr. Spadaccio proposes a growth rate of 7.15%, based on his review of analysts' projected earnings growth rates. If he had removed the unduly low growth rate for Middlesex Water, his group average growth

[2] "Choice Among Methods of Estimating Share Yield," The Journal of Portfolio Management, Spring 1989 by Gordon, Gordon & Gould. "We have compared the accuracy of four methods for estimating the growth component of the discounted cash flow yield on a share: past growth rate in earnings (KEGR), past growth rate in dividends (KDGR), past retention growth rate (KBRG), and forecasts of growth by security analysts (KFRG)…we have three observations to make. First, the superior performance by KFRG should come as no surprise. All four estimates of growth rely upon past data, but in the case of KFRG a larger body of past data is used, filtered through a group of security analysts who adjust for abnormalities that are not considered relevant for future growth."

rate would have been 7.74%, thereby producing a 9.58% (1.84% + 7.74%) DCF return, when excluding the Middlesex dividend yield as well.

21. Q. In his testimony, Mr. Garrett does not assemble any growth rates that are specific to his proxy group of companies. Does this follow the traditional approach for applying the DCF model?

A. No. While Mr. Garrett acknowledges that various sources exist for company-specific growth rates, he does not look at them. The only growth rates that are specific to his water company proxy group are those taken from my testimony. His approach to looking at GDP growth is certainly alien to all DCF analysis that is familiar to the Commission. On this basis alone, the DCF analysis submitted by Mr. Garrett in this case should be dismissed. I say this because, as I previously explained, Myron Gordon established that analysts' forecast of earnings growth are the correct input for the DCF for each member of the proxy group.

22. Q. Do the DCF growth rates proposed by Mr. Garrett provide a reasonable input in the cost of equity analysis using the DCF model?

A. No. Mr. Garrett indicates that his method for analyzing the growth rate component rests on: (i) nominal GDP, (ii) real GDP, (iii) inflation, and (iv) the risk-free rate. There are many problems with his approach. First, the combination of the real GDP growth and inflation equals nominal GDP, i.e. (1.018) * (1.020) = (1.0380 -1) = 3.8%. Hence, two of his input variables are double counted when he separately considers nominal GDP growth. Second, the risk-free rate provides no guide of the growth that a company can realize in its earnings. Earnings growth occurs through revenue growth, net of: O&M, depreciation, taxes, and interest. None of these factors are addressed with the risk-free rate of return. Third, Mr. Garrett is essentially developing a generic growth rate that would apply to any, or all companies, whether they are regulated or non-regulated companies. We all know that each company has a unique company-

specific growth rate. His approach is simply incompatible with the basic concept of the DCF, where future cash flows for each company are systematic related to one another by a constant growth rate. It is also incompatible with the use of the growth rates of a comparable barometer group of companies to meet the requirement that a utility is to be permitted to earn a return equal to comparable companies. Remember, the DCF equation is P = D / (k-g). Mr. Garrett's growth rate does not fit within this equation.

23. Q. What DCF growth rate did Mr. Garrett actually use in his DCF?

A. He used one of my growth rates taken from analysts' projections after first asserting that a growth rate range of 2% to 4% is indicated from his analysis. But in doing so he introduced a downward bias to his result because he adopted the lowest of the forecast growth rates, I provided. If his approach were not biased by his belief that a proper growth rate should be between 2% and 4%, he would have also included DCF results using a 7.13% (6.31% + 7.15% + 7.93% = 21.39% ÷ 3) growth rate from all three forecast growth rates that I reported. The resulting DCF calculations would provide an 8.87% return with the quarterly form of the DCF. Regardless, his DCF return is inadequate for reasons explained above.

LEVERAGE ADJUSTMENT

24. Q. Please respond to Mr. Spadaccio's criticism of your leverage adjustment.

A. In his discussion of my leverage adjustment, Mr. Spadaccio mentions M/B ratio at page 39 of I&E Statement No. 2. I need to be clear that my leverage adjustment is not designed to produce any particular M/B ratio. Mr. Spadaccio offers three reasons for not making a leverage adjustment. First, Mr. Spadaccio notes that the credit rating agencies assess financial risk in terms of a company's booked debt obligations in their analysis of the creditworthiness of a company. I agree. But this has nothing to do with my leverage adjustment. The credit rating agencies do not measure the

market required cost of equity for a company. The credit rating agencies are only concerned with the interests of lenders. They are judging risk associated with a company's ability to make timely payments of principal and interest. Hence, they are not concerned with the cost of equity or how it is applied in the rate-setting context. While Mr. Spadaccio's observation is correct, it has no relevance to my leverage adjustment.

25. Q. Second, Mr. Spadaccio also questions your leverage adjustment by reference to prior Commission orders. Please comment.

A. Mr. Spadaccio points to several decisions where the Commission declined to make a leverage adjustment – *i.e.*, rate cases including Aqua Pennsylvania, the City of Lancaster Water Department, UGI Utilities – Electric Division, and Columbia Gas of Pennsylvania. The fact that the Commission declined to use the leverage adjustment in the Aqua Pennsylvania case cited by Mr. Spadaccio does not invalidate its use. Notably, the Commission did not repudiate the leverage adjustment in the Aqua case, but instead arrived at an 11.00% return on equity for Aqua by including a separate return increment for management performance. Just like an increment for management performance is not recognized in all rate cases, so too the Commission seems to be taking a similar approach to the leverage adjustment. As to the City of Lancaster decision, the situation there was quite different than the leverage adjustment that I propose in this case. Lancaster proposed a leverage adjustment to the cost of equity measured with the Hamada formula and applied it to the DCF result, the Risk Premium result, and the CAPM. While the Hamada formula plays a role in the CAPM, it is not applicable to the DCF or the Risk Premium measures of the cost of equity. Hence, this distinguishes the City of Lancaster approach to the leverage adjustment from mine in this case. As to the UGI – Electric Division case, there the Commission granted a management performance increment rather than a leverage

adjustment when arriving at a 9.85% equity return. And for Columbia, the Company accepted the ALJs determination of the allowed return, which was 9.86%. Thus, Columbia chose not to argue the leverage adjustment in Exceptions to the Commission. However, based upon the current inputs to the DCF that indicated a low result, the Commission should now consider using the leverage adjustment, just as it did previously when the DCF was suggesting unusual results.

26. Q. Third, Mr. Spadaccio argues that investors base their decisions on the book value debt and equity ratios for regulated utilities. Please respond.

A. Mr. Spadaccio contends that information presented to investors (see page 44 of I&E Statement No. 2), such as that included in the Value Line reports, argues against my leverage adjustment because investors base their investment decisions on book value. However, the Value Line reports clearly show the market capitalization of each company in his barometer group. This means that investors are well aware of the market capitalization of the water utility stocks that Mr. Spadaccio relies upon for his analysis of the cost of equity. More importantly, I fundamentally disagree that investors base their decisions on book values. To the contrary, it is the future cash flows that investors expect to realize that determines the price they are willing to pay for a share of common equity. Stated differently, investors are concerned with the return that will be earned on the dollars they invest (*i.e.*, their market price) and not some accounting value of little relevance to them. The financial risk associated with the book value capital structure is different from the market value of the capitalization. I clearly demonstrate this point on Schedule 10 of AP Exhibit 4-A. Hence, the observation of Mr. Spadaccio is misplaced because I have clearly shown the difference in financial risk and that risk difference must be taken into account when arriving at an equity return that is applicable to the weighted average cost of capital using book value weights.

27. Q. Mr. Garrett criticized the leverage adjustment that you propose to account for the divergence of market capitalization and book value capitalization. Please comment.

A. At pages 35-38 of OCA Statement No. 2, Mr. Garrett never really refutes my leverage adjustment. Indeed, he says that I misapplied the Hamada formula leverage adjustment approach. First, in the DCF approach, I did not use the Hamada formula, but rather I used the Modigliani & Miller approach. Second, at page 36 of OCA Statement No. 2, Mr. Garrett claims that the Hamada formula generates an unlevered beta of 0.47. But what I have shown is that the correct unlevered beta is 0.60 (see page 40 of AP Statement No. 7). The reason for the difference is that I correctly use the market capitalization for my calculation and Mr. Garret did not, because he used the book value capital structure ratios of AP. Indeed, there, Mr. Garrett used the actual capital structure ratios of AP, rather than the hypothetical ratios he proposes.

COST OF COMMON EQUITY - CAPITAL ASSET PRICING MODEL

28. Q. Do you have concerns regarding Mr. Spadaccio's and Mr. Garrett's applications of the CAPM?

A. Yes. Mr. Spadaccio's CAPM analysis understates the cost of equity for a number of reasons: (i) his use of the yield on 10-year Treasury notes, (ii) his failure to use leveraged adjusted betas, and (iii) his failure to make a size adjustment. Mr. Garrett uses an inappropriate 30-day average yield on 30-year Treasury bonds and a beta that is not leverage adjusted. He also fails to include the size adjustment.

29. Q. How does the use of the yield on 10-year Treasury notes compare with yields on longer-term Treasury bonds?

A. The Blue Chip reports show this comparison. For the third quarter of 2021, the gap was 0.61% (1.93% - 1.32%) between the yields on 30-year and 10-year Treasury obligations. For the period 2023-2027, that gap is projected at 0.60% (3.5% - 2.9%).

This shows a systematic understatement of Mr. Spadaccio's CAPM returns. This understatement can be traced to extraordinary monetary policy actions taken by the FOMC to deal with the recession that followed the onset of the COVID pandemic. Shorter-term rates, such as 10-year notes, respond more to the policy initiatives of monetary officials, while long-term rates, such as 30-year bonds, are more a reflection of investor sentiment of their required returns. For this reason, long-term rates, such as those revealed by 30-year Treasury bonds, should be used to measure the risk-free rate of return. Use of shorter-term rates, such as Mr. Spadaccio's 10-year Treasury Notes yields, are more susceptible to Fed policy actions.

30. Q. How has Mr. Spadaccio understated the risk-free rate of return?

A. The support for his risk-free rate of return is shown on his Schedule 8 of I&E Exhibit No. 2. There, he incorrectly gives the same weight to the yield on 10-year Treasury notes for the fourth quarter of 2021 as he does for the entire five-year period 2023 through 2027. This approach leads to a seriously understated risk-free rate of return. Even if 10-year rates are used, it is necessary to correct the weights assigned to the forecast data presented by Mr. Spadaccio. I have revised his forecast below, based upon Blue Chip. Moreover, Blue Chip provides higher yields on Treasury obligations as the forecasts are extended into the future.

The resulting risk-free rate of return is 2.8% using the yield on 10-year Treasury Notes and 3.3% using the yield on 30-year Treasury Bonds.

Year	10-Year Treasury Yield	30-Year Treasury Yield
2022	2.0%	2.6%
2023	2.4%	2.9%
2024	2.7%	3.3%
2025	3.0%	3.6%
2026	3.2%	3.8%
2027	3.3%	3.8%
Average	2.8%	3.3%

31. Q. How should these results be used in the CAPM?

A. The risk-free rate of return should be calculated with the data that I present above. The size adjustment of 1.02% must also be incorporated into the CAPM. I have corrected Mr. Spadaccio's CAPM as indicated below using those inputs and the forecast yield on 10-year Treasury bond shown above:

	Rf	+	*β*	*(*	*Rm*	-	*Rf*	*)*	+	*size*	=	*K*
Water Group	2.80%	+	0.78	(	12.14%	-	2.80%	)	+	1.02%	=	11.11%

32. Q. Mr. Spadaccio questions the need to adjust the CAPM results for size differences. Please comment.

A. As a preliminary matter, it is noteworthy that CAPM provides compensation solely for systematic risk, and that the size of the Water Group must be considered separately. As I indicated with the data presented on Schedules 2, 3 and 4 of AP Exhibit 4-A, the water utilities are small as they are just 9% to 11% of the size of the electric and gas utilities that comprise the S&P Public Utilities. Indeed, recent Federal Energy Regulatory Commission ("FERC") orders specifically prescribe an adjustment to the

CAPM due to the size of an enterprise.[3] Mr. Spadaccio's arguments revolve around the purported distinction between regulated utilities and unregulated industrial companies (see page 49 of I&E Statement No. 2). However, the Wong article that he relies upon was authored twenty (20) years ago, and employed data going back into the 1960s. Enormous changes have occurred in the industry since the 1960s that have fundamentally changed the utility business. The Wong article also noted that betas for the non-regulated companies were larger than the betas of the utilities. This, however, is not a revelation, because utilities continue to have lower betas than many other companies. This fact does not invalidate the additional risk associated with small size.

The Wong article further concludes that size cannot be explained in terms of beta. Again, this should not be a surprise. Beta is not the tool that should be employed to make that determination. Indeed, beta is a measure of systematic risk and it does not provide the means to identify the return necessary to compensate for the additional risk of small size. In contrast, the famous Fama/French study (see "The Cross-Section of Expected Stock Returns," The Journal of Finance, June 1992) identified size as a separate factor that helps explain returns.

33. Q. How does size affect the financial performance of a small company?

A. Examples of the financial consequences of external factors that can influence the financial performance of a small company include loss of a large customer and the effect of unexpected changes in expense.

34. Q. In the recent Gas Division rate case for PECO Energy (Docket No. R-2020-301829), the Commission declined to make a size adjustment to the CAPM. Should the size adjustment be considered here?

[3] *See, e.g.*, Association of Businesses Advocating Tariff Equity, 171 FERC ¶61,154 (May 21, 2020).

A. Yes. In that case, the ALJs and Commission concluded the adjustment for size was not necessary in utility rate regulation. In this case, it is worthy to note that the beta measure of systematic risk does not account for the additional risk associated with small size, either for a non-regulated firm or a public utility. In addition, the studies that I have relied upon for the size adjustment utilized market-wide evidence that included public utilities. Likewise, the FERC has incorporated the size adjustment into its CAPM analysis. For these reasons, the Commission should revisit the propriety of including a size adjustment here.

35. Q. At page 50 of OCA Statement No. 2, Mr. Garrett also challenges the adjustment that you made to the results of the CAPM for the size of the Water Group. Please respond.

A. A size adjustment is necessary because the financial impact of changes in specific dollar amounts of revenues and costs have a magnified influence on a small company because there are fewer dollars over which those revenues or costs can be spread.

36. Q. Mr. Garrett has also performed a CAPM calculation in addition to his DCF analysis. Are the results of his CAPM useful in setting the Company's equity return in this case?

A. No. There are a variety of problems with Mr. Garrett's CAPM approach which makes it not useful in this case. He makes CAPM calculations that produce results of 6.4%, which on its face is simply not credible. This is shown by the Commission's Quarterly Earnings Report that produces a CAPM return of 9.99% for the Water Company barometer Group that exceeded substantially the DCF return. Rather Mr. Garrett has produced a CAPM result that is erroneously lower than his DCF result. First, Mr. Garrett uses a backward looking yield on 30-year Treasury bonds. A 30-day historical average period is not compatible with the Commission's use of forecast Treasury yields (see UGI Utilities - Electric Division at Docket No. R-2017-2640058, Order

Entered October 25, 2018). Second, the 5.5% equity risk premium ("ERP") selected by Mr. Garrett is completely off the mark. As one input to his analysis, Mr. Garrett calculated a 7.0% "Required Return on Market" that is less than the 8.0% DCF return that he calculates for his Water Group. It is inconceivable that the total market return associated with a beta of 1.0 could be less than the return for the Water Group that has a beta of 0.794 according to Mr. Garrett. His total market return is just not credible.

Mr. Spadaccio's data leads to an ERP of 10.16% (12.14% - 1.98%), and I determined an 9.00% ERP. Furthermore, the implied total market return using Mr. Garrett's final inputs is just 7.52% (2.02% + 5.5%), which is clearly incompatible with actual stock market returns of 18.40% in 2020, 16.21% YTD in 2021, and 12.16% on average for the past 95 years (1926-2020).

COST OF COMMON EQUITY - RISK PREMIUM ANALYSIS

37. Q. Do you believe the Risk Premium method provides significant evidence of the cost of equity?

A. Yes. In my opinion, the Risk Premium results should be given serious consideration. The Risk Premium method is straight-forward, understandable and has intuitive appeal because it is based on a company's own borrowing rate. The utility's borrowing rate provides the foundation for its cost of equity which must be higher than the cost of debt in recognition of the higher risk of equity (see AP St. No. 5 pages 30-33). So, while Mr. Spadaccio and Mr. Garrett decline to use the Risk Premium approach to measure the Company's cost of equity, it is an approach that provides a direct and complete reflection of a utility's risk and return because it considers additional factors not reflected in the beta measure of systematic risk. It is particularly useful when investors expect changes in the cost of debt prospectively, which is currently the expectation of investors, as I have explained above and in AP St. No. 7,

pages 35-39. Indeed, the Risk Premium approach provides for direct reflection of prospective interest rates in the model and therefore should be given weight in determining the equity cost rate in this case.

38. Q. Please respond to Mr. Garrett's criticisms of your Risk Premium approach.

A. While Mr. Garrett declines to use the Risk Premium approach to measure the Company's cost of equity, it is an approach that provides a direct and complete reflection of a utility's risk and return because it considers additional factors not reflected in the beta measure of systematic risk. In fact, it is precisely because investors consider the results of other methods that they too should be used in addition to the DCF in the development of the cost of equity in this proceeding. As I explained in my direct testimony, we are facing the prospect of increasing interest rates for the future and the market has increased yields on debt instruments. I incorporated the trend toward higher interest rates when I developed my Risk Premium cost of equity of 10.50% (3.75% interest rate on A-rated public utility bonds + 6.75% equity risk premium).

39. Q. What does Mr. Spadaccio say about your Risk Premium analysis?

A. Mr. Spadaccio makes the unfounded assertion that the Risk Premium and CAPM methods should only be used as a comparison to the results of the DCF method because they do not carry over from the investment decision-making process to the utility rate setting process (see page 19 of OCA Statement No. 2). In fact, it is precisely because investors consider the results of other methods that they too should be used in addition to the DCF in the development of the cost of equity in this proceeding. Mr. Spadaccio's assertion that the Risk Premium method does not measure the current cost of equity as directly as the DCF is similarly without foundation. As I explained in my direct testimony and earlier in this rebuttal testimony, we are facing the prospect of increasing interest rates for the future. I incorporated

the trend toward higher interest rates when I developed my Risk Premium cost of equity of 10.50%. Hence, my Risk Premium cost rate is fully responsive to changing market fundamentals and the credit quality of the Water Group.

COST OF COMMON EQUITY - COMPARABLE EARNINGS APPROACH

40. Q. Please respond to the criticism of the Comparable Earnings approach.

A. The underlying premise of the Comparable Earnings method is that regulation should emulate results obtained by firms operating in competitive markets and that a utility must be given an opportunity cost of capital equal to that which could be earned if one invested in firms of comparable risk. For non-regulated firms, the cost of capital concept is used to determine whether the expected marginal returns on new projects will be greater than the cost of capital, *i.e.*, the cost of capital provides the hurdle rate at which new projects can be justified, and therefore undertaken. Further, given the 10-year time frame (*i.e.*, five years historical and five years projected) considered by my study, it is unlikely that the earned returns of non-regulated firms would diverge significantly from their cost of capital.

The Comparable Earnings approach satisfies the comparability standard established in the *Hope* case. In addition, the financial community has expressed the view that the regulatory process must consider the returns that are being achieved in the non-regulated sector to ensure that regulated companies can compete effectively in the capital markets. Moreover, in a 1994 study that addressed the ROE issue, John Olson (then with Merrill Lynch) established that ROEs from non-regulated companies provide better assessment of investor requirements than those available for regulated utilities.[4]

[4] "Natural Gas: The Case for ROE Reform," John E. Olson First Vice President, Merrill Lynch & Co., October 11, 1994.

MANAGEMENT PERFORMANCE

41. Q. Both Mr. Spadaccio and Mr. Garrett oppose any recognition for management performance in the determination of the return on equity. Mr. Spadaccio and Mr. Garrett asserts that AP has only done what it is required to by law. How do you respond?

A. As I stated in my direct testimony, I believe AP has performed in an exemplary manner, as explained by AP Witness Packer, and that performance should be recognized in this case. Mr. Spadaccio simply disagrees, without addressing any of the items highlighted by Mr. Packer as examples of AP's excellent performance. Mr. Spadaccio further claims that the 22 basis points the Company realized for management performance in its last rate case was over a decade ago and should not be considered now. Mr. Garrett's position regarding management performance is that the models of the cost of equity already incorporate management effectiveness. In each case, neither Messrs. Spadaccio nor Garrett have shown that AP is not entitled to some form of management performance recognition by the Commission. Mr. Packer's testimony has established that the Company's management performance warrants recognition by the Commission.

Q. Mr. Garrett also criticizes your addition of a management performance adjustment, arguing that you have proposed such an adjustment in each rate case in Pennsylvania since 2015. Please comment.

A. Mr. Garrett misperceives my role with respect to management performance adjustments to equity. As I have made clear in this case, and in each of the cases identified by Mr. Garrett, I do not make an independent assessment of management performance of each utility. Other company witnesses, such as Mr. Packer in this case, present evidence in support of management performance.

SUMMARY

42. Q. Please summarize your rebuttal testimony.

A. It is my opinion that the equity allowances proposed by Mr. Spadaccio and Mr. Garrett significantly understate the cost of common equity for AP. In an environment of prospectively higher interest rates and Company-specific risk factors, an opportunity to earn a cost of equity of 10.75% is reasonable for AP.

43. Q. Does this conclude your rebuttal testimony?

A. Yes, it does.