Statement No. 8R

COLUMBIA GAS OF PENNSYLVANIA, INC.

Rebuttal Testimony

of

Paul R. Moul, Managing Consultant
P. Moul & Associates

Concerning

Cost of Equity and
Fair Rate of Return

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Columbia Gas of Pennsylvania, Inc.
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Introduction

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.

Q. Did you previously submit testimony in this proceeding on behalf of Columbia Gas of Pennsylvania, Inc. ("CPA" or the "Company")?

A. Yes. I submitted my direct testimony, Columbia Statement No. 8, on March 16, 2018.

Q. What is the purpose of your rebuttal testimony?

A. My rebuttal testimony responds to the direct testimony submitted by Dr. Marlon F. Griffing, a witness appearing on behalf of the Office of the Consumer Advocate ("OCA"), Christopher M. Henkel, a witness appearing on behalf of the Commission's Bureau of Investigation and Enforcement ("I&E"), James L. Crist, a witness appearing on behalf of The Pennsylvania State University ("PSU"), and Robert D. Knecht appearing on behalf of the Office of Small Business Advocate ("OSBA"). If I fail to address each and every issue in the testimonies of each of these witnesses, it does not imply agreement with those issues.

Q. What are the key aspects of the rate of return issue that the Commission should consider when deciding this issue in this case?

A. The Company's capital structure and the cost of debt are not an issue in this case. Mr. Henkel and Dr. Griffing accepted the Company's proposed capital structure and cost of debt in this case. Messrs. Crist and Knecht did not address these issues. The equity returns, however, proposed by the I&E and OCA witnesses are entirely too low to reflect the risks of CPA and the prospective cost of equity. It is noteworthy that Mr. Crist did not prepare a cost of equity analysis, and his assertion that current experienced return should be adopted is unsupported and unjustified. Mr. Crist's proposal of an overall rate of return

of 6.3% produces an equity return of 7.5%, which is roughly 200 basis points lower than the inadequate recommendations of the I&E and OCA witnesses. There are three key factors that bear on the rate of return issue in this case. Aside from technical issues that I will discuss later in my rebuttal testimony, the Commission should take into consideration the following:

1) A rate of return that will be reflective of rising capital cost rates and the higher risk associated with the TCJA.

2) A rate of return that will reflect and be supportive of the Company's financial and risk profile.

3) The management effectiveness displayed by CPA.

As I explain below, the opposing party recommendations fail to adequately consider these points and thereby understate the required cost of common equity in this proceeding.

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

A. My key points are:

- Comparable Companies – Dr. Griffing and Mr. Henkel have made deletions and additions to the proxy group that I proposed in this case. I disagree with those alternations to my Gas Group because my group fairly reflects the risks for the typical natural gas distribution utility.
- Discounted Cash Flow (DCF) – A variety of DCF results are too close to the cost of debt to provide a reliable measure of the cost of equity. As such, alternative measures should be considered as has been Commission practice in other proceedings.
- A multistage DCF model, as proposed by Dr. Griffing, is inappropriate for use in this case.
- DCF Leverage Adjustment – The I&E and OCA witnesses have not refuted the accuracy of the Company's leverage adjustments to the DCF and beta component

of the CAPM.

- Capital Asset Pricing Model – A reasonable application of the CAPM mandates using prospective yields on 30-year Treasury bonds, leverage adjusted betas, historical returns based on arithmetic means, and size adjustment.
- Risk Premium Analysis – The Risk Premium approach has previously been considered by the Commission and the results presented by the Company substantiate the Company's proposed return in this case. The Risk Premium analysis is particularly relevant in this case because it directly reflects the effect of higher expected interest costs on the prospective cost of common equity capital.
- Comparable Earnings Approach – This approach substantiates the Company's proposed return in this case.

Management effectiveness of CPA warrants an equity return above the midpoint of the indicated returns shown by the standard models of the cost of equity. Furthermore, there is no reason to adjust downward the equity return, as proposed by Messrs. Henkel, Crist, and Knecht, if the Commission adopts the Company's revisions to its WNA and its proposed RNA.

The Effect of the Tax Cuts and Jobs Acts ("TCJA") on the Risk Profile of CPA

Q. What have credit rating agencies said about the effect of the TCJA on utilities?

A. Moody's has indicated that TCJA has a negative impact on the credit ratings of utility holding companies and their regulated operating companies due to the reduction in cash flow and coverage ratios as the ratemaking process passes the benefits of reduced taxes through to ratepayers. Indeed, Moody's Investors Service on June 18, 2018 downgraded its outlook on the regulated utilities sector to "negative," citing lower cash flows and higher debt levels as federal tax reform and increased capital spending continue to weigh on the

sector.

Q. How has the TCJA increased business and operating risk for CPA?

A. There are several major financial consequences that flow from the changes in the federal corporate income tax law that will negatively affect the Company. First, a lower federal corporate income tax rate (21% versus 35%) will lower the Company's pre-tax interest coverage and, therefore, will reduce its credit quality and increase risk. As noted on page 10 of CPA Statement No. 8, the new 21% marginal federal corporate income tax rate will result in pre-tax interest coverage of 4.40 times at proposed rates. Under the old marginal federal corporate income tax rate of 35%, the Company's pre-tax interest coverage would have been 5.13 times. Furthermore, lower federal corporate income taxes will make investor returns more volatile than before the change in federal corporate income taxes, and higher volatility translates into increased business risk for CPA.

Finally, utilities such as CPA, will require more investor-supplied capital to fund their construction program because the new federal corporate income tax law eliminates bonus depreciation and deferred taxes will be booked at a lower rate prospectively. In response to these financial challenges caused by the new lower federal corporate income tax rate, the Company's risk will increase, thereby causing an increase in the cost of capital in response to higher business risk and weaker credit quality measures.

Q. Have I&E and OCA witnesses adequately considered the effect of the TCJA on the risk profile of CPA?

A. In my opinion, they have not. Dr. Griffing's and Mr. Henkel's proposals are not an appropriate regulatory response to the TCJA for natural gas utilities generally, or CPA specifically. In light of the discussion above, setting a return on equity at a much higher rate would be the appropriate response to the increased risk fostered by TCJA. As to the claim that the market evidence, and in particular the stock prices in the DCF, reflect the impact of TCJA, it is not enough to make such a sweeping statement as it affects the

credit quality implications of the TCJA. For example, the credit rating agencies are very concerned about the cash flow implications of TCJA. Dr. Griffing has not demonstrated how his equity proposal that is substantially based on the DCF model has addressed the cash flow and credit quality issues on a prospective basis.

Q. What actions can be taken to address the higher risk implications of the TCJA?

A. Credit rating agencies anticipate that it will be necessary for utilities to work closely with state regulators to try to address the negative impact of tax reform. Exhibit PRM-1R shows that the rating agencies have suggested that potential regulatory ratemaking offsets to tax-related cash flow reductions could include:

(i) a higher authorized return on equity from regulators to recognize that business risk has increased, credit quality will decline, and cash flow will be diminished prospectively;

(ii) a deleveraging of the capital structure through less debt and more equity; and/or

(iii) a reduction in future capex to accommodate lower future cash flows.

Item (ii), although under the direct control of public utilities, can only be effective if a new higher equity ratio is recognized in the rate-setting process, and item (iii) is counter to the growing capital requirement of natural gas utilities. Reducing capex is neither desirable nor responsible for natural gas utilities, such as CPA. Importantly, item (i) is directly under the control of regulators, such as the Commission. In this case, the Commission can employ my financial risk adjustment in the DCF model as a means to both increase the equity return and to recognize the need for deleveraging the capital structure until such time that more equity is used therein. The Commission should be receptive to higher authorized returns to account for the effects of the TCJA, as well as in recognition of the trend toward higher interest rates that has developed in 2018.

Opposing Parties Equity Proposals and Relevant Market Fundamentals

Q. Is it necessary that the cost of equity set by the Commission support the Company's financial profile?

A. Yes, the cost of equity set by the Commission should allow the Company to maintain its financial integrity and credit quality. At a time when the cost of capital is increasing, the Commission should reject the proposal by Dr. Griffing to set the Company's return at 9.45%. A cost of equity return of 9.72% as proposed by Mr. Henkel also would be viewed by investors as unsupportive of the Company's financial health. Rather, based on the factors listed below, and for technical reasons set forth later in this rebuttal testimony, I have shown that the proposed returns by Mr. Henkel and Dr. Griffing are too low to reflect the risk and return for CPA.

Q. How do Mr. Henkel's and Dr. Griffing's recommendations compare with recently authorized equity returns?

A. Their recommended equity returns are equal to or below the average authorized for natural gas utilities of 9.68% for the first quarter of 2018 and 9.72% for the full year 2017. Since these returns were established, capital costs have increased and business risk has increased due to TCJA. Hence, higher returns are required today.

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, rising interest rates, and the cash-flow consequences of TCJA. 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.

Q. Is there evidence that suggests that the cost of equity has been increasing?

A. Yes. Generally, utility stock prices reached a peak in November 2017 and have trailed off since then. A number of factors have weighed on utility stock prices. They include (i) higher interest rates, (ii) greater stock market volatility, and (iii) the TCJA. There have been seven (7) one-quarter percentage point increases in the Fed Funds rate since the Federal Open Market Committee ("FOMC") began to normalize interest rates following the financial crisis and the Great Recession. The most recent of these increases occurred on June 13, 2018, after the direct testimony of other parties was served. Going forward, there is an expectation of possibly two additional interest rate increases in 2018 and three increases are expected in 2019. Along with these increases, the yield on 10-year

Treasury notes recently hit the 3% level for the first time since 2014. Indeed, the yield on A-rated public utility bonds has increased to 4.28% in May 2018 from 3.79% in December 2017 -- a 49 basis point (13%) increase. Higher interest rates have been weighing heavily on stocks, and utilities in particular. The Commission should be increasing the Company's authorized return when there is a compelling need for capital investment to rehabilitate aging infrastructures.

Q. Did Dr. Griffing offer any discussion of interest rates?

A. Yes, he did but he drew an incorrect conclusion from the data he considered. In his justification of the use of the 30-year Treasury Bond as his risk-free rate in CAPM analysis, Dr. Griffing notes that recent increases by the FOMC have not led to increases in the 30-year Treasury's yield, meaning, in his view, that there is "evidence that increases in the federal funds target rates by the FOMC do not result in proportional increases in capital costs." Dr. Griffing pointed to the variety of increases in the Fed Funds rate but opined that long-term bond yields have not changed in a similar magnitude.

Q. Why do you say that Dr. Griffing drew the wrong conclusion from his review of capital market conditions?

A. In the short-term, the trend in the Federal Funds rate and the yield on 30-year Treasury can diverge due to factors that can change the shape of the yield curve. However, Dr. Griffing's explanation does not suggest that these two rates do not have an enduring relationship or that they will not move in a similar direction in the long-term. It is more reasonable to conclude that actions by the FOMC raising the benchmark Federal Funds rate will ultimately put upward pressure on long-term Treasury yields. While the CAPM analysis is addressed in more detail below, Dr. Griffing's comments on the Blue Chip Financial Forecast misses the point: putting aside the magnitude of the change, capital market conditions are signaling a general upward trend in rates. It is not reasonable to propose a low cost of equity under those conditions.

Q. Are the equity return recommendations by Mr. Henkel and Dr. Griffing commensurate with the returns that investors expect other natural gas utilities to earn?

A. No. The table provided below summarizes the forecasted returns on equity for the natural gas utility industry, as published in the June 1, 2018 edition of Value Line.

Company	2019	2021-23
Atmos Energy Corp.	10.00%	11.00%
Chesapeake Utilities Corp.	9.50%	10.00%
New Jersey Resources Corp.	15.50%	13.00%
NiSource, Inc.	9.50%	11.50%
Northwest Natural Gas	9.00%	12.00%
One Gas, Inc.	8.50%	9.00%
South Jersey Industries, Inc.	9.00%	10.50%
Southwest Gas Corp.	10.00%	10.50%
Spire, Inc.	9.00%	10.50%
Average	10.00%	10.89%

Knowledgeable investors are aware of these returns and price the stocks of the natural gas utilities accordingly. These data support the 10.95% equity return that I recommended in my Columbia Statement No. 8.

Q. How is the remainder of your testimony organized?

A. I will cover the issues of (i) the composition of the proxy (i.e., barometer) group, (ii) the weight to be given to the DCF method, (iv) the DCF growth rate, (iv) the non-constant DCF method, (v) the leverage adjustment to the DCF and CAPM methods, (vi) the CAPM method, (vii) the Risk Premium analysis, (viii) Comparable Earnings, and (ix) the risk factors affecting CPA.

Proxy Group

Q. Are there differences in the proxy groups utilized by the rate of return witnesses in this case?

A. Yes. Dr. Griffing accepts seven of my companies in his Comparison Group for his analysis. He drops Chesapeake Utilities and substitutes NiSource in his Comparison Group, thereby having an eight-company group. Mr. Henkel includes only five of my companies in his Barometer Group. He drops Chesapeake Utilities, New Jersey Resources and South Jersey Industries, but includes NiSource. This leaves him with only six companies in his Barometer Group.

Q. Mr. Henkel used the percentage of revenues devoted to utility operations as a criterion for screening companies to assemble his barometer group. Please explain why this is not the correct criterion.

A. For utilities, the percentage of regulated revenues cannot be used to select members of the barometer group because the margins on other business segments within barometer group companies are generally dissimilar to the utility business. Energy trading is a case in point, which would make revenue comparisons incompatible because of the large revenues and small margins associated with that business, when contained in potential barometer group companies. That is to say, energy trading generates large amount of revenues, but little profits because the margins on such trades are very small.

Cost of Common Equity - Discounted Cash Flow

Q. The DCF model has been used by Mr. Henkel and Dr. Griffing 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 CPA. 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. I am aware that the Commission usually expresses its cost of equity determination in the context of the DCF model. But the Commission also considers other methods as well. In its order entered on December 28, 2012, in Docket No. R-2012-2290597, the Commission stated:

> Sole reliance on one methodology without checking the validity of the results of that methodology with other cost of equity analyses does not always lend itself to responsible ratemaking. We conclude that methodologies other than the DCF can be used as a check upon the reasonableness of the DCF derived equity return calculation.[2]

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. Henkel, Dr. Griffing, and me. Dr. Griffing also offers a two-stage DCF model, which is not appropriate in the case, and has never been used by the Commission in a rate case decision. I will discuss later in my rebuttal testimony the shortcomings of his two-stage DCF model.

Q. How do the growth rates compare for your Gas Group, Mr. Henkel's barometer

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[1] The growth rate variables shown on Schedules 8 and 9 of CPA Exhibit No. 400 shows that the assumption associated with the simplified DCF model are not reasonable.

[2] Pennsylvania Public Utility Commission, PPL Electric Utilities, R-2012-2290597, meeting held December 5, 2012, at 80.

group, and Dr. Griffing's Comparison Group.

A. I used a 6.75% growth rate for my Gas Group, Mr. Henkel used a 6.58% for his barometer group, and Dr. Griffing used a 6.38% growth rate for his Comparison Group. These comparisons show that variations in growth rates are not the primary driver that differentiates the equity return proposals in this case.

Q. Do the DCF results proposed by Mr. Henkel provide a 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 barometer group results 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. Henkel fall into that category:

Company		Average: 52 wk & Spot Yield	+	Growth	=	Total
Northwest Natural Gas		3.41%	+	5.00%	=	8.41%
Southwest Gas		3.08%	+	5.75%	=	8.83%

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. Henkel that fail to provide a sufficient spread over the six-month average yield of 4.43% on Baa-rated public utility bonds, or the May 2018 yield that was 4.71%. As I have demonstrated in my direct testimony (Columbia Statement No. 8 at page 37), the spread between the cost of debt and cost of equity should be 6.50% in this market environment. As such, none of the returns listed above can come close to meeting this standard.

Q. Please summarize Dr. Griffing's DCF methodology.

A. Dr. Griffing develops both a "Constant Growth DCF" and a "Multi-stage DCF" analysis. In his DCF analyses, Dr. Griffing computes the dividend yields by dividing the annualized dividend for each proxy group company by the average stock price for the 30 trading days ended May 18, 2018.

Q. What growth rates does Dr. Griffing rely on in the development of his Constant Growth DCF analysis?

A. Dr. Griffing relies on the average of the five-year projected earnings per share growth rates reported by Value Line, Zacks and Yahoo! Finance for the period ended March-May 2018.

Q. How does Dr. Griffing develop his DCF results?

A. Dr. Griffing averages the earnings growth rates for the proxy group, which results in a 6.38% growth rate and then adds to that the average dividend yield for the proxy group of 3.00%, resulting in a ROE estimate of 9.38%. But, he makes a serious omission where he excludes the Value Line earnings per share growth rate for NiSource. If he had not made this exclusion, his DCF return would have been 12.93% for NiSource and his group average would have been 9.90%. Unlike the low results that I show on page 13 of Statement No. 8R, the inclusion of NiSource growth rate does not move the group average DCF return outside the range of reasonable returns.

Q. Have you conducted an analysis to determine if the results of Dr. Griffing's Constant Growth DCF model are reasonable and meet the Hope and Bluefield standards?

A. Yes, I have. As shown in Exhibit MFG-10, the results of his Constant Growth DCF analysis range from 8.30% to 12.01%. This is a very wide range. Within this range, four of his observations are below the mainstream equity return that has been authorized for a natural gas utility in the last several years. Four of his observations are generally within the range of recently-authorized returns. The average return for those four observations

is 10.11%.

Leverage Adjustment

Q. Please respond to Mr. Henkel's criticisms of your leverage adjustment.

A. In his discussion of my leverage adjustment, Mr. Henkel mentions market-to-book ratios ("M/B"). I need to be clear that my leverage adjustment is not designed to produce any particular M/B ratio. Mr. Henkel offers four reasons for not making a leverage adjustment. First, Mr. Henkel notes that the credit rating agencies assess financial risk in terms of a company's income statement 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 ratesetting context. While Mr. Henkel's observation is correct, it has no relevance to my leverage adjustment.

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

A. Mr. Henkel points to several decisions where the Commission declined to make a leverage adjustment – i.e., rate cases including Aqua Pennsylvania, and the City of Lancaster Water Department. The fact that the Commission declined to use the leverage adjustment in the Aqua Pennsylvania case cited by Mr. Henkel 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.

Q. Third, Mr. Henkel says that he is unaware of any term in academic literature that describes the leverage adjustment. Please respond.

A. Leverage adjustments are routinely discussed in the academic literature. Indeed, any basic finance textbook discusses the relationship between returns and the degree of financial leverage, and often references the work of Modigliani and Miller and Hamada.[3] Moreover, the credit rating agencies concern about debt leverage and the consequences of TCJA show the importance of financial risk in the rating process. I have merely extended these well-accepted principles to the ratesetting process by using a precise analytics process based upon data that is readily available to investors and regulators.

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

A. Mr. Henkel contends that information presented to investors, 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 gas utility stocks that Mr. Henkel relies upon for his analysis of the cost of equity. More importantly, I fundamentally disagree

[3] Richard A. Brealy, Stewart C. Myers and Franklin Allen, Principles of Corporate Finance, Ninth Edition, New York: McGraw-Hill/Irwin, (2008).

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, which I clearly demonstrate on Schedule 10 of CPA Exhibit No. 400. Hence, the observation of Mr. Henkel 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.

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

A. It must be recognized that, in order to make the DCF results relevant in the ratesetting context, the market-derived cost rate cannot be used without modification. The importance of the leverage modification to the DCF results was fully supported in my direct testimony, wherein it was shown that the market value of the equity in the Gas Group's capitalization was much higher than its book value. The market value common equity ratio was 71.07% compared to a book value common equity ratio 56.65% (see page 1 of Schedule 10 of CPA Exhibit No. 400). The leverage adjustment is necessary to make the market-derived DCF results applicable in the ratesetting context. Because the market-based cost rate is determined based on less financial risk than that reflected in the ratemaking capital structure, and because increased financial risk justifies a higher return on equity, it is necessary to account for the higher financial risk that arises from the lower common equity ratio measured by book value capitalization.

The adjustment that I labeled as a "leverage adjustment" is merely a convenient way of showing the simple DCF model (i.e., D/P + g) in the context of a return that applies to a capital structure that is computed with book value weights rather than market value weights. To do so, I identify a separate leverage adjustment, but there is no need to do so other than providing separate identification for this factor. If I had expressed my return solely in the context of the book value weights that we use to set the weighted average cost of capital and ignored the familiar D/P + g expression, then there would be no separate element to reflect the financial leverage change. Hence, I am not asking the Commission to assume that investors consistently and repeatedly pay too much for utility stock, nor should the Commission intervene to substitute its judgment over that of investors. My only point is that when we use a market determined cost of equity developed from the DCF model, it reflects a level of financial risk that is different from the capital structure stated at book value. Indeed, we could dispense with the leverage adjustment by merely computing the weighted average cost of capital using the market value weights. Since that is not standard rate-setting practice, my adjustment is required.

Multi-Stage DCF Analyses

Q. Is there anything inherently wrong with the non-constant DCF model in public utility ratesetting?

A. Yes. The non-constant DCF model is not widely used in regulatory proceedings. And, I am fairly certain that the Commission has not used a multi-stage DCF model in prior cases. The basic fallacy of the non-constant DCF model rests with a set of problematic assumptions of specifying cash flows that are too far out into the future to permit a reasonable and reliable result. Cash flows extending many years into the future become less precise as the estimates are extended. That is to say, the traditional way of applying the multi-stage DCF involves forecasts of specific future cash flow amounts. With those

cash flows, the non-constant DCF model is then solved by iteration for the present value of those amounts. Further, the discounting of specific future cash flows is sensitive to the number of cash flows to be estimated, and/or the accurate forecast of a terminal stock price at the end of the forecast period. It is difficult enough to forecast a stock price next week, month or year let alone to forecast a stock price in ten, fifteen or twenty years from now. Dr. Griffing, however, did not use the conventional multi-stage DCF model, but, rather, employed a hybrid approach that employed a blended 2/3 and 1/3 weighting in the traditional constant growth DCF model.

Q. Are there objective measures that can be used to determine whether or not to employ a multi-stage DCF, such as the model that Dr. Griffing proposes?

A. Yes. In reaching this judgment, the objective measures that should be considered include: (i) a dividend payout ratios analysis, (ii) an assessment of the natural gas utilities relative to other industries, and (iii) whether analysts' forecasts are out-of-line whereby they are not sustainable. First, I have found that the dividend payout ratios of the natural gas utilities in the 57.3% to 65.3% range are not usual for regulated public utilities, thereby indicating that the single stage, constant growth DCF model results do not provide atypical results for natural gas utilities. Therefore, the multi-stage approach is not necessary. Second, the nature of the natural gas utility industry does not fit the pattern of growth I described on pages 23 and 24 of CPA Statement No. 8. In other words, the natural gas industry cannot be said to be in one state of growth now and will be entering another stage of growth in the near future. So, the multi-stage DCF is not called for in this case. Third, the average analysts' earnings growth estimates of 6.75% and 6.38% for my Gas Group and Dr. Griffing's Comparison Group, respectively, is not out of line and is clearly sustainable. Thus, based on these criteria the use of a multi-stage growth rate in the DCF analysis is unsupported in this case for the Gas Group.

Q. Please describe Dr. Griffing's Multi-Stage DCF analysis

A. Dr. Griffing performs a Multi-Stage DCF analysis on his proxy group by assigning 2/3 weight to the analysts' forecast earnings growth rate and 1/3 weight to a GDP growth rate. Dr. Griffing relies on two estimates of GDP growth for his long-term growth rate: 1) 3.9%, published by the Congressional Budget Office for the period from 2018-2028; and 2) 4.3% from the Reference case forecast produced by the U.S. Energy Information Administration ("EIA") for the period from 2018-2050.[4] There is reason to believe that these GDP growth rates may prove to be too low with the economic impact of TCJA because one of the purposes of the TCJA was to create jobs and thereby increase economic growth. Dr. Griffing's Multi-Stage DCF analyses produce ROE estimates of 8.62% using these projections and 8.67% excluding NiSource.

Q. Do you agree with Dr. Griffing's use of the growth rate of the United States Gross Domestic Product ("GDP") in his "multi-stage" DCF analysis of the proxy companies?

A. No, I do not. The U.S. GDP growth rate has little or no connection to the growth rates investors expect for these companies. GDP growth is an average for all activities in the economy. At any given point in time, some companies or industries grow faster than the economy, while other companies or industries are declining. Thus, it is not unusual for some companies or industries to exceed the average GDP growth rate for significant periods of time. Companies grow at different rates from each other for a variety of reasons related to the economy in their regions, their financing practices, diversification opportunities, and other reasons. Consequently, there is no reason to expect that an estimate-based GDP growth generally is as reliable an estimate as one based on analysts' forecasts for the specific companies being analyzed.

[4] Direct Testimony of Marlon Griffing at 30.

Moreover, the cost of equity estimates that Dr. Griffing calculates by using projected GDP growth rates are far below returns allowed for natural gas utilities in recent years and it should be self-evident that the DCF results from analysts' estimates are far more reasonable.

Q. Have other regulatory commissions relied on the weightings that Dr. Griffing has used in his multi-stage DCF analysis?

A. Yes, the Federal Energy Regulatory Commission ("FERC") has traditionally relied on this methodology that employs the 2/3 and 1/3 weighting. However, in recent cases the FERC has recognized that the results of this model have been affected by anomalous market conditions.

In Opinion No. 531, the FERC noted:

> There is 'model risk' associated with the excessive reliance or mechanical application of a model when the surrounding conditions are outside of the normal range. 'Model risk' is the risk that a theoretical model that is used to value real world transactions fails to predict or represent the real phenomenon that is being modeled.[5]

In Opinion No. 531, the FERC noted that the low interest rates and bond yields that persisted throughout the analytical period that was relied on resulted in anomalous market conditions and recognized the need to move away from the midpoint of the DCF analysis as measured by the median value. In that case, the FERC relied on the CAPM and other risk premium methodologies to inform its judgment where to set the return within the range of the DCF results. The FERC chose the 75th percentile to deal with these anomalies

In Opinion No. 551, issued in September 2016, the FERC recognized that those anomalous market conditions continued and again concluded that it was necessary to

[5] FERC Docket No. EL11-66-001, Opinion No. 531, footnote 286. While Opinion No. 531 was recently remanded to the FERC by the D.C. Circuit Court, the Court's decision did not question the finding by the FERC that capital market conditions were anomalous.

rely on ROE estimation methodologies other than the DCF model to set the appropriate ROE:

> Although the Commission noted certain economic conditions in Opinion No. 531, the principle argument was based on low interest rates and bond yields, conditions that persisted throughout the study period. Consequently, we find that capital market conditions are still anomalous as described above...[6]
>
> Because the evidence in this proceeding indicates that capital markets continue to reflect the type of unusual conditions that the Commission identified in Opinion No. 531, we remain concerned that a mechanical application of the DCF methodology would result in a return inconsistent with Hope and Bluefield.
>
> As the Commission found in Opinion No. 531, under these circumstances, we have less confidence that the midpoint of the zone of reasonableness in this proceeding accurately reflects the equity returns necessary to meet the Hope and Bluefield capital attraction standards. We therefore find it necessary and reasonable to consider additional record evidence, including evidence of alternative methodologies...

Q. What do you conclude about the results of Dr. Griffing's DCF analyses?

A. The DCF models as specified by Dr. Griffing do not produce reliable results under current market conditions. Indeed, seven of his eight multistage DCF results are below 9.00%. These results are simply not useful in this case. The under-estimation of the ROE in the multi-stage DCF analyses is largely due to the effect of the low interest rates and high valuations of utility shares.

Q. If a multi-stage DCF model were to be employed, what adjustments to the results are necessary based on Dr. Griffing's calculations?

A. The FERC has looked at the level of interest rates and bond yields among other factors to determine whether market conditions are anomalous. Anomalous market conditions presently exist due to low interest rates and bond yields. This situation exists in spite of

[6] FERC Docket No. EL14-12-002, Opinion No. 551, at para 121.

the recent rise in interest rates. Actions by the FOMC are mainly responsible for low instant rates by historical standards. Indeed, the Federal Reserve has continued to maintain a large balance sheet through its holding of Treasury securities and mortgage-backed securities. While the Federal Reserve has stopped adding to its holdings, its balance sheet currently contains $4.364 ($2.546 + $1.818) trillion of these securities. The FERC has found that these actions have created anomalous market conditions and has responded by adjusting upward the point at which the FERC sets a ROE within the range of reasonable returns resulting from the DCF "two-step" analysis. Again, the FERC has repeatedly expressed concern that a mechanical application of the DCF methodology would produce anomalous results and the FERC also stated in Opinion No. 531 that it was interested in the results of other models. Opinion No. 531 indicates that the results of other models help guide the FERC toward selecting a return from the range indicated by the two-stage DCF model (See Opinion No. 531 at P 146). So, when these conditions exist, the FERC moves to the 75th percentile that is represented by the median value and the top of the range of DCF results. Here, that DCF return would be 9.47% (8.33% + 10.61% = 18.94% ÷ 2) using the data submitted by Dr. Griffing. The FERC, however, is mindful of the requirements of Bluefield and Hope when setting the final return.

Cost of Common Equity - Capital Asset Pricing Model

Q. Do you have concerns regarding Mr. Henkel's and Dr. Griffing's applications of the CAPM?

A. Yes. Mr. Henkel'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 use of historical geometric means to calculate total market return, (iii) out of date measures of the total market return, (iv) his failure to use leveraged adjusted betas, and (v) his failure to make a size adjustment. I disagree with Dr. Griffing's CAPM as it relates to (i) the lack of a prospective yield on

Treasury bonds, (ii) the lack of a leverage adjusted beta, (iii) a forward-looking market risk premium that is incomplete, and (iv) the lack of a size adjustment.

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 fourth quarter of 2018, the gap is projected to be 0.3% (3.5% - 3.2%) between the yields on 30-year and 10-year Treasury obligations. For the period 2019-2023, that gap is projected at 0.50% (4.1% - 3.6%). This shows a systematic understatement of Mr. Henkel's CAPM returns. This understatement can be traced to extraordinary monetary policy actions taken by the FOMC to deal with the persistent sluggishness in the economy. Part of the Fed's strategy in dealing with this issue is a much lower Fed Funds rate that has resulted in lower shorter-term interest rates. While the FOMC has reduced short-term rates to restore investor confidence in the credit markets, long-term interest rates have remained relatively higher. Even though the FOMC has implemented seven increases in the Fed Funds rate since 2015, and additional increases are expected, the current Fed Funds rate (i.e., target range of 1.75% to 2.00%) remains relatively low. That is to say, short-term rates respond more to the policy initiatives of monetary officials, while long-term rates 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. Henkel's 10-year Treasury Notes yields, are more susceptible to Fed policy actions.

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

A. The support for his risk-free rate of return is shown on his Schedule 10 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 2018 as he does for the entire five-year period 2019 through 2023. This approach leads to a seriously understated risk-free rate of return. There are several

problems with his approach. First, even if 10-year rates are used, it is necessary to correct the weights assigned to the forecast data presented by Mr. Henkel. I have revised his forecast below, based upon the Blue Chip reports that were used by Mr. Henkel. Moreover, Blue Chip provides higher yields on Treasury obligations as the forecasts are extended into the future.

Year	10-Year Treasury Yield	10-Year Treasury Yield
2018	3.00%	3.30%
2019	3.30%	3.80%
2020	3.60%	4.10%
2021	3.70%	4.20%
2022	3.70%	4.20%
2023	3.80%	4.20%
Average	3.52%	3.97%

The resulting risk-free rate of return is 3.52% using the yield on 10-year Treasury Notes, as compared to Mr. Henkel's 3.38%, and 3.97% using the yield on 30-year Treasury Bonds.

Q. What are your observations regarding Mr. Henkel's use of the geometric mean?

A. Mr. Henkel has incorrectly used the geometric mean in his historic analysis of the total market returns (see page 29 of I&E St. No. 2). The theoretical foundation of the CAPM requires that the arithmetic mean be used because it conforms to the single period specification of the model and it provides a representation of all probable outcomes and has a measurable variance. It has been established that the arithmetic mean best describes expected future returns -- the objective of the CAPM. The arithmetic mean provides the correct representation of all probable outcomes and has a measurable variance. In contrast, use of the geometric mean, which Mr. Henkel advocates, consists

merely of a rate of return taken from two data points which would have no measurable variance (i.e., the dispersion of the returns cannot be calculated with a geometric mean). So, while a geometric mean will capture the growth from an initial to a terminal value, it cannot provide a reasonable representation of the market premium in the context of the CAPM because the model requires a single period return expectation of investors. The arithmetic mean provides an unbiased estimate, provides the correct representation of all probable outcomes, and has a measurable variance.

As stated by Ibbotson:

> *Arithmetic Versus Geometric Differences*
> For use as the expected equity risk premium in the CAPM, the arithmetic or simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number. This is because the CAPM is an additive model where the cost of capital is the sum of its parts. Therefore, the CAPM expected equity risk premium must be derived by arithmetic, not geometric, subtraction.
>
> *Arithmetic Versus Geometric Means*
>
> The expected equity risk premium should always be calculated using the arithmetic mean. The arithmetic mean is the rate of return which, when compounded over multiple periods, gives the mean of the probability distribution of ending wealth values....This makes the arithmetic mean return appropriate for computing the cost of capital. The discount rate that equates expected (mean) future values with the present value of an investment is that investment's cost of capital. The logic of using the discount rate as the cost of capital is reinforced by noting that investors will discount their (mean) ending wealth values from an investment back to the present using the arithmetic mean, for the reason given above. They will therefore require such an expected (mean) return prospectively (that is, in the present looking toward the future) in order to commit their capital to the investment. (Stocks, Bonds, Bills and Inflation - 1996 Yearbook, pages 153-154

As such, the geometric mean should not be used in the CAPM. With the arithmetic mean, the market risk premium is 6.36% (12.21% - 5.85%), not the 5.59% number that was used by Mr. Henkel.

Q. Are there later quotes available from the Ibbotson Yearbook that might lead to a different conclusion regarding the use of arithmetic means?

A. No. A careful reading of Ibbotson on this point indicates that its view for using arithmetic data in the CAPM has not changed in later publications of its Yearbook. In the 2014 Yearbook (see page 83), Ibbotson states that "... the arithmetic mean better represents a typical performance over single periods." The CAPM is a single-period model, i.e., it provides an annual return, that requires use of the arithmetic mean to conform with the specification of the model. Moreover, when applying the CAPM (see page 152), Ibbotson specifically states: "The equity risk premium is calculated by subtracting the arithmetic mean of the government bond income return from the arithmetic mean of the stock market total return."

Q. What are your observations concerning Mr. Henkel's calculation of the total market return?

A. His forecasted future returns (see Schedule 11 of I&E Exhibit No. 2) using the Value Line forecasts are out of date. According to Schedule 3 of Exhibit MFG-11, the current return (as of May 18, 2018) for Value Line is 11.83% comprised of 9.73% growth rate plus a dividend yield of 2.1%. Therefore, the correct return on the market is 12.93% (14.02% + 11.83% = 25.85% ÷ 2) rather than the 10.33% return Mr. Henkel shows on Schedule 11 of I&E Exhibit No. 2.

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

A. To calculate the market premium ("Rm – Rf") with both forecast return of 12.93% and 12.21% historical data that I present above, the market return would be 12.57% (12.93% + 12.21% = 25.14% ÷ 2). The size adjustment of 1.02% must also be incorporated into the CAPM. I have corrected Mr. Henkel's CAPM as indicated below using those inputs and the yield on 30-year Treasury bonds:

	Rf	+	*β*	(	*Rm*	-	*Rf*	) +	*size*	=	*K*
Gas Group	3.97%	+	0.68	(	12.57%	-	3.97%	) +	1.02%	=	10.84%

Q. Mr. Henkel 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 thus CPA specific risk should be considered. Mr. Henkel's arguments revolve around the purported distinction between regulated utilities and unregulated industrial companies. 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.

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.

Q. Dr. Griffing also challenges the adjustment that you made to the results of the CAPM for the size of the Gas 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. The SBBI/Morningstar Yearbook clearly demonstrates that the simple CAPM does not reflect the return that is associated with small size. As Ibbotson has stated:

> The security market line is based on the pure CAPM without adjusting for the size premium. Based on the risk (or beta) of a security, the expected return should fluctuate along the security market line. However, the expected returns for the smaller deciles of the NYSE/AMEX/NASDAQ lie above the line, indicating that these deciles have had returns in excess of those appropriate for their systematic risk.

Q. Concerning Dr. Griffing's CAPM, why is it appropriate to include forward-looking data in the CAPM results?

A. Just like all market models of the cost of equity, CAPM is an expectational model. Dr. Griffing's CAPM approach suffers from the infirmity of not positioning the risk-free rate of return in a forward-looking manner. To remedy this shortcoming, at least in part, current data should be supplemented with forward-looking data. After all, Dr. Griffing uses forecasted information exclusively in his DCF analysis when considering the appropriate growth rate. He also uses Value Line forecasts in his development of the market risk premium. To be consistent, forecasts of Treasury bond yields, such as those available from Blue Chip Financial Forecasts, should be considered. By neglecting to consider forecasts of interest rates, Dr. Griffing understated his risk-free rate of return by 0.60% (3.75% - 3.15%). And, we know that current interest rates cannot be relied upon for the risk-free rate in the CAPM, just as current earnings cannot be relied upon for the growth rate in the DCF.

Q. Please respond to Dr. Griffing's criticism of the Blue Chip forecasts as an input to

the CAPM.

A. Dr. Griffing essentially engages in "Monday morning quarterbacking," by asserting that Blue Chip forecasts have overstated the subsequent actual interest rates. But this type of comparison is no basis to ignore the Blue Chip forecasts. First, there is not a "Blue Chip" forecast, per se. Blue Chip is, instead, a consensus forecast from a large panel of analysts and economists. It contains a diversity of opinions regarding the direction and level of interest rates. Second, and more important, Blue Chip is a source used by investors when they make investment decisions. It does not matter how accurate the Blue Chip forecasts are, but whether they are relied upon and used by investors. Because they are used by investors making investment decisions, Blue Chip forecasts are a critical component necessary to determine the expected market return and cannot be ignored. The Blue Chip source is no different than the Value Line, Zack's and Yahoo! Finance sources that Dr. Griffing used in his DCF analysis. Dr. Griffing did not test the accuracy of, or question Value Line, Zack's and Yahoo! Finance when adopting those sources. The same applies logically to the Blue Chip forecasts.

Q. Dr. Griffing has criticized your leverage-adjusted betas. Please respond.

A. The betas that I have used are calculated strictly from market values, using a firm's stock price as the dependent variable and the market index as the independent variable. I have explained in my direct testimony and in additional detail in my rebuttal testimony addressing the DCF method, the reasons that the regulatory-determined cost of equity must be adjusted for the differences between the risks implicit in the market-based models versus the financial risk associated with book value capital structure used in rate-setting. The Hamada formula that I used to adjust the betas is merely an extension of the Modigliani and Miller formula that I used relative to the DCF calculation.

Q. Does Dr. Griffing's CAPM analysis produce reasonable results?

A. No, it does not. Dr. Griffing's CAPM results are between 9.35% and 9.60%. He also

developed an ECAPM for the comparison group of 9.97% to 10.16%. His ECAPM analysis clearly show that his traditional CAPM methodology is not producing a reasonable cost of equity.

Q. What problem have you detected in Dr. Griffing's development of the market risk premium component of the CAPM?

A. Dr. Griffing has used the Value Line forecast data without using other forecasts of future market returns. He uses multiple sources of GDP growth and analysts' forecasts in the DCF, and that approach should also be considered for the CAPM. For example, the DCF return for the S&P 500 is 14.02% as shown on Schedule 11 of I&E Exhibit No. 2. This would give a market risk premium of 10.87% using Dr. Griffing's risk-free rate of return of 3.15%. Combined with Dr. Griffing's Value Line based returns, the forecast of the market premium would be 9.78% (10.87% + 8.68% = 19.55% ÷ 2), not the lower market risk premium of 8.68% that he used. Making this adjustment would bring Dr. Griffing's CAPM result to 10.39%.[7]

Cost of Common Equity - Risk Premium Analysis

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 Columbia Statement No. 8 pages 34-38). So, while Mr. Henkel and Dr. Griffing decline to use the Risk Premium approach to measure the Company's cost of equity, it is an approach that provides a direct and

[7] Calculation: 3.15% + (9.78% * 0.74) = 10.39%.

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 in Columbia Statement No. 8, pages 35-36. 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.

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

A. Mr. Henkel 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 ratesetting process. 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. Henkel'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 my 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 11.25%. Finally, as I have shown in my direct testimony, the risk premium is not constant, which is contrary to Mr. Henkel's assertion. Hence, my Risk Premium cost rate is fully responsive to changing market fundamentals.

Q. Dr. Griffing leaves the impression that your risk premium model is dependent upon a constant relationship between returns of stocks and bonds. Please respond.

A. My Risk Premium approach does not assume a static differential between the cost of debt and the cost of equity. Indeed, the data presented on my Schedule 12 shows that it is not. In order to recognize the dynamic nature of the equity risk premium and to fit that

premium to current market fundamentals, I performed an analysis to align the historically developed equity premium to expected market fundamentals. This was explained on pages 36-37 of Exhibit No. 400. Basically, my analysis used all reliable data to establish the risk premium, thus avoiding a bias in selecting a particular period. I then refined the analysis to develop a risk premium from historical data that seeks to emulate investors' expectations. The value of my approach, which considered both of these matters, is that it allows the risk premium to vary over time -- which is what my risk premium does, and it conforms with a forward-looking cost of equity.

Cost of Common Equity - Comparable Earnings Approach

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.[8]

Cost of Common Equity - Company Specific Factors

Q. How should the Commission recognize the performance of the Company's management when setting its return in this case?

A. Mr. Huwar is addressing the Company's noteworthy accomplishments in his testimony (see CPA St. No. 1). The Commission should adopt a return on equity above the midpoint of the range of reasonable returns to recognize the exemplary performance of the Company's management. This process has been used in other cases where the Commission added 25 basis points to the return in the case of West Penn Power Company, 22 basis points to the return in the case of Aqua Pennsylvania, and 12 basis points to the return in the case of PPL Electric Utilities. Certainly, in this case, based on the testimony of other Company witnesses, CPA is deserving of similar treatment for a 20 basis points increment (0.25% + 0.22% + 0.12% = 0.59% ÷ 3 = 0.20%) that represents an average of the performance recognition previously utilized by the Commission in the past. I believe CPA should receive at least this level as well.

Q. With regard to your discussion of credit quality and the associated adjustment, Mr. Henkel and Dr. Griffing indicate that the cost of debt picks up credit quality differences, and to reflect it again in the cost of equity is double-counting. Please respond.

A. Mr. Henkel and Dr. Griffing are incorrect on this point. As a preliminary matter, I have made a more generalized risk adjustment than solely credit quality in my direct testimony. The credit risk considerations were just part of the consideration of risk faced by CPA vis-

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

à-vis the proxy group for this case, and credit quality differences were a means to quantify the greater investment risk of Columbia compared to the barometer group. The cost of equity is comprised of the cost of debt plus the premium necessary to recognize the greater risk of common equity. As I have applied the Risk Premium method, the cost of debt that I utilized was based on the yield on A-rated public utility bonds. Hence, it is necessary to adjust this yield to the Baa-rating level. There is no double-counting here.

Q. Messrs. Henkel, Crist and Knecht also argue that if the Commission approves the RNA, the Company's risk will be reduced and the equity return should be lower. Please respond.

A. Messrs. Henkel, Crist and Knecht are incorrect on this point. As I fully documented on pages 7 and 8 of Columbia Statement No. 8, no adjustment to the cost of equity is warranted for the RNA because the risk attributes of the RNA are fully reflected in the cost of equity determination with market data derived from the Gas Group. I am also advised that the WNA and proposed RNA for CPA only applies to residential usage.

Summary

Q. Please summarize your rebuttal testimony.

A. It is my opinion that the equity allowances proposed by Mr. Henkel and Dr. Griffing significantly understate the cost of common equity for CPA. In an environment of prospectively higher interest rates and company-specific risk factors including CPA's operating risk and its small size, an opportunity to earn a cost of equity of 10.95% is reasonable for CPA after recognition of the effectiveness of the Company's management. Moreover, the Commission should be guided by the exemplary performance of the Company's management when selecting the point in the range when setting the Company's return in this case, which should be at least 20 basis points.

Q. Does this conclude your rebuttal testimony?

A. Yes, it does.

MOODY'S
INVESTORS SERVICE

Rating Action: Moody's changes outlooks on 25 US regulated utilities primarily impacted by tax reform

Global Credit Research - 19 Jan 2018

New York, January 19, 2018 -- Moody's Investors Service, ("Moody's") has changed the rating outlooks to negative from stable for 24 regulated utilities and utility holding companies; and to stable from positive for one utility holding company in the United States. The short-term and long-term ratings for all 25 companies were affirmed.

RATINGS RATIONALE

"Today's action primarily applies to companies that already had limited cushion in their rating for deterioration in financial performance, will be incrementally impacted by changes in the tax law and where we now expect key credit metrics to be lower for longer," said Jim Hempstead, a Managing Director at Moody's. "Utilities will work closely with state regulators to try to mitigate the negative impact of tax reform and in some cases they may seek to refine their corporate financial policies. Where successful, their rating outlooks could revert to stable."

Tax reform is credit negative for US regulated utilities because the lower 21% statutory tax rate reduces cash collected from customers, while the loss of bonus depreciation reduces tax deferrals, all else being equal. Moody's calculates that the recent changes in tax laws will dilute a utility's ratio of cash flow before changes in working capital to debt by approximately 150 - 250 basis points on average, depending to some degree on the size of the company's capital expenditure programs. From a leverage perspective, Moody's estimates that debt to total capitalization ratios will increase, based on the lower value of deferred tax liabilities.

The change in outlook to negative from stable for the 24 companies affected in this rating action primarily reflects the incremental cash flow shortfall caused by tax reform on projected financial metrics that were already weak, or were expected to become weak, given the existing rating for those companies. The negative outlook also considers the uncertainty over the timing of any regulatory actions or other changes to corporate finance polices made to offset the financial impact.

The change in outlook to stable from positive for American Electric Power Company, Inc. (AEP, Baa1 stable) reflects Moody's calculations that the projected ratio of cash flow before changes in working capital to debt, incorporating the effects of tax reform, will remain in the mid-teens range. At this level, Moody's believes AEP's Baa1 rating is appropriate.

The vast majority of US regulated utilities, however, continue to maintain stable rating outlooks. We do not expect the cash flow reduction associated with tax reform to materially impact their credit profiles because sufficient cushion exists within projected financial metrics for their current ratings. Nonetheless, further actions could occur on a company specific basis.

Over the next 12 to 18 months, Moody's will continue to monitor the financial impact of tax reform on each company, including its regulatory approach to rate treatment and any changes to corporate finance strategies. This will include balance sheet changes due to the reclassification of excess deferred tax liabilities as a regulatory liability and the magnitude of any amounts to be refunded to customers. If the financial impact of tax reform is more severe than Moody's initial estimates or the companies fail to materially mitigate any weaknesses in their financial profiles, the ratings could be downgraded.

That said, Moody's expects that most utilities will attempt to manage any negative financial implications of tax reform through regulatory channels. Corporate financial policies could also change. The actions taken by utilities will be incorporated into the credit analysis on a prospective basis. As a result, it is conceivable that some companies will sufficiently defend their credit profiles. For these companies, it is possible for the outlook to return to stable.

Potential regulatory offsets to tax-related cash leakage could include: accelerated cost recovery of certain regulatory assets or future investment; changes to the equity layer or allowed ROEs in rates, and other actions. Changes to corporate financial policies could include changes to capitalization, the financing of future

investments, dividend growth, or others. Some of these corporate measures could have a more immediate boost to projected metrics than certain regulatory provisions, which may take time to approve and implement.

Outlook Actions:

..Issuer: American Electric Power Company, Inc.

....Outlook, Changed To Stable From Positive

..Issuer: Avista Corp.

....Outlook, Changed To Negative From Stable

..Issuer: Avista Corp. Capital II

....Outlook, Changed To Negative From Stable

..Issuer: Duke Energy Corporation

....Outlook, Changed To Negative From Stable

..Issuer: Entergy Corporation

....Outlook, Changed To Negative From Stable

..Issuer: New Jersey Natural Gas Company

....Outlook, Changed To Negative From Stable

..Issuer: Northwest Natural Gas Company

....Outlook, Changed To Negative From Stable

..Issuer: ONE Gas, Inc

....Outlook, Changed To Negative From Stable

..Issuer: Piedmont Natural Gas Company, Inc.

....Outlook, Changed To Negative From Stable

..Issuer: Public Service Company of Oklahoma

....Outlook, Changed To Negative From Stable

..Issuer: Questar Gas Company

....Outlook, Changed To Negative From Stable

..Issuer: South Jersey Gas Company

....Outlook, Changed To Negative From Stable

..Issuer: Alabama Power Capital Trust V

....Outlook, Changed To Negative From Stable

..Issuer: Alabama Power Company

....Outlook, Changed To Negative From Stable

..Issuer: Southern Company (The)

....Outlook, Changed To Negative From Stable

..Issuer: Southern Elect Generating Co

....Outlook, Changed To Negative From Stable

..Issuer: Southwestern Public Service Company

....Outlook, Changed To Negative From Stable

..Issuer: Wisconsin Gas LLC

....Outlook, Changed To Negative From Stable

..Issuer: American Water Capital Corp.

....Outlook, Changed To Negative From Stable

Issuer: American Water Works Company, Inc.

....Outlook, Changed To Negative From Stable

Outlook Actions:

..Issuer: Consolidated Edison Company of New York, Inc.

....Outlook, Changed To Negative From Stable

..Issuer: Consolidated Edison, Inc.

....Outlook, Changed To Negative From Stable

..Issuer: Orange and Rockland Utilities, Inc.

....Outlook, Changed To Negative From Stable

..Issuer: Brooklyn Union Gas Company, The

....Outlook, Changed To Negative From Stable

..Issuer: KeySpan Gas East Corporation

....Outlook, Changed To Negative From Stable

Affirmations:

..Issuer: American Electric Power Company, Inc.

.... Commercial Paper, Affirmed P-2

....Senior Unsecured Shelf, Affirmed (P)Baa1

....Junior Subordinated Shelf, Affirmed (P)Baa2

....Senior Unsecured Regular Bond/Debenture, Affirmed Baa1

..Issuer: Avista Corp.

.... Issuer Rating, Affirmed Baa1

....Senior Secured First Mortgage Bonds, Affirmed A2

....Underlying Senior Secured First Mortgage Bonds, Affirmed A2

....Senior Secured Medium-Term Note Program, Affirmed (P)A2

....Senior Secured Regular Bond/Debenture, Affirmed A2

....Senior Unsecured Medium-Term Note Program, Affirmed (P)Baa1

..Issuer: Avista Corp. Capital II

....Pref. Stock Preferred Stock, Affirmed Baa2

..Issuer: Duke Energy Corporation

.... Issuer Rating, Affirmed Baa1

....Junior Subordinated Regular Bond/Debenture, Affirmed Baa2

....Senior Unsecured Shelf, Affirmed (P)Baa1

....Senior Unsecured Bank Credit Facility, Affirmed Baa1

....Senior Unsecured Commercial Paper, Affirmed P-2

....Senior Unsecured Regular Bond/Debenture, Affirmed Baa1

..Issuer: Entergy Corporation

.... Issuer Rating, Affirmed Baa2

....Senior Unsecured Commercial Paper, Affirmed P-2

....Senior Unsecured Regular Bond/Debenture, Affirmed Baa2

....Senior Unsecured Shelf, Affirmed (P)Baa2

..Issuer: New Jersey Natural Gas Company

.... Commercial Paper, Affirmed P-1

..Issuer: Northwest Natural Gas Company

.... Commercial Paper, Affirmed P-2

....Senior Secured Medium-Term Note Program, Affirmed (P)A1

....Senior Unsecured Medium-Term Note Program, Affirmed (P)A3

....Senior Secured Shelf, Affirmed (P)A1

....Senior Unsecured Shelf, Affirmed (P)A3

....Preferred Shelf, Affirmed (P)Baa2

....Senior Secured First Mortgage Bonds, Affirmed A1

....Senior Secured Regular Bond/Debenture, Affirmed A1

..Issuer: ONE Gas, Inc

....Senior Unsecured Commercial Paper, Affirmed P-1

....Senior Unsecured Regular Bond/Debenture, Affirmed A2

..Issuer: Piedmont Natural Gas Company, Inc.

....Senior Unsecured Commercial Paper, Affirmed P-1

....Senior Unsecured Regular Bond/Debenture, Affirmed A2

..Issuer: Public Service Company of Oklahoma

.... Issuer Rating, Affirmed A3

....Senior Unsecured Regular Bond/Debenture, Affirmed A3

..Issuer: Questar Gas Company

....Senior Unsecured Commercial Paper, Affirmed P-1

....Senior Unsecured Medium-Term Note Program, Affirmed (P)A2

....Senior Unsecured Regular Bond/Debenture, Affirmed A2

..Issuer: Alabama Power Capital Trust V

....Pref. Stock Preferred Stock, Affirmed A2

..Issuer: Alabama Power Company

.... Commercial Paper, Affirmed P-1

.... Issuer Rating, Affirmed A1

....Senior Unsecured Shelf, Affirmed (P)A1

....Preferred Shelf, Affirmed (P)A3

....Preference Shelf, Affirmed (P)A3

....Pref. Stock Preferred Stock, Affirmed A3

....Senior Unsecured Bank Credit Facility, Affirmed A1

....Senior Unsecured Commercial Paper, Affirmed P-1

....Senior Unsecured Regular Bond/Debenture, Affirmed A1

..Issuer: Columbia (Town of) AL, Industrial Dev. Board

....Senior Unsecured Revenue Bonds, Affirmed A1

....Senior Unsecured Revenue Bonds, Affirmed VMIG 1

..Issuer: Eutaw (City of) AL, Industrial Dev. Board

....Senior Unsecured Revenue Bonds, Affirmed A1

....Senior Unsecured Revenue Bonds, Affirmed VMIG 1

..Issuer: Mobile (City of) AL, I.D.B.

....Senior Unsecured Revenue Bonds, Affirmed A1

....Senior Unsecured Revenue Bonds, Affirmed VMIG 1

..Issuer: Walker County Econ & Ind Dev Authority

....Senior Unsecured Revenue Bonds, Affirmed A1

....Senior Unsecured Revenue Bonds, Affirmed VMIG 1

..Issuer: West Jefferson (Town of) AL, Ind. Devel. Bd.

....Senior Unsecured Revenue Bonds, Affirmed A1

....Senior Unsecured Revenue Bonds, Affirmed VMIG 1

..Issuer: Wilsonville (Town of) AL, I.D.B.

....Senior Unsecured Revenue Bonds, Affirmed A1

....Senior Unsecured Revenue Bonds, Affirmed VMIG 1

....Underlying Senior Unsecured Revenue Bonds, Affirmed A1

..Issuer: South Jersey Gas Company

.... Issuer Rating, Affirmed A2

....Senior Secured First Mortgage Bonds, Affirmed Aa3

....Senior Secured Medium-Term Note Program, Affirmed (P)Aa3

....Senior Secured Regular Bond/Debenture, Affirmed Aa3

....Senior Unsecured Commercial Paper, Affirmed P-1

..Issuer: New Jersey Economic Development Authority

....Senior Secured Revenue Bonds, Affirmed Aa3

....Underlying Senior Secured Revenue Bonds, Affirmed Aa3

....Senior Secured Revenue Bonds, Affirmed Aa2

....Underlying Senior Secured Revenue Bonds, Affirmed Aa2

..Issuer: Southern Company (The)

.... Commercial Paper, Affirmed P-2

....Junior Subordinated Regular Bond/Debenture, Affirmed Baa3

....Senior Unsecured Shelf, Affirmed (P)Baa2

....Junior Subordinated Shelf, Affirmed (P)Baa3

....Senior Unsecured Bank Credit Facility, Affirmed Baa2

....Senior Unsecured Regular Bond/Debenture, Affirmed Baa2

..Issuer: Southern Elect Generating Co

.... Issuer Rating, Affirmed A2

....Senior Unsecured Regular Bond/Debenture, Affirmed A1

..Issuer: Southwestern Public Service Company

.... Issuer Rating, Affirmed Baa1

....Senior Secured Shelf, Affirmed (P)A2

....Senior Unsecured Shelf, Affirmed (P)Baa1

....Senior Secured First Mortgage Bonds, Affirmed A2

....Senior Unsecured Bank Credit Facility, Affirmed Baa1

....Senior Unsecured Commercial Paper, Affirmed P-2

....Senior Unsecured Regular Bond/Debenture, Affirmed Baa1

..Issuer: Wisconsin Gas LLC

.... Commercial Paper, Affirmed P-1

....Senior Unsecured Regular Bond/Debenture, Affirmed A2

..Issuer: American Water Capital Corp.

.... Issuer Rating, Affirmed A3

....Senior Unsecured Shelf, Affirmed (P)A3

....Senior Unsecured Commercial Paper, Affirmed P-2

....Senior Unsecured Regular Bond/Debenture, Affirmed A3

..Issuer: American Water Works Company, Inc.

.... Issuer Rating, Affirmed A3

..Issuer: Berks County Industrial Development Auth., PA

....Senior Unsecured Revenue Bonds, Affirmed A3

..Issuer: California Pollution Control Financing Auth.

....Senior Unsecured Revenue Bonds, Affirmed A3

..Issuer: Illinois Development Finance Authority

....Senior Unsecured Revenue Bonds, Affirmed A3

..Issuer: Illinois Finance Authority

....Senior Unsecured Revenue Bonds, Affirmed A3

..Issuer: Indiana Finance Authority

....Senior Unsecured Revenue Bonds, Affirmed A3

..Issuer: MARICOPA COUNTY INDUSTRIAL DEVELOPMENT AUTHORITY,

....Senior Unsecured Revenue Bonds, Affirmed A3

..Issuer: Northampton County I.D.A., PA

....Senior Unsecured Revenue Bonds, Affirmed A3

..Issuer: Owen (County of) KY

....Senior Unsecured Revenue Bonds, Affirmed A3

.Issuer: Consolidated Edison Company of New York, Inc.

.... Issuer Rating, Affirmed A2

....Senior Unsecured Shelf, Affirmed (P)A2

....Subordinate Shelf, Affirmed (P)A3

....Preferred Shelf, Affirmed (P)Baa1

....Senior Unsecured Commercial Paper, Affirmed P-1

....Senior Unsecured Regular Bond/Debenture, Affirmed A2

....Underlying Senior Unsecured Regular Bond/Debenture, Affirmed A2

..Issuer: New York State Energy Research & Dev. Auth.

....Senior Unsecured Revenue Bonds, Affirmed A2

....Underlying Senior Unsecured Revenue Bonds, Affirmed A2

..Issuer: New York State Research & Development Auth.

....Senior Unsecured Revenue Bonds, Affirmed A2

....Underlying Senior Unsecured Revenue Bonds, Affirmed A2

..Issuer: Consolidated Edison, Inc.

.... Issuer Rating, Affirmed A3

....Senior Unsecured Shelf, Affirmed (P)A3

....Senior Unsecured Commercial Paper, Affirmed P-2

....Senior Unsecured Regular Bond/Debenture, Affirmed A3

..Issuer: Orange and Rockland Utilities, Inc.

.... Issuer Rating, Affirmed A3

....Senior Unsecured Commercial Paper, Affirmed P-2

....Senior Unsecured Regular Bond/Debenture, Affirmed A3

..Issuer: Brooklyn Union Gas Company, The

....LT Issuer Rating, Affirmed A2

....Senior Unsecured Regular Bond/Debenture, Affirmed A2

..Issuer: New York State Energy Research & Dev. Auth.

....Backed LT IRB/PC Insured, Affirmed A2

...Underlying LT IRB/PC, Affirmed A2

Issuer: KeySpan Gas East Corporation

....LT Issuer Rating, Affirmed A2

....Senior Unsecured Regular Bond/Debenture, Affirmed A2

The principal methodology used in rating Public Service Company of Oklahoma, Southwestern Public Service Company, Southern Company (The), Alabama Power Company, Alabama Power Capital Trust V, Southern Elect Generating Co, South Jersey Gas Company, Wisconsin Gas LLC, American Electric Power Company, Inc., Duke Energy Corporation, Piedmont Natural Gas Company, Inc., Avista Corp., Avista Corp. Capital II, ONE Gas, Inc, New Jersey Natural Gas Company, Northwest Natural Gas Company, Questar Gas Company, Entergy Corporation, Consolidated Edison, Inc., Consolidated Edison Company of New York, Inc., Brooklyn Union Gas Company, The, KeySpan Gas East Corporation, and Orange and Rockland Utilities, Inc. was Regulated Electric and Gas Utilities published in June 2017. The principal methodology used in rating American Water Works Company, Inc. and American Water Capital Corp. was Regulated Water Utilities published in December 2015. Please see the Rating Methodologies page on www.moodys.com for a copy of these methodologies.

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