

**I&E Statement No. 2**  
**Witness: Christopher M. Henkel**

**PENNSYLVANIA PUBLIC UTILITY COMMISSION**

**v.**

**COLUMBIA GAS OF PENNSYLVANIA, INC.**

**Docket No. R-2018-2647577**

**Direct Testimony**

**of**

**Christopher M. Henkel**

**Bureau of Investigation & Enforcement**

**Concerning:**

**Rate of Return**

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## **INTRODUCTION OF WITNESS**

**Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

A. My name is Christopher Henkel. My business address is Pennsylvania Public Utility Commission, P.O. Box 3265, Harrisburg, PA 17105-3265.

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

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

**Q. WHAT IS YOUR EDUCATIONAL AND EMPLOYMENT BACKGROUND?**

A. My educational and professional background is set forth in Appendix A, which is attached.

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

A. I&E is responsible for protecting the public interest in proceedings before the Commission. The I&E analysis and testimony in this proceeding is based on its responsibility to represent the public interest. This responsibility refers to balancing the interests of the ratepayers, the regulated utility, and the regulated community as a whole.

**Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

A. The purpose of my direct testimony is to address the claimed rate of return, including the cost of common equity and the overall fair rate of return for Columbia Gas of Pennsylvania, Inc. (Columbia or Company).

**BACKGROUND**

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

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

**Q. WHAT IS THE REVENUE REQUIREMENT FORMULA?**

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

$$RR = E + D + T + (RB \times ROR) \quad \text{Where:}$$

RR = Revenue Requirement

E = Operating Expenses

D = Depreciation Expense

T = Taxes

RB = Rate Base

ROR = Overall Rate of Return

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

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

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

**Q. PLEASE CONTINUE.**

A. The *Bluefield Water Works & Improvements Co. v. Public Service Comm. of West Virginia*, 262 U.S. 679, 692-93 (1923), and the *FPC v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944) cases set forth the principles that are generally accepted by regulators throughout the country as the appropriate criteria for measuring a fair rate of return:

1. A utility is entitled to a return similar to that being earned by other enterprises with corresponding risks and uncertainties, but not as high as those earned by highly profitable or speculative ventures;

2. A utility is entitled to a return reasonably sufficient to assure financial soundness;
3. A utility is entitled to a return sufficient to maintain and support its credit and raise necessary capital; and
4. A fair return can change (increase or decrease) along with economic conditions and capital markets.

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

A. In base rate proceedings, the overall rate of return is traditionally calculated using the weighted average cost of capital method. To calculate the weighted average cost of capital, a company's capital structure must first be determined by comparing the percentage of each capitalization component that has financed rate base to total capital. In this case, the capital components consist of long-term debt, short-term debt, and common equity. Next, the effective cost rate of each capital structure component must be determined. The historical component of the cost rate of debt can be computed accurately and any future debt issuances are based on estimates. The cost rate of common equity is not fixed and is more difficult to measure, necessitating the use of a proxy group as discussed later in this testimony. Next, each capital structure component percentage is multiplied by the corresponding effective cost rate to determine the weighted capital component cost

rate. The I&E table below demonstrates the interaction of each capital structure component and its corresponding effective cost rate. Finally, the sum of the weighted cost rates produces the overall rate of return. This overall rate of return is multiplied by the rate base to determine the return portion of a company's revenue requirement.

**I&E POSITION**

**Q. SUMMARIZE YOUR RATE OF RETURN RECOMMENDATION FOR THE COMPANY.**

A. I recommend the following rate of return for Columbia:

<u>Type of Capital</u>	<u>Ratio</u>	<u>Cost Rate</u>	<u>Weighted Cost</u>
Long-Term Debt	44.42%	5.11%	2.27%
Short-Term Debt	3.24%	3.20%	0.10%
Common Equity	52.34%	9.72%	5.09%
Total	100.00%		<u>7.46%<sup>1</sup></u>

**COMPANY POSITION**

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

A. The Company has claimed the following rate of return:

<u>Type of Capital</u>	<u>Ratio</u>	<u>Cost Rate</u>	<u>Weighted Cost</u>
Long-Term Debt	44.42%	5.11%	2.27%
Short-Term Debt	3.24%	3.20%	0.10%
Common Equity	52.34%	10.95%	5.73%
Total	100.00%		<u>8.10%<sup>2</sup></u>

<sup>1</sup> I&E Exhibit No. 2, Schedule 1.

<sup>2</sup> Columbia Exhibit No. 400, Schedule 1.

## **PROXY GROUP**

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

A. A proxy group is a set of companies that have similar traits of risk in comparison to the subject utility. It acts as a benchmark for determining the subject utility's rate of return in a base rate case.

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

A. A proxy group is used as a benchmark to satisfy the long-established guideline of utility regulation that seeks to provide the subject utility with the opportunity to earn a return equal to that of similar risk enterprises.

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

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

A. To select a proxy group that is representative of the natural gas utility industry, I used the following criteria:

1. Fifty percent or more of the company's revenues must be generated from the natural gas distribution industry;
2. The company's stock must be publicly traded;
3. Investment information for the company must be available from more than one source;
4. The company must not be currently involved in an announced merger or the target of an announced acquisition; and
5. The company must have five consecutive years of historic earnings data.

**Q. HOW DID MR. MOUL DEVELOP HIS PROXY GROUP?**

A. Mr. Moul's proxy group (Gas Group) began with all of the gas utilities that are contained in The Value Line Investment Survey and that are not currently the target of a publicly-announced merger or acquisition.<sup>3</sup> From that group of companies, Mr. Moul eliminated NiSource due to its electric operations<sup>4</sup> and UGI Corporation due to its highly diversified businesses.<sup>5</sup>

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<sup>3</sup> Columbia Statement No. 8, p. 4, lines 6-17.

<sup>4</sup> Columbia Statement No. 8, p. 4, line 12.

<sup>5</sup> Columbia Statement No. 8, p. 4, line 13.

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

A. Mr. Moul ultimately selected Atmos Energy Corp., Chesapeake Utilities Corp., New Jersey Resources Corp., Northwest Natural Gas, One Gas, Inc., South Jersey Industries, Inc., Southwest Gas Corporation, and Spire, Inc.<sup>6</sup> He provided no further criteria for selecting the eight companies that comprise his Gas Group.

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

A. I selected Atmos Energy Corp., NiSource, Northwest Natural Gas, One Gas Inc., Southwest Gas, and Spire Inc.

**Q. HOW DOES YOUR PROXY GROUP DIFFER FROM MR. MOUL'S?**

A. My proxy group differs from that of Mr. Moul because I excluded Chesapeake Utilities Corp., New Jersey Resources Corp., and South Jersey Industries, Inc., as they did not meet my first criterion that 50% or more of the company's revenues must be generated from the natural gas distribution industry. Additionally, I chose NiSource as a member of my proxy group because more than 50% of its revenue is generated from the natural gas distribution industry and it meets my remaining criteria. Mr. Moul rejected NiSource due to its electric operations.

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<sup>6</sup> Columbia Statement No. 8, p. 4.

**Q. WHAT IS THE REASON FOR EXCLUDING COMPANIES THAT DO NOT HAVE 50% OR MORE OF THEIR REVENUES FROM THE NATURAL GAS DISTRIBUTION INDUSTRY?**

A. I excluded companies that generate less than 50% of their revenues from the natural gas distribution industry because a company operating predominantly in other industries faces different risks than that of a company operating in the natural gas distribution industry.

**Q. WHAT ARE YOUR REASONS FOR USING REVENUES AND NOT ASSETS AS A MEASURE OF OPERATING SIMILARITY?**

A. I chose revenues instead of assets as one of my criteria because the ratio of utility assets to total assets does not always reliably indicate if a company is primarily operating as a regulated utility. Assets are accounted for at the original cost minus depreciation, which means that the value of the assets depend on their age. The regulated utility segment of a company may predominantly have assets that are depreciated; therefore, the utility assets to total assets ratio does not always accurately measure the portion of a company's operations that are derived from its regulated utility operations. In other words, a parent company can have most of its utility assets depreciated, but still do more business as a utility than as another type of enterprise.

Another reason that the percent of utility business is not always accurately represented by using the ratio of utility assets to total assets is that there are differences between businesses in the amount of capital needed. A utility with all new equipment may need a large net value of assets to produce a small level of cash flow while another business may need only a small net value of assets to produce a large level of cash flow. Therefore, comparing the assets of a gas utility segment to the total assets of a company is not an appropriate criterion and could be misleading.

### **CAPITAL STRUCTURE**

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

A. The Company has claimed a capital structure of 44.42% long-term debt, 3.24% short-term debt, and 52.34% equity for the fully projected future test year (FPFTY) ending December 30, 2019.<sup>7</sup>

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

A. Mr. Moul states that these capital structure ratios are the best approximation of the mix of capital the Company will employ to finance its rate base during the period that the new rates are in effect.<sup>8</sup>

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<sup>7</sup> Columbia Statement No. 8, p. 18, lines 24-45.

<sup>8</sup> Columbia Statement No. 8, p. 19, lines 1-3.

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

A. I recommend using the Company's claimed capital structure of 44.42% long-term debt, 3.24% short-term debt, and 52.34% equity for the FPFTY ending December 30, 2019.

**Q. WHAT IS THE BASIS FOR YOUR RECOMMENDATION TO USE THE COMPANY'S CLAIMED CAPITAL STRUCTURE?**

A. The Company's capital structure is appropriate for this proceeding as it is within the range of capital structures of my proxy group. For the five-year period 2012-2016, the group's long-term debt ranged from 33.77% to 57.42%, short term debt ranged from 0.00% to 16.59% and common equity ranged from 35.04% to 61.32%.<sup>9</sup>

**COST RATE OF LONG-TERM DEBT**

**Q. WHAT IS THE COMPANY'S CLAIMED COST RATE OF LONG-TERM DEBT?**

A. Mr. Moul calculates the Company's claimed cost rate of long-term debt to be a weighted cost rate of 5.11% based on the Company's long-term debt issuances expected to be outstanding at December 30, 2019.<sup>10</sup>

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<sup>9</sup> I&E Exhibit No. 2, Schedule 2.

<sup>10</sup> Columbia Exhibit 400, Schedule 6 [3 of 3].

**Q. WHAT IS THE BASIS FOR THE COMPANY'S CLAIMED COST RATE OF LONG-TERM DEBT?**

A. The Company's claim is based on actual prior debt issuances and an estimate of two future issuances at individual cost rates.<sup>11</sup>

**Q. DO YOU ACCEPT THE CLAIMED COST RATE OF LONG-TERM DEBT?**

A. Yes. I accept the Company's long-term debt cost rate of 5.11% because it is within the range of implied cost rates for the proxy group of 3.97% to 5.86%.<sup>12</sup>

**Q. DO YOU HAVE ANY RECOMMENDATIONS FOR FUTURE SUPPORTING DOCUMENTATION TO BE PROVIDED BY THE COMPANY REGARDING ITS FUTURE LONG-TERM DEBT ISSUANCES?**

A. Yes. In the instant case, the estimates of debt issuances for June 2018 and June 2019 are based on predictions of future issued amounts, dates, and cost rates. As such, I recommend that as part of its next base rate filing, Columbia supplies: (1) all documentation, including all term sheets or estimates from investment bankers, supporting debt issued between this base rate case and the next base rate case; and (2) the Treasury yield as reported in the Federal Reserve Statistical Release,

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<sup>11</sup> Columbia Statement No. 8, pp. 17-18, Exhibit 400, Schedule 6 [3 of 3].

<sup>12</sup> I&E Exhibit No. 2, Schedule 3.

H.15 Selected Interest Rates and the yield spread as reported by Reuters Corporate Spreads as of the dates of each issuance.

### **COST RATE OF SHORT-TERM DEBT**

**Q. WHY IS SHORT-TERM DEBT INCLUDED IN THIS PROCEEDING?**

A. Natural gas distribution companies (NGDCs) are able to store gas, which is advantageous because it allows NGDCs to pump gas into storage for future use during the summer months when demand and cost for gas are lower. Current gas storage is typically financed by short-term debt. Since ratemaking principles allow for the stored gas in rate base, the associated short-term debt is allowed in a company's capital structure.

**Q. WHAT IS THE COMPANY'S CLAIMED COST RATE OF SHORT-TERM DEBT?**

A. The Company's claimed cost rate of short-term debt is 3.20%, which represents the Company's forecasted cost of short-term debt for the FPFTY ending December 30, 2019.<sup>13</sup>

**Q. WHAT IS THE BASIS FOR THE COMPANY'S CLAIMED COST RATE OF SHORT-TERM DEBT?**

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<sup>13</sup> Columbia Statement No. 8, pp. 19-20.

A. Mr. Moul states that the Company obtains its short-term debt from the NiSource money pool, which has as its source either commercial paper or a credit facility with a syndicate of banks.<sup>14</sup> The cost of short-term debt for the Company is comprised of the London Interbank Offered Rate (LIBOR) plus a spread for NiSource commercial paper. For this case, Mr. Moul used Blue Chip's forecasted LIBOR rate of 2.59%, and when the 0.60% margin is added, Mr. Moul's short-term debt cost rate estimate is 3.20% (rounded).<sup>15</sup> With the rounding adjustment, the spread becomes 0.61%.

**Q. DO YOU ACCEPT THE COMPANY'S CLAIMED COST RATE OF SHORT-TERM DEBT?**

A. Yes. The Blue Chip Financial Forecast is the only reliable source I have found that forecasts a LIBOR rate and therefore I do not oppose the Company's claimed cost rate.

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<sup>14</sup> Columbia Statement No. 8, p. 19, lines 24-25.

<sup>15</sup> Columbia Statement No. 8, pp. 19-20.

## **COST OF COMMON EQUITY**

### **COMMON METHODS**

**Q. WHAT METHODS ARE COMMONLY PROPOSED TO DETERMINE THE COST OF COMMON EQUITY?**

A. There are four methods commonly proposed to determine the cost of common equity. The four methods are: The Discounted Cash Flow (DCF), the Capital Asset Pricing Model (CAPM), the Risk Premium (RP), and Comparable Earnings (CE) methods.

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

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

**Q. WHAT IS THE THEORETICAL BASIS FOR THE CAPM?**

A. The CAPM describes the relationship of a stock’s investment risk and its market rate of return. It identifies the rate of return investors expect so that it is comparable with returns of other stocks of similar risk. This method hypothesizes

that the investor-required return on a company's stock is equal to the return on a "risk free" asset plus an equity premium reflecting the company's investment risk. In the CAPM, two types of risk are associated with a stock: (1) firm-specific risk (unsystematic risk); and (2) market risk (systematic risk), which is measured by a firm's beta. The CAPM allows for investors to receive a return only for bearing systematic risk. Unsystematic risk is assumed to be diversified away and, therefore, does not earn a return.

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

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

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

A. The theoretical basis for the CE method is the economic concept of "opportunity cost," or the probable return available to investors from alternative investments of similar risk. Under this theory, when investors believe that the probable return

from a given investment is not equal to the return available from another investment of similar risk, the investor will shift resources to the alternative investment.

**Q. IN THIS PROCEEDING, WHAT METHODS DO YOU RECOMMEND TO DETERMINE THE COST OF COMMON EQUITY?**

A. I recommend using the DCF method as the primary method to determine the cost of common equity and using the results of the CAPM as a comparison to the DCF results. This is consistent with the methodology historically used by the Commission in base rate proceedings.<sup>16</sup>

**Q. PLEASE EXPLAIN WHY YOU CHOSE TO USE THE DCF AND CAPM IN YOUR ANALYSIS.**

A. I used the DCF and CAPM for a variety of reasons. I chose the DCF as my primary method because it is intuitively appealing to investors since it is based upon the concept that the receipt of dividends in addition to expected appreciation is the total return requirement determined by the market. The use of a growth rate and expected dividend yield are also strengths of the DCF as this recognizes the time value of money and is forward-looking. The use of the utilities' own stock prices and growth rates in the calculation causes the DCF to be company-specific.

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<sup>16</sup> *Pa PUC v. City of DuBois – Bureau of Water*; Docket No. R-2016-2554150 (Order Entered March 28, 2017). See generally *Disposition of Cost Rate Models*.

The DCF method is the superior method for determining the rate of return for the current economic market because it measures the cost of equity directly.

I included the CAPM analysis as a comparison because, similar to the DCF, it incorporates inputs that allow the results to be specific to the utility industry, although the CAPM is far less responsive to changes in the industry than the DCF. The CAPM is based on the performance of U.S. Treasury bonds and the performance of the market as measured through the S&P 500; it is company-specific only through the use of beta. Beta reflects a stock's volatility relative to the overall market; therefore, it reflects an industry-specific aspect to the CAPM, but only as a measure of how reactive the industry is compared to the market as a whole. The DCF model is more responsive to changes in the utility industry because it requires the inputs of individual utility company stock prices, dividends, and growth rates. However, I have included the results of my CAPM analysis as a comparison to the DCF because each model is affected differently by changes in the market. It should be noted that the CAPM has several disadvantages and should not be used as a primary method.

**Q. EXPLAIN THE CAPM'S DISADVANTAGES.**

A. The relevancy of the CAPM (and therefore, the RP method) does not carry over from the investment decision-making process into the regulatory process. The CAPM and RP methods give results that indicate to an investor what the equity

cost rate should be if current economic and regulatory conditions are the same as those present during the historical period in which the risk premiums were determined. Although the CAPM and RP results can be useful to investors in making rational buy and sell decisions within their portfolios, the DCF method, via the use of a proxy group's average dividend yield and growth rate, is superior for determining the rate of return for the current economic market and measuring the cost of equity directly. The CAPM and the RP method are less reliable indicators because they measure the cost of equity indirectly and risk premiums vary depending on the debt and equity being compared. Also, regulators can never be certain that economic and regulatory conditions underlying the historical period during which the risk premiums were calculated are the same today or will be the same in the future.

**Q. HOW DOES THE FACT THAT ECONOMIC AND REGULATORY CONDITIONS TODAY CAN BE AND ARE OFTEN DIFFERENT FROM THE HISTORIC PERIOD AFFECT THE RESULTS FROM THE CAPM AND RP METHOD?**

A. The CAPM and the RP method do not measure the current rate of return on common equity directly. Instead, the CAPM and the RP method determine the rate of return on common equity indirectly by observing the cost of debt.

An implicit assumption when using the CAPM and the RP method is that the variables determining the equity cost rate and debt cost rate are the same, which allows the analyst to apply a constant risk premium (the difference between the risk-free rate and the return on the market). However, the variables determining the cost rates in the two markets affect the cost rates differently, leading to a changing risk premium over time. The use of a constant risk premium fails to capture the effect of changing economic conditions on risk premiums over time.

While a historic risk premium is the result of the comparison of two cost rates over time, the DCF's constant growth rate is derived directly from the stock and is not a comparative factor.

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

A. Yes. The article, "Market Place; A Study Shakes Confidence In the Volatile-Stock Theory," which appeared in the *New York Times* on February 18, 1992, summarized a CAPM study conducted by professors Eugene F. Fama and Kenneth R. French.<sup>17</sup> Their study examined the importance of beta, CAPM's risk factor, in explaining returns on common stock. In CAPM theory, a stock with a higher beta should have a higher expected return. They found that the model did not do well

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<sup>17</sup> Berg, Eric N. "Market Place; A Study Shakes Confidence In the Volatile-Stock Theory" *The New York Times*, Feb 1992: *nytimes.com* Web. 23 Mar 2016.

in predicting actual returns and suggested the use of more elaborate multi-factor models.

A more recent article, “The Capital Asset Pricing Model: Theory and Evidence,” which appeared in the *Journal of Economic Perspectives* states that:

The attraction of the CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk. Unfortunately, the empirical record of the model is poor, poor enough to invalidate the way it is used in applications.<sup>18</sup>

As a result, I conclude that the CAPM’s relevance to the investment decision making process does not carry over into the regulatory rate setting process.

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

A. The RP method is excluded due to the fact that it is a simplified version of the CAPM and, in addition to being subject to the same faults listed above, the RP method does not recognize company-specific risk through beta.

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

A. The CE method is excluded because the choice of which companies are comparable is subjective and it is debatable whether historic accounting values are

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<sup>18</sup> Fama, Eugene F. and French, Kenneth R., “The Capital Asset Pricing Model: Theory and Evidence.” *Journal of Economic Perspectives* (2004): Volume 18, Number 3, pp. 25-46.

representative of the future. Moreover, the Commission has long recognized the problem with this method and, as a result, its historical usage in this regulatory forum has been minimal.

**Q. WHAT IS THE COMMISSION’S HISTORICAL TREATMENT OF THE CE APPROACH?**

A. Regarding the use of non-utility companies’ historical book earnings in an attempt to determine a cost of equity for a utility, the Commission stated:

The use of nonregulated companies as a comparable group for regulated firms requires numerous unsupportable assumptions which results in a highly speculative finding.<sup>19</sup>

**SUMMARY OF COMPANY’S RESULTS**

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

A. Mr. Moul testifies that in analyzing the Company’s cost of equity, he relied on four methods: the DCF, the RP, the CAPM, and the CE method. Mr. Moul then lists the results for each method based on his proxy group of eight gas companies:

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<sup>19</sup> *Pennsylvania Public Utility Commission v. Philadelphia Electric Co.* 33 PUR 4<sup>th</sup> 319, 341 (Pa PUC 1980).

<sup>20</sup> Columbia Exhibit No. 400, Schedule 1, p. 2.

<u>Method</u>	<u>Gas Group</u> <sup>20</sup>
DCF	10.87%
Risk Premium	11.60%
CAPM	11.98%
CE method	12.85%

Mr. Moul makes a recommendation of 10.95%<sup>21</sup>, which is within his range of market-based models (DCF, RP, and CAPM) and the CE method. His recommendation includes a 20-basis point addition to recognize the performance of the Company's management based on the claims made in Mr. Huwar's testimony.<sup>22</sup>

### **I&E RECOMMENDATION**

**Q. WHAT IS YOUR RECOMMENDATION FOR THE APPROPRIATE COST OF COMMON EQUITY IN THIS PROCEEDING?**

A. Based upon my analysis, I recommend a cost of common equity of 9.72%.<sup>23</sup>

**Q. WHAT IS THE BASIS FOR YOUR RECOMMENDATION?**

A. I arrived at this equity return using the DCF method. As explained below, I used my CAPM results of 9.47% (forecasted) and 8.98% (historic) only to present to

<sup>20</sup> Columbia Exhibit No. 400, Schedule 1, p. 2.

<sup>21</sup> Columbia Statement No. 8, p. 5, lines 9-11.

<sup>22</sup> Columbia Statement No. 1, pp. 17-32, Exhibit MAH-1.

<sup>23</sup> I&E Exhibit No. 2, Schedule 4.

the Commission a comparison to my DCF results. My DCF analysis employed a spot dividend yield, a 52-week dividend yield, and earnings growth forecasts.

## **DISCOUNTED CASH FLOW (DCF)**

### **Q. PLEASE EXPLAIN YOUR DCF ANALYSIS.**

A. My analysis employs the standard discrete DCF model as portrayed in the following formula:

$$K = D_1/P_0 + g$$

Where:

K = Cost of equity

D<sub>1</sub> = Dividend expected during the year

P<sub>0</sub> = Current price of the stock

g = Expected growth rate of dividends

When a forecast of D<sub>1</sub> is not available, D<sub>0</sub> (the current dividend) must be adjusted by one-half of the expected growth rate in order to account for changes in the dividend paid in period one.<sup>24</sup> As forecasts for each company in my proxy group were available from Value Line, no dividends were adjusted for the purpose of my analysis.

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

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<sup>24</sup> The adjustment of one-half the growth rate is used when the timing of the dividend increase is not known for certain. It could occur next month, or in the twelfth month. On average, it is safe to assume that the increase will occur half way through the prospective year. Therefore, an adjustment by one-half the expected growth rate is appropriate.

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

<b>Five Company Proxy Group</b>	<b>Dividend Yield<sup>25</sup></b>
Spot	3.22%
52-week average	3.05%
Average	3.14%

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

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

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

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<sup>25</sup> I&E Exhibit No. 2, Schedule 5.

A. The following table presents the expected growth rates for the six-company proxy group:

<b>Company</b>	<b>Average Growth Rate<sup>26</sup></b>
Atmos Energy	7.29%
NiSource Inc.	9.27%
Northwest Natural Gas	5.00%
One Gas Inc.	6.37%
Southwest Gas	5.75%
Spire Inc.	5.81%
Average	6.58%

**Q. WHAT IS THE RESULT OF YOUR DCF ANALYSIS BASED ON YOUR RECOMMENDED DIVIDEND YIELDS AND GROWTH RATES?**

A. The result of my DCF analysis is 9.72%<sup>27</sup> and is calculated as follows:

$$\begin{array}{rclclcl}
 K & = & D_1/P_0 & + & g \\
 9.72\% & = & 3.14\% & + & 6.58\%
 \end{array}$$

<sup>26</sup> I&E Exhibit No. 2, Schedule 6.

<sup>27</sup> I&E Exhibit No. 2, Schedule 4.

## **CAPITAL ASSET PRICING MODEL (CAPM)**

### **Q. PLEASE EXPLAIN YOUR CAPM ANALYSIS.**

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

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

Where:

K = Cost of equity

$R_f$  = Risk-free rate of return

$R_m$  = Expected rate of return on the overall stock

$\beta$  = Beta measures the systematic risk of an asset

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

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

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

A. In estimating an equity cost rate for my proxy group of six natural gas utilities, I used the average of the betas for the companies as provided in the Value Line Investment Survey. The average beta for the proxy group is 0.68, which indicates that natural gas utilities are less volatile than the overall stock market.<sup>28</sup>

**Q. WHAT TIME PERIOD HAVE YOU CHOSEN FOR YOUR CAPM ANALYSIS?**

A. I have chosen to calculate both a historic and a forecasted CAPM. My historic CAPM uses a risk-free rate and a market risk premium calculated over the 65 years that information on the 10-year Treasury note is available.

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

A. For my historic CAPM analysis, I have chosen to use the risk-free rate of return ( $R_f$ ) from the projected yield on 10-year Treasury Notes. While the yield on the short-term T-Bill is a more theoretically correct parameter to represent a risk-free yield, this yield can be extremely volatile. The volatility of short-term T-Bills is directly influenced by Federal Reserve policy. At the other extreme, the 30-year Treasury Bond yield exhibits more stability but is not risk-free. Long-term

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<sup>28</sup> I&E Exhibit No. 2, Schedule 7.

Treasury Bonds have substantial maturity risk associated with market risk and the risk of unexpected inflation. Long-term treasuries normally offer higher yields to compensate investors for these risks. As a result, I chose to use the yield on the 10-year Treasury Note because it balances the shortcomings of the other two alternatives. Historically, the geometric average for the yield on the 10-year Treasury Bond has averaged 5.21%.<sup>29</sup>

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

A. I have used a historical return for the S&P Composite Index as a benchmark for the expected return on the overall stock market. The geometric average for the historical return of the S&P Composite index is 10.80%.<sup>30</sup>

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

A. From the fourth quarter of 2018 through the third quarter of 2019, the yield on the 10-year Treasury Bond is expected to range between 3.20% and 3.40% from the fourth quarter of 2018; it is forecasted to be 3.60% from 2019-2023.<sup>31</sup> For my forecasted CAPM analysis I chose 3.38%, which is the average of all the yields I observed.

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<sup>29</sup> I&E Exhibit No. 2, Schedule 8.

<sup>30</sup> I&E Exhibit No. 2, Schedule 9.

<sup>31</sup> I&E Exhibit No. 2, Schedule 10.

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

A. To arrive at a representative expected return on the overall stock market, I observed a Value Line summary of the 1700 stocks its analysts follow and a summary report on the S&P 500 performed by Yahoo!. Value Line expects its universe of 1700 stocks to have an average yearly return of 10.78% over the next three to five years, based on a forecasted dividend yield of 2.00% and a yearly index appreciation of 40%. The S&P 500 index is expected to have an average yearly return of 14.02% over the next five years, based upon Barron's forecasted dividend yield of 2.02% and Yahoo! Finance's expected increase in the S&P 500 index of 12.00%.<sup>32</sup>

**Q. WHAT ARE THE EXPECTED RETURNS ON THE OVERALL STOCK MARKET BASED ON YOUR FORECASTED AND HISTORIC ANALYSIS?**

A. The expected returns on the overall market are 10.80%<sup>33</sup> for my historical analysis and 12.40%<sup>34</sup> for my forecasted analysis.

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<sup>32</sup> I&E Exhibit No. 2, Schedule 11.

<sup>33</sup> I&E Exhibit No. 2, Schedule 9.

<sup>34</sup> I&E Exhibit No. 2, Schedule 11.

**Q. WHAT ARE THE COST OF EQUITY RESULTS FROM YOUR FORECASTED AND HISTORIC CAPM ANALYSES?**

A. The results of these two analyses are as follows:

Historic	8.98% <sup>35</sup>
Forecasted	9.47% <sup>36</sup>

**CRITIQUE OF COMPANY'S CLAIM**

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

A. No. Mr. Moul's claimed cost of equity is overstated for several reasons. First, Mr. Moul gives undue weight to his CAPM, RP, and CE results, which is not representative of previous Commission methodology. Second, Mr. Moul makes several unsupported adjustments (including size, leverage, credit quality, etc.) to either the inputs or the results of his analyses, all of which serve to inflate his recommendation. Finally, Mr. Moul proposes to add 20 and 35 basis point increments to his cost of equity in recognition of the Company's claimed exemplary management performance and credit quality risk, respectively.

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<sup>35</sup> I&E Exhibit No. 2, Schedule 12.

<sup>36</sup> I&E Exhibit No. 2, Schedule 13.

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

### **Q. DO YOU AGREE WITH MR. MOUL'S RELIANCE ON THE CAPM, RP, AND CE MODELS?**

A. No. While I support providing the Commission with the CAPM methodology results for establishing a point of comparison to the DCF model, I oppose weighting the CAPM, RP, and CE models equally with the DCF. For reasons discussed above, assigning equal weight to the CAPM, RP, and CE models, as Mr. Moul has done, is inappropriate. The CAPM measures the cost of equity indirectly and can be manipulated by the time period chosen. The RP model has no company-specific variable such as beta, it is a simplified version of the CAPM, and it suffers the same flaws as the CAPM. Additionally, a recent Commission Order relied primarily on the DCF and rejected giving the other methodologies equal weight:

[T]he City's cost of equity in this proceeding should be based upon the use of the DCF methodology, with the other methodology results used as a check on the reasonableness of the DCF results. We note that we have primarily relied upon the DCF methodology in arriving at previous determinations of the proper cost of equity and utilized the results of methods other than the DCF, such as the CAPM and RP methods, as a check upon the reasonableness of the DCF derived equity return calculation, tempered by informed judgement. We are not persuaded by the arguments of the City that we should assign equal weight to the multiple methodologies.<sup>37</sup>

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<sup>37</sup> *Pennsylvania Public Utility Commission v. City of DuBois – Bureau of Water*, Docket No. R-2016-2554150, pp. 96-97, Order Entered March 28, 2017.

## **CE METHOD**

### **Q. WHAT ARE THE LIMITATIONS OF THE COMPARABLE EARNINGS APPROACH?**

A. Some limitations of the CE approach have been discussed above. Additionally, Mr. Moul's CE model includes companies that have different business and financial risk profiles than Columbia Gas of PA<sup>38</sup>. Mr. Moul's CE approach analysis features a mix of companies that are not utilities and, therefore, are too dissimilar to be used in a CE analysis. Specifically, the criteria Mr. Moul employs in his screening process for his CE approach result in the selection of such entities as Darden Restaurants, Inc., Estee Lauder Companies, Inc., Allstate Corporation, and the Hershey Company. Because NGDCs are monopolies, they have very low business risk and can maintain higher financial risk profiles with more leverage. In contrast, the companies in Mr. Moul's CE proxy group operate in a competitive environment with higher levels of business risk. They must maintain lower financial risk profiles by using smaller amounts of leverage.

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<sup>38</sup> Columbia Exhibit 400, Schedule 14.

## **RISK ANALYSIS**

**Q. PLEASE SUMMARIZE MR. MOUL’S CLAIMS REGARDING THE COMPANY’S RISK FACTORS.**

A. Mr. Moul describes the Company’s risk factors as qualitative, under “Natural Gas Risk Factors,”<sup>39</sup> and quantitative, under “Fundamental Risk Analysis.”<sup>40</sup> He points to the potential for bypass, the cost of replacing aging infrastructure, the potential discontinuation of the Company’s weather normalization adjustment (WNA) tariff design and/or the refusal of its revenue normalization adjustment (RNA) proposal, and the effects of the new federal income tax law changes as qualitative risks. He lists many financial metrics including size, common equity, operating ratios, interest coverage, quality of earnings, and internally generated funds as quantitative risks.

**Q. WHAT ARE MR. MOUL’S CLAIMS REGARDING POTENTIAL RISK OF BYPASS?**

A. Mr. Moul states that the Company faces a unique situation in Western Pennsylvania where gas utilities have overlapping territories; this creates ‘gas on gas’ competition. He claims that the six interstate pipelines traversing the Company’s service territory create the potential for bypass among certain large volume customers. Additionally, Mr. Moul claims that local gas production

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<sup>39</sup> Columbia Statement No. 8, p. 5.

<sup>40</sup> Columbia Statement No. 8, p. 12.

provides another bypass threat, as well as the consolidation of competing Local Distribution Companies which form a strong competitor.<sup>41</sup>

**Q. WHAT ARE YOUR OBSERVATIONS REGARDING MR. MOUL'S CLAIMED RISK OF BYPASS FOR COLUMBIA?**

A. The Western Pennsylvania market is unique in that the overlapping territories create 'gas on gas' competition; however, whatever competition exists is limited to a very small number of competitors and only in overlapping territories. In his testimony, Mr. Moul did not provide the number of potential customers affected, nor did he reveal the size of Columbia's territory that is overlapped by NGDC competitors. Additionally, to the degree that customers must absorb switching costs to move from one NGDC to another, competition will be discouraged. An attempt was made to quantify the minimum cost for a customer to switch from Columbia to another NGDC, however, the Company was unable to provide information requested to help determine a minimum switching cost.<sup>42</sup> Because insufficient information has been provided, the risk of bypass in overlapping territories cannot be substantiated. Beyond the claimed risk of bypass resulting from overlapping territories of competitors, Columbia faces no more risk than any of the companies in the proxy group. The cost of equity measured by the proxy group adequately compensates investors for the risk of bypass.

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<sup>41</sup> Columbia Statement No. 8, p. 6, lines 12-23.

<sup>42</sup> I&E Exhibit No. 2, Schedule 14.

**Q. WHAT CLAIM DOES MR. MOUL MAKE WITH RESPECT TO THE COMPANY'S RISK EXPOSURE IN REPLACING AGING INFRASTRUCTURE?**

A. Mr. Moul claims that the Company incurs additional risk because required capital expenditures to replace aging infrastructure do not increase the Company's rate base.<sup>43</sup> The Company anticipates total capital expenditures over the next five years will equal 97% of the net utility plant service at December 31, 2016.<sup>44</sup>

**Q. WHAT IS YOUR RESPONSE TO MR. MOUL'S ASSERTION REGARDING THE COMPANY'S RISK CAUSED BY THE REPLACEMENT OF AGING INFRASTRUCTURE?**

A. The Company faces no more risk than any of the companies in Mr. Moul's Gas Group, all of which face the same issue of replacing aging infrastructure. The Company has the option to file future base rate cases to recover capital expenditure outlays used for infrastructure replacement. Base rate cases provide the Company an opportunity to earn a reasonable return on capital investments. The Company regularly takes advantage of this opportunity; its last base rate case at Docket No. R-2016-2529660 was filed in 2016. Additionally, the Company has the ability to make use of the Distribution System Improvement Charge (DSIC) to offset the regulatory lag occurring between the period of capital outlay for replacing infrastructure and the next base rate case.

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<sup>43</sup> Columbia Statement No. 8, p. 9, line 18-19.

<sup>44</sup> Columbia Statement No. 8, p. 10, lines 3-5.

**Q. WHAT RISK HAS MR. MOUL CLAIMED WITH RESPECT TO THE POTENTIAL DISCONTINUATION OF THE WEATHER NORMALIZATION ADJUSTMENT (WNA) MECHANISM AND REFUSAL OF THE REVENUE NORMALIZATION ADJUSTMENT (RNA)?**

A. Mr. Moul states that, “If the Company is unable to continue with its WNA rate design beyond 2018 and is not authorized to adopt the RNA mechanism, its risk will increase above that of the Gas Group that serves as a basis to measure the Company’s cost of equity...”<sup>45</sup>

**Q. WHAT IS YOUR RESPONSE TO MR. MOUL’S CLAIM REGARDING THE COMPANY’S INCREASED RISK AS A RESULT OF DISCONTINUING THE WNA MECHANISM?**

A. The Commission allows utilities the opportunity to propose alternative ratemaking mechanisms, and Columbia has requested continuation of its WNA, albeit with modification, and proposed an RNA in this proceeding. I am not aware of any reason the WNA mechanism cannot be renewed. The Company currently does not have an RNA mechanism in place; therefore, its refusal will not increase risk to the Company. However, if the Commission approves the Company’s RNA proposal, its overall risk will decrease as a result. I&E’s position on Columbia’s

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<sup>45</sup> Columbia Statement No. 8, p. 7, lines 20-23.

specific requests regarding the Company's WNA and RNA proposals are addressed in the testimony of I&E witness Cline in I&E Statement No. 3.

**Q. WHAT RISKS TO THE COMPANY DOES MR. MOUL ATTRIBUTE TO THE NEW FEDERAL INCOME TAX LAW CHANGES?**

A. Mr. Moul asserts the federal income tax law changes will reduce pre-tax interest coverage (adversely affecting credit quality), increase income variability, require more investor supplied capital to fund its construction program, and place downward pressure on the internally generated funds to construction ratio.<sup>46</sup>

**Q. PLEASE DISCUSS MR. MOUL'S ASSERTION THAT THE LOWER PRE-TAX INTEREST COVERAGE WILL REDUCE CREDIT QUALITY.**

A. Mr. Moul contends that federal income tax law changes will shrink interest coverage from 5.13 times to 4.40 times, increasing credit risk and placing downward pressure on credit quality.<sup>47</sup> Interest coverage for the Gas Group has fluctuated from 4.48 to 5.19 (including allowance for funds used during construction (AFUDC)) for the period of 2012-2016.<sup>48</sup> Columbia and all the companies in Mr. Moul's Gas Group have the same exposure to changes imposed by passage of the Tax Cuts and Jobs Act (TCJA). The Company's interest coverage prior to the effects of the TCJA was at 5.13<sup>49</sup> which falls within the

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<sup>46</sup> Columbia Statement No. 8, pp. 10-11.

<sup>47</sup> Columbia Statement No. 8, p. 10, lines 12-15.

<sup>48</sup> Columbia Exhibit No. 400, Schedule 3, p. 1.

<sup>49</sup> Columbia Statement No. 8, p. 10, line 14.

upper range of the Gas Group (4.48 to 5.19)<sup>50</sup>, assuming that Mr. Moul's measurement of the Company's interest coverage ratio includes AFUDC. Because the companies in the Gas Group are equally affected by the TCJA, their interest coverage ratios will experience a decline similar to Columbia. Therefore, the risk to Columbia associated with declining interest coverage is accurately measured by the proxy group.

**Q. DISCUSS MR. MOUL'S ASSERTION THAT THERE WILL BE INCREASED VARIABILITY OF REVENUES AND EXPENSES DUE TO TAX REFORM.**

A. In his response to I&E-RR-012-D, Mr. Moul states, that, "All members of the Gas Group are susceptible to the provisions of the TCJA."<sup>51</sup> Therefore, with respect to income variability, Columbia faces no greater risk than other members of the Gas Group. Over time, as the provisions of the TCJA become the new norm, income variability will re-stabilize, all other things aside. The proxy group's average return on equity adequately compensates for the risk of income variability related to passage of the TCJA.

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<sup>50</sup> Columbia Exhibit No. 400, Schedule 3, p. 1.

<sup>51</sup> I&E Exhibit No.2, Schedule No. 15.

**Q. DISCUSS MR. MOUL’S CLAIM THAT UTILITIES WILL REQUIRE MORE INVESTOR SUPPLIED CAPITAL BECAUSE OF THE DECLINE OF INTERNALLY GENERATED FUNDS TO FUND CONSTRUCTION AS A RESULT OF TAX REFORM<sup>52</sup>.**

A. The new tax law reduces deferred taxes and eliminates bonus depreciation for utilities; consequently, this reduces the percentage of internally generated funds for construction. However, the Company’s Internally Generated Funds for Construction ratio falls within the five-year range of measurements of the Gas Group, 69% to 88.5%. It is worth noting that within the Gas Group range, the 2014 value of 88.5% seems abnormally high.<sup>53</sup> The Company also has the opportunity to file future base rate cases when the need arises. Thus, I believe the Company’s overall risk associated with the TCJA is comparable with the Gas Group.

**Q. DO YOU HAVE ANY ADDITIONAL COMMENTS IN RESPONSE TO MR. MOUL’S CONCERNS REGARDING POTENTIAL IMPACTS OF TAX REFORM?**

A. Yes. Changes resulting from the TCJA will most likely not prevent Columbia from being credit worthy nor impact the Company’s ability to access capital at fair rates. The full impact of Tax Reform has not been realized for the utility industry;

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<sup>52</sup> Columbia Statement No. 8, p.11, lines 5-7.

<sup>53</sup> Columbia Exhibit 400, Schedule 3.

therefore, it is inappropriate to make dire premonitions and return on equity adjustments in this proceeding.

**Q. DO YOU AGREE WITH MR. MOUL'S ASSESSMENT OF THE QUANTITATIVE RISKS IN HIS FUNDAMENTAL RISK ANALYSIS?**

A. No. I disagree with Mr. Moul's analysis with respect to utility size, fixed charge coverage, and return on book equity. Two of these risk factors, utility size and fixed charge coverage, are discussed and disputed later in this direct testimony.

**Q. DISCUSS MR. MOUL'S CLAIM REGARDING RETURN ON BOOK EQUITY.**

A. Mr. Moul claims that the coefficient of variation of the rate of return on book common equity measures a firm's risk associated with its variability of earned returns. Greater amounts of variability indicate higher levels of risk. Mr. Moul asserts changes in federal income tax law will likely place upward pressure on the Company's variability statistics.<sup>54</sup> For the five-year period of 2012-2016, the coefficient of variation was 0.077 for the Company, 0.030 for the Gas Group, and 0.022 for the S&P Utilities. What is missing from Mr. Moul's analysis is a sense of scale, or proportionality, in terms of risk associated with the coefficient of variation. Coefficients of variation that are less than 1.00 indicate low variability; therefore, the degree of difference in variability between the Company and the Gas

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<sup>54</sup> Columbia Statement No. 8, pp. 14-15.

Group is small in scale. Columbia is relatively comparable to the Gas Group in terms of variability of earned returns.

**Q. SUMMARIZE THE COMPANY'S QUANTITATIVE RISK FACTORS.**

A. In terms of the Common Equity Ratio and Operating Ratios, I agree with Mr. Moul that the Company is in a position of similar or lower risk in comparison with the Gas Group. The size risk does not apply to utility companies as discussed later in my direct testimony. The difference in return on Book Equity between Columbia and the Gas Group is negligible, and once the effects of the new tax law are factored in to the Gas Group, its coverage ratio will likely be similar to Columbia. While Mr. Moul testifies that, "prospectively, quality of earnings will suffer as the effective income tax rate declines," he also states that, "quality of earnings has not been a significant concern for the Company."<sup>55</sup> Columbia's Internally Generated Funds slightly lag the Gas Group. Overall, the cost of equity, as measured by the proxy group, adequately measures the cost of equity for Columbia.

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<sup>55</sup> Columbia Statement No. 8, p. 16, lines 7-9.

## **MR. MOUL'S ADDITIONAL EQUITY ADJUSTMENTS**

### **Q. WHAT ADJUSTMENTS HAS THE COMPANY MADE TO ITS COST OF EQUITY ANALYSIS?**

A. Mr. Moul argues for a growth rate higher than the proxy group average in his DCF analysis. He further increases his recommended cost of common equity by 117 basis points to account for a claimed leverage risk, and then adds a 35-basis point adjustment to incorporate an asserted credit quality risk. The beta value used in Mr. Moul's CAPM is inflated by means of a double adjustment; this causes an overstatement of the claimed market risk premium factor and, consequently, the cost of equity in his CAPM analysis. Finally, Mr. Moul adds 20 basis points in recognition of claimed exemplary management performance.

## **INFLATED DCF GROWTH RATES**

### **Q. WHAT GROWTH RATE HAS MR. MOUL CHOSEN FOR HIS DCF ANALYSIS?**

A. Mr. Moul has chosen a growth rate of 6.75%.<sup>56</sup>

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

A. Based on the growth rates Mr. Moul provides,<sup>57</sup> the average earnings per share (EPS) growth rate for the Gas Group, shown by individual the analytical surveys he referenced is:

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<sup>56</sup> Columbia Statement No. 8, p. 28, lines 8-17.

<sup>57</sup> Columbia Exhibit 400, Schedule 9.

Analytical Firm	Average Growth Rate <sup>58</sup>
I/B/E/S First Call	5.64%
Reuters	6.06%
Zacks	6.26%
Morningstar	8.60%
SNL	5.96%
Value Line	6.75%
Proxy Group Average	6.55%

Although the average growth rate for Mr. Moul's Gas Group is 6.55%, he alleges a higher growth rate at the top of the range of his Gas Group is justified because the recent changes to federal tax law will result in accelerated economic growth. Mr. Moul claims that this improved economic growth justifies a recommended growth rate of 6.75%.<sup>59</sup>

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

A. No. The EPS growth forecasts of Mr. Moul's Gas Group are generated by analysts that would already be aware of the potential accelerated economic growth resulting from the TCJA. Accordingly, this accelerated economic growth should already be factored into their forecasted EPS growth rates. Therefore, because Mr. Moul has chosen an EPS growth rate at the top of the range of his Gas Group,

<sup>58</sup> Columbia Exhibit 400, Schedule 9.

<sup>59</sup> Columbia Statement No. 8, p. 28, lines 7-17.

the accelerated economic growth factor has been factored in *twice*, resulting in an inflated growth rate, and in turn, an inflated DCF result. The average growth rate of the Gas Group, as published by the analytical surveys used by Mr. Moul, more accurately represents the growth rate factor in a DCF model of Columbia's cost of equity.

**Q. DO YOU HAVE ANY ADDITIONAL COMMENTS ON THE FIVE-YEAR PROJECTED GROWTH RATES OF MR. MOUL'S GAS GROUP?**

A. Yes. While these five-year projected growth rates can be used in analyses, one must be aware that analysts' estimates may be biased. This bias has been observed in literature.

**Q. PLEASE EXPLAIN.**

A. An article authored by Professors Ciciretti, Dwyer, and Hasan in 2009 observed strong evidence of earnings forecasts being higher than actual earnings.<sup>60</sup> In the spring of 2010, *McKinsey on Finance* presented an article reporting that after a decade of stricter regulation, analysts' forecasts are still overly optimistic. The article demonstrates that at twelve months out, earnings estimates exceed actual earnings while a one-month forecast is closer to the actual result.<sup>61</sup> Mr. Moul's

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<sup>60</sup> Ciciretti, Rocco; Dwyer, Gerald R; and Iftekhan Hasan. "Investment Analysts' Forecasts of Earnings" Federal Reserve Bank of St. Louis Review, September/October 2009, 91 (5, part 2) pp. 545-67.

<sup>61</sup> Goedhart, Marc J; Raj, Rishi; and Abhishek Saxena. "Equity analyst: Still too bullish" McKinsey On Finance Number 35 Spring 2010, pp. 14-17.

DCF growth rate is overstated; in addition to results that are already upwardly biased, it contains an adjustment that duplicates the factor of accelerated economic growth.

### **DCF ADJUSTMENTS**

**Q. WHAT OTHER ADJUSTMENTS HAS MR. MOUL ADDED TO THE RESULT OF HIS PROPOSED DCF ANALYSIS?**

A. Mr. Moul proposes to make a 117-basis point leverage adjustment to the results of his DCF analysis to account for applying a market valued cost of equity to a book valued equity capital measure and a 35-basis point adjustment to account for credit quality risk.<sup>62</sup>

**Q. WHAT IS FINANCIAL LEVERAGE?**

A. Financial leverage is the use of debt capital to acquire assets. It supplements equity capital in the acquisition process. A firm with significantly more debt than equity is considered to be highly leveraged.

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<sup>62</sup> Columbia Statement No. 8, pp. 29-34.

**Q. WHAT IS A MARKET-TO-BOOK RATIO?**

A. A market-to-book ratio is used to evaluate a public firm's equity value. This is done by comparing the market value and book value of a company's equity.

**Q. IS MR. MOUL ADJUSTING THE COST OF EQUITY TO RECOGNIZE HOW THE COMPANY IS LEVERAGED?**

A. No. Mr. Moul does not propose to change the capital structure of the utility (a leverage adjustment), nor does he propose to apply the market-to-book ratio to the DCF model (a market-to-book adjustment). Instead, Mr. Moul is proposing to make an adjustment to account for applying the market value cost rate of equity to the book value of the utility's equity. To my knowledge, there is currently no term in academic journals or textbooks that describes this type of adjustment.

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

A. Mr. Moul theorizes that an adjustment is needed when the results of the DCF model are applied to a book capital structure that is different than what is indicated by market capital structure. Mr. Moul opines that the financial risk of the proxy group is measured by the capital structure ratios calculated from the market capitalization of each company.<sup>63</sup> Mr. Moul's adjustment is premised upon his claim that "...the financial risk of the Gas Group is accurately measured by the

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<sup>63</sup> Columbia Statement No. 8, pp. 29-30.

capital structure ratios calculated from the market capitalization of a firm...

Because the rate setting process uses a different set of ratios calculated from the book value capitalization, then further analysis is required to synchronize the financial risk of the book capitalization with the required return on the book value of the equity.”<sup>64</sup>

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

A. Mr. Moul states:

I know of no means to mathematically solve for the 1.17% leverage adjustment by expressing it in the terms of any particular relationship of market price to book value. The 1.17% adjustment is merely a convenient way to compare the 10.52% return computed directly with the Modigliani & Miller formulas to the 9.35% return generated by the DCF model...based on a market value capital structure.<sup>65</sup>

**Q. HOW DOES MR. MOUL CALCULATE THE 10.52% RETURN HE CLAIMS IS COMPUTED DIRECTLY WITH THE MODIGLIANI AND MILLER FORMULAS?**

A. Mr. Moul uses the following formulas found in Columbia Exhibit 400, Schedule 10:

$$k_u = k_e - (((k_u - i) 1-t) D/E) - (k_u - d) P/E$$

and  $k_e = k_u + (((k_u - i) 1-t) D/E) + (k_u - d) P/E$

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<sup>64</sup> Columbia Statement No. 8, p. 29, lines 19-26 and p. 30, line 1.

<sup>65</sup> Columbia Statement No. 8, p. 32, lines 9-15.

Where:

$k_u$  = cost of equity for an all-equity firm

$k_e$  = market determined cost of equity

$i$  = cost of debt

$t$  = tax rate

$d$  = dividend rate on preferred stock

$D$  = debt ratio

$P$  = preferred stock ratio

$E$  = common equity ratio

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

A. No. Mr. Moul's adjustment is inconsistent and inappropriate because of the way ratings agencies characterize financial risk and its lack of support in academic literature.

**Q. HOW IS MR. MOUL'S BASIS FOR HIS LEVERAGE ADJUSTMENT INCONSISTENT?**

A. Although Mr. Moul claims that his "leverage adjustment is not intended, nor was it designed, to address the reasons that stock prices vary from book value,"<sup>66</sup> he bases his leverage adjustment upon his assertion that "where a firm's capitalization as measured by its stock price diverges from its book value, the potential exists for

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<sup>66</sup> Columbia Statement No. 8, p. 30, lines 12-13.

a financial risk difference.”<sup>67</sup> While Mr. Moul stated that he does not intend his adjustment to transform his DCF result from a market value into a book value result, the adjustment is predicated upon the difference between the market value and the book value of a firm. The premise for his adjustment is his claim that since the DCF is based upon the stock prices of the companies in his Gas Group, it is market based and therefore cannot be applied, unadjusted, to the book value capital structure of Columbia. However, he also claims that, “any observations concerning market prices relative to book are not on point.”<sup>68</sup> Mr. Moul’s methodology, regarding leverage adjustment, assumes that the price of a firm’s stock is based upon the risk inherent in its market value capital structure ratio and not its book value capital structure ratio. This assertion is inconsistent with capital structure ratios available to investors, such as the ratios included in Value Line, which are based on the book value of debt and the book value of equity. Value Line, in its publications, presents the book value debt and equity ratios of the utilities, not the market value ratios, demonstrating that investors base their decisions on book value debt and equity ratios for regulated utilities. Therefore, no adjustment is needed.

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<sup>67</sup> Columbia Statement No. 8, p. 29, lines 4-5.

<sup>68</sup> Columbia Statement No. 8, p. 30, lines 13-14.

**Q. PLEASE EXPLAIN HOW RATINGS AGENCIES ASSESS FINANCIAL RISK.**

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

**Q. DISCUSS THE LACK OF SUPPORT IN ACADEMIC LITERATURE FOR MR. MOUL'S LEVERAGE ADJUSTMENT.**

A. Mr. Moul cites to Modigliani and Miller's research on the subject of capital structure and cost of capital as justification for his leverage adjustment. However, Mr. Moul has misinterpreted Modigliani and Miller's theory and used it in a way the researchers never advocated.

Modigliani and Miller's research was geared primarily toward understanding company capital investment behavior, not the financial risk associated with a stock's market price divergence from its book value. Also, the adjustment and formula employed by Mr. Moul cannot be found in the research he cites.

**Q. WHAT DOES THE WORK OF MODIGLIANI AND MILLER STATE ABOUT THE EFFECT OF THE TYPE OF CAPITAL EMPLOYED (DEBT OR EQUITY) UPON THE VALUE OF THE FIRM?**

A. The work of Modigliani and Miller supports a conclusion opposite to that of Mr. Moul, namely that "the market value of any firm is independent of its capital structure."<sup>69</sup> Furthermore, as they state, "the value of any firm must be independent of its financial structure."<sup>70</sup>

**Q. ARE YOU AWARE OF ANY OTHER ACADEMIC LITERATURE THAT SUPPORTS MR. MOUL'S LEVERAGE ADJUSTMENT?**

A. No. I am not aware of any other academic literature that supports Mr. Moul's leverage adjustment, furthermore the formulas employed by Mr. Moul do not appear anywhere in the research he cites.

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<sup>69</sup> Modigliani, Franco and Miller, Merton H. "The Cost of Capital, Corporation Finance, and the Theory of Investment" *American Economic Review*, June 1958, p. 268.

<sup>70</sup> Modigliani, Franco and Miller, Merton H. "The Cost of Capital, Corporation Finance, and the Theory of Investment: Reply" *American Economic Review*, June 1965, p. 525.

**Q. PLEASE SUMMARIZE YOUR RECOMMENDATION REGARDING THE LEVERAGE ADJUSTMENT.**

A. I recommend that Mr. Moul's proposed 117-basis point leverage adjustment be rejected because there is no academic support for such an adjustment in a DCF setting; true financial risk is a function of the amount of interest expense, and capital structure information provided to investors through Value Line is that of book values, not market values. Mr. Moul's adjustments serve only to tamper with the DCF's market-based methodology.

**Q. WHAT IS THE BASIS FOR MR. MOUL'S CREDIT QUALITY RISK ADJUSTMENT?**

A. Mr. Moul claims that because The Company obtains its external capital from its parent NiSource Inc.<sup>71</sup>, which has a lower credit rating than the Gas Group average, an adjustment of 35 basis points is warranted to Columbia's investors to compensate them for credit quality risk. Mr. Moul further opines that his formula (presumably his DCF model) does not include the cost of debt in the calculation, and therefore the risk of Columbia's lower credit rating must be included as an adjustment.<sup>72</sup>

**Q. WHAT ARE THE CREDIT RATINGS FOR NISOURCE AND THE GAS GROUP AVERAGE?**

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<sup>71</sup> Columbia Statement No. 8, p.13, line 5.

<sup>72</sup> I&E Exhibit No. 2, Schedule 16.

A. The credit ratings reported by Mr. Moul for NiSource and the Gas Group Average, listed by ratings agency are:

	<b>Moody's</b>	<b>S&amp;P</b>
<b>NiSource<sup>73</sup></b>	Baa2	BBB+
<b>Gas Group Average<sup>74</sup></b>	A2	A-

**Q. HOW DOES MR. MOUL CALCULATE HIS CREDIT QUALITY RISK ADJUSTMENT?**

A. Mr. Moul uses the spread between A Rated and Baa Rated Public Utility Bonds as a proxy to quantify the claimed greater credit quality risk of Columbia compared with his Gas Group.<sup>75</sup> The spread is 0.35% or 35 basis points.

**Q. DO YOU AGREE WITH MR. MOUL'S CREDIT QUALITY ADJUSTMENT?**

A. No. Credit quality risk is accounted for in the cost of debt; lenders require higher interest rates from firms with lower credit quality because they expect to be compensated for taking on a greater risk of default. Columbia has a slightly lower

<sup>73</sup> Columbia Statement No. 8, p.13, lines 6-7.

<sup>74</sup> Columbia Statement No. 8, p.13, lines 11-12 and Columbia Exhibit 400, Schedule 3, p. 2.

<sup>75</sup> Columbia Exhibit 400, Schedule 11 and Columbia Statement No. 8, p. 34, lines 1-9.

credit rating than the average for the Gas Group; correspondingly, its cost of debt should be higher, which Mr. Moul confirms in his response to I&E-RR-009-D, Part A, “the cost of debt to Columbia is higher than the cost of debt for the Gas Group as revealed by the differences in yields on A-rated and Baa-rated debt.”<sup>76</sup> A comparison of the embedded cost of debt for Columbia and the average for the Gas Group confirms Mr. Moul’s statement. The cost of debt for Columbia, estimated at November 30, 2017, is 5.22%; the Gas Group average cost of debt is 4.57%<sup>77</sup>. The spread revealed by the comparison is 65 basis points, nearly double the 35-basis point credit quality adjustment requested by Mr. Moul. Clearly, Columbia’s credit quality risk is accounted for in its cost of debt. If the cost of equity is adjusted upward to compensate investors for credit quality risk, the risk factor cost will be duplicated in Columbia’s overall rate of return.

**Q. PLEASE SUMMARIZE YOUR RECOMMENDATION REGARDING MR. MOUL’S CREDIT QUALITY ADJUSTMENT.**

A. I recommend that Mr. Moul’s 35-basis point credit quality adjustment be rejected. It results in double-counting Columbia’s credit quality risk which is accounted for in its cost of debt, and ultimately reflected in its overall rate of return.

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<sup>76</sup> I&E Exhibit No. 2, Schedule 16.

<sup>77</sup> Columbia Exhibit 400, Schedule 6, p. 1.

**Q. WHAT WOULD MR. MOUL'S DCF BE WITHOUT ANY ADJUSTMENTS?**

A. Without Mr. Moul's use of inflated growth rates, leverage and credit quality adjustments, his DCF model would consist of a dividend yield of 2.60% and an average growth rate of 6.55%, resulting in a 9.15% cost of equity, which is lower than my recommended 9.71%.

**INFLATED CAPM BETAS**

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

A. Mr. Moul has taken the average Value Line beta of his Gas Group, which is already adjusted on the basis that all securities, over time, move toward the Security Market Line value of 1.00,<sup>78</sup> and then inflated it further from 0.74 to 0.90 using the same logic that he used to enhance his DCF returns, through a financial risk or leverage adjustment.<sup>79</sup> Such enhancements are unwarranted for beta in a CAPM analysis for the same reasons that enhancements are unwarranted for DCF results. If the Value Line betas do not reflect an accurate investment risk as Mr. Moul contends, the question naturally arises as to why Value Line does not publish betas that are adjusted for leverage.

Until this type of adjustment is demonstrated in academic literature to be valid, such leverage-adjusted betas in a CAPM should be rejected.

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<sup>78</sup> Andrew J Cueter, "Using Beta", October 2, 2012, *Value Line Educational Article*.

<sup>79</sup> Columbia Statement No. 8, p. 39, lines 1-20.

## **SIZE ADJUSTMENT**

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

A. Mr. Moul adds 102 basis points to his CAPM indicated cost of common equity because he opines that as the size of a firm decreases, its risk and required return increases. Mr. Moul relies upon an uncited discussion by Professor Brigham, technical literature including a Fama and French study, and an article published in *Public Utilities Fortnightly*.<sup>80</sup>

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

A. Mr. Moul's size adjustment is unnecessary because none of the technical literature he cites supporting investment adjustments related to the size of a company is specific to the utility industry and, therefore, is not relevant in this proceeding.

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

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

Dr. Annie Wong concludes:

The objective of this study is to examine if the size effect exists in the utility industry. After controlling for equity values, there is some weak evidence that firm size is a missing factor from the CAPM for the industrial but not for

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<sup>80</sup> Columbia Statement No. 8, p. 42-43.

utility stocks. This implies that although the size phenomenon has been strongly documented for the industrials, the findings suggest that there is no need to adjust for the firm size in utility rate regulation.<sup>81</sup>

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

**Q. WHAT WOULD MR. MOUL'S CAPM RESULT BE WITHOUT THE SIZE ADJUSTMENT AND INFLATED BETAS?**

A. Mr. Moul's CAPM result would be 9.68% without his size adjustment and inflated betas. The calculation is repeated below without Mr. Moul's adjustments:

$$\begin{array}{rcccccccc} \text{Rf} & + & \beta & * & (\text{Rm-Rf}) & + & \text{size} & = & \text{K} \\ 3.75\% & + & 0.74 & * & 8.01\% & + & 0\% & = & 9.68\% \end{array}$$

This result is only slightly higher than my forecasted CAPM result of 9.47%.<sup>82</sup>

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<sup>81</sup> Wong, Annie, "Utility Stocks and the Size Effect: An Empirical Analysis" *Journal of the Midwest Finance Association* (1993): 95-101.

<sup>82</sup> I&E Exhibit 2, Schedule 13.

## **MANAGEMENT RECOGNITION POINTS**

### **Q. WHAT IS THE COMPANY'S REQUEST REGARDING MANAGEMENT RECOGNITION POINTS?**

A. Mr. Moul states that his 10.95% recommendation for the cost of equity includes 0.20% to recognize the Company's strong management performance. Mr. Moul relies upon the testimony of Mr. Huwar to support his increase to the requested return on equity.<sup>83</sup>

### **Q. WHAT IS THE TESTIMONY OF MR. HUWAR REGARDING MANAGEMENT PERFORMANCE?**

A. Mr. Huwar claims that Columbia's management performance is demonstrated through among other things, its aggressive infrastructure replacement plan,<sup>84</sup> superior results in PUC Management Performance Audit and PUC UCARE reports, its PAR rate, Quality of Service Performance report, and its result in the 2017 J.D. Power Residential Customer Satisfaction Survey.<sup>85</sup>

### **Q. DO YOU AGREE WITH THE TWENTY BASIS POINT ADDITION TO THE RATE OF RETURN PROPOSED BY MR. MOUL?**

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<sup>83</sup> Columbia Statement No. 8, p. 5.

<sup>84</sup> Columbia Statement No. 1, p. 17 and Columbia Statement No. 7.

<sup>85</sup> Columbia Statement No. 1., pp. 17-36.

A. No. To begin, Columbia's aggressive infrastructure replacement is funded by ratepayers. Additionally, topics such as reliability, customer satisfaction, and a focus on safety are required of every public utility under 66 Pa C.S.A. §1501. Columbia has also benefited through its use of a DSIC that provides funding for infrastructure replacement without the need to file base rate cases.

### **OVERALL RATE OF RETURN**

**Q. WHAT IS THE COMPANY'S PROPOSED OVERALL RATE OF RETURN?**

A. The Company's proposed overall rate of return is 8.10% (Columbia Statement No. 8, and Columbia Exhibit 400, Schedule 1).

**Q. WHAT IS I&E'S RECOMMENDED OVERALL RATE OF RETURN?**

A. Per I&E Exhibit No. 2, Schedule No. 1, the appropriate overall rate of return recommended by I&E is 7.46%.

**Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

A. Yes.

**CHRISTOPHER M HENKEL**  
**PROFESSIONAL EXPERIENCE AND EDUCATION**

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**EMPLOYMENT:**

Fixed Utility Financial Analyst 2018 – Present	PA Public Utility Commission Bureau of Investigation & Enforcement
Transportation Analyst 1 year	Woodstream Corporation
Senior Payroll Coordinator 12 years	Susquehanna Bancshares, Inc.

**EDUCATION/CERTIFICATION:**

Millersville University, B.S. Business Administration / Finance – 2016  
Certificate, Bloomberg Market Concepts

**TESTIMONY SUBMITTED:**

**ASSISTED WITH THE FOLLOWING CASES:**

R-2017-2640058	UGI Utilities, Inc. – Electric Division
R-2018-3000124	Duquesne Light Company
R-2018-3000164	PECO Energy Company