**BEFORE THE WASHINGTON**

**UTILITIES & TRANSPORTATION COMMISSION**

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Complainant,

v.

CASCADE NATURAL GAS CORPORATION,

Respondent.

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DOCKET UG-200568

# RESPONSE TESTIMONY OF J. RANDALL WOOLRIDGE ON BEHALF OF THE WASHINGTON STATE OFFICE OF THE ATTORNEY GENERAL PUBLIC COUNSEL UNIT

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**Exhibit JRW-1Tr**

November 19, 2020

**Revised November 24, 2020**

**DOCKET UG-200568**

**RESPONSE TESTIMONY OF J. RANDALL WOOLRIDGE**

**EXHIBIT JRW-1Tr**

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## EXHIBITS LIST

**Q. Please state your full name, address, and occupation.**

A. My name is J. Randall Woolridge, and my business address is 120 Haymaker Circle, State College, PA 16801. I am a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed University Fellow in Business Administration at the University Park Campus of Pennsylvania State University. I am also the Director of the Smeal College Trading Room and President of the Nittany Lion Fund, LLC. A summary of my educational background, research, and related business experience is provided in Exhibit JRW-12

## I. INTRODUCTION AND SUMMARY OF TESTIMONY

**Q. What is the scope of your testimony in this proceeding?**

A. I have been asked by the Public Counsel Unit of the Washington State Attorney General's Office to provide an opinion as to the overall fair rate of return or cost of capital for the regulated gas utility service of Cascade Natural Gas Corporation ("Cascade" or the "Company") and to evaluate Cascade's rate of return testimony in this proceeding.[1]

**Q. How is your testimony organized?**

A. First, I summarize my cost of capital recommendation for the Company, and review the primary areas of contention on the Company's position. Second, I provide an overview of capital market conditions and authorized returns on equity (ROE) for utilities. Third, I discuss the proxy group that I have used to estimate an equity cost rate for Cascade. Fourth, I provide my recommendations on the Company's appropriate capital structure and senior

[1] In my testimony, I use the terms 'rate of return' and 'cost of capital' interchangeably. This is because the required rate of return of investors on a company's capital is the cost of capital.

capital cost rates. Fifth, I estimate the equity cost rate for the Company. Finally, I critique Cascade's rate of return analysis and testimony. In Exhibit JRW-12, I provide a summary of my educational and professional background.

## A. Utility Rate of Return

**Q. What comprises a utility's "Rate of Return"?**

A. A company's overall rate of return consists of three main categories: (1) capital structure (i.e., ratios of short-term debt, long-term debt, preferred stock and common equity); (2) cost rates for short-term debt, long-term debt, and preferred stock; and (3) common equity cost, otherwise known as ROE.

**Q. What is a utility's ROE intended to reflect?**

A. An ROE is most simply described as the allowed rate of profit for a regulated company. In a competitive market, a company's profit level is determined by a variety of factors including the state of the economy, the degree of competition a company faces, the ease of entry into its markets, the existence of substitute or complementary products/services, the company's cost structure, the impact of technological changes, and the supply and demand for its services and/or products. For a regulated monopoly, the regulator determines the level of profit available to the utility. The United States Supreme Court established the guiding principles for establishing an appropriate level of profitability for regulated public utilities in two cases: (1) *Bluefield*[2] and (2) *Hope*.[3] In those cases, the Court recognized that the fair rate of return on equity should be: (1) comparable to

[2] *Bluefield Water Works and Improvement Co. v. Pub. Serv. Comm'n of W. Va.*, 262 U.S. 679 (1923) ("Bluefield").

[3] *Federal Power Comm'n v. Hope Nat. Gas Co*., 320 U.S. 591 (1944) ("Hope").

returns investors expect to earn on investments with similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain the company's credit and to attract capital.

Thus, the appropriate ROE for a regulated utility requires determining the market-based cost of capital. The market-based cost of capital for a regulated firm represents the return investors could expect from other investments, while assuming no more and no less risk. The purpose of all of the economic models and formulas in cost of capital testimony (including those presented later in my testimony) is to estimate, using market data of similar-risk firms, the rate of return equity investors require for that risk-class of firms in order to set an appropriate ROE for a regulated firm.

### B. Summary of Positions

**Q. Please review the company's proposed rate of return or cost of capital.**

A. Cascade witness Ms. Tammy J. Nygard recommends a capital structure consisting of 49.60 percent Total debt and 50.40 percent common equity, and a debt cost rate of 4.745 percent. Cascade witness Ms. Ann E. Bulkley has recommended a common equity cost rate of 10.30 percent for Cascade. The Company's overall proposed rate of return is 7.544 percent.

**Q. Please review your recommendations regarding the appropriate market-based rate of return for Cascade.**

A. I have reviewed the Company's proposed capital structure and overall cost of capital. I demonstrate that Cascade's proposed capitalization has a higher common equity ratio and lower financial risk than the capitalization the Company has maintained over time. As a result, I have used a capital structure with a common equity ratio of 49.10 percent, which is the capital structure adopted in the Company's last rate case, and is consistent with

Cascade's capitalization in recent years. To estimate an equity cost rate for the Company, I have applied the Discounted Cash Flow Model (DCF) and the Capital Asset Pricing Model (CAPM) to my proxy group of gas distribution companies ("Gas Proxy Group"). My DCF and CAPM analyses indicate an equity cost rate range of 7.30 percent to 9.0 percent.

**Q. What is your rate of return recommendation for Cascade?**

A. As noted, my equity cost rate studies indicate an ROE between 7.30 percent and 9.00 percent. I believe that this range accurately reflects current capital market data. Since I rely primarily on the DCF approach, and Cascade's risk level is at the high-end of the Gas Proxy Group, I will use 9.00 percent as my recommended equity cost rate for the Company. With my recommended capitalization ratios and using Cascade's proposed debt cost rate, my rate of return or cost of capital recommendation for the Company is 6.83 percent and is summarized in Table 1 and Exhibit JRW-2.

**Table 1**
**PC's Rate of Return Recommendation**

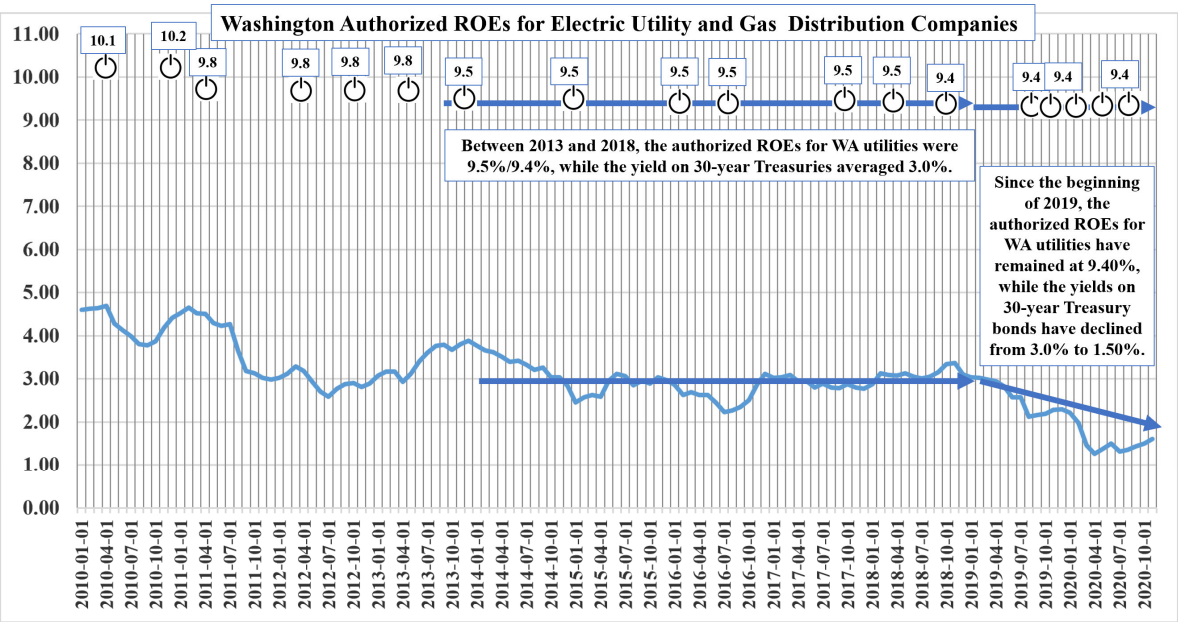
| Capital Source | Capitalization Ratios | Cost Rate | Weighted Cost Rate |
|---|---|---|---|
| **Debt** | **50.90%** | **4.75%** | **2.42%** |
| **Common Equity** | **49.10%** | **9.00%** | **4.42%** |
| **Total Capital** | **100.00%** | | **6.83%** |

**Q. Please discuss the authorized ROEs for electric utility and gas distribution companies in Washington, and how they are related to interest rates?**

A. Figure 1 shows (1) the authorized ROEs in Washington for electric utility and gas distribution companies and (2) 30-year Treasury yields, since 2010. Between 2013 and 2018, the authorized ROEs in Washington were in the 9.4 percent–9.5 percent range, while the 30-year Treasury yield averaged 3.0 percent. Over that time period, the

difference between the authorized ROEs and 30-year Treasury yields was fairly constant. In the year 2019, yield on 30-year Treasury bonds declined about 100 basis points to 2.0 percent, and traded at all-time lows. However, the authorized ROEs in Washington remained in the 9.4 percent–9.5 percent range. Now, in 2020, interest rates and capital costs declined to new record lows due to the impact of the novel coronavirus, and the 30-year Treasury yield has declined to the 1.50 percent range. The bottom line is that, unlike previous years, Washington authorized ROEs since the beginning of 2019 have not maintained their relationship with interest rates and have not reflected the decline in interest rates and capital costs.

**Figure 1**
**Washington Authorized ROEs and 30-Year Treasury Yields**
**2010-2020**




Date Sources: Washington ROEs - S&P Global Market Intelligence, RRA *Regulatory Focus*, 2020.
Thirty-Year Treasury Yields - https://fred.stlouisfed.org/series/DGS30.

### C. Primary Rate of Return Issues in this Case

**Q. Please provide an overview of the primary issues regarding rate of return in this proceeding.**

A. The primary issues related to the Company's rate of return include the following:

Capital Market Conditions – Ms. Bulkley's analyses, ROE results, and recommendations are based on assumptions of higher interest rates and capital costs. However, interest rates and capital costs have remained at historically low levels in 2020, and the Federal Reserve has acknowledged that it will keep interest rates near zero for years to come.

Capital Structure – The Company has proposed a capital structure with a common equity ratio of 50.40 percent. This includes a higher common equity ratio and lower financial risk than: (1) the companies in my Gas Proxy Group, and (2) the capitalization the Company has maintained over time. As a result, I have used a capital structure with a common equity ratio of 49.10 percent, which is the capital structure adopted in the Company's last rate case, and is consistent with Cascade's capitalization in recent years.

There is a Disconnect Between the Results of Ms. Bulkley's ROE Studies and Her 10.3% ROE Recommendation – The vast majority of Ms. Bulkley's analyses suggest a ROE that is much lower than her 10.3 percent ROE recommendation. The only analyses that support a ROE of 10.3 percent are her CAPM studies. As discussed below, these studies include an inflated long-term projected interest rate and a market risk premium that is based on assumptions of future earnings growth and stock market returns that defy economic logic.

DCF Approach – Ms. Bulkley and I have both employed the traditional constant-growth DCF model. Ms. Bulkley has seriously overstated her reported DCF results in three ways: (1) she has exclusively used the overly optimistic and upwardly biased EPS growth rate forecasts of Wall Street analysts and *Value Line*; and (2) she has combined abnormally high *Value Line* projected EPSs for her proxy companies, computed from a three-year base period, with three-to-five-year projected growth rates of First Call and Zacks; and (3) she has claimed that the DCF results underestimate the market-determined cost of equity capital due to high utility stock valuations and low dividend yields. On the other hand, when developing the DCF growth rate that I have used in my analysis, I have reviewed 13 growth rate measures including historical and projected growth rate measures and have evaluated growth in dividends, book value, and earnings per share. In addition, Ms. Bulkley's errors are magnified by the fact that she has used a small proxy group.

CAPM Approach – The CAPM approacsince weh requires an estimate of the risk-free interest rate, beta, and the market or risk premium. There are three issues with Ms. Bulkley's CAPM analysis: (1) her long-term projected (3.20 percent) 30-year Treasury yield is well in excess of current market yields; (2) she has employed the Empirical CAPM ("ECAPM") version of the CAPM, which makes inappropriate adjustments to the risk-free rate and the market risk premium; and (3) most significantly, she has computed a market risk premium of 12.14 percent. The 12.14 percent market risk premium is much larger than: (1) indicated by historic stock and bond return data; and (2) found in the published studies and surveys of the market risk premium. In addition, I demonstrate that the 12.14 percent market risk premium is based on unrealistic assumptions of future

economic and earnings growth and stock returns. To compute her market risk premium, Ms. Bulkley has applied the DCF to the S&P 500 and employed analysts' three-to-five-year earnings per share (EPS) growth-rate projections as a growth rate to compute an expected market return and market risk premium. As I demonstrate later in my testimony, the EPS growth-rate projection used for the S&P 500 and the resulting expected market return and market risk premium include unrealistic assumptions regarding future economic and earnings growth and stock returns. In short, her CAPM results are based on the unrealistic assumption that, over the long-term, corporate earnings can grow at almost three times GDP.

As I highlight in my testimony, there are three commonly used procedures for estimating a market risk premium – historic returns, surveys, and expected return models. I have used a market risk premium of 6.00 percent, which: (1) factors in all three approaches – historic returns, surveys, and expected return models – to estimate a market premium; and (2) employs the results of many studies of the market risk premium. As I note, the 6.00 percent figure reflects the market risk premiums: (1) determined in recent academic studies by leading finance scholars; (2) employed by leading investment banks and management consulting firms; and (3) found in surveys of companies, financial forecasters, financial analysts, and corporate CFOs.

Alternative Risk Premium Model - Ms. Bulkley also estimates an equity cost rate using an alternative risk premium model, which she calls the Bond Yield Risk Premium (BYRP) approach. There are two issues with this approach: (1) the base interest rates; and (2) the risk premium. With respect to the base rates, her long-term projected (3.20 percent) 30-year Treasury yield is well in excess of current market yields. The risk premium

in her BYRP method is based on the historical relationship between the yields on long-term Treasury yields and authorized ROEs for gas distribution companies. There are several issues with this approach: (1) This approach is a gauge of commission behavior and not investor behavior. Capital costs are determined in the market place through the financial decisions of investors and are reflected in such fundamental factors as dividend yields, expected growth rates, interest rates, and investors' assessment of the risk and expected return of different investments; (2) Ms. Bulkley's methodology produces an inflated measure of the risk premium because her approach uses historical authorized ROEs and Treasury yields, and the resulting risk premium is applied to projected Treasury yields; and (3) the risk premium is inflated as a measure of investors' required risk premium, because gas distribution companies have been selling at market-to-book ratios in excess of 1.0.[4] This indicates that the authorized rates of return have been greater than the return that investors require.

Expected Earnings Approach - Ms. Bulkley also uses the Expected Earnings approach to estimate an equity cost rate for the Company. Ms. Bulkley computes the expected ROE as forecasted by *Value Line* for her proxy group of gas utilities. As I discuss in my critique of Ms. Bulkley's presentation, the so-called "Expected Earnings" approach does not measure the market cost of equity capital, is independent of most cost of capital indicators, ignores the research on the upward bias in *Value Line*'s earnings projections, and has several other empirical issues. Therefore, the Commission should

[4] As discussed later in my testimony, a market-to-book ratio in excess of 1.0 indicates that a utility's earned ROE is above its cost of equity capital.

ignore Ms. Bulkley's "Expected Earnings" approach in determining the appropriate ROE for Cascade.

Other Factors - Ms. Bulkley also considers other risk factors in arriving at her 10.30 percent ROE recommendation. She claims that Cascade deserves an increment to the authorized ROE for various risk factors, including its small size, customer concentration, capital expenditures, and regulatory risk. She also contends that Cascade deserves a higher ROE due to flotation costs. Ms. Bulkley's arguments on both the risk factors and flotation costs are without merit. The Company's small size, customer concentration, capital expenditures, and regulatory risk are considered in the credit-rating process used by major rating agencies. The S&P issuer credit rating for Cascade of BBB+, which is at the low end of the range of the Gas Proxy Group. With respect to flotation costs, Ms. Bulkley has not cited any flotation costs paid by the Company. As such, she is requesting greater revenues in the form of a higher ROE for flotation costs that the Company does not incur.

## II. CAPITAL MARKET CONDITIONS AND UTILITY AUTHORIZED ROES

### A. Capital Market Conditions

**Q. Please review the financial markets in 2020.**

A. The financial markets began the year in good form – stock prices rose about five percent in the first six weeks of the year and interest rates declined. Then came weeks of chaos. In the middle of February, the spread of the coronavirus went global and the virus became a major risk factor for the world's population and global economy. The coronavirus disease

2019 (COVID-19), has spread to over 200 countries around the world and was officially identified by the World Health Organization as a global pandemic in mid-March.

Investors around the world began to focus on the potential economic consequences of the coronavirus in the middle of January.[5] However, the markets largely ignored the impact of the virus until the third week of February. From mid-February until the third week of March, the S&P 500 declined 35 percent and investors fled to low risk financial assets, most notably long-term Treasury bonds. The yield on the benchmark 30-year Treasury bond declined from 2.0 percent and traded as low as 0.9 percent, an all-time low. Furthermore, the day-to-day volatility of prices in financial markets was at extremes. The VIX, which is the CBOE volatility index and is known as Wall Street's Fear Index, increased from 15 and traded over 50, a level which has not been seen since the financial crisis in 2008.

The stock market began its recovery in the third week of March. Despite the ongoing spread of COVID-19 and an economic crisis created by the virus that includes record unemployment, the S&P 500 has come back strong and is close to its previous all-time high in February. The 30-year Treasury yield, which was about 2.0 percnet mid-February, dropped to record low levels below 1.0 percent and now has come back to about 1.5 percent. The VIX, which topped out over 50, is now about 25. And utility stocks, which declined with the market by about 35 percent from Mid-February to mid-March, have come back, but less so than the overall market.

[5] Akane Otane, *Coronavirus Tests Market's Faith in Global Economy*, THE WALL STREET J., Jan. 28, 2020.

**Q. Does Ms. Bulkley highlight the actions of the federal reserve in response to the coronavirus pandemic?**

A. Yes. Ms. Bulkley notes that the Federal Reserve has been active in monetary policy to support the economy in the wake of the coronavirus pandemic. In addition, since she prepared her testimony, Federal Reserve Chair Jerome Powell stated that the Fed would keep interest rates low for a number of years in a September 4th NPR interview: "We think that the economy's going to need low interest rates, which support economic activity, for an extended period of time … It will be measured in years."[6] Subsequently, on September 15, 2020, Federal Reserve officials made more specific Mr. Powell's September 4th comments, projecting that they would keep interest rates near zero through 2023 to help the economy fully recover from the pandemic.[7]

**Q. Ms. Bulkley does not discuss how the Fed's actions have impacted utility bond yields. Have utility bonds yields declined with Treasury bond yields?**

A. Yes. Figure 2 shows 30-year Treasury yields (Panel A), long-term 'A' rated utility yields (Panel B), and the yield differentials between these two yields (Panel C) over the 2000-20 time period. The yield differentials in Panel C shows that the spread between utility and Treasury yields has increased dramatically during the 2008 financial crisis and during March of this year as a result of the coronavirus. The yield differential has declined significantly in recent months, and is now back to the 1.0 percent to 1.5percent range that

[6] Jeff Cox, *Powell Says Duration of Low Interest Rates 'Will Be Measured in Years'*, CNBC.COM, (Sept. 4, 2020, 3:52 PM EDT) https://www.cnbc.com/2020/09/04/powell-says-duration-of-low-interest-rates-will-be-measured-in-years.html (last updated Sept. 4, 2020, 4:48 PM EDT).

[7] Victoria Guida, *Fed Expects to Keep Rates Near Zero through 2023*, POLITICO.COM (Sept. 16, 2020, 2:35 PM EDT) https://www.politico.com/news/2020/09/16/federal-reserve-zero-interest-rate-416202 (last updated Sept. 16, 2020, 5:18 PM EDT).

it has been historically.

**Figure 2**
**Panel A**
**30-Year Treasury Yields**


Data Source: https://fred.stlouisfed.org/series/DGS30

**Panel B**
**Long-Term A-Rated Utility Bond Yields**


Data Source: Mergent Bond Record

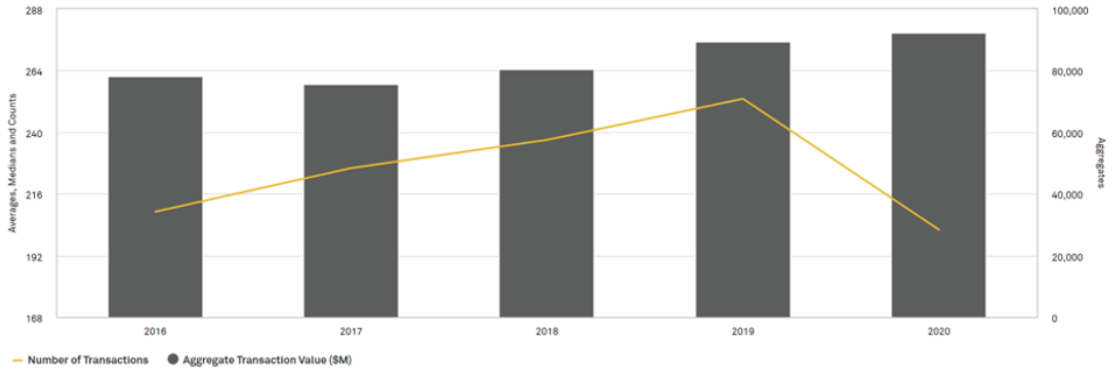
**Panel C**
**Long-Term A-Rated Utility Bonds Minus**
**30-Year Treasury Yields**


**Q. Have utilities taken advantage of the lower bond yields to raise capital?**

A. Yes. Figure 3 shows the amount of capital raised in debt (Panel A) and equity capital markets from 2016-2020. Utilities have especially taken advantage of the low interest rates; as of October 2, 2020, they have already raised a record amount of capital in the debt markets. The amount of equity raised by utilities is shown in Panel B. 2020 year-to-date, the amount of equity is down a little relative to 2019, but this figure is only for the first nine months of 2020.

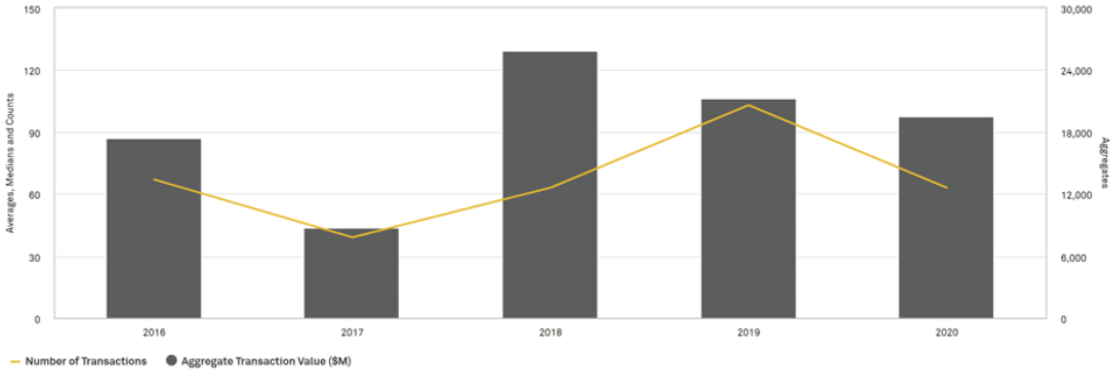
**Figure 3**

**Panel A**
**Utility Debt Offerings**
**2016-2020**




Source: S&P Global Market Intelligence.

**Panel B**
**Utility Equity Offerings**
**2016-2020**




Source: S&P Global Market Intelligence.

**Q. In her testimony, Ms. Bulkley implies that interest rates and capital costs are about to increase, and she uses higher projected interest rates in her CAPM and risk premium models. Please respond.**

A. In her discussion of capital market conditions, Ms. Bulkley points to forecasts of long-term interest rates to imply that capital costs are about to increase and uses these forecasts in her CAPM and risk premium approaches.

**Q. Please discuss the forecasts of higher interest rates by economists and other professional forecasters.**

A. In recent years, there have been a number of studies showing that the consensus forecasts of economists are that interest rates are going higher and these forecasts are continually wrong. These include:

(1) after the announcement of the end of Quantitative Easing III ("QEIII") program in 2014, all the economists in Bloomberg's interest rate survey forecasted interest rates would increase in 2014, and 100 percent of the economists were wrong;[8]

(2) *Bloomberg* reported that the Federal Reserve Bank of New York has gone as far as stopping use of interest rate estimates of professional forecasters in its interest rate model;[9]

(3) a study entitled "How Interest Rates Keep Making People on Wall Street Look Like Fools," which evaluated economists' forecasts for the yield on ten-year Treasury bonds at the beginning of the year for the last ten years.[10] The results demonstrated that economists consistently predict that interest rates will go higher, and interest rates have not fulfilled the predictions; and

(4) a study that tracked economists' forecasts for the yield on ten-year Treasury bonds on an ongoing basis from 2010 until 2015, entitled "Interest Rate

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[8] Ben Eisen, *Yes, 100% of Economists were Dead Wrong about Yields*, MARKETWATCH (Oct. 22, 2014, 8:01 AM EDT) https://www.marketwatch.com/story/yes-100-of-economists-were-dead-wrong-about-yields-2014-10-21.

[9] Susanne Walker and Liz Capo McCormick, *Unstoppable $100 Trillion Bond Market Renders Models Useless*, BLOOMBERG.COM (June 2, 2014, 12:37 PM), http://www.bloomberg.com/news/2014-06-01/the-unstoppable-100-trillion-bond-market-renders-models-useless.html.

[10] Joe Weisenthal, *How Interest Rates Keep Making People on Wall Street Look Like Fools*, BLOOMBERG.COM, (Mar 16, 2015, 4:38 AM) http://www.bloomberg.com/news/articles/2015-03-16/how-interest-rates-keep-making-people-on-wall-street-look-like-fools..

Forecasters Are Shockingly Wrong Almost All of the Time," demonstrates how economists continually forecast that interest rates are going up, but interest rates have failed to go up. [11]

**Q. Please summarize your discussion of the interest rate forecasts used by Ms. Bulkley.**

A. I recommend that the Commission ignore these forecasts because, as demonstrated in the above studies, economists are always predicting that interest rates are going up, and they have consistently been wrong. Ms. Bulkley makes a significant error in suggesting that investors share economists' views of higher rates and that these views are incorporated into their decision-making. I highlight that investors would not be buying long-term Treasury bonds at current yields today if they followed economists' interest rate forecasts because a near-term increase in interest rates would result in a negative rate of return on those bonds.

### B. Authorized ROEs

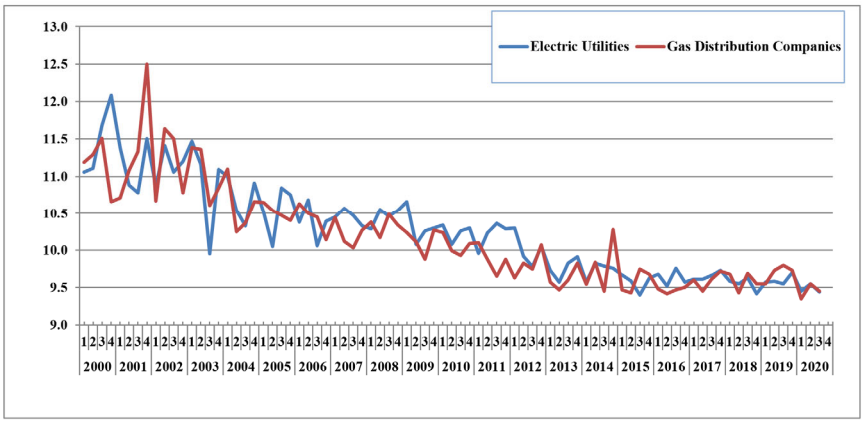
**Q. Please discuss the trend in authorized ROEs for electric and gas companies.**

A. Over the years, as interest rates have come down, authorized ROEs for electric utility and gas distribution companies have declined to reflect a low capital cost environment. Figure 4, which shows the quarterly authorized ROEs for electric utility and gas distribution companies in the U.S. from 2000 to 2020, clearly shows a downward trend in the data. For gas distribution companies, the authorized ROEs for gas distribution companies have declined from 9.94 percent in 2012, to 9.68 percent in 2013, 9.78 percent in 2014, 9.60 percent in 2015, 9.50 percent in 2016, 9.72 percent in 2017, 9.59 percent in 2018, 9.71

[11] Akin Oyedele, *Interest Rate Forecasters are Shockingly Wrong Almost All of the Time*, BUSINESS INSIDER (July 18, 2015, 5:25 AM). http://www.businessinsider.com/interest-rate-forecasts-are-wrong-most-of-the-time-2015-7.

percent in 2019, and 9.45 percent in the first three quarters of 2020, according to Regulatory Research Associates.[12] S&P called the average gas ROE in the first half of 2020 an "all-time low."[13]

**Figure 4**
**Authorized ROEs for Gas Utility and Gas Distribution Companies**
**2000-2020**




**Q. Do you believe that your ROE recommendation meets *Hope* and *Bluefield* standards?**

A. Yes, I do. As previously noted, according to the *Hope* and *Bluefield* decisions, returns on capital should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital. As shown on page 3 of Exhibit JRW-6, gas distribution companies have been earning ROEs in the range of 8.0 percent to 9.0 percent in recent years. With such a ROE, gas companies such as those in the proxy group have strong investment grade credit ratings, their stocks have been selling at about 2.0 times book value, and they have been raising

[12] S&P Global Market Intelligence, Regulatory Research Associates, *Regulatory Focus*, 2020.

[13] S&P Global Market Intelligence, *Gas ROE Authorizations Fall to New Low in H1'20*, Aug. 11, 2020.

abundant amounts of capital. While my recommendation is below the average authorized ROEs for gas distribution companies, it reflects the record low levels of interest rates and capital costs. Therefore, I believe that my ROE recommendation meets the criteria established in the *Hope* and *Bluefield* decisions.

## III. PROXY GROUP SELECTION

**Q. Please describe your approach to developing a fair rate of return recommendation for Cascade.**

A. To develop a fair rate of return recommendation for the Company (market cost of equity), I evaluated the return requirements of investors on the common stock of a proxy group of nine publicly held gas distribution companies ("the Gas Proxy Group"). The Gas Proxy Group consists of nine natural gas distribution companies listed by *Value Line* in the Natural Gas Company industry group: Atmos Energy, Chesapeake Utilities, Inc., New Jersey Resources, NiSource, Northwest Natural Holding Company, One Gas, Inc., South Jersey Industries, Southwest Gas Corporation, and Spire, Inc.

**Q. How does your group compare to Ms. Bulkley's group of gas distribution companies?**

A. Ms. Bulkley has excluded NiSource and Chesapeake Utilities from the group of gas distribution companies covered by *Value Line*. Ms. Bulkley excludes companies that receive less than 70 percent of operating income from regulated operations and 60 percent of operating income from gas operations. These screens exclude Chesapeake Utilities and NiSource. Given the small number of regulated gas companies, I do not believe these companies should be eliminated.

**Q. Please discuss the financial statistics for your proxy group.**

A. On page 1 of Exhibit JRW-3, I list the summary financial statistics for the Gas Proxy Group. The median operating revenues and net plant among members of the Gas Proxy Group are $1,952.4 million and $4,599.4 million, respectively. On average, the group receives 70 percent of revenues from regulated gas operations, has an A-/BBB+ average issuer credit rating from S&P, an average common equity ratio of 45.8 percent, and an average earned return on common equity of 8.7 percent.

**Q. What role do bond ratings play in the investment community?**

A. I believe that bond ratings provide a good independent assessment of the investment risk of a company.

**Q. How does the investment risk of the company compare to that of your gas proxy group?**

A. The S&P issuer credit rating for Cascade is BBB+. The average S&P issuer credit rating for the Gas Proxy Group is A-/BBB+. As such, I believe that, based on the credit ratings, the Company is at the low end of the range of the proxy group.

**Q. Please discuss the investment risk of the gas proxy group as measured by the risk metrics published by *Value Line*.**

A. On page 2 of Exhibit JRW-3, I show the riskiness of the Gas Proxy Group using five different risk measures from *Value Line*. The comparisons of the risk measures include: (1) Beta (0.84); (2) Financial Strength (A); (3) Safety (2.1); (4) Earnings Predictability (67); and (5) Stock Price Stability (88).[14] In my opinion, these risk measures indicate that the group's investment risk is relatively low.

[14] These metrics are defined on page 3 of Exhibit JRW-3.

## III. CAPITAL STRUCTURE RATIOS AND DEBT COST RATES

**Q. Please describe Cascade's proposed capital structure.**

A. The Company has proposed a capital structure consisting of 49.60 percent total debt and 50.40 percent common equity, and a debt cost rate of 4.745 percent. This is shown in Panel A of page 1 of Exhibit JRW-4.

**Q. How do the Company's proposed capital structure ratios compare to the average capitalization ratios for companies in your proxy group?**

A. Cascade's proposed capital structure ratios include a common equity ratio of 50.40 percent. As shown on Page 1 of Exhibit JRW-3, the average quarterly common equity ratio for the Gas Proxy Group, as of December 31, 2019, was 46.1 percent. As such, Cascade has proposed a capital structure that includes more common equity financing of its utility operations than the average in the proxy group.

**Q. On pages 90-94 of her testimony and in Schedule 10,[15] Ms. Bulkley attempts to justify the Company's proposed capital structure by comparing Cascade's proposed 50.40 percent common equity ratio to the average equity ratio of the operating utilities owned by the proxy holding companies. Is this the appropriate comparison?**

A. No. Contrary to Ms. Bulkley's assertions, the appropriate comparison when it comes to common equity ratios is between the common equity ratio as proposed by the Company and the average common equity ratios for the holding companies in the proxy group. The reason is that both Ms. Bulkley and I use the holding companies to estimate a cost of equity capital for the Company. That is because the holding companies have common

[15] Anne E. Bulkley, Exh. AEB-2 (Schedule 10).

stock outstanding and so we can apply DCF and CAPM equity cost rate approaches. Therefore, the common equity ratios of the holding companies are appropriate for comparison purposes, not the common equity ratios of the subsidiary operating utility companies.

**Q. What capital structure has cascade employed to finance its operations in recent years?**

A. As shown in Panel B of Page 1 of Exhibit JRW-4, Cascade has maintained a capital structure consisting of 51.48 percent debt and 48.52 percent equity over the 2018-2020 time period. This is generally in line with the Company's authorized common equity ratios in its two most recent rate cases: (1) Docket UG-170929 – 49.0 percent authorized on July 20, 2018,[16]; and (2) Docket UG-190210 – 49.1 percent authorized on February 3, 2020.[17]

**Q. What capital structure are you recommending in this case?**

A. Given the Company's recent capitalizations and authorized common equity ratios, I will use a capital structure consisting of 50.90 percent debt and 49.10 percent equity. This is the capital structure agreed to in the settlement in Cascade's most recent rate case (Docket UG-190210).

**Q. Are you using the Company's proposed debt cost rate?**

A. Yes.

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[16] *Wash. Utils. & Transp. Comm'n v. Cascade Nat. Gas Corp*. Docket UG-170929, Order 06 Final Order Rejecting Tariff Sheets; Resolving Contested Issues; Approving and Adopting Settlement Agreement; and Authorizing and Requiring Compliance Filing ¶ 58 (Jul. 20, 2018).

[17] *Wash. Utils. & Transp. Comm'n v. Cascade Nat. Gas Corp*. Docket UG-19210, Order 05 Final Order Approving and Adopting Settlement Agreement ¶ 10 (Feb. 3, 2020).

# IV. THE COST OF COMMON EQUITY CAPITAL

## A. Overview

**Q. Why must an overall cost of capital or fair rate of return be established for a public utility?**

A. In a competitive industry, the return on a firm's common equity capital is determined through the competitive market for its goods and services. Due to the capital requirements needed to provide utility services and the economic benefit to society from avoiding duplication of these services and the construction of utility infrastructure facilities, many public utilities are monopolies. Because of the lack of competition and the essential nature of their services, it is not appropriate to permit monopoly utilities to set their own prices. Thus, regulation serves as a substitute for the absence of competition, and seeks to establish prices that are fair to consumers and, at the same time, sufficient to meet the operating and capital costs of the utility, *i.e.*, provide an adequate return on capital to attract investors.

**Q. Please provide an overview of the cost of capital in the context of the theory of the firm.**

A. The total cost of operating a business includes the cost of capital. The cost of common equity capital is the expected return on a firm's common stock that the marginal investor would deem sufficient to compensate for risk and the time value of money. In equilibrium, the expected and required rates of return on a company's common stock are equal.

Normative economic models of a company or firm, developed under very restrictive assumptions, provide insight into the relationship between a firm's

performance or profitability, capital costs, and the value of the firm. Under the economist's ideal model of perfect competition, where entry and exit are costless, products are undifferentiated, and there are increasing marginal costs of production, firms produce up to the point where price equals marginal cost. Over time, a long-run equilibrium is established where price equals average cost, including the firm's capital costs. In equilibrium, total revenues equal total costs, and because capital costs represent investors' required return on the firm's capital, actual returns equal required returns, and the market value must equal the book value of the firm's securities.

In a competitive market, firms can achieve competitive advantage due to product-market imperfections. Most notably, companies can gain competitive advantage through product differentiation (adding real or perceived value to products) and by achieving economies of scale (decreasing marginal costs of production). Competitive advantage allows firms to price products above average cost and thereby earn accounting profits greater than those required to cover capital costs. When profits are in excess of those required by investors, or when a firm earns a return on equity in excess of its cost of equity, investors respond by valuing the firm's equity in excess of its book value.

James M. McTaggart, founder of the international management consulting firm Marakon Associates, described this essential relationship between the return on equity, the cost of equity, and the market-to-book ratio in the following manner:

> Fundamentally, the value of a company is determined by the cash flow it generates over time for its owners, and the minimum acceptable rate of return required by capital investors. This "cost of equity capital" is used to discount the expected equity cash flow, converting it to a present value. The cash flow is, in turn, produced by the interaction of a company's return on equity and the annual rate of equity growth. High return on equity (ROE) companies in low-growth markets, such as Kellogg, are prodigious generators of cash flow, while low ROE companies in high-growth markets,

> such as Texas Instruments, barely generate enough cash flow to finance growth.
>
> A company's ROE over time, relative to its cost of equity, also determines whether it is worth more or less than its book value. If its ROE is consistently greater than the cost of equity capital (the investor's minimum acceptable return), the business is economically profitable and its market value will exceed book value. If, however, the business earns an ROE consistently less than its cost of equity, it is economically unprofitable and its market value will be less than book value. [18]

As such, the relationship between a firm's return on equity, cost of equity, and market-to-book ratio is relatively straightforward. A firm that earns a return on equity above its cost of equity will see its common stock sell at a price above its book value. Conversely, a firm that earns a return on equity below its cost of equity will see its common stock sell at a price below its book value.

**Q. Please provide additional insights into the relationship between ROE and market-to-book ratios.**

A. This relationship is discussed in a classic Harvard Business School case study entitled "Note on Value Drivers." On page 2 of that case study, the author describes the relationship very succinctly:

> For a given industry, more profitable firms – those able to generate higher returns per dollar of equity – should have higher market-to-book ratios. Conversely, firms which are unable to generate returns in excess of their cost of equity [(K)] should sell for less than book value.

| *Profitability* | *Value* |
|---|---|
| *If ROE > K* | *then Market/Book > 1* |
| *If ROE = K* | *then Market/Book =1* |
| *If ROE < K* | *then Market/Book< 1* [19] |

[18] James M. McTaggart, *The Ultimate Poison Pill: Closing the Value Gap*, COMMENTARY, Spring 1986, at 3.

[19] Benjamin Esty, *Note on Value Drivers*, HARVARD BUSINESS SCHOOL, Case No. 9-297-082, Apr. 7, 1997.

To assess the relationship by industry, as suggested above, I performed a regression study between estimated ROE and market-to-book ratios using natural gas distribution and electric utility companies. I used all companies in these two industries that are covered by *Value Line* and have estimated ROE and market-to-book ratio data. The results are presented in Exhibit JRW-5. The average R-square is 0.50.[20] This demonstrates the strong positive statistically significant relationship between ROEs and market-to-book ratios for public utilities. Given that the market-to-book ratios have been above 1.0 for a number of years, this also demonstrates that utilities have been earning ROEs above the cost of equity capital for many years.

**Q. What economic factors have affected the cost of equity capital for public utilities?**

A. Exhibit JRW-6 provides indicators of public utility equity cost rates over the past decade.

Page 1 shows the yields on long-term A-rated public utility bonds. These yields decreased from 2000 until 2003, and then hovered in the 5.50 percent-6.50 percent range from mid-2003 until mid-2008. These yields peaked in November 2008 at 7.75 percent during the Great Recession. These yields have generally declined since then, dropping below 4.0 percent on four occasions - in mid-2013, in early 2015, in the summer of 2016, and in late 2017. These yields increased in 2018, fell back below 4.0 percent in 2019 and have fallen much lower in 2020 to below 3.00 percent.

Page 2 of Exhibit JRW-6 provides the dividend yields for the companies in the Gas Proxy Group over the past 17 years. The dividend yields for the gas group declined from 5.8 percent to 3.1 percent between the years 2000 to 2007, increased to about 4.0

[20] R-square measures the percent of variation in one variable (e.g., market-to-book ratios) explained by another variable (e.g., expected ROE). R-squares vary between zero and 1.0, with values closer to 1.0 indicating a higher relationship between two variables.

percent in 2009, and have declined steadily since that time. The average dividend yield has been in the 2.70 percent to 2.90 percent range in the past three years.

Average earned returns on common equity and market-to-book ratios for gas utilities are on page 3 of Exhibit JRW-6. For the gas group, earned returns on common equity have been in the range of 9.0 percent to 12.0 percent over these years. Over the past decade, the actual earned ROEs have declined from the 12.0 percent range to about 9.0 percent. The average earned ROE in the past three years has been in the 8.0 percent to 9.0 percent range. The average market-to-book ratios for this group, have been over 2.00X in the past three years. This means that, for at least the last decade, returns on common equity have been greater than the cost of capital, or more than necessary to meet investors' required returns. This also means that customers have been paying more than necessary to support an appropriate profit level for regulated utilities.

**Q. What factors determine investors' expected or required rate of return on equity?**

A. The expected or required rate of return on common stock is a function of market-wide as well as company-specific factors. The most important market factor is the time value of money, as indicated by the level of interest rates in the economy. Common stock investor requirements generally increase and decrease with like changes in interest rates. The perceived risk of a firm is the predominant factor that influences investor return requirements on a company-specific basis. A firm's investment risk is often separated into business risk and financial risk. Business risk encompasses all factors that affect a firm's operating revenues and expenses. Financial risk results from incurring fixed obligations in the form of debt in financing its assets.

**Q. How does the investment risk of utilities compare with that of other industries?**

A. Due to the essential nature of their service as well as their regulated status, public utilities are exposed to a lesser degree of business risk than other, non-regulated businesses. The relatively low level of business risk allows public utilities to meet much of their capital requirements through borrowing in the financial markets, thereby incurring greater than average financial risk. Nonetheless, the overall investment risk of public utilities is below most other industries.

Page 4 of Exhibit JRW-6 is an updated study of industry betas. I updated my industry beta study and now the average electric, gas, and water utility betas are 0.86, 0.85, and 0.78, respectively. As discussed below, utility stocks were more volatile than the overall market during March and April 2020 when the financial markets were especially volatile. *Value Line* updates betas for companies on a quarterly basis. As such, this short period when utility stocks were more volatile than the market resulted in a significant increase in utility betas as published by *Value Line*. In fact, the betas of most of the low beta industries increased in the update. Nonetheless, utilities are still among the lowest risk industries as measured by beta. In addition, this issue is discussed later in this testimony, as there are some measurement problems with *Value Line* betas.

**Q. What is the cost of common equity capital?**

A. The costs of debt and preferred stock are normally based on historical or book values and can be determined with a great degree of accuracy. The cost of common equity capital, however, cannot be determined precisely and must instead be estimated from market data and informed judgment. This return requirement of the stockholder should be commensurate with the return requirement on investments in other enterprises having comparable risks.

According to valuation principles, the present value of an asset equals the discounted value of its expected future cash flows. Investors discount these expected cash flows at their required rate of return that, as noted above, reflects the time value of money and the perceived riskiness of the expected future cash flows. As such, the cost of common equity is the rate at which investors discount expected cash flows associated with common stock ownership.

**Q. How can the expected or required rate of return on common equity capital be determined?**

A. Models have been developed to ascertain the cost of common equity capital for a firm. Each model, however, has been developed using restrictive economic assumptions. Consequently, judgment is required in selecting appropriate financial valuation models to estimate a firm's cost of common equity capital, in determining the data inputs for these models, and in interpreting the models' results. All of these decisions must take into consideration the firm involved as well as current conditions in the economy and the financial markets.

**Q. How did you estimate the cost of equity capital for the Company?**

A. Primarily, I rely on the DCF model to estimate the cost of equity capital. Given the investment valuation process and the relative stability of the utility business, the DCF model provides the best measure of equity cost rates for public utilities. I have also performed an analysis based on the capital asset pricing model (CAPM); however, I give these results less weight because I believe that risk premium studies, of which the CAPM is one form, provide a less reliable indication of equity cost rates for public utilities.

**Q. Why do you think that CAPM provides a less reliable indicator of equity cost rates?**

A. I believe that the CAPM provides a less reliable measure of a utility's equity cost rate because it requires an estimate of the market risk premium. As discussed below, there is a wide variation in estimates of the market risk premium found in studies by academics and investment firms as well as in surveys of market professionals.

### B. DCF Analysis

**Q. Please describe the theory behind the traditional DCF model.**

A. According to the DCF model, the current stock price is equal to the discounted value of all future dividends that investors expect to receive from investment in the firm. As such, stockholders' returns ultimately result from current as well as future dividends. As owners of a corporation, common stockholders are entitled to a *pro rata* share of the firm's earnings. The DCF model presumes that earnings that are not paid out in the form of dividends are reinvested in the firm so as to provide for future growth in earnings and dividends. The rate at which investors discount future dividends, which reflects the timing and riskiness of the expected cash flows, is interpreted as the market's expected or required return on the common stock. Therefore, this discount rate represents the cost of common equity. Algebraically, the DCF model can be expressed as:

$$P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \ldots \frac{D_n}{(1+k)^n}$$

where P is the current stock price, $D_n$ is the dividend in year n, and k is the cost of common equity.

**Q. Is the DCF model consistent with valuation techniques employed by investment firms?**

A. Yes. Virtually all investment firms use some form of the DCF model as a valuation technique. One common application for investment firms is called the three-stage DCF or dividend discount model (DDM). The stages in a three-stage DCF model are presented in Exhibit JRW-7, Page 1 of 1. This model presumes that a company's dividend payout progresses initially through a growth stage, then proceeds through a transition stage, and finally assumes a maturity (or steady-state) stage. The dividend-payment stage of a firm depends on the profitability of its internal investments, which, in turn, is largely a function of the life cycle of the product or service.

(1) Growth stage: Characterized by rapidly expanding sales, high profit margins, and an abnormally high growth in earnings per share. Because of highly profitable expected investment opportunities, the payout ratio is low. Competitors are attracted by the unusually high earnings, leading to a decline in the growth rate.

(2) Transition stage: In later years, increased competition reduces profit margins and earnings growth slows. With fewer new investment opportunities, the company begins to pay out a larger percentage of earnings.

(3) Maturity (steady-state) stage: Eventually, the company reaches a position where its new investment opportunities offer, on average, only slightly attractive ROEs. At that time, its earnings growth rate, payout ratio, and ROE stabilize for the remainder of its life. The constant-growth DCF model is appropriate when a firm is in the maturity stage of the life cycle.

In using this model to estimate a firm's cost of equity capital, dividends are projected into the future using the different growth rates in the alternative stages, and

then the equity cost rate is the discount rate that equates the present value of the future dividends to the current stock price.

**Q. How do you estimate stockholders' expected or required rate of return using the DCF model?**

A. Under certain assumptions, including a constant and infinite expected growth rate, and constant dividend/earnings and price/earnings ratios, the DCF model can be simplified to the following:

$$P = \frac{D_1}{k - g}$$

where $D_1$ represents the expected dividend over the coming year and g is the expected growth rate of dividends. This is known as the constant-growth version of the DCF model. To use the constant-growth DCF model to estimate a firm's cost of equity, one solves for "k" in the above expression to obtain the following:

$$k = \frac{D_1}{P} + g$$

**Q. In your opinion, is the constant-growth version of the DCF model appropriate for public utilities?**

A. Yes. The economics of the public utility business indicate that the industry is in the maturity or constant-growth stage of a three-stage DCF. The economics include the relative stability of the utility business, the maturity of the demand for public utility services, and the regulated status of public utilities (especially the fact that their returns on investment are effectively set through the ratemaking process). The appropriate DCF

valuation procedure for companies in this stage is the constant-growth DCF. In the constant-growth version of the DCF model, the current dividend payment and stock price are directly observable. However, the primary problem and controversy in applying the DCF model to estimate equity cost rates entails estimating investors' expected dividend growth rate.

**Q. What factors should one consider when applying the DCF methodology?**

A. One should be sensitive to several factors when using the DCF model to estimate a firm's cost of equity capital. In general, one must recognize the assumptions under which the DCF model was developed in estimating its components (the dividend yield and the expected growth rate). The dividend yield can be measured precisely at any point in time; however, it tends to vary somewhat over time. Estimation of expected growth is considerably more difficult. One must consider recent firm performance, in conjunction with current economic developments and other information available to investors, to accurately estimate investors' expectations.

**Q. What dividend yields have you reviewed?**

A. I have calculated the dividend yields for the companies in the proxy group using the current annual dividend and 30-day, 90-day, and 180-day average stock prices. These dividend yields are provided in page 2 of Exhibit JRW-8. Due to changing market conditions in 2020, I am using the dividend yields derived from the 30-day and 90-day average stock prices. For the Gas Proxy Group, the median dividend yields using the 30-day and 90-day average stock prices range from 3.6 percent to 3.7 percent. As a result, I am using 3.65 percent as the dividend yield for the Gas Proxy Group.

**Q. Please discuss the appropriate adjustment to the spot dividend yield.**

A. According to the traditional DCF model, the dividend yield term relates to the dividend yield over the coming period. Professor Myron Gordon, who is associated with the development of the DCF model for popular use, indicates that this is obtained by: (1) multiplying the expected quarterly dividend over the coming quarter by four, and (2) dividing the resulting annual dividend by the current stock price to determine the appropriate dividend yield for a firm that pays dividends on a quarterly basis.[21]

In applying the DCF model, some analysts adjust the current dividend for growth over the coming year as opposed to the coming quarter. This can be complicated because firms tend to announce changes in dividends at different times during the year. As such, the dividend yield that is computed based upon presumed growth over the coming quarter as opposed to the coming year can be quite different. Consequently, it is common for analysts to adjust the dividend yield by some fraction of the long-term expected growth rate.

**Q. Given this discussion, what adjustment factor do you use for your dividend yield?**

A. I adjust the dividend yield (D/P) by one-half (0.5) of the expected growth (g) so as to reflect growth over the coming year. The DCF equity cost rate (K) is computed as:

$$K = [ (D/P) * (1 + 0.5g) ] + g$$

**Q. Please discuss the growth rate component of the DCF model.**

A. There is debate as to the proper methodology to employ in estimating the growth component of the DCF model. By definition, this component is investors' expectation of

[21] Direct Testimony of Myron J. Gordon and Lawrence I. Gould at 62, Docket No. 79-05, *Petition for Modification of Prescribed Rate of Return* (F.C.C. Apr. 1980).

the long-term dividend growth rate. Presumably, investors use some combination of historical and/or projected growth rates for earnings and dividends per share and for internal or book-value growth to assess long-term potential.

**Q. What growth data have you reviewed for the proxy group?**

A. I have analyzed a number of measures of growth for the companies in the proxy group. I reviewed *Value Line*'s historical and projected growth rate estimates for earnings per share (EPS), dividends per share (DPS), and book value per share (BVPS). In addition, I utilized the average EPS growth rate forecasts of Wall Street analysts as provided by Yahoo and Zacks. These services solicit three-to-five-year earnings growth rate projections from securities analysts and compile and publish the means and medians of these forecasts. Finally, I assessed prospective growth as measured by prospective earnings retention rates and earned returns on common equity.

**Q. Please discuss historical growth in earnings and dividends as well as internal growth.**

A. Historical growth rates for EPS, DPS, and BVPS are readily available to investors and are presumably an important ingredient in forming expectations concerning future growth. However, one must use historical growth numbers as measures of investors' expectations with caution. In some cases, past growth may not reflect future growth potential. Also, employing a single growth rate number (for example, for five or 10 years) is unlikely to accurately measure investors' expectations, due to the sensitivity of a single growth rate figure to fluctuations in individual firm performance as well as overall economic fluctuations (i.e., business cycles). However, one must appraise the context in which the growth rate is being employed. According to the conventional DCF model, the expected

return on a security is equal to the sum of the dividend yield and the expected long-term growth in dividends. Therefore, to best estimate the cost of common equity capital using the conventional DCF model, one must look to long-term growth rate expectations.

Internally generated growth is a function of the percentage of earnings retained within the firm (the earnings retention rate) and the rate of return earned on those earnings (the return on equity). The internal growth rate is computed as the retention rate times the return on equity. Internal growth is significant in determining long-term earnings and, therefore, dividends. Investors recognize the importance of internally generated growth and pay premiums for stocks of companies that retain earnings and earn high returns on internal investments.

**Q. Which EPS forecasts should be used in developing a DCF growth rate?**

A. The DCF growth rate is the long-term projected growth rate in EPS, DPS, and BVPS. Therefore, in developing an equity cost rate using the DCF model, the projected long-term growth rate is the projection used in the DCF model.

**Q. Why do you not rely exclusively on the EPS forecasts of Wall Street analysts in arriving at a DCF growth rate for the proxy group?**

A. There are several reasons. First, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Nonetheless, over the very long term, dividends and earnings will have to grow at a similar growth rate. Therefore, consideration must be given to other indicators of growth, including prospective dividend growth, internal growth, as well as projected earnings growth.

Second, a 2011 study by Lacina, Lee, and Xu has shown that analysts' long-term earnings growth rate forecasts are not more accurate at forecasting future earnings than

just using last year's earnings figure as the projected future earnings number.[22] Employing data over a 20-year period, these authors demonstrate that using the most recent year's EPS figure to forecast EPS in the next three-to-five years proved to be just as accurate as using the EPS estimates from analysts' long-term earnings growth rate forecasts. In the authors' opinion, these results indicate that analysts' long-term earnings growth rate forecasts should be used with caution as inputs for valuation and cost of capital purposes.

Finally, and most significantly, it is well known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased. This has been demonstrated in a number of academic studies over the years.[23] Hence, using these growth rates as a DCF growth rate will provide an overstated equity cost rate. On this issue, a study by Easton and Sommers (2007) found that optimism in analysts' growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.[24]

**Q. Are the EPS growth rate forecasts of *Value Line* also overly optimistic and upwardly**

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[22] 8 M. Lacina, B. Lee & Z. Xu, ADVANCES IN BUSINESS AND MANAGEMENT FORECASTING at 77-101 (Kenneth D. Lawrence, Ronald K. Klimberg eds., Emerald Group Publishing Ltd., 2011).

[23] The studies that demonstrate analysts' long-term EPS forecasts are overly-optimistic and upwardly biased include: R.D. Harris, *The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts*, J. OF BUSINESS FINANCE & ACCOUNTING, 725-55 (June/July 1999); P. DeChow, A. Hutton, and R. Sloan, *The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings*, CONTEMPORARY ACCOUNTING RESEARCH (2000); K. Chan, L., Karceski, J., & Lakonishok, J., *The Level and Persistence of Growth Rates*, J. OF FINANCE, 643-684 (2003); 8 M. Lacina, B. Lee and Z. Xu, (2011), ADVANCES IN BUSINESS AND MANAGEMENT FORECASTING (Kenneth D. Lawrence, Ronald K. Klimberg eds., Emerald Group Publishing Limited, 2011); and Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, *Equity Analysts, Still Too Bullish*, MCKINSEY ON FINANCE, Spring 2010, at 14-17.

[24] Peter D. Easton & Gregory A. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts*, 45 J. ACCT. RES. 983–1015 (2007).

**biased?**

A. Yes. A study by Szakmary, Conover, and Lancaster (2008) evaluated the accuracy of *Value Line*'s three-to-five-year EPS growth rate forecasts using companies in the Dow Jones Industrial Average over a 30-year time period and found these forecasted EPS growth rates to be significantly higher than the EPS growth rates that these companies subsequently achieved.[25]

**Q. Is it your opinion that stock prices reflect the upward bias in the EPS growth rate forecasts?**

A. Yes, I do believe that investors are well aware of the bias in analysts' EPS growth rate forecasts and stock prices, therefore, reflect the upward bias.

**Q. How does that affect the use of these forecasts in a DCF equity cost rate study?**

A. According to the DCF model, the equity cost rate is a function of the dividend yield and expected growth rate. Because stock prices reflect the bias, it would affect the dividend yield. In addition, the DCF growth rate needs to be adjusted downward from the projected EPS growth rate to reflect the upward bias.

**Q. Please discuss the historical growth of the companies in the proxy group, as provided by *Value Line.***

A. Page 3 of Exhibit JRW-8 provides the five- and 10-year historical growth rates for EPS, DPS, and BVPS for the companies in the proxy group, as published in the *Value Line Investment Survey.* The median historical growth measures for EPS, DPS, and BVPS for

[25] A. Szakmary, C. Conover, & C. Lancaster, *An Examination of Value Line's Long-Term Projections*, J. OF BANKING & FIN. 820-833 (May 2008).

the Gas Proxy Group, as provided in Panel A, range from 4.5 percent to 6.5 percent, with an average of the medians of 5.9 percent.

**Q. Please summarize *Value Line*'s projected growth rates for the companies in the proxy group.**

A. *Value Line*'s projections of EPS, DPS, and BVPS growth for the companies in the proxy group are shown on page 4 of Exhibit JRW-8. As I stated above, due to the presence of outliers, I use the medians in my analysis. For the Gas Proxy Group, as shown in Panel A of page 4 of Exhibit JRW-8, the medians range from 6.5 percent to 9.0 percent, with an average of the medians of 7.2 percent.

Also provided on page 4 of Exhibit JRW-8 are the prospective sustainable growth rates for the companies in the Gas Proxy Group as measured by *Value Line*'s average projected return on shareholders' equity and retention rate. As I noted above, sustainable growth is a significant and primary driver of long-run earnings growth. For the Gas Proxy Group, the median prospective sustainable growth rate is 4.3 percent.

**Q. Please assess growth for the proxy group as measured by analysts' forecasts of expected five-year EPS growth.**

A. Yahoo and Zacks collect, summarize, and publish Wall Street analysts' three-to-five-year EPS growth rate forecasts for the companies in the Gas Proxy Group. These forecasts are provided for the companies in the proxy group on page 5 of Exhibit JRW-8. I have reported both the mean and median growth rates for the Group. Since there is considerable overlap in analyst coverage between the two services, and not all of the companies have forecasts from the different services, I have averaged the expected three-to-five-year EPS growth rates from the two services for each company to arrive at an expected EPS growth

rate for each company. The mean and median of analysts' projected EPS growth rates for the gas group are 5.5 percent and 4.8 percent, respectively.[26]

**Q. Please summarize your analysis of the historical and prospective growth of the proxy group.**

A. Page 6 of Exhibit JRW-8 shows the summary DCF growth rate indicators for the Gas Proxy Group.

The historical growth rate indicators for my Gas Proxy Group imply a baseline growth rate of 5.9 percent. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 7.2 percent, and *Value Line*'s projected sustainable growth rate is 4.3 percent. The projected EPS growth rates of Wall Street analysts for the Gas Proxy Group are 5.5 percent and 4.8 percent as measured by the mean and median growth rates. The overall range for the projected growth rate indicators (ignoring historical growth) is 4.3 percent to 7.2 percent. Giving primary weight to the projected EPS growth rate of Wall Street analysts, I believe that the appropriate growth rate for the Gas Proxy Group is in the 5.00 percent to 5.50 percent. I will use the average of this range, 5.25 percent, as my DCF equity cost rate for Cascade.[27]

**Q. Did you rely on historical growth rate in arriving at your 5.25 percent DCF growth rate?**

A. No. I reviewed historical growth rates but did not rely on them.

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[26] Given the variation in the measures of central tendency of analysts' projected EPS growth rates for the proxy group, I have considered both the mean and median figures in the growth rate analysis.

[27] As discussed below, I am giving less weight to the projected growth rates from *Value Line* because *Value Line* projects growth from a three-year base period (and not from today) which significant inflates projected growth for these gas companies.

**Q. Based on the above analysis, what are your indicated common equity cost rates from the DCF model for the proxy group?**

A. My DCF-derived equity cost rates for the Gas Proxy Group are summarized on page 1 of Exhibit JRW-8 and in Table 2 below.

**Table 2**
**DCF-derived Equity Cost Rate/ROE**

| | Dividend Yield | 1 + ½ Growth Adjustment | DCF Growth Rate | Equity Cost Rate |
|---|---|---|---|---|
| **Gas Proxy Group** | **3.65%** | **1.02625** | **5.25%** | **8.95%** |

The calculation for the Gas Proxy Group is the 3.65 percent dividend yield, times the one and one-half growth adjustment of 1.02625, plus a DCF growth rate of 5.25 percent, which results in an equity cost rate of 9.00 percent.

### C. Capital Asset Pricing Model

**Q. Please discuss the CAPM.**

A. The CAPM is a risk premium approach to gauging a firm's cost of equity capital. According to the risk premium approach, the cost of equity is the sum of the interest rate on a risk-free bond ($R_f$) and a risk premium (RP), as in the following:

$$k = R_f + RP$$

The yield on long-term U.S. Treasury securities is normally used as $R_f$. Risk premiums are measured in different ways. The CAPM is a theory of the risk and expected returns of common stocks. In the CAPM, two types of risk are associated with a stock: firm-specific risk or unsystematic risk, and market or systematic risk, which is measured by a firm's beta. The only risk that investors receive a return for bearing is systematic risk.

According to the CAPM, the expected return on a company's stock, which is also the equity cost rate (K), is expressed as:

$$K = (R_f) + ß * [E(R_m) - (R_f)]$$

Where:

- *K* represents the estimated rate of return on the stock;
- $E(R_m)$ represents the expected rate of return on the overall stock market. Frequently, the S&P 500 is used as a proxy for the "market";
- $(R_f)$ represents the risk-free rate of interest;
- $[E(R_m) - (R_f)]$ represents the expected equity or market risk premium—the excess rate of return that an investor expects to receive above the risk-free rate for investing in risky stocks; and
- *Beta*—(ß) is a measure of the systematic risk of an asset.

To estimate the required return or cost of equity using the CAPM requires three inputs: the risk-free rate of interest ($R_f$), the beta (ß), and the expected equity or market risk premium $[E(R_m) - (R_f)]$. $R_f$ is the easiest of the inputs to measure – it is represented by the yield on long-term U.S. Treasury bonds. ß, the measure of systematic risk, is a little more difficult to measure because there are different opinions about what adjustments, if any, should be made to historical betas due to their tendency to regress to 1.0 over time. And finally, the most difficult input to measure is the expected equity or market risk premium ($E(R_m) - (R_f)$). I will discuss each of these inputs below.

**Q. Please discuss Exhibit JRW-9.**

A. Exhibit JRW-9 provides the summary results for my CAPM study. Page 1 shows the results, and the following pages contain the supporting data.

**Q. Please discuss the risk-free interest rate.**

A. The yield on long-term U.S. Treasury bonds has usually been viewed as the risk-free rate of interest in the CAPM. The yield on long-term U.S. Treasury bonds, in turn, has been considered to be the yield on U.S. Treasury bonds with 30-year maturities.

**Q. What risk-free interest rate are you using in your CAPM?**

A. As shown on page 2 of Exhibit JRW-9, the yield on 30-year U.S. Treasury bonds has been in the 1.3 percent to 4.0 percent range over the 2013–2020 time period. The current 30-year Treasury yield is near the bottom of this range. Given the recent range of yields, I have chosen to use a yield toward the middle of the range as my risk-free interest rate. Therefore, I am using 2.50 percent as the risk-free rate, or $R_f$, in my CAPM. This rate is consistent with Duff & Phelps, who are also using 2.50 percent (see page 7 of Exhibit JRW-9).[28]

**Q. Does your 2.50 percent risk-free interest rate take into consideration forecasts of higher interest rates?**

A. No, it does not. As I stated before, forecasts of higher interest rates have been notoriously wrong for a decade. My 2.50 percent risk-free interest rate takes into account the range of interest rates in the past and effectively synchronizes the risk-free rate with the market risk premium. The risk-free rate and the market risk premium are interrelated in that the market risk premium is developed in relation to the risk-free rate. As discussed below, my market risk premium is based on the results of many studies and surveys that have been published over time. Therefore, my risk-free interest rate of 2.50 percent is effectively a normalized risk-free rate of interest.

[28] Duff & Phelps, *Cost of Capital Research Center* (2020) https://www.duffandphelps.com/insights/publications/cost-of-capital.

**Q. What betas are you employing in your CAPM?**

A. Beta (ß) is a measure of the systematic risk of a stock. The market, usually taken to be the S&P 500, has a beta of 1.0. The beta of a stock with the same price movement as the market also has a beta of 1.0. A stock with price movement greater than that of the market, such as a technology stock, is riskier than the market and has a beta greater than 1.0. A stock with below average price movement, such as that of a regulated public utility, is less risky than the market and has a beta less than 1.0. Estimating a stock's beta involves running a linear regression of a stock's return on the market return.

As shown on page 3 of Exhibit JRW-9, the slope of the regression line is the stock's ß. A steeper line indicates that the stock is more sensitive to the return on the overall market. This means that the stock has a higher ß and greater-than-average market risk. A less steep line indicates a lower ß and less market risk.

Several online investment information services, such as Yahoo and Reuters, provide estimates of stock betas. Usually these services report different betas for the same stock. The differences are usually due to: (1) the time period over which ß is measured; and (2) any adjustments that are made to reflect the fact that betas tend to regress to 1.0 over time.

**Q. Please discuss the recent change in betas.**

A. I have traditionally used the betas as provided in the *Value Line Investment Survey*. As discussed above, the betas for utilities recently increased significantly as a result of the volatility of utility stocks during the stock market meltdown associated with the novel coronavirus in March. Utility betas as measured by *Value Line* have been in the 0.55 to 0.70 range for the past 10 years. But utility stocks were much more volatile relative to

the market in March and April of this year, and this resulted in an increase of above 0.30 to the average utility beta.

*Value Line* defines their computation of beta as:[29]

> Beta - A relative measure of the historical sensitivity of a stock's price to overall fluctuations in the New York Stock Exchange Composite Index. A Beta of 1.50 indicates a stock tends to rise (or fall) 50% more than the New York Stock Exchange Composite Index. The ''Beta coefficient'' is derived from a regression analysis of the relationship between weekly percent-age changes in the price of a stock and weekly percentage changes in the NYSE Index over a period of five years. In the case of shorter price histories, a smaller time period is used, but two years is the minimum. The Betas are adjusted for their long-term tendency to converge toward 1.00. Value Line then adjusts these Betas to account for their long-term tendency to converge toward 1.00.

However, there are several issues with *Value Line* betas:

1. *Value Line* betas are computed using weekly returns, and the volatility of utility stocks during March was impacted by using weekly and not monthly returns. Yahoo Finance uses five years of monthly returns to compute betas, and Yahoo Finance's betas for utilities are lower than *Value Lin*e's.

2. *Value Line* betas are computed using the New York Stock Exchange Index as the market. While about 3,000 stocks trade on the NYSE, most technology stocks are traded on the NASDAQ or over-the-counter market and not the NYSE. Technology stocks, which make up about 25 percent of the S&P 500, tend to be more volatile. If they were traded on the NYSE, they would increase the volatility of the measure of the market and thereby lower utility betas.

3. Major vendors of CAPM betas such as Merrill Lynch, *Value Line*, and Bloomberg

[29] *Value Line* (2020) www.valueline.com.

publish adjusted betas. The so-called Blume adjustment cited by *Value Line* adjusts betas calculated using historical returns data to reflect the tendency of stock betas to regress toward 1.0 over time, which means that the Betas of typical low beta stocks tend to increase toward 1.0, and the betas of typical high beta stocks tend to decrease toward 1.0.[30]

The Blume adjustment procedure is:

Regressed Beta = .67 * (Observed Beta) + 0.33

For example, suppose a company has an observed past beta of 0.50. The regressed (Blume-adjusted) beta would be:

Regressed Beta = .67 * (0.50) + 0.33 = 0.67

Blume offered two reasons for betas to regress toward 1.0. First, he suggested it may be a by-product of management's efforts to keep the level of firm's systematic risk close to that of the market. He also speculated that it results from the management's efforts to diversify through investment projects.

However, there is an issue with using regressed betas for utilities. Specifically, a study by Michelfelder and Theodossiou investigated whether regressed Betas are appropriate for utilities.[31] Conceptually, Michelfelder and Theodossiou suggested that utilities are different from unregulated companies in several areas, which may result in betas not regressing toward 1.0:[32]

> Being natural monopolies in their own geographic areas, public utilities have more influence on the prices of their product (gas and electricity) than other firms. The rate setting process provides public utilities with the opportunity to adjust prices of gas and gasity to recover the rising costs of

[30] M. Blume, *On the Assessment of Risk*, J. OF FIN. (Mar. 1971).

[31] Richard A. Michelfelder and Panayiotis Theodossiou, *Public Utility Beta Adjustment and Biased Costs of Capital in Public Utility Rate Proceedings*, THE ELECTRICITY J., (Nov. 2013).

[32] *Id.*, at 61.

fuel and other materials used in the transmission and distribution of gasity and gas.

To test for a regression toward 1.0, the authors used monthly holding period total returns for 57 publicly traded U.S. public utilities for the period from January 1962 to December 2007 using 60, 84, 96, and 108 monthly returns over five different non-lapping periods. They also used alternative time periods and got similar results. The authors came to the following conclusion from their analysis of the data:[33]

> Major vendors of CAPM Betas such as Merrill Lynch, Value Line, and Bloomberg distribute Blume adjusted betas to investors. We have shown empirically that public utility betas do not have a tendency to converge to 1. Short-term Betas of public utilities follow a cyclical pattern with recent downward trends, then upward structural breaks with long-term betas following a downward trend.

The authors concluded that utility betas converge to 0.59 as opposed to 1.0. The implication is that using regressed betas such as those from *Value Line* will result in an inflated expected return using the CAPM for gas utilities.

**Q. Given this discussion, what betas are you using in your CAPM?**

A. As shown on page 3 of Exhibit JRW-9, the median *Value Line* beta for the Gas Proxy Group is 0.80. At this point, until I have studied utility betas in more depth, I will continue to use *Value Line* betas in my CAPM. I believe this is a conservative approach at this time.

**Q. Please discuss the market risk premium.**

A. The market risk premium is equal to the expected return on the stock market (e.g., the expected return on the S&P 500, $E(R_m)$ minus the risk-free rate of interest ($R_f$)). The market risk premium is the difference in the expected total return between investing in

[33] *Id.*, at 67.

equities and investing in "safe" fixed-income assets, such as long-term government bonds. However, while the market risk premium is easy to define conceptually, it is difficult to measure because it requires an estimate of the expected return on the market - $E(R_m)$. As is discussed below, there are different ways to measure $E(R_m)$, and studies have come up with significantly different magnitudes for $E(R_m)$. As Merton Miller, the 1990 Nobel Prize winner in economics indicated, $E(R_m)$ is very difficult to measure and is one of the great mysteries in finance.[34]

**Q. Please discuss the alternative approaches to estimating the market risk premium.**

A. Page 4 of Exhibit JRW-9 highlights the primary approaches to, and issues in, estimating the expected market risk premium. The traditional way to measure the market risk premium was to use the difference between historical average stock and bond returns. In this case, historical stock and bond returns, also called *ex post* returns, were used as the measures of the market's expected return (known as the *ex ante* or forward-looking expected return). This type of historical evaluation of stock and bond returns is often called the "Ibbotson approach" after Professor Roger Ibbotson, who popularized this method of using historical financial market returns as measures of expected returns. However, this historical evaluation of returns can be a problem because: (1) *ex post* returns are not the same as *ex ante* expectations; (2) market risk premiums can change over time, increasing when investors become more risk-averse and decreasing when investors become less risk-averse; and (3) market conditions can change such that *ex post* historical returns are poor estimates of *ex ante* expectations.

[34] Merton Miller, *The History of Finance: An Eyewitness Account*, J. OF APPLIED CORP. FIN., 3 (2000).

The use of historical returns as market expectations has been criticized in numerous academic studies as discussed later in my testimony. The general theme of these studies is that the large equity risk premium discovered in historical stock and bond returns cannot be justified by the fundamental data. These studies, which fall under the category "*Ex Ante* Models and Market Data," compute *ex ante* expected returns using market data to arrive at an expected equity risk premium. These studies have also been called "Puzzle Research" after the famous study by Mehra and Prescott in which the authors first questioned the magnitude of historical equity risk premiums relative to fundamentals.[35]

In addition, there are a number of surveys of financial professionals regarding the market risk premium, as well as several published surveys of academics on the equity risk premium. Duke University has published a CFO Survey on a quarterly basis for over 10 years.[36] Questions regarding expected stock and bond returns are also included in the Federal Reserve Bank of Philadelphia's annual survey of financial forecasters, which is published as the *Survey of Professional Forecasters*.[37] This survey of professional economists has been published for almost 50 years. In addition, Pablo Fernandez

[35] Rajnish Mehra & Edward C. Prescott, The Equity Premium: A Puzzle, J. OF MONETARY ECONS. 145 (1985).

[36] DUKE UNIVERSITY, *The CFO Survey* (2020) https://www.richmondfed.org/cfosurvey.

[37] FEDERAL RESERVE BANK OF PHILADELPHIA, *Survey of Professional Forecasters* (Feb. 2020), https://www.philadelphiafed.org/-/media/research-and-data/real-time-center/survey-of-professional-forecasters/2019/spfq119.pdf?la=en. The Survey of Professional Forecasters was formerly conducted by the American Statistical Association (ASA) and the National Bureau of Economic Research (NBER) and was known as the ASA/NBER survey. The survey, which began in 1968, is conducted each quarter. The Federal Reserve Bank of Philadelphia, in cooperation with the NBER, assumed responsibility for the survey in June 1990.

conducts annual surveys of financial analysts and companies regarding the equity risk premiums used in their investment and financial decision-making.[38]

**Q. Please provide a summary of the market risk premium studies.**

A. Derrig and Orr, Fernandez, and Song completed the most comprehensive reviews of the research on the market risk premium.[39] Derrig and Orr's study evaluated the various approaches to estimating market risk premiums, discussed the issues with the alternative approaches, and summarized the findings of the published research on the market risk premium. Fernandez examined four alternative measures of the market risk premium – historical, expected, required, and implied. He also reviewed the major studies of the market risk premium and presented the summary market risk premium results. Song provided an annotated bibliography and highlighted the alternative approaches to estimating the market risk premium.

Page 5 of Exhibit JRW-9 provides a summary of the results of the primary risk premium studies reviewed by Derrig and Orr, Fernandez, and Song, as well as other more recent studies of the market risk premium. In developing page 5 of Exhibit JRW-9, I have categorized the types of studies as discussed on page 4 of Exhibit JRW-9. I have also included the results of studies of the "Building Blocks" approach to estimating the equity risk premium. The Building Blocks approach is a hybrid approach employing elements of both historical and *ex ante* models.

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[38] Pablo Fernandez, Eduardo Apellániz, & Javier Acín, SURVEY: MARKET RISK PREMIUM AND RISK-FREE RATE USED FOR 81 COUNTRIES IN 2020 (Mar. 25, 2020), IESE Business School Working Paper No. WP-1244-E, Available at SSRN: https://ssrn.com/abstract=3560869 or http://dx.doi.org/10.2139/ssrn.3560869 .

[39] *See* Richard Derrig & Elisha Orr, EQUITY RISK PREMIUM: EXPECTATIONS GREAT AND SMALL, Working Paper (version 3.0), Automobile Insurers Bureau of Massachusetts, (Aug. 28, 2003); Pablo Fernandez, EQUITY PREMIUM: HISTORICAL, EXPECTED, REQUIRED, AND IMPLIED, IESE Business School Working Paper (2007); Zhiyi Song, THE EQUITY RISK PREMIUM: AN ANNOTATED BIBLIOGRAPHY, CFA Institute (2007).

**Q. Please discuss page 5 of Exhibit JRW-9.**

A. Page 5 of Exhibit JRW-9 provides a summary of the results of the market risk premium studies that I have reviewed. These include the results of: (1) the various studies of the historical risk premium, (2) *ex ante* market risk premium studies, (3) market risk premium surveys of CFOs, financial forecasters, analysts, companies and academics, and (4) the Building Blocks approach to the market risk premium. There are results reported for over 30 studies, and the median market risk premium of these studies is 4.83 percent.

**Q. Please highlight the results of more recent risk premium studies and surveys.**

A. The studies cited on page 5 of Exhibit JRW-9 include every market risk premium study and survey I could identify that was published over the past 15 years and that provided a market risk premium estimate. Many of these studies were published prior to the financial crisis that began in 2008. In addition, some of these studies were published in the early 2000s at the market peak. It should be noted that many of these studies (as indicated) used data over long periods of time (as long as 50 years of data) and so were not estimating a market risk premium as of a specific point in time (e.g., the year 2001). To assess the effect of the earlier studies on the market risk premium, I have reconstructed page 5 of Exhibit JRW-9 on page 6 of Exhibit JRW-9; however, I have eliminated all studies dated before January 2, 2010. The median market risk premium estimate for this subset of studies is 5.13 percent.

**Q. Please summarize the market risk premium studies and surveys.**

A. As noted above, there are three approaches to estimating the market risk premium – historic stock and bond returns, *ex ante* or expected returns models, and surveys. The studies on page 6 of Exhibit JRW-9 can be summarized in the following manners:

Historic Stock and Bond Returns - Historic stock and bond returns suggest a market risk premium in the 4.40 percent to 6.43 percent range, depending on whether one uses arithmetic or geometric mean returns.

Ex Ante Models - Market risk premium studies that use expected or ex ante return models indicate a market risk premium in the range of 5.24 percent to 6.75 percent.

Surveys - Market risk premiums developed from surveys of analysts, companies, financial professionals, and academics are lower, with a range from 3.36 percent to 5.70 percent.

**Q. Please highlight the *ex ante* market risk premium studies and surveys that you believe are most timely and relevant.**

A. I will highlight several studies/surveys.

Pablo Fernandez conducts annual surveys of financial analysts and companies regarding the equity risk premiums used in their investment and financial decision-making.[40] His survey results are included on pages 5 and 6 of Exhibit JRW-9. The results of his 2020 survey of academics, financial analysts, and companies, which included 4,000 responses, indicated a mean market risk premium employed by U.S. analysts and companies of 5.6 percent.[41] His estimated market risk premium for the U.S. has been in the 5.00 percent to 5.60 percent range in recent years.

Professor Aswath Damodaran of New York University, a leading expert on valuation and the market risk premium, provides a monthly updated market risk premium

[40] Pablo Fernandez, Vitaly Pershin, and Isabel Fernandez Acín, A Survey: MARKET RISK PREMIUM AND RISK-FREE RATE USED FOR 81 COUNTRIES IN 2020, IESE Business School (Apr. 2020).

[41] *Id.* at 3.

based on projected S&P 500 EPS and stock price level and long-term interest rates. His estimated market risk premium, shown graphically in Figure 5, below, for the past 20 years, has primarily been in the range of 5.0 percent to 6.0 percent since 2010. As of November 2020, his estimate of the implied market risk premium was 5.35 percent.[42]

**Figure 5**
**Damodaran Market Risk Premium**

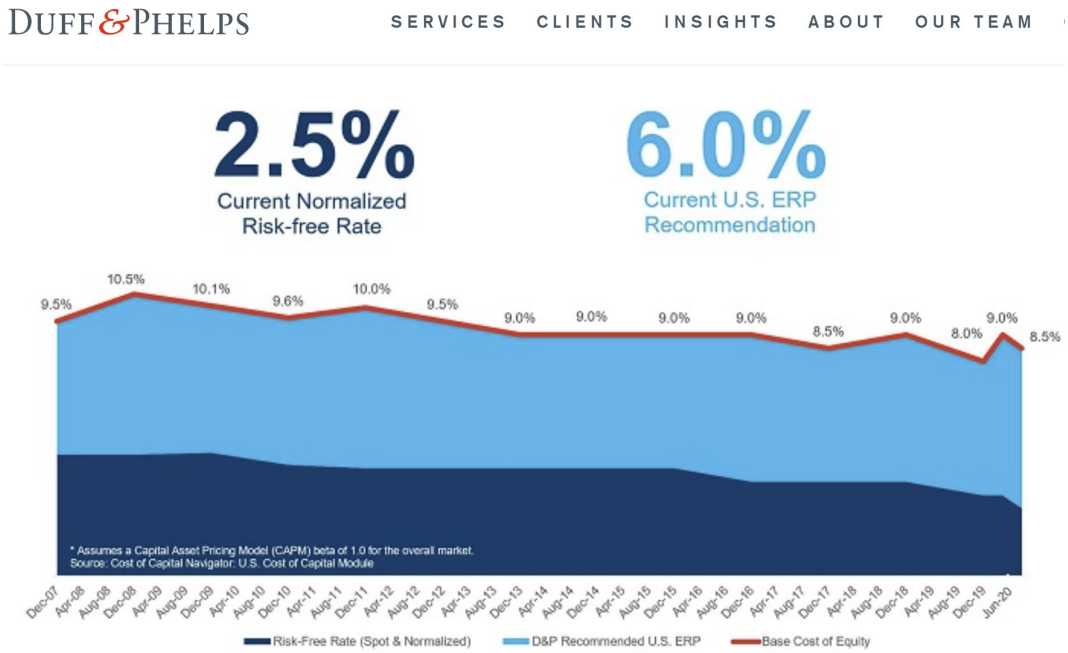

Source: Aswarth Damodaran, *Damodaran Online*, N.Y. UNIVERSITY, http://pages.stern.nyu.edu/~adamodar/ (last visited Nov. 18, 2020).

Duff & Phelps, an investment advisory firm, provides recommendations for the normalized risk-free interest rate and market risk premiums to be used in calculating the cost of capital data. Its recommendations over the 2008–2020 time periods are shown on page 7 of Exhibit JRW-9 and are shown graphically in Figure 6. Over the past decade, Duff & Phelps' recommended normalized risk-free interest rates have been in the 2.50 percent to 4.00 percent and market risk premiums have been in the 5.0 percent to 6.0

[42] Aswarth Damodaran, *Damodaran Online*, N.Y. UNIVERSITY, http://pages.stern.nyu.edu/~adamodar/ (last visited Nov. 18, 2020).

percent range. Most recently, in the wake of the novel coronavirus in 2020, Duff & Phelps decreased its recommended normalized risk-free interest rate from 3.0 percent to 2.50 percent and increased its market risk premium from 5.00 percent to 6.00 percent.[43]

**Figure 6**
**Duff & Phelps**
**Normalized Risk-Free Rate and Market Risk Premium Recommendations**
**2007-2020**




Source: https://www.duffandphelps.com/insights/publications/cost-of-capital

**Q. Given these results, what market risk premium are you using in your CAPM?**

A. The studies on page 6 of Exhibit JRW-9, and more importantly, the more timely and relevant studies just cited, suggest that the appropriate market risk premium in the U.S. is in the 4.0 percent to 6.0 percent range. I will use an expected market risk premium of 6.00 percent, which is in the upper end of the range, as the market risk premium. I gave

[43] Duff & Phelps, *U.S. Equity Risk Premium Recommendation* (June 30, 2020) https://www.duffandphelps.com/insights/publications/cost-of-capital.

most weight to the market risk premium estimates of Duff & Phelps, KPMG, the Fernandez survey, and Damodaran. This is a conservatively high estimate of the market risk premium considering the many studies and surveys of the market risk premium.

**Q. What equity cost rate is indicated by your CAPM analysis?**

A. The results of my CAPM study for the proxy group are summarized on page 1 of Exhibit JRW-9 and in Table 3 below.

**Table 3**
**CAPM-Derived Equity Cost Rate/ROE**
$K = (R_f) + ß * [E(R_m) - (R_f)]$

| | Risk-Free Rate | Beta | Equity Risk Premium | Equity Cost Rate |
|---|---|---|---|---|
| **Gas Proxy Group** | **2.50%** | **0.80** | **6.0%** | **7.3%** |

For the Gas Proxy Group, the risk-free rate of 2.50 percent plus the product of the beta of 0.80 times the equity risk premium of 6.0 percent results in a 7.3 percent equity cost rate.

**D. Equity Cost Rate Summary**

**Q. Please summarize the results of your equity cost rate studies.**

A. My DCF and CAPM analyses for the Gas Proxy Group indicate equity cost rates of 9.00 percent and 7.30 percent, respectively.

**Table 4**
**ROEs Derived from DCF and CAPM Models**

| | DCF | CAPM |
|---|---|---|
| **Gas Proxy Group** | **9.00%** | **7.30%** |

**Q. Given these results, what is your primary estimated equity cost rate for the group?**

A. I conclude that the appropriate equity cost rate for companies in the Gas Proxy Group is in the 7.30 percent to 9.00 percent range. However, since I rely primarily on the DCF

approach, and Cascade's risk level is at the high-end on the Gas Proxy Group, I will use 9.00 percent as my recommended equity cost rate for the Company.

**Q. Please indicate why your equity cost rate recommendation is appropriate for the gas distribution operations of the company.**

A. There are a number of reasons why an equity cost rate of 9.00 percent is appropriate and fair for the Company in this case:

(1) As shown on page 1 of Exhibit JRW-6, capital costs for utilities, as indicated by long-term utility bond yields, are at historically low levels. In addition, given low inflationary expectations and slow global economic growth, interest rates are likely to remain at low levels for some time.

(2) As shown on page 4 of Exhibit JRW-6, the gas distribution industry is among the lowest risk industries in the U.S. as measured by beta. Most notably, the betas for gas companies have been declining in recent years, which indicates the risk of the industry has declined. Overall, the cost of equity capital for this industry is the lowest in the U.S., according to the CAPM.

(3) To be conservative, I have recommended an equity cost rate at the high end of the range of my ROE outcomes.

(4) The mean authorized ROEs for gas distribution companies have declined from 9.94 percent in 2012, to 9.68 percent in 2013, 9.78 percent in 2014, 9.60 percent in 2015, 9.50 percent in 2016, 9.72 percent in 2017, 9.59 percent in 2018, 9.71 percent in 2019, and 9.45 percent in the first three quarters of 2020, according to

Regulatory Research Associates.[44] In my opinion, authorized ROEs have lagged behind capital market cost rates, or in other words, authorized ROEs have been slow to reflect low capital market cost rates. However, the trend has been towards lower ROEs and the norm now is below 10 percent. Hence, I believe that my recommended ROE reflects our present historically low capital cost rates, and these low capital cost rates are finally being recognized as the norm by state utility regulatory commissions.

**Q. Do you believe that your 9.00 percent roe recommendation meets the *Hope* and *Bluefield* standards?**

A. Yes, I do. As previously noted, according to the *Hope* and *Bluefield* decisions, returns on capital should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital. As shown on page 3 of Exhibit JRW-6, gas distribution companies have been earning ROEs in the range of 8.0 percent to 9.0 percent. With such a ROE, gas companies such as those in the proxy group have strong investment grade credit ratings, their stocks have been selling at about 2.0 times book value, and they have been raising abundant amounts of capital. While my recommendation is below the average authorized ROEs for gas distribution companies, it reflects the record low levels of interest rates and capital costs. Therefore, I do believe that my ROE recommendation meets the criteria established in the *Hope* and *Bluefield* decisions.

[44] S&P Global Market Intelligence, Regulatory Research Associates, *Regulatory Focus*, 2019.

## V. CRITIQUE OF CASCADE'S RATE OF RETURN TESTIMONY

**Q. Please review the Company's proposed rate of return.**

A. Cascade witness Ms. Tammy J. Nygard recommends a capital structure consisting of 49.60 percent total debt and 50.40 percent common equity, and debt cost rate of 4.745 percent. Cascade witness Ms. Ann E. Bulkley has recommended a common equity cost rate of 10.30 percent for Cascade. The Company's overall proposed rate of return is 7.544 percent.

**Q. What are the primary areas of disagreement in estimating the rate of return or cost of capital in this proceeding?**

A. As reviewed above, the primary issues related to the Company's rate of return include the following: (1) Capital Structure; (2) the Disconnect Between the Results of Ms. Bulkley's ROE Studies and her 10.3 percent ROE Recommendation; (3) DCF Approach; (5) CAPM Approach; (6) Alternative Risk Premium Model; and (7) Expected Earnings Approach: and (8) Other Factors including the Company's capital expenditures, regulator risk, small size, and flotation costs.

The capital structure, capital market conditions, and the disconnect between Ms. Bulkey's studies and her recommendation were previously discussed. The other items are discussed below.

**Q. Please review Ms. Bulkley's equity cost rate approaches and results.**

A. Ms. Bulkley has developed a proxy group of gas distribution companies and employs DCF, CAPM, Bond Yield Risk Premium (BYRP), and Expected Earnings equity cost rate approaches. Ms. Bulkley's equity cost rate estimates for Cascade are summarized on page 2 Exhibit JRW-10. Based on these figures, she concludes that the appropriate equity cost

rate is 10.3 percent for Cascade's gas distribution operations.

### A. DCF Approach

**Q. Please summarize Ms. Bulkley's DCF estimates.**

A. On pages 45-50 of her testimony and in Schedule 3,[45] Ms. Bulkley develops an equity cost rate by applying the DCF model to her gas group. Ms. Bulkley's DCF results are summarized on page 2 of Exhibit JRW-10. In the traditional DCF approach, the equity cost rate is the sum of the dividend yield and expected growth. Ms. Bulkley uses three dividend yield measures (30, 90, and 180 days) in her DCF models. In her constant-growth DCF models, Ms. Bulkley has relied on the forecasted EPS growth rates of Zacks, Yahoo Finance, and *Value Line*. The average of the median DCF results, as reported by Ms. Bulkley, is 9.49 percent for her gas group.

**Q. What are the errors in Ms. Bulkley's DCF analyses?**

A. The primary issues in Ms. Bulkley's DCF analyses are: (1) she has exclusively used the overly optimistic and upwardly biased EPS growth rate forecasts of Wall Street analysts and *Value Line* and ignores other growth rate measures such as the dividend growth rate and sustainable growth; (2) she has combined abnormally high *Value Line* projected EPSs for her proxy companies, computed from an out-of-date, three-year base period, with three-to-five-year projected growth rates of First Call and Zacks, skewing higher her measurement of growth; and (3) she has claimed that the DCF results underestimate the market-determined cost of equity capital due to high utility stock valuations and low dividend yields. These issues are discussed below.

[45] Direct Testimony of Anne E. Bulkley, Exh. AEB-1T at 45-50; Exh. AEB-2 (Schedule 3).

### 1. Analysts' EPS Growth Rate Forecasts

**Q. Please discuss Ms. Bulkley's exclusive reliance on the projected growth rates of Wall Street analysts and *Value Line.***

A. It seems highly unlikely that investors today would rely exclusively on the EPS growth rate forecasts of Wall Street analysts and ignore other growth rate measures in arriving at their expected growth rates for equity investments. As I previously indicated, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Hence, consideration must be given to other indicators of growth, including historical prospective dividend growth, internal growth, as well as projected earnings growth. In addition, a recent study by Lacina, Lee, and Xu (2011) has shown that analysts' long-term earnings growth rate forecasts are not more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.[46] As such, the weight given to analysts' projected EPS growth rates should be limited. Finally, and most significantly, it is well known that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased.[47] Hence, using solely these EPS growth rates as a DCF growth rate produces an overstated equity cost rate. A recent study by Easton and Sommers (2007) found that optimism in analysts' earnings growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost

[46] 8 M. Lacina, B. Lee & Z. Xu, ADVANCES IN BUSINESS AND MANAGEMENT FORECASTING at 77-101 (Kenneth D. Lawrence, Ronald K. Klimberg eds., Emerald Group Publishing Ltd., 2011).

[47] *See* references in n.20.

3.0 percentage points.[48] Therefore, exclusive reliance on these forecasts for a DCF growth rate results in failure of one the basic inputs in the equation. In addition, as noted above, a study by Szakmary, Conover, and Lancaster (2008) discovered the three-to-five-year EPS growth rate forecasts of *Value Line* to be significantly higher than the EPS growth rates that these companies subsequently achieved.[49]

**Q. Have changes in regulations affecting Wall Street analysts and their research impacted the upward bias in their projected EPS growth rates?**

A. No. A number of the studies I have cited above demonstrate that the upward bias has continued despite changes in regulations and reporting requirements over the past two decades. This observation is highlighted by a 2010 McKinsey study entitled "Equity Analysts: Still Too Bullish," which involved a study of the accuracy of analysts' long-term EPS growth rate forecasts. The authors conclude that after a decade of stricter regulation, analysts' long-term earnings forecasts continue to be excessively optimistic. They made the following observation:[50]

> Alas, a recently completed update of our work only reinforces this view—despite a series of rules and regulations, dating to the last decade, that were intended to improve the quality of the analysts' long-term earnings forecasts, restore investor confidence in them, and prevent conflicts of interest. For executives, many of whom go to great lengths to satisfy Wall Street's expectations in their financial reporting and long-term strategic moves, this is a cautionary tale worth remembering. This pattern confirms our earlier findings that analysts typically lag behind events in revising their forecasts to reflect new economic conditions. When economic growth accelerates, the size of the forecast error declines; when economic growth

[48] P. Easton & G. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts,* 45(5) J. OF ACCT. RES. 983–1015 (2007).

[49] A. Szakmary, C. Conover, & C. Lancaster, *An Examination of Value Line's Long-Term Projections*, J. OF BANKING & FIN., 820-833 (May 2008).

[50] Marc H. Goedhart, Rishi Raj, and Abhishek Saxena, *Equity Analysts, Still Too Bullish*, MCKINSEY ON FINANCE, Spring 2010, at 14-17 (emphasis added).

> slows, it increases. So as economic growth cycles up and down, the actual earnings S&P 500 companies report occasionally coincide with the analysts' forecasts, as they did, for example, in 1988, from 1994 to 1997, and from 2003 to 2006. *Moreover, analysts have been persistently overoptimistic for the past 25 years, with estimates ranging from 10 to 12 percent a year, compared with actual earnings growth of 6 percent. Over this time frame, actual earnings growth surpassed forecasts in only two instances, both during the earnings recovery following a recession. On average, analysts' forecasts have been almost 100 percent too high.*

This is the same observation made in a *Bloomberg Businessweek* article.[51] The author concluded: "***The bottom line****: Despite reforms intended to improve Wall Street research, stock analysts seem to be promoting an overly rosy view of profit prospects*."

**Q. Are the EPS growth rate forecasts of *value line* also overly optimistic and upwardly biased?**

A. Yes. A study by Szakmary, Conover, and Lancaster (2008) evaluated the accuracy of *Value Line*'s three-to-five-year EPS growth rate forecasts using companies in the Dow Jones Industrial Average over a 30-year time period and found these forecasted EPS growth rates to be significantly higher than the EPS growth rates that these companies subsequently achieved. The authors concluded that *Value Line*'s forecasts of earnings per share growth rates were "strikingly overoptimistic."[52]

### 2. *Value Line* Projected EPS Growth Rate

**Q. Please discuss Ms. Bulkley's DCF growth rate.**

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[51] Roben Farzad, *For Analysts, Things Are Always Looking Up*, BLOOMBERG BUSINESSWEEK (June 10, 2010), https://www.bloomberg.com/news/articles/2010-06-10/for-analysts-things-are-always-looking-up.

[52] A. Szakmary, C. Conover, & C. Lancaster, *An Examination of Value Line's Long-Term Projections*, J. OF BANKING & FIN., 820-833 (May 2008).

A. Table 5 shows Ms. Bulkley's DCF growth rates from Yahoo, Zacks, and *Value Line*. The Yahoo and Zacks growth rates are the average of analysts' three-to-five-year projected growth rates compiled by Yahoo and Zacks. *Value Line* uses a different approach in estimating projected growth. *Value Line* projects growth from a three-year base period – 2016–2018 – to a projected three-year period for the period 2023–2025. Using this approach, the three-year based period can have a significant impact on the *Value Line* growth rate if this base period includes years with abnormally high or low earnings. For most of the seven proxy companies, the *Value Line* projected EPS growth rates are larger than the average of the Yahoo and Zacks growth rates, and especially so for Northwest Natural Gas Co. ("NWN").

**Table 5**
**Ms. Bulkley's DCF Growth Rates**

| Company | *Value Line* | Yahoo | Zacks |
|---|---|---|---|
| Atmos Energy Corporation | 7.00% | 7.50% | 7.20% |
| New Jersey Resources Corporation | 2.50% | 6.00% | 6.00% |
| Northwest Natural Gas Company | 22.50% | 3.75% | NA% |
| ONE Gas Inc. | 7.00% | 5.00% | 5.50% |
| South Jersey Industries, Inc. | 9.50% | 10.20% | 10.20% |
| Southwest Gas Corporation | 8.00% | 8.20% | 6.00% |
| Spire, Inc. | 5.50% | 4.65% | 4.80% |
| Average | 8.86% | 6.47% | 6.62% |

Data Source: Bulkley Schedule 4.

**Q. What skews *Value Line*'s growth rates?**

A. *Value Line*'s data includes a projected EPS growth rate of 22.5 percent for NWN as shown in Table 5; by any measure, NWN's data is an outlier. Panel A of Table 6 shows that *Value Line* included a 22.5 percent growth rate for a three-year base period – 2016–2018 – to project growth for three-year period of 2023–2025. Panel B of Table 6 shows that NWN's base period includes 2016, 2017, and 2018 EPS figures of $2.12, -$1.94, and $2.33. The *Value Line* projected EPS growth rate of 22.5 percent for NWN is the compounded annual growth rate for the three-year historical period of 2016, 2017, and

2018, which shows an average EPS of $0.84, to the projected EPS of $3.50 for the projected period of 2023–2025. The actual growth rate is 22.7 percent over the seven-year period, but *Value Line* reports 22.5 percent since it averages growth rates to the nearest one-half percent.

**Table 6**
**NWN's *Value Line* Projected EPS Growth Rate**
**Panel A**

| ANNUAL RATES of change (per sh) | Past 10 Yrs. | Past 5 Yrs. | Est'd '16-'18 to '23-'25 |
|---|---|---|---|
| Revenues | -4.5% | -3.0% | *2.5%* |
| "Cash Flow" | -3.0% | -5.5% | *8.0%* |
| Earnings | -10.5% | -18.0% | *22.5%* |
| Dividends | 2.5% | 1.0% | *.5%* |
| Book Value | 2.0% | - - | *1.5%* |

**Panel B**

| NWN | 2016 | 2017 | 2018 | 2019 | 2020 | 2023-25 |
|---|---|---|---|---|---|---|
| Earnings Per Share | 2.12 | -1.94 | 2.33 | 2.10 | 2.40 | 3.50 |
| 3 Year Base and Projected Periods | 2016-18 | | | | | 2023-25 |
| Base and Projected EPS Figures | 0.84 | | | | | 3.50 |
| Base Period to Projected Period Growth Rate | | | 22.7% | | | |

Source: *See* Exhibit JRW-10 at 4.

**Q. Please summarize the impact of combining the different projected eps growth rates on Ms. Bulkley's DCF results.**

A. The impact of combining the EPS growth rates from Zacks and Yahoo and *Value Line* inflates Ms. Bulkley's DCF results. Meanwhile, the *Value Line* growth rates are, on average, 200 points higher than the Yahoo and Zacks projected growth rates because they do not measure growth from the present but from a historical (and stale) time period.[53]

[53] I have used *Value Line*'s projected growth rates for EPS, DPS, and BVPS. However, due to the different periods of growth that are measured by *Value Li*ne compared to Yahoo and Zacks, I have analyzed the *Value Line* data separately from the other growth rate data, and I have used the medians of the growth rates for the proxy group to minimize the impact of outliers such as those discussed above.

### 3. The DCF Model and the Cost of Equity Capital

**Q. Please discuss Ms. Bulkley's claim that the DCF model understates the cost of equity capital.**

A. On page 48 of her testimony, Ms. Bulkley makes the claim that using current utility stock valuations and low dividend yields will underestimate the market-determined ROE using the DCF model.

**Q. What is your response to this claim?**

A. Ms. Bulkley's claim is totally without merit for the following reasons. First, she is saying that utility stocks are overvalued, and their stock prices will decline in the future (and therefore their dividend yield will increase). Hence, Ms. Bulkley presumes that she knows more than investors in the stock market. Second, Ms. Bulkley's CAPM results are highly dependent on her approach to estimating the market risk premium, which as discussed below, includes unreasonably high projections of future earnings growth and stock returns.

### B. CAPM Approach

**Q. Please discuss Ms. Bulkley's CAPM.**

A. On pages 50-56 of her testimony and in Schedule 4,[54] Ms. Bulkley develops an equity cost rate by applying the CAPM model to her gas proxy group. Ms. Bulkley's DCF results are summarized on page 2 of Exhibit JRW-10. Ms. Bulkley develops an equity cost rate by using not only the traditional CAPM, but also the so-called Empirical CAPM (ECAPM) model for her gas proxy group. The ECAPM is a variant of the traditional CAPM. The

[54] Bulkley, Exh. AEB-2 (Schedule 4 CAPM 1).

CAPM/ECAPM approach requires an estimate of the risk-free interest rate, Beta, and the equity risk premium. Ms. Bulkley uses: (1) current (1.31 percent), near-term projected (1.60 percent), and long-term projected (3.20 percent) 30-year Treasury yields; (2) betas from *Value Line* and Bloomberg; and (3) a market risk premium of 12.14 percent. Based on these figures, she finds CAPM/ECAPM equity cost rates ranging from 8.94 percent to 11.90 percent.

**Q. What are the errors in Ms. Bulkley's CAPM/ECAPM analyses?**

A. The primary errors with Ms. Bulkley's CAPM/ECAPM analyses are: (1) the use of the ECAPM version of the CAPM; (2) the projected risk-free interest rate of 3.2 percent; and (3) the expected market risk premium 12.14 percent. As I explain below, the use of a 12.14 percent MRP is a very serious error.

### 1. ECAPM Approach

**Q. What issues have you identified with Ms. Bulkley's ECAPM approach?**

A. In addition to the CAPM, Ms. Bulkley has employed a variation of the CAPM, which she calls the "ECAPM." The ECAPM, as popularized by rate of return consultant Dr. Roger Morin, attempts to model the well-known findings of tests of the CAPM that have indicated the Security Market Line (SML) is not as steep as predicted by the CAPM. However, the ECAPM lacks theoretical or empirical basis for some of its assumptions, and as such, the ECAPM is nothing more than an *ad hoc* version of the CAPM. The ECAPM provides for weights that are used to adjust the risk-free rate and market risk premium in applying the ECAPM. Ms. Bulkley uses 0.25 and 0.75 factors to boost the equity risk premium measure, but provides no empirical justification for those figures.

Beyond the lack of any theoretical or empirical validation of the ECAPM, there are

two errors in Ms. Bulkley's version of the ECAPM. First, I am not aware of any tests of the CAPM that use adjusted betas such as those used by Ms. Bulkley. Second, adjusted betas, which were previously discussed, address the empirical issues with the CAPM because: (1) adjusting low beta stock increases the adjusted beta and CAPM expected return; and (2) adjusting high beta stock decreases the adjusted beta and CAPM expected return.

### 2. The Projected Risk-Free Interest Rate

**Q. Please discuss the base yield of Ms. Bulkley's CAPM/ECAPM analysis.**

A. Ms. Bulkley uses a long-term projected risk-free interest rate of 3.2 percent in her CAPM/ECAPM. This figure is about 150 basis points above the current yield on long-term Treasury bonds of 1.5 percent. Investors would not be buying long-term Treasury bonds at their current yields if they expected the yields on these bonds to increase from100 to 200 basis points in the next year or two. Such a move in interest rates would result in a capital loss of over 20 percent. Investors do not buy long-term Treasury bonds or any other investment if they expect to receive a negative return.

### 3. Market Risk Premium

**Q. Please assess Ms. Bulkley's market risk premium derived from applying the DCF model to the S&P 500.**

A. A very serious problem with Ms. Bulkley's CAPM analysis is the magnitude of the market (or equity) risk premium, which she uses to produce very high ROE results--as high as 11.90 percent[55]. Ms. Bulkley develops an expected market risk premium by: (1) applying the DCF model to the S&P 500 to get an expected market return; and (2) subtracting the risk-

[55] *See* Bulkley, Exh. AEB-2 (Schedule 2).

free rate of interest. As shown in Table 7, Ms. Bulkley's estimated market return of 13.49 percent for the S&P 500 equals the sum of the dividend yield of 2.01 percent and expected EPS growth rate of 11.33 percent. The expected EPS growth rate is the average of the expected EPS growth rates from S&P. The primary error in this approach is Ms. Bulkley's expected DCF growth rate. As previously discussed, the expected EPS growth rates of Wall Street analysts are upwardly biased. In addition, as explained below, the projected growth rate is inconsistent with actual economic and earnings growth rates in the U.S.

**Table 7**
**Bulkley CAPM Market Risk Premium**

| | |
|---|---|
| **Dividend Yield** | **2.01%** |
| **+ Expected EPS Growth** | **11.33%** |
| **= Expected Market Return** | **13.49%** |
| **- Risk-Free Rate** | **1.31%** |
| **= Market Risk Premium** | **12.14%** |

**Q. Initially, please provide additional insights into the expected stock market return of 13.49 percent.**

A. Simply put, the assumption of a 13.49 percent expected stock market return is excessive and unrealistic. The compounded annual return in the U.S. stock market is about 10 percent (9.71% between 1928-2019, according to Damodaran).[56] Thus, Ms. Bulkley's CAPM results assume that return on the U.S. stock market will be a staggering 40 percent higher in the future than it has been in the past. Ms. Bulkley's extremely high expected stock market return, and her resulting market risk premium and equity cost rate results,

[56] Aswarth Damodaran, *Damodaran Online*, N.Y. UNIVERSITY, http://pages.stern.nyu.edu/~adamodar/ (last visited Nov. 18, 2020).

are directly related to computing the expected stock market return as the sum of the adjusted dividend yield plus the expected EPS growth rate of 11.33 percent. This is addressed below.

**Q. Please once again address the issues with analysts' EPS growth rate forecasts.**

A. The key point is that Ms. Bulkley's CAPM market risk premium methodology is based entirely on the concept that analyst projections of companies' three-to-five-year EPS growth rates reflect investors' expected *long-term* EPS growth for those companies. However, this seems highly unrealistic given the published research on these projections. As previously noted, numerous studies have shown that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased.[57] Moreover, as discussed above, the Lacina, Lee and Xu study showed that analysts' forecasts of EPS growth over the next three-to-five years earnings are no more accurate than their forecasts of the next single year's EPS growth (and the single year forecasts are notoriously inaccurate). The overly optimistic inaccuracy of analysts' growth rate forecasts leads to an upward bias in equity cost estimates that has been estimated at about 300 basis points.[58]

[57] Such studies include: R.D. Harris, *The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts*, J. OF BUS. FIN. & ACCT., 725-55 (June/July 1999); P. DeChow, A. Hutton, and R. Sloan, *The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings*, CONTEMPORARY ACCOUNTING RESEARCH (2000); Louis K. C. Chan, Jason Karceski, & Josef Lakonishok, *The Level and Persistence of Growth Rates*, J. OF FIN., 643−684 (2003); 8 M. Lacina, B. Lee & Z. Xu, ADVANCES IN BUSINESS AND MANAGEMENT FORECASTING at 77-101 (Kenneth D. Lawrence, Ronald K. Klimberg eds., Emerald Group Publishing Ltd., 2011).

[58] Peter D. Easton & Gregory A. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts*, 45 J. OF ACCT. RES. 983–1015 (2007).

**Q. Is Ms. Bulkley's market risk premium of 12.14 percent reflective of the market risk premiums found in studies and surveys of the market risk premium?**

A. Ms. Bulkley's 12.14 percent figure is well in excess of market risk premiums: (1) found in studies of the market risk premiums by leading academic scholars; (2) produced by analyses of historic stock and bond returns; and (3) found in surveys of financial professionals. Page 6 of Exhibit JRW-9 provides the results of over 30 market risk premiums studies from the past 15 years. Historic stock and bond returns suggest a market risk premium in the 4.40-6.43 percent range, depending on whether one uses arithmetic or geometric mean returns. There have been many studies using expected return (also called *ex ante*) models, and their market risk premiums results vary from as low as 5.24 percent to as high as 6.0 percent. Finally, the market risk premiums developed from surveys of analysts, companies, financial professionals, and academics suggest even potentially lower market risk premiums, in a range from 3.36 percent to 6.75 percent. The bottom line is that there is no support in historic return data, surveys, academic studies, or reports for investment firms for a market risk premium as high as the 12.14 percent used by Ms. Bulkley.

**Q. Is a projected EPS growth rate of 11.33 percent, which Ms. Bulkley uses to compute her market risk premium of 12.14 percent, reasonable given the projected growth in U.S. GDP?**

A. No. Beyond my previous discussion of the upwardly biased nature of analysts' projected earnings per share (EPS) growth rates, a long-term EPS growth rate of 11.33 percent is inconsistent with both historic and projected economic and earnings growth in the U.S for several reasons.

First, long-term EPS and economic growth is about one-half of Ms. Bulkley's projected EPS growth rate of 11.33 percent. Second, long-term EPS and GDP growth are directly linked. And third, more recent trends in GDP growth, as well as projections of GDP growth, suggest slower economic and earnings growth in the near future, during the period when the rates from this case will be effective.

Long-Term Historic EPS and GDP Growth have been in the 6 -7 percent Range - I performed a study of the growth in nominal GDP, S&P 500 stock price appreciation, and S&P 500 EPS and dividends per share (DPS) growth since 1960. The results are provided on page 1 of Exhibit JRW-11, and a summary is shown in Table 8, below.

**Table 8**
**GDP, S&P 500 Stock Price, EPS, and DPS Growth Percent**
**1960-Present**

| | |
|---|---|
| **Nominal GDP** | **6.43** |
| **S&P 500 Stock Price** | **7.05** |
| **S&P 500 EPS** | **6.87** |
| **S&P 500 DPS** | **5.91** |
| **Average** | **6.43** |

The results show that the historical long-run growth rates for GDP, S&P EPS, and S&P DPS are in the 6 percent to 7 percent range. By comparison, Ms. Bulkley's long-run growth rate projection of 11.33 percent is at best overstated. These estimates suggest that companies in the U.S. would be expected to: (1) increase their growth rate of EPS by more than 50 percent in the future, and (2) maintain that growth indefinitely in an economy that is currently expected to grow at about one-third of Ms. Bulkley's projected growth rates.

There is a Direct Link Between Long-Term EPS and GDP Growth - The results in Exhibit JRW-11 and Table 6 show that historically there has been a close link between long-term EPS and GDP growth rates. Brad Cornell of the California Institute of Technology published a study on GDP growth, earnings growth, and equity returns. He finds that long-term EPS growth in the U.S. is directly related to GDP growth, with GDP growth providing an upward limit on EPS growth. In addition, he finds that long-term stock returns are determined by long-term earnings growth.[59] He concludes with the following observations:[60]

> The long-run performance of equity investments is fundamentally linked to growth in earnings. Earnings growth, in turn, depends on growth in real GDP. This article demonstrates that both theoretical research and empirical research in development economics suggest relatively strict limits on future growth. In particular, real GDP growth in excess of 3 percent in the long run is highly unlikely in the developed world. In light of ongoing dilution in earnings per share, this finding implies that investors should anticipate real returns on U.S. common stocks to average no more than about 4–5 percent in real terms.

The Trend and Projections Indicate Slower GDP Growth in the Future - The components of nominal GDP growth are real GDP growth and inflation. Page 3 of Exhibit JRW-11 shows annual real GDP growth rate over the 1961 to 2019 time period. Real GDP growth has gradually declined from the 5.0 percent to 6.0 percent range in the 1960s to the 2.0 percent to 3.0 percent range during the most recent five-year period. The second component of nominal GDP growth is inflation. Page 4 of Exhibit JRW-11 shows inflation as measured by the annual growth rate in the Consumer Price Index (CPI) over

[59] Bradford Cornell, *Economic Growth and Equity Investing*, FIN. ANALYSTS J. 63 (Jan. – Feb. 2010).

[60] Bradford Cornell, "Economic Growth and Equity Investing," *Financial Analysts Journal* (January- February 2010), p. 63.

the 1961 to 2019 time period. The large increase in prices from the late 1960s to the early 1980s is readily evident. Equally evident is the rapid decline in inflation during the 1980s as inflation declined from above 10 to about four percent. Since that time, inflation has gradually declined and has been in the 2.0 percent range or below over the past five years.

The graphs on pages 2, 3, and 4 of Exhibit JRW-11 provide clear evidence of the decline, in recent decades, in nominal GDP as well as its components, real GDP and inflation. To gauge the magnitude of the decline in nominal GDP growth, Table 9, below, provides the compounded GDP growth rates for 10-, 20-, 30-, 40- and 50-years. Whereas the 50-year compounded GDP growth rate is 6.28 percent, there has been a monotonic and significant decline in nominal GDP growth over subsequent 10-year intervals. These figures strongly suggest that nominal GDP growth in recent decades has slowed and that a figure in the range of 4.0 to 5.0 percent is more appropriate today for the U.S. economy.

**Table 9**
**Historical Nominal GDP Growth Rates**

| | |
|---|---|
| **10-Year Average** | **4.02%** |
| **20-Year Average** | **4.08%** |
| **30-Year Average** | **4.55%** |
| **40-Year Average** | **5.39%** |
| **50-Year Average** | **6.28%** |

Long-Term GDP Projections also Indicate Slower GDP Growth in the Future - A lower range is also consistent with long-term GDP forecasts. There are several forecasts of annual GDP growth that are available from economists and government agencies. These are listed in Panel B of on page 5 of Exhibit JRW-11. The mean 10-year nominal GDP growth forecast (as of March 2020) by economists in the recent *Survey of Financial*

*Forecasters* is 4.30 percent.[61] The Energy Information Administration (EIA), in its projections used in preparing *Annual Energy Outlook,* forecasts long-term GDP growth of 4.2 percent for the period 2019–2050.[62] The Congressional Budget Office (CBO), in its forecasts for the period 2019 to 2029, projects a nominal GDP growth rate of 3.8 percent.[63] Finally, the Social Security Administration (SSA), in its Annual OASDI Report, provides a projection of nominal GDP from 2020–2095.[64] SSA's projected growth GDP growth rate over this period is 4.1 percent. Overall, these forecasts suggest long-term GDP growth rate in the 4.0–4.3 percent range. The trends and projections indicating slower GDP growth make Ms. Bulkley's market risk premium of 12.14 percent, which is computed by using a growth rate of 11.33 percent from analysts' EPS growth projections, look even more unrealistic. Simply stated, Ms. Bulkley's projected EPS growth rate of 11.33 percent is almost three times projected GDP growth.

**Q. What are the fundamental factors that have led to the decline in prospective GDP growth?**

A. As addressed in a study by the consulting firm McKinsey & Co., two factors drive real GDP growth over time: (1) the number of workers in the economy (employment); and (2) the productivity of those workers (usually defined as output per hour).[65] According to

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[61] FEDERAL RESERVE BANK, *Survey of Professional Forecasters*, https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/ (last visited on Nov. 19, 2020).

[62] U.S. Energy Information Administration, *Annual Energy Outlook 2020*, Table: Macroeconomic Indicators..

[63] Congressional Budget Office, *The 2020 Long-Term Budget Outlook*, June 25, 2020.

[64] Social Security Administration, *2020 Annual Report of the Board of Trustees of the Old-Age, Survivors, and Disability Insurance (OASDI) Program*, Table VI.G4, (July 1, 2020), The 4.1% growth rate is the growth in projected GDP from $22,341 trillion in 2020 to $450,425 trillion in 2095.

[65] McKinsey & Co., *Can Long-Term Growth be Saved*?, MCKINSEY GLOBAL INSTITUTE Jan. 2015.

McKinsey, population and productivity growth, which grew at compound annual rates of 1.7 and 1.8 percent, respectively, drove real GDP growth over the past 50 years.

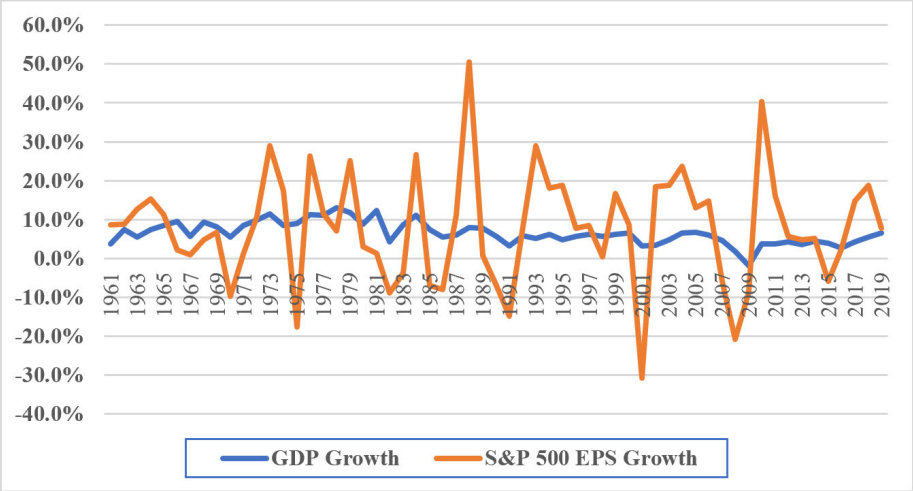
However, global economic growth is projected to slow significantly in the years to come. The primary factor leading to the decline is slow growth in employment (working-age population), which results from slower population growth and longer life expectancy. McKinsey estimates that employment growth will slow to 0.3 percent over the next 50 years. They conclude that even if productivity remains at the rapid rate of the past 50 years of 1.8 percent, real GDP growth will fall by 40 to 2.1 percent.

**Q. Please provide more insights into the relationship between S&P 500 EPS and GDP growth.**

A. Figure 7 shows the average annual growth rates for GDP and the S&P 500 EPS since 1960. The one very apparent difference between the two is that the S&P 500 EPS growth rates are much more volatile than the GDP growth rates, when compared using the relatively short, and somewhat arbitrary, annual conventions used in these data.[66] Volatility aside, however, it is clear that over the medium to long run, S&P 500 EPS growth does not outpace GDP growth.

[66] Timing conventions such as years and quarters are needed for measurement and benchmarking but are somewhat arbitrary. In reality, economic growth and profit accrual occur on continuous bases. A 2014 study evaluated the timing relationship between corporate profits and nominal GDP growth. The authors found that aggregate accounting earnings growth is a leading indicator of the GDP growth with a quarter-ahead forecast horizon. *See* Yaniv Konchitchki and Panos N. Patatoukas, *Accounting Earnings and Gross Domestic Product*, 57 J. OF ACCT. AND ECON. 76-88 (2014).

**Figure 7**
**Average Annual Growth Rates**
**GDP and S&P 500 EPS**
**1960-2019**




Data Sources: GDPA - http://research.stlouisfed.org/fred2/series/GDPA/downloaddata.
S&P EPS - http://pages.stern.nyu.edu/~adamodar/

A fuller understanding of the relationship between GDP and S&P 500 EPS growth requires consideration of several other factors.

Corporate Profits are Constrained by GDP – Milton Friedman, the noted economist, warned investors and others not to expect corporate profit growth to sustainably exceed GDP growth, stating, "Beware of predictions that earnings can grow faster than the economy for long periods. When earnings are exceptionally high, they don't just keep booming."[67] Friedman also noted in the same *Fortune* interview that profits must move back down to their traditional share of GDP. In Table 10 below, I show that currently the aggregate net income levels for the S&P 500 companies, using 2019 figures, represent 6.53 percent of nominal GDP.

[67] Shaun Tully, *Corporate Profits Are Soaring. Here's Why It Can't Last*," FORTUNE (Dec. 7, 2017), http://fortune.com/2017/12/07/corporate-earnings-profit-boom-end/.

**Table 10**
**S&P 500 Aggregate Net Income as a Percent of GDP**

| | $ Billion |
|---|---|
| **Aggregate Net Income for S&P 500** | **$1,399.46** |
| **2019 Nominal U.S. GDP** | **$21,427.10** |
| **Net Income/GDP (%)** | **6.53%** |

Data Sources: 2019 Net Income for S&P 500 companies – *Value Line* (March 3, 2020).
2019 Nominal GDP – Moody's - https://www.economy.com/united-states/nominal-gross-domestic-product.

Short-Term Factors Impact S&P 500 EPS – The growth rates in the S&P 500 EPS and GDP can diverge on a year-to-year basis due to short-term factors that impact S&P 500 EPS in a much greater way than GDP. As shown above in Figure 7, S&P EPS growth rates are much more volatile than GDP growth rates. The EPS growth for the S&P 500 companies has been influenced by low labor costs and interest rates, commodity prices, the recovery of different sectors such as the energy and financial sectors, the cut in corporate tax rates, etc. These short-term factors can make it appear that there is a disconnect between the economy and corporate profits.

The Differences Between the S&P 500 EPS and GDP – In the last two years, as the EPS for the S&P 500 has grown at a faster rate than U.S. nominal GDP, some have pointed to the differences between the S&P 500 and GDP.[68] These differences include:

(a) corporate profits are about two-thirds manufacturing driven, while GDP is two-thirds services driven;

[68] *See* the following studies: Burt White and Jeff Buchbinder, *The S&P and GDP are not the Same Thing*, LPL FIN. (Nov. 4, 2014), https://www.businessinsider.com/sp-is-not-gdp-2014-11; Matt Comer, *How Do We Have 18.4% Earnings Growth In A 2.58% GDP Economy*?, SEEKING ALPHA, (Apr. 2018), https://seekingalpha.com/article/4164052-18_4-percent-earnings-growth-2_58-percent-gdp-economy; Shaun Tully, *How on Earth Can Profits Grow at 10% in a 2% Economy*?, FORTUNE (July 27, 2017), http://fortune.com/2017/07/27/profits-economic-growth/.

(b) consumer discretionary spending accounts for a smaller share of S&P 500 profits (15 percent) than of GDP (23 percent);

(c) corporate profits are more international-trade driven, while exports minus imports tend to drag on GDP; and

(d) S&P 500 EPS is impacted not just by corporate profits but also by share buybacks on the positive side (fewer shares boost EPS) and by share dilution on the negative side (new shares dilute EPS). While these differences may seem significant, the Income Approach to measure GDP includes corporate profits (in addition to employee compensation and taxes on production and imports) and therefore effectively accounts for the first three factors.[69]

The bottom line is that despite the intertemporal short-term differences between S&P 500 EPS and nominal GDP growth, the long-term link between corporate profits and GDP is inevitable.

**Q. Please provide additional evidence showing that the S&P 500 EPS growth rate that Ms. Bulkley uses to compute her market risk premium is unrealistic.**

A. Beyond my previous discussion, I have performed the following analysis of S&P 500 EPS and GDP growth in Table 11 below. Specifically, I started with the 2019 aggregate net income for the S&P 500 companies and 2019 nominal GDP for the U.S. As shown in Table 10, the aggregate profit for the S&P 500 companies represented 6.53 percent of nominal GDP in 2019. In Table 11, I then projected the aggregate net income level for

[69] The Income Approach to measuring GDP includes wages, salaries, and supplementary labor income, corporate profits, interest and miscellaneous investment income, farmers' incomes, and income from non-farm unincorporated businesses

the S&P 500 companies and GDP as of the year 2050. For the growth rate for the S&P 500 companies, I used Ms. Bulkley's projected S&P 500 EPS growth rate of 11.33 percent. As a growth rate for nominal GDP, I used the average of the long-term projected GDP growth rates from SFF, CBO, SSA, and EIA (4.3, 3.8, 4.1, and 4.0 percent), which is 4.09 percent. The projected 2050 level for the aggregate net income level for the S&P 500 companies is $38.9 trillion. However, over the same period GDP grows to $78.7 trillion. As such, if the aggregate net income for the S&P 500 grows in accordance with the growth rate used by Ms. Bulkley, and if nominal GDP grows at rates projected by major government agencies, the net income of the S&P 500 companies will represent growth from 6.53 percent of GDP in 2019 to 52.52 percent of GDP in 2050. Obviously, it is implausible for the net income of the S&P 500 to become 50 percent of GDP.

**Table 11**
**Projected S&P 500 Earnings and Nominal GDP**
**2019-2050**
**S&P 500 Aggregate Net Income as a Percent of GDP**

| | 2019 Value | Growth Rate | No. of Years | 2050 Value |
|---|---|---|---|---|
| **Aggregate Net Income for S&P 500** | **$1,399.46** | **11.33%** | **31** | **$ 38,988.72** |
| **2018 Nominal U.S. GDP** | **$21,427.10** | **4.09%** | **31** | **$ 74,240.80** |
| **Net Income/GDP (%)** | **6.53%** | | | **52.52%** |

Data Sources: 2019 Aggregate Net Income for S&P 500 companies – *Value Line* (Mar. 3, 2020).
2019 Nominal GDP – Moody's - https://www.economy.com/united-states/nominal-gross-domestic-product.
S&P 500 EPS Growth Rate - Ms. Bulkley's projected S&P 500 growth rate of 11.33;
Nominal GDP Growth Rate – The average of the long-term projected GDP growth rates from SFF, CBO, SSA, and EIA (4.3%, 3.8%, 4.0%, and 4.1%).

**Q. Please provide a summary analysis on GDP and S&P 500 EPS growth rates.**

A. As noted above, the long-term link between corporate profits and GDP is inevitable. The short-term differences in growth between the two has been highlighted by some notable market observers, including Warren Buffet, who indicated that corporate profits as a

share of GDP tend to go far higher after periods where they are depressed, and then drop sharply after they have been hovering at historically high levels. In a famous 1999 *Fortune* article, Mr. Buffet made the following observation:[70]

> You know, someone once told me that New York has more lawyers than people. I think that's the same fellow who thinks profits will become larger than GDP. When you begin to expect the growth of a component factor to forever outpace that of the aggregate, you get into certain mathematical problems. In my opinion, you have to be wildly optimistic to believe that corporate profits as a percent of GDP can, for any sustained period, hold much above 6%. One thing keeping the percentage down will be competition, which is alive and well. In addition, there's a public-policy point: If corporate investors, in aggregate, are going to eat an ever-growing portion of the American economic pie, some other group will have to settle for a smaller portion. That would justifiably raise political problems – and in my view a major reslicing of the pie just isn't going to happen.

In sum, Ms. Bulkley's long-term S&P 500 EPS growth rate of 11.33 percent is grossly overstated and has no basis in economic reality. In the end, the big question remains as to whether corporate profits can grow faster than GDP. The magnitude of Ms. Bulkley's CAPM/ECAPM results rest entirely on her assumption that the EPS for S&P 500 companies can grow at 11.33 percent, nearly three times the projected GDP growth rate. Jeremy Siegel, the renowned finance professor at the Wharton School of the University of Pennsylvania, believes that going forward, earnings per share can grow about half a point faster than nominal GDP, or about 5.0 percent, due to the big gains in the technology sector. But, he also believes that sustained EPS growth matching analysts' near-term projections is absurd: "The idea of 8% or 10% or 12% growth is ridiculous. It will not happen."[71]

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[70] Carol Loomis, *Mr. Buffet on the Stock Market*, FORTUNE, Nov. 22, 1999, https://money.cnn.com/magazines/fortune/fortune_archive/1999/11/22/269071/.

[71] Shaun Tully, *Corporate Profits Are Soaring. Here's Why It Can't Last*, FORTUNE, Dec. 7, 2017,

### C. Bond Yield Risk Premium Approach (BYRP)

**Q. Please review Ms. Bulkley's BYRP approach.**

A. On pages 52-6 of her testimony and in Schedule 5,[72] Ms. Bulkley estimates an equity cost rate using a risk premium (RP) model. She uses the quarterly authorized ROEs for gas distribution companies from Q1 1992 until 2020. Ms. Bulkley develops an equity cost rate by: (1) regressing the authorized returns on equity for gas utility companies on the 30-year Treasury yield; and then (2) adding the risk premium established in (1) to each of her three different 30-year Treasury yields: (a) a current yield of 1.31 percent, (b) a near-term projected yield of 1.60 percent, and (c) a long-term projected yield of 3.20 percent. Ms. Bulkley's RP results are provided in page 2 of Exhibit JRW-10. She reports BYRP equity cost rates ranging from 9.06 percent to 9.86 percent.

**Q. What are the errors in Ms. Bulkley's BYRP analysis?**

A. The two issues are: (1) the long-term projected (3.20 percent) 30-year Treasury yield; (2) the risk premium.

#### 1. Long-Term Projected Risk-Free Interest Rate

**Q. What is the issue with Ms. Bulkley's risk free interest rates?**

A. Ms. Bulkley's long-term projected (3.20 percent) 30-year Treasury yield is well above the current 30-year Treasury yield of 1.50 percent. As previously discussed, investors would not be buying 30-year Treasury bonds at current rates if they expected these rate to increase by 200 basis points in the next couple years because they would incur significant capital losses.

http://fortune.com/2017/12/07/corporate-earnings-profit-boom-end/.

[72] Direct Testimony of Anne E. Bulkley, Exh. AEB-1T at 52-56; Exh. AEB-2 (Schedule 5).

In addition, as discussed above, economists have been forecasting high interest rates for a decade, and they have been consistently wrong as interest rates have declined and not increased.

### 2. Risk Premium

**Q. What are the issues with Ms. Bulkley's risk premium in the BYRP analysis?**

A. There are several problems with this approach for calculating risk premium.

First, the methodology produces an inflated measure of the risk premium because it uses historic authorized ROEs and Treasury yields, and the resulting risk premium is applied to projected Treasury yields. Since Treasury yields are always forecasted to increase, the resulting risk premium would be smaller if done correctly, which would be to use projected Treasury yields in the analysis rather than historic Treasury yields.

Second, Ms. Bulkley's RP approach is a gauge of *commission* behavior and not *investor* behavior. Capital costs are determined in the marketplace through the financial decisions of investors, and they are reflected in such fundamental factors as dividend yields, expected growth rates, interest rates, and investors' assessment of the risk and expected return of different investments. Regulatory commissions should set ROEs based on capital market data as well as utility- and rate case-specific information, in setting ROEs.

Third, since the stocks of gas distribution have been selling above book value for the last decade, it is obvious that the authorized ROEs of state utility commissions are above the returns that investors require, and have been for quite some time.

### D. Expected Earnings Approach

**Q. Please discuss Ms. Bulkley's expected earnings analysis.**

A. On pages 60-2 of her testimony and in Schedule 6,[73] Ms. Bulkley estimates equity cost rates of 9.94 percent and 9.74 percent using an approach she calls the Expected Earnings (EE) approach. Her methodology in this approach simply involves using the expected ROE for the companies in the proxy group as estimated by *Value Line*.

**Q. Please address the issues with Ms. Bulkley's expected earnings approach.**

A. There are a number of significant issues with this so-called Expected Earnings approach. As such, I strongly suggest that the Commission ignore this approach in setting an ROE for Cascade. These issues include:

The Expected Earnings Approach Does Not Measure the Market Cost of Equity Capital – First, this is an accounting-based methodology that does not measure investor return requirements. As indicated by Professor Roger Morin, a long-time rate of return witness for utility companies, "More simply, the Comparable (Expected) Earnings standard ignores capital markets. If interest rates go up 2% for example, investor requirements and the cost of equity should increase commensurably, but if regulation is based on accounting returns, no immediate change in equity cost results."[74] As such, this method does not measure the market cost of equity capital.

Changes in ROE Ratios do not Track Capital Market Conditions - As also noted by Morin:

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[73] Bulkley, Exh. AEB-1T at 60-62; Exh. AEB-2 (Schedule 6).

[74] Roger Morin, NEW REGULATORY FINANCE 293 (Pub. Util. Rep. 2006).

> The denominator of accounting return, book equity, is a historical cost-based concept, which is insensitive to changes in investor return requirements. Only stock market price is sensitive to a change in investor requirements. Investors can only purchase new shares of common stock at current market prices and not at book value.[75]

The Expected Earnings Approach is Circular - The ROE ratios for the proxy companies are not determined by competitive market forces, but instead are largely the result of federal and state rate regulation, including the present proceedings.

The Proxies' ROEs Reflect Earnings on Business Activities that are not Representative of Cascade's Rate-Regulated Utility Activities - The numerators of the proxy companies' ROEs include earnings from business activities that are riskier and produce more projected earnings per dollar of book investment than does the regulated gas business. These include earnings from unregulated businesses such as merchant generation, construction services, and other energy services.

**Q. Finally please discuss the expected earnings approach in light of a study of *Value Line* projected earnings.**

A. Ms. Bulkley's EE approach uses *Value Line*'s adjusted forecast for proxy utility ROEs. Hence, the ROE specified by the EE approach is totally dependent on the forecast of one variable (net income/shareholder's equity) by one analyst firm (*Value Line*), with the same single individual authoring most of the *Value Line* reports for the various proxy companies. Neither the Commission nor other parties have assessed the accuracy of these forecasts. However, one study evaluated the *Value Line* forecasts. A study by Szakmary, Conover, and Lancaster evaluated the accuracy of *Value Line*'s three-to-five-year EPS

[75] *Id.*

growth rate forecasts using companies in the Dow Jones Industrial Average over a 30-year time period and found these forecasted EPS growth rates to be significantly higher than the EPS growth rates that these companies subsequently achieved.[76]

Szakmary, Conover, and Lancaster (SCL) studied the predicted versus the projected stock returns, sales, profit margins, and earnings per share made by *Value Line* over the 1969 to 2001 time period. *Value Line* projects variables from a three-year base period (e.g., 2012–2014) to a future three-year projected period (e.g., 2016–18). SCL used the 65 stocks included in the Dow Jones Indexes (30 Industrials, 20 Transports and 15 Utilities). SCL found that the projected annual stock returns for the Dow Jones stocks were "incredibly overoptimistic" and of no predictive value. The mean annual stock return of 20 percent for the Dow Jones' stocks *Value Line*'s forecasts was nearly double the realized annual stock return. The authors also found that *Value Line*'s forecasts of earnings per share and profit margins were termed "strikingly overoptimistic." *Value Line*'s forecasts of annual sales were higher than achieved levels, but not statistically significant. SCL concluded that the overly optimistic projected annual stock returns were attributable to *Value Line*'s upwardly biased forecasts of earnings per share and profit margins

The SCL results suggest that *Value Line*'s projection of return on equity is upwardly biased. As noted above, the EPS and profit margins as projected by *Value Line* over this 30-year period were termed "strikingly overoptimistic." This is because *Value Line*'s projected earnings is the numerator for their calculation of return on equity (net

[76] A. Szakmary, C. Conover, & C. Lancaster, *An Examination of Value Line's Long-Term Projections*, J. OF BANKING & FIN. 820-833 (May 2008)..

income/book value). Therefore, the EE approach proposed by Ms. Bulkley is based on an upwardly biased measure forecasted by one analyst.

**E. Other Factors**

**Q. What other factors did Ms. Bulkley consider in arriving at her 10.30 percent ROE recommendation for the Company?**

A. Ms. Bulkley also considers two other factors in arriving at her 10.30 percent ROE recommendation. She claims that Cascade's deserves an increment to its authorized ROE for various risk factors, including its small size, customer concentration, capital expenditures, and regulatory risk. She also contends that Cascade deserves a higher ROE due to flotation costs.

**Q. Is Ms. Bulkley correct that the Company deserves a higher ROE due to these factors?**

A. No. Ms. Bulkley has incorrectly claimed that that these factors are a justification for a higher ROE for Cascade. First, with respect to the risk factors, the Company's small size, customer concentration, capital expenditures, and regulatory risk are all factors considered in the credit-rating process used by major rating agencies. The S&P issuer credit rating for Cascade of BBB+, which is at the low end of range of the Gas Proxy Group.

**Q. Please provide additional insights into the so-called small size effect.**

A. Ms. Bulkley claims that the Company deserves additional return due to its small size. She justifies the magnitude of the adjustment by referring to Duff & Phelps who computes a so-called size adjustment based on the historical stock market returns for companies based on their size. There are numerous errors in using historical market

returns to compute risk premiums. These errors provide inflated estimates of expected risk premiums. Among the errors are survivorship bias (only successful companies survive – poor companies do not) and unattainable return bias (the Ibbotson procedure presumes monthly portfolio rebalancing). The net result is that Ibbotson's size premiums are poor measures for risk adjustment to account for the size of a utility.

Professor Annie Wong has also tested for a company size premium in utilities and concluded that, unlike industrial stocks, utility stocks do not exhibit a significant company size premium.[77] As explained by Professor Wong, there are several reasons why such a size premium would not be attributable to utilities. Utilities are regulated closely by state and federal agencies and commissions, and hence, their financial performance is monitored on an ongoing basis by both the state and federal governments. In addition, public utilities must gain approval from government entities for common financial transactions such as the sale of securities (or the issuance of debt). Furthermore, unlike for their industrial counterparts, accounting standards and reporting are fairly standardized for public utilities. Finally, a utility's earnings are predetermined to a certain degree through the ratemaking process in which performance is reviewed by state commissions and other stakeholders. Overall, in terms of regulation, government oversight, performance review, accounting standards, and information disclosure, utilities are much different than industrials, which could account for the lack of a company size premium.

[77] Annie Wong, *Utility Stocks and the Size Effect: An Empirical Analysis*, J. OF THE MIDWEST FIN. ASS'N, 95-101 (1993).

**Q. Please discuss the research on the Company size premium in estimating the equity cost rate.**

A. As noted, there are errors in using historical market returns to compute risk premiums. With respect to the small firm premium, Richard Roll (1983) found that one-half of the historic return premium for small companies disappears once biases are eliminated and historic returns are properly computed. The error arises from the assumption of monthly portfolio rebalancing and the serial correlation in historic small firm returns.[78]

**Q. What other evidence can you provide regarding issues related to the size premium?**

A. Professor Damodaran, the New York University valuation guru, provides a thorough analysis of the company size effect, which he terms the small firm or cap premium. Figure 8 traces the small firm premium over the 1927–2014 time period.[79] Damodaran has studied the issue for years and makes a number of observations on the size premium or effect:

(1) the effect has largely disappeared since 1980, which is the year the Banz article was published;

(2) the small firm premium tends to come and go over time;

(3) the small firm premium tends to be associated with the January effect (small companies only earn abnormal returns in the first two weeks of January);

(4) the small cap premium seems to actually be a microcap premium, as it disappears when companies with market capitalizations below $5 million are removed;

[78] *See* Richard Roll, *On Computing Mean Returns and the Small Firm Premium*, J. OF FIN. ECON. 371-86, (1983).

[79] Aswath Damodaran, *The Small Cap Premium: Where is the Beef*, 34 No. 4 Business Valuation Review 152-157 (2015).

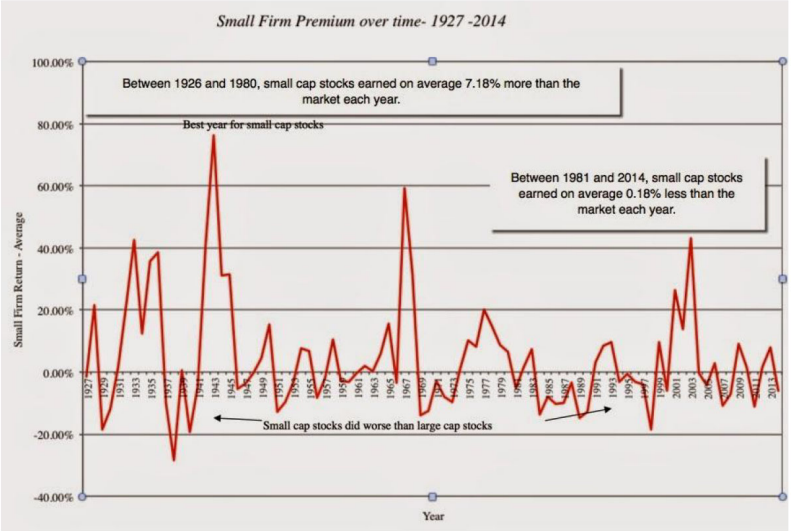
(5) Damodaran does not find a small cap premium when he estimates a small firm required return;

(6) he has never used a small cap premium when valuing small companies; and

(7) he blames three factors for some analysts' continued use of a small cap premium: (i) intuition (it seems smaller companies should be riskier), (ii) inertia (individuals and institutions are slow to change and to adopt new ideas); and (iii) bias (analysts prefer higher discount rates and lower valuations).

**Figure 8**
**The Small Firm Premium**
**1927-2014**

Source: Aswath Damodaran, *The Small Cap Premium - Where is the Beef*, 34 No. 4 Business Valuation Review 152-157 (2015).




**Q. Please summarize your evidence on the small size premium.**

A. Ms. Bulkley has claimed that the Company deserves an incremental return due to its small size. Ms. Bulkley has not performed any empirical studies to support her contention that the Company is riskier due to its small size, and she does not point to any independent reports to support her claim. The size effect is usually associated with Duff

& Phelps annual stock return study where they compute so-called size premiums based on the historical stock market returns for companies where size is measured by market capitalizations. As discussed above, the existence of a size premium in the stock market in an ongoing debate in investment circles, and many believe that it has disappeared over time. In addition, there is evidence that no such size premium exists for regulated public utilities. As such, the Commission should reject the Company's request to have a ROE adder for its small size in the absence of any study that supports this claim.

**Q. Is Ms. Bulkley's consideration of flotation costs appropriate in this case?**

A. No. Ms. Bulkley argues that a flotation cost adjustment is appropriate for Cascade. This is erroneous for several reasons:

First, she has not identified any flotation costs for Cascade, and therefore, she is arguing for the Company to receive additional revenues in the form of a higher ROE for expenses the Company does not incur.

Second, it is commonly argued that a flotation cost adjustment (such as that used by the Company) is necessary to prevent the dilution of the existing shareholders. This is incorrect for several reasons:

(1) If an equity flotation cost adjustment is similar to a debt flotation cost adjustment, the fact that the market-to-book ratios for gas distribution companies are over 2.00X actually suggests that there should be a flotation cost reduction (and not an increase) to the equity cost rate. This is because when (a) a bond is issued at a price in excess of face or book value, and (b) the difference between market price and the book value is greater than the flotation or issuance costs, the cost of that debt is lower than the coupon rate of the debt. The amount by which market

values of gas distribution companies are in excess of book values is much greater than flotation costs. Hence, if common stock flotation costs were exactly like bond flotation costs, and one was making an explicit flotation cost adjustment to the cost of common equity, the adjustment would be downward;

(2) If a flotation cost adjustment is needed to prevent dilution of existing stockholders' investment, then the reduction of the book value of stockholder investment associated with flotation costs can occur only when a company's stock is selling at a market price at/or below its book value. As noted above, as shown on page 3 of Exhibit JRW-8, gas distribution companies are selling at market prices well in excess of book value, and have been for the last decade. Hence, when new shares are sold, existing shareholders realize an increase in the book value per share of their investment, not a decrease;

(3) Flotation costs consist primarily of the underwriting spread or fee and not out-of-pocket expenses. On a per-share basis, the underwriting spread is the difference between the price the investment banker receives from investors and the price the investment banker pays to the company. Therefore, these are not expenses that must be recovered through the regulatory process. Furthermore, the underwriting spread is known to the investors who are buying the new issue of stock, and who are well aware of the difference between the price they are paying to buy the stock and the price that the Company is receiving. The offering price they pay is what matters when investors decide to buy a stock based on its expected return and risk prospects. Therefore, the company is not entitled to an adjustment to the allowed return to account for those costs; and

(4) Flotation costs, in the form of the underwriting spread, are a form of a transaction cost in the market. They represent the difference between the price paid by investors and the amount received by the issuing company. Whereas the Company believes that it should be compensated for these transaction costs, it has not accounted for other market transaction costs in determining its cost of equity. Most notably, brokerage fees that investors pay when they buy shares in the open market are another market transaction cost. Brokerage fees increase the effective stock price paid by investors to buy shares. If the Company had included these brokerage fees or transaction costs in its DCF analysis, the higher effective stock prices paid for stocks would lead to lower dividend yields and equity cost rates. This would result in a downward adjustment to their DCF equity cost rate.

**Q. Does this conclude your testimony?**

A. Yes.