Exh. DCP-1T
Docket UG-200568
Witness: David C. Parcell

BEFORE THE WASHINGTON
UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **CASCADE NATURAL GAS CORPORATION,** **Respondent.**	**DOCKET UG-200568**

TESTIMONY OF

DAVID C. PARCELL

ON BEHALF OF THE STAFF OF WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Cost of Capital

November 19, 2020

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LIST OF EXHIBITS

I. INTRODUCTION

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

A. My name is David C. Parcell. I am a Principal and Senior Economist of Technical Associates, Inc. My address is 2218 Worchester Rd., Midlothian, Virginia 23113.

Q. Please summarize your educational background and professional experience.

A. I hold B.A. (1969) and M.A. (1970) degrees in economics from Virginia Polytechnic Institute and State University (Virginia Tech) and a M.B.A. (1985) from Virginia Commonwealth University. I have been a consulting economist with Technical Associates since 1970. I have provided cost of capital testimony in public utility ratemaking proceedings dating back to 1972 and I have previously filed testimony and/or testified in over 580 utility proceedings before about 50 regulatory agencies in the United States and Canada. I have previously filed testimony on behalf of the Staff of the Washington Utilities and Transportation Commission (Commission) in proceedings involving Avista, Puget Sound Energy and Pacific Power & Light Company, as well as Cascade Natural Gas. Exh. DCP-2 provides a more complete description of my education and relevant work experience.

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

A. I have been retained by the Commission Staff to evaluate the cost of capital ("COC") aspects of the current natural gas rate case of Cascade Natural Gas Corporation

("Cascade" or "Company"). I have performed independent studies and I am making recommendations of the current COC for Cascade.

Q. Have you prepared an exhibit in support of your testimony?

A. Yes. In addition to Exh. DCP-2, identified above, I have prepared Exh. DCP-3 through Exh. DCP-15. These exhibits were prepared either by me or under my direction. The information contained in these exhibits is correct to the best of my knowledge and belief.

II. RECOMMENDATIONS AND SUMMARY

Q. What are your COC recommendations in this proceeding?

A. My overall COC recommendations for Cascade are shown on Exh. DCP-3 and can be summarized as follows:

Item	Percent	Cost			Weighted Cost	
Long-Term Debt	51.50%	4.745%			2.44%	
Common Equity	48.50%	9.00%	9.25%	9.50%	4.37%	4.49%	4.61%
Total	100.00%				6.81%		7.05%
						6.93%	

Cascade's application requests a COC of 7.544 percent and a cost of equity/return on equity ("ROE") of 10.30 percent.

Q. Please summarize your analyses and conclusions.

A. This proceeding is concerned with Cascade's regulated natural gas distribution operations in Washington. My analyses concern the Company's COC.

The first step in performing my COC analyses is to develop the appropriate capital structure. Cascade proposes use of a capital structure comprised of 50.4 percent common equity and 49.6 percent debt.[1] This is described by Cascade witness Tammy J. Nygard as being "based upon Cascade's actual (and targeted) average capital structure for the last two years."[2] The Commission has not adopted a capital structure approach for this Company in its previous four general rate cases, dating back to 2006, and has instead accepted settlements that did not address the capital structure approach.[3] I do not accept Cascade's proposed capital structure, which is a significant departure from the Company's 2019 actual capital structure. Instead, I employ a hypothetical capital structure with a common equity ratio of 48.5 percent and debt of 51.5 percent, which I believe is the proper capital structure for the Company and is consistent with the Commission's criteria for the capital structure selection.[4]

The second step in a COC calculation is to determine the embedded cost rate of debt. Cascade proposes use of a 4.745 percent cost of debt, which is the Company's pro-forma cost rate as of December 31, 2019.[5] I have accepted the Company's cost of debt.

[1] Nygard, Exh. TJN-1T at 3:10-11.
[2] *Id*. at 4:4-5.
[3] *See Wash. Utils. & Transp. Comm'n v. Cascade Nat'l Gas Corp.*, Docket UG-060256, Order 05 (Jan. 12, 2007); *Wash. Utils. & Transp. Comm'n v. Cascade Nat'l Gas Corp.*, Docket UG-152286, Order 04 (Jul. 7, 2016); *Wash. Utils. & Transp. Comm'n v. Cascade Nat'l Gas Corp.*, Docket UG-170929, Order 06 (July 20, 2018); *Wash. Utils. & Transp. Comm'n v. Cascade Nat'l Gas Corp.*, Docket UG-190210, Order 05 (Feb. 3, 2020).
[4] *See Wash. Utils. & Transp. Comm'n v. Avista Corp.*, Dockets UE-170485 and UG-170486, Order 07, 39, ¶ 109 (April 26, 2018); *see also Wash. Utils. & Transp. Comm'n v. Puget Sound Energy, Inc.*, Dockets UE-040640 and UG-040641, Order 06, 13, ¶ 27 (Feb. 18, 2005) (2004 PSE GRC Order).
[5] Nygard, Exh. TNJ-IT at 2: 15-23.

The third step in the COC calculation is to estimate the ROE. I employ four recognized methodologies to estimate Cascade's ROE, each of which I apply a group of publicly-traded proxy natural gas utility holding companies. These four methodologies and my findings are:

Methodology	Range
Discounted Cash Flow ("DCF")	9.0%-10.0% (9.5% mid-point)
Capital Asset Pricing Model ("CAPM")	6.0%-6.4% (6.2% mid-point)
Comparable Earnings ("CE")	8.5%-9.5% (9.0% mid-point)
Risk Premium ("RP")	8.3%-9.6% (9.0% mid-point)

Based upon these findings, I conclude that Cascade's ROE is within a range of 9.00 percent to 9.50 percent, which is based upon the mid-point of the range of the results for the DCF, CE and RP models. I specifically recommend a 9.25 percent ROE for Cascade. As I indicate in a later section, my ROE recommendation does not directly incorporate the CAPM results, which I believe to be somewhat low at this time, relative to the DCF, CE and RP results.

III. ECONOMIC/LEGAL PRINCIPLES AND METHODOLOGIES

Q. What are the primary economic and legal principles that establish the standards for determining a fair rate of return for a regulated utility?

A. Public utility rates are normally established in a manner designed to allow the recovery of their costs, including capital costs. This is frequently referred to as "cost of service" ratemaking. Rates for regulated public utilities traditionally have been primarily established using the "rate base – rate of return" concept. Under this method, utilities are allowed to recover a level of operating expenses, taxes, and depreciation deemed

reasonable for rate-setting purposes, and are granted an opportunity to earn a fair rate of return on the assets utilized (i.e., rate base) in providing service to their customers.

The rate base is derived from the asset side of the utility's balance sheet as a dollar amount and the rate of return is developed from the liabilities/owners' equity side of the balance sheet as a percentage. Thus, the revenue impact of the cost of capital is derived by multiplying the rate base by the rate of return, including income taxes.

The rate of return is developed from the cost of capital, which is estimated by weighting the capital structure components (i.e., debt, preferred stock, and common equity) by their percentages in the capital structure and multiplying these values by their cost rates. This is also known as the weighted cost of capital.

Technically, "fair rate of return" is a legal and accounting concept that refers to an *ex post* (after the fact) earned return on an asset base, while the cost of capital is an economic and financial concept which refers to an *ex ante* (before the fact) expected, or required, return on a capital base. In regulatory proceedings, however, the two terms are often used interchangeably, and I have equated the two concepts in my testimony.

From an economic standpoint, a fair rate of return is normally interpreted to mean that an efficient and economically managed utility will be able to maintain its financial integrity, attract capital, and establish comparable returns for similar risk investments. These concepts are derived from economic and financial theory and are generally implemented using financial models and economic concepts.

Although I am not a lawyer and I do not offer a legal opinion, my testimony is based on my understanding that two United States Supreme Court decisions provide the controlling standards for a fair rate of return. The first decision is *Bluefield Water Works*

and Improvement Co. v. Public Serv. Comm'n of West Virginia, 262 U.S. 679 (1923). In this decision, the Court stated:

> The annual rate that will constitute just compensation depends upon many circumstances and must be determined by the exercise of fair and enlightened judgment, having regard to all relevant facts. A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility, and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time, and become too high or too low by changes affecting opportunities for investment, the money market, and business conditions generally.[6]

It is generally understood that the *Bluefield* decision established the following standards for a fair rate of return: comparable earnings, financial integrity, and capital attraction. It also noted that required returns change over time, and there is an underlying assumption that the utility be operated efficiently.

The second decision is *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591 (1942). In that decision, the Court stated:

> The rate-making process under the [Natural Gas] Act, i.e., the fixing of 'just and reasonable' rates, involves a balancing of the investor and consumer interests . . . From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. By this standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.[7]

[6] *Bluefield*, 262 U.S. at 693.
[7] *Hope*, 320 U.S. at 603.

The three economic and financial parameters in the *Bluefield* and *Hope* decisions – comparable earnings, financial integrity, and capital attraction – reflect the economic criteria encompassed in the "opportunity cost" principle of economics. The opportunity cost principle provides that a utility and its investors should be afforded an opportunity (not a guarantee) to earn a return commensurate with returns they could expect to achieve on investments of similar risk. The opportunity cost principle is consistent with the fundamental premise on which regulation rests, namely, that it is intended to act as a surrogate for competition.

Q. How can the *Bluefield* and *Hope* parameters be employed to estimate the cost of capital for a utility?

A. Neither the courts nor economic/financial theory has developed exact and mechanical procedures for precisely determining the cost of capital. This is the case because the cost of capital is an opportunity cost and is prospective-looking, which dictates that it must be estimated. However, there are several useful models that can be employed to assist in estimating the ROE, which is the capital structure item that is the most difficult to determine. These include the DCF, CAPM, CE and RP methods. Each of these methodologies will be described in more detail later in my testimony.

IV. GENERAL ECONOMIC CONDITIONS

Q. Are economic and financial conditions important in determining the COC for a public utility?

A. Yes. The costs of capital for both fixed-cost (i.e., debt) components and common equity are determined in part by current and prospective economic and financial conditions. At any given time, each of the following factors has an influence on the COC:

- The level of economic activity (i.e., growth rate of the economy);
- The stage of the business cycle (i.e., recession, expansion, or transition);
- The level of inflation;
- The level and trend of interest rates; and,
- Current and expected economic conditions.

My understanding is that this position is consistent with the *Bluefield* decision, which noted "[a] rate of return may be reasonable at one time and become too high or too low by changes affecting opportunities for investment, the money market, and business conditions generally."[8]

Q. What indicators of economic and financial activity did you evaluate in your analyses?

A. I examined several sets of economic statistics from 1975 to the present. I chose this time period because it permits the evaluation of economic conditions over four full business cycles, plus the current cycle, allowing for an assessment of changes in long-term trends. Consideration of economic/financial conditions over a relatively long period of time

[8] *Bluefield*, 262 U.S. at 693.

allows me to assess how such conditions have impacted the level and trends of the costs of capital This period also approximates the beginning and continuation of active rate case activities by public utilities that generally began in the mid-1970s.

A business cycle is commonly defined as a complete period of expansion (recovery and growth) and contraction (recession). A full business cycle is a useful and convenient period over which to measure levels and trends in long-term capital costs because it incorporates the cyclical (i.e., stage of business cycle) influences and, thus, permits a comparison of structural (or long-term) trends.

Q. Please describe the time frames of the four prior business cycles and the current cycle.

A. The four prior complete cycles and current cycle cover the following periods:

Business Cycle	Expansion Cycle	Contraction Period
1975-1982	Mar. 1975-July 1981	Aug. 1981-Oct. 1982
1982-1991	Nov. 1982-July 1990	Aug. 1990-Mar. 1991
1991-2001	Mar. 1991-Mar. 2001	Apr. 2001-Nov. 2001
2001-2009	Nov. 2001-Nov. 2007	Dec. 2007-June 2009
Current	July 2000-Feb. 2020	Mar. 2020-

Source: The National Bureau of Economic Research, "U.S. Business Cycle Expansions and Contractions."[9]

Q. Do you have any general observations concerning the recent trends in economic conditions and their impact on capital costs over this broad period?

A. Yes, I do. From the early 1980s until the end of 2007, the U.S. economy enjoyed general prosperity and stability. This period was characterized by longer economic expansions, relatively tame contractions, low and declining inflation, and declining interest rates and other capital costs.

[9] *Available at*: http://www.nber.org/cycles/cyclesmain.html.

However, in 2008 and 2009, the economy declined significantly, initially as a result of the 2007 collapse of the "sub-prime" mortgage market and the related liquidity crisis in the financial sector of the economy. Subsequently, this financial crisis intensified with a more broad-based decline, initially based on a substantial increase in petroleum prices and a dramatic decline in the U.S. financial sector of the economy.

This decline has been described as the worst financial crisis since the Great Depression of the 1930s and has been referred to as the "Great Recession." Beginning in 2008, the U.S. and other governments implemented unprecedented policies to attempt to correct or minimize the scope and effects of this recession. Some of these policies are still in effect.

At the current time, the U.S. economy has entered a new and significant recession.[10] This is largely the result of the Coronavirus Disease 2019 ("COVID-19" or "Novel Coronavirus") pandemic. The economic and financial consequences of this serious health crisis have created a recession as nations, including the U.S., have instituted significant travel, social, and commercial restrictions designed to slow the spread of COVID-19. Beginning in March and lasting into June of 2020, much of the world and U.S. were in "lock down" as a significant portion of both businesses and governments operated under restrictive conditions in some instances, and remained closed in other instances. In addition, the U.S. federal government has instituted a multi-trillion-dollar stimulus program (i.e., CARES Act) to aid businesses and individuals during this crisis and the Federal Reserve System ("Federal Reserve") has implemented several financial measures to help maintain the country's financial system.

[10] The National Bureau of Economic Research has recently officially declared that the U.S. economy is in a recession. *Available at*: https://finance.yahoo.com/news/US-economy-officially-in-recession-nber-16522613.html.

Q. Please describe recent and current economic and financial conditions and their impact on the costs of capital.

A. One impact of the Great Recession, as well as the COVID-19 pandemic and its related economic/financial consequences, has been a reduction in actual and expected investment returns and a corresponding reduction in capital costs. This decline is evidenced by a decline in both short-term and long-term interest rates and the expectations of investors and is reflected in COC model results (such as DCF, CAPM, CE and RP). Regulatory agencies throughout the U.S. have recognized the decline in capital costs by authorizing lower ROEs for regulated utilities in each of the last several years.[11]

Exh. DCP-4 shows several sets of relevant economic and financial statistics for the cited time periods. Page 1 contains general macroeconomic statistics, page 2 shows interest rates, and page 3 contains equity market statistics.

Page 1 of Exh. DCP-4 shows that in 2007, the economy stalled and subsequently entered a significant decline, as indicated by the lower growth rate in real (i.e., adjusted for inflation) Gross Domestic Product ("GDP"), lower levels of industrial production, and an increase in the unemployment rate. This recession lasted until mid-2009, making it a longer-than-normal, as well as a much deeper, recession. Since then, economic growth has been somewhat erratic, and the economy has grown more slowly than in prior expansions. On the other hand, the recent business cycle achieved the longest period of any expansion in recent financial history. As stated above, due to the COVID-19 pandemic, the recent expansion has ended, and a recession has resulted. It is apparent that GDP declined by five percent in the first quarter of 2020 and over 30 percent in the

[11] Regulatory Research Associates, "Regulatory Focus." April 11, 2019.

second quarter, and the unemployment rate has significantly increased due to the COVID-19 pandemic and state/federal actions to prevent the spread of this disease.

Page 1 also shows the rate of inflation. As reflected in the Consumer Price Index ("CPI"), inflation rose significantly during the 1975 through 1982 business cycle and reached double-digit levels in 1979 through 1980. The rate of inflation has declined substantially since 1981. Since 2008, the CPI has been three percent or lower on an annual basis, with 2014 and 2015 growth below one percent, 2016 and 2017 growth at 2.1 percent, 2018 growth at 1.9 percent, and 2019 growth at 2.3 percent. It is thus apparent that the rate of inflation has generally been declining over the past several business cycles. Recent and current levels of inflation are at the lowest levels of the past 35 years, which is reflective of lower capital costs.[12]

Q. What have been the trends in interest rates over the four prior business cycles and at the current time?

A. Page 2 of Exh. DCP-4 shows several series of interest rates. Both short-term and long-term rates rose sharply to record levels in 1975 through 1982, when the inflation rate was high. Interest rates have declined substantially in conjunction with the corresponding declines in inflation since the early 1980s.

From 2008 to late 2015, the Federal Reserve maintained the Federal Funds rate (i.e., short-term interest rate) at 0.25 percent, a then all-time low. Following much anticipation, the Federal Reserve subsequently raised the Federal Funds rate on nine

[12] The rate of inflation is one component of interest rate expectations of investors, who generally expect to receive a return in excess of the rate of inflation. Thus, a lower rate of inflation has a downward impact on interest rates and other capital costs.

occasions between December 2015 and December 2018.[13] In July, September, and October 2019, on the other hand, the Federal Reserve began reducing the Federal Funds rate by 0.25 percent on three separate occasions. An emergency rate cut of 0.50 percent occurred in early March 2020, followed by further reductions in mid-March to a range of zero percent to 0.25 percent as an economic stimulus in response to the COVID-19 pandemic. The Federal Reserve also purchased U.S. Treasury securities to stimulate the economy following the Great Recession[14] and has recently begun doing so again as part of the COVID-19 financial situation.

As seen on page 2 of Exh. DCP-4, since 2011, both U.S. and public utility bond yields have declined to their lowest levels in the past four business cycles and in more than 45 years. Even with the 2016 through 2019 "tapering" and eventual ending of the Federal Reserve's Quantitative Easing ("QE") program, as well as the Federal Reserve's raising of the Federal Funds rate (prior to again lowering this rate several times), interest rates have remained relatively low. Both government and utility long-term lending rates remain near historically low levels, again reflective of lower capital costs. In addition, current interest rates for many utilities are lower than historic (embedded) cost rates. This is also true for Cascade as its cost of debt was 5.16 percent at the time of its last rate case and is 4.75 percent currently.[15]

[13] The Federal Funds increases took place in December 2015, December 2016, March 2017, June 2017, December 2017, March 2018, June 2018, September 2018, and December 2018. Subsequent reduction took place in July 2019, September 2019, October 2019, and March 2020 (twice).

[14] This is referred to as Quantitative Easing ("QE"), which was comprised of three "rounds" during the Great Recession. In "round" 3, known as QE3, the Federal Reserve initially purchased some $85 billion of U.S. Treasury Securities per month in order to stimulate the economy. The Federal Reserve eventually "tapered" its purchase of U.S. Treasury securities through October 2014, at which time QE ended. The Federal Reserve restarted this program in mid-March 2020 in response to economic conditions resulting from the COVID-19 outbreak.

[15] In the previous GRC, the end date of the test year was December 31, 2018.

Since the COVID-19 pandemic began in February of 2020, both long-term and short-term interest rates have declined and remained at historic lows. The Federal Reserve has established a "near zero" level of short-term interest rates and there is no expectation that this will end in the near-term.[16] The Federal Reserve has also re-implemented its Great Recession policy of simulative easing as it has purchased U.S. Treasury securities and has also injected substantial liquidity into the economy. As shown on Exh. DCP-4, page 2, the yields on 10-year U.S. Treasury bonds is currently less than one percent, the lowest level by far since at least the mid-1970s.

Q. What does Exh. DCP-4 show for trends of common share prices?

A. Page 3 shows several series of common stock prices and ratios. These indicate that stock prices were essentially stagnant during the high inflation/high interest rate environment of the late 1970s and early 1980s. The 1983 to 1991 business cycle and the more recent cycles witnessed a significant upward trend in stock prices. The beginning of the Great Recession saw stock prices decline precipitously as stock prices in 2008 and early 2009 were down significantly from peak 2007 levels, reflecting the financial/economic crisis. Beginning in the second quarter of 2009, prices recovered substantially and ultimately reached and exceeded the levels achieved prior to the "crash."

On the other hand, recent equity markets have been somewhat volatile. As an example of this, the end of 2018 witnessed significant declines in stock prices, with many indexes declining more than 20 percent (i.e., a "bear" market). Following this, stock

[16] On June 10, 2020, the Federal Reserve announced its intention to maintain "zero" short-term rates until at least 2022 and also to maintain its purchases of long-term Treasury securities (QE). On September 16, 2020, the Federal Reserve further announced its intention to maintain short-term interest rates at "near zero" percent until the economy has recovered to a "full recovery" level, which could be at least until 2023.

indices recovered with many indices reaching record high levels in 2019 and early 2020. Since the latter days of February 2020, on the other hand, stock prices have been extremely volatile and dramatically declined in March in response to the COVID-19 pandemic and corresponding uncertainty in the financial markets regarding the economic consequences of governmental, commercial, and social measures designed to limit the spread of the virus. Since April, stock prices have recovered somewhat from the dramatic declines that took place.

Q. What conclusions do you draw from your discussion of economic and financial conditions?

A. Recent economic and financial circumstances have differed from any that have prevailed since at least the 1930s. Concurrent with the Great Recession, there was a decline in capital costs and returns which significantly reduced the values of most retirement accounts, investment portfolios, and other assets. One significant aspect of this has been a decline in investor expectations of returns even with the return of stock prices to levels achieved prior to the "crash."[17] This is evidenced by: (1) lower interest rates on bank deposits; (2) lower interest rates on U.S. Treasury and utility bonds; and (3) lower authorized returns on equity by regulatory commissions. As noted above, utility bond interest rates are currently at levels well below those prevailing prior to the financial crisis of late 2008 to early 2009 and remain near the lowest levels in the past 45 years and are also generally lower than the embedded cost rates for most utilities, including Cascade. Finally, current economic conditions, resulting from "shut-downs" of many

[17] *See e.g.*, Vanguard News & Perspectives. "Stabilization, Not Stagnation: Expect Modest Returns," (March 30, 2017), *available at* www.personal.vanguard.com/us/insights/artical/infographic-stabilization-032017.

large and small businesses in response to the COVID-19 pandemic, are resulting in lower profit levels, equity returns and interest rates.

Q. How do these economic/financial conditions impact the determination of a return on equity for regulated utilities?

A. The COCs for regulated utilities have declined in recent years. In addition, the results of the traditional ROE models (i.e., DCF, CAPM, CE and RP) are lower than was the case prior to the Great Recession. As a result, it is not surprising that the average ROEs authorized by state regulatory agencies have declined and continued to remain relatively low, as follows:[18]

	Electric		Natural Gas	
Year	Average	Median	Average	Median
2007	10.32%	10.23%	10.22%	10.20%
2008	10.37%	10.30%	10.39%	10.45%
2009	10.52%	10.50%	10.22%	10.26%
2010	10.29%	10.26%	10.15%	10.10%
2011	10.19%	10.14%	9.91%	10.05%
2012	10.02%	10.00%	9.93%	10.00%
2013	9.82%	9.82%	9.68%	9.72%
2014	9.76%	9.75%	9.78%	9.78%
2015	9.60%	9.53%	9.60%	9.68%
2016	9.60%	9.60%	9.53%	9.50%
2017	9.68%	9.60%	9.73%	9.60%
2018	9.55%	9.57%	9.60%	9.60%
2019	9.78%	9.70%	9.72%	9.72%
2020	9.53%	9.54%	9.44%	9.42%

[18] Regulatory Research Associates, "Regulatory Focus," January 31, 2019, General Rate Cases. 2019 and 2020 figures calculated by Mr. Parcell using data provided in Company testimonies. 2020 figures reflect eight months of data.

V. CASCADE'S OPERATIONS AND RISKS

Q. Please summarize Cascade and its operations.

A. Cascade is a natural gas distribution utility that provides natural gas to more than 294,000 customers in 96 communities in western and central Washington and central and eastern Oregon. The Company dates back to 1953.[19] In 2006, Cascade was acquired by MDU Resources Group, Inc. ("MDU") and currently operates as a division of MDU (which is operated through the MDU Energy Capital subsidiary).

Q. Please describe MDU and how Cascade fits into the operational structure of this entity.

A. MDU is a diversified entity that is divided into five business segments:[20]

Natural Gas Distribution Segment
- Montana-Dakota Utilities
- Cascade Natural Gas
- Intermountain Gas

Electric Segment
- Montana-Dakota Utilities

Pipeline and Midstream Segment
- WBI Holdings

Construction Materials and Contracting Segment
- Knife River

Construction Services Segment
- MDU Construction Services

[19] *Available at*: https://www.cngc.com/in-the-community/about-us/.
[20] MDU Resources Group, 2019 Form 10-K, pages 7-8.

MDU's non-utility operations account for the majority of its consolidated 2019 operations, as noted below:[21]

Segment	Operating Revenues	Operating Income
Electric	6.6%	13.3%
Natural Gas Distribution	16.2%	14.4%
Pipeline/Midstream	2.6%	8.9%
Construction Materials and Contracting	41.0%	37.4%
Construction Services	34.7%	26.3%

This indicates that MDU's construction-related segments account for over one-half of its consolidated operations, whereas the natural gas segment accounts for less than 17 percent of its operations.

Within the natural gas segment, Washington operations accounted for 28 percent of 2019 operating sales revenues and Oregon accounted for 8 percent.[22] Thus, Cascade operations were about one-third of MDU's natural gas operations.

Q. What are the current security ratings of Cascade?

A. The present debt ratings (senior unsecured credit ratings) of Cascade are as follows:

Fitch	BBB+
Standard & Poor's[23]	BBB+

[21] Calculations made from information contained in MDU Resources Group, 2019 Form 10-K, page 31.
[22] MDU Resources Group, 2019 Form 10-K, page 13.
[23] Standard & Poor's downgraded Cascade's "standalone" issuer credit rating in 2018, but not the senior unsecured rating.

Q. What have been the trends in Cascade's bond ratings?

A. This is shown on Exh. DCP-5 for the Company's "issuer" credit ratings. Both the Fitch ratings of Cascade were downgraded in 2018. It should be noted that Cascade's ratings are tied to those of MDU.[24]

Q. Does Cascade have access to any cost recovery mechanisms?

A. Yes. Cascade is currently participating in the following cost recovery mechanisms:

- Purchased Gas Adjustment (PGA)
- Conservation Program Adjustment (CPA)
- Cost Recovery Mechanism for Pipeline Replacement (CRM)
- Washington Energy Assistance Fund (WEAF) Program
- Decoupling Mechanism Adjustment

Q. Do these mechanisms reduce the risk of Cascade?

A. Yes, they do. Those mechanisms, on both an independent and collective basis, have the effect of transferring a portion of Cascade's risks from its shareholders to its ratepayers. This is the case since the risk of fully recovering certain expenses is reduced or eliminated.

[24] S&P Global Ratings, "RatingsDirect, Cascade Natural Gas Corp.," (Jan. 23, 2020).

VI. CAPITAL STRUCTURE AND COST OF DEBT

Q. What is the importance of determining a proper capital structure in a regulatory framework?

A. A utility's capital structure is important because the concept of rate base – rate of return regulation requires the capital structure to be utilized in estimating the total cost of capital. Within this framework, it is proper to ascertain whether the utility's capital structure is appropriate relative to its level of business risk and relative to other utilities.

As discussed in Section III of my testimony, the purpose of determining the proper capital structure for a utility is to ascertain its capital costs. The rate base – rate of return concept recognizes the assets employed in providing utility services and provides for a return on these assets by identifying the liabilities and common equity (and their cost rates) used to finance the assets. In this process, the rate base is derived from the asset side of the balance sheet and the cost of capital is derived from the liabilities/owners' equity side of the balance sheet. The inherent assumption in this procedure is that the dollar values of the capital structure and the rate base are approximately equal, and the former is utilized to finance the latter.

The common equity ratio (i.e., the percentage of common equity in the capital structure) is the capital structure item which normally receives the most attention. This is the case because common equity: (1) usually commands the highest cost rate; (2) generates associated income tax liabilities; and (3) causes the most controversy since its cost cannot be precisely determined.

Q. What are the historic capital structure ratios of Cascade?

A. I have examined the actual, historic (2015-2019) capital structure ratios of Cascade, which is shown on page 1 of Exh. DCP-6. The common equity ratios have been:

	Cascade	
	Including S-T Debt	Excluding S-T Debt
2015	47.1%	47.1%
2016	47.3%	47.3%
2017	49.2%	49.2%
2018	49.1%	49.1%
2019	46.6%	47.7%

This indicates that Cascade has had an equity ratio of less than 50 percent over the past five years.

Page 2 of Exh. DCP-6 shows the capital structure ratios of MDU Resources, which is largely an unregulated entity. MDU Resources has maintained equity ratios of about 55 percent to 60 percent over the past five years. This higher equity ratio for MDU Resources is not surprising since its largely unregulated operations, which are the majority of the entity, carry more risk than its regulated operations, and thus should be financed with a larger equity base.

Q. How do these capital structures compare to those of investor-owned natural gas utilities?

A. Exh. DCP-7 shows the common equity ratios (excluding short-term debt in capitalization) for the group of proxy companies (which are holding companies and not purely gas

distribution utilities) used in developing my cost of equity models and related conclusions. These are:

Period	Average	Median
2015-2019	54.3%	53.8%
2023-2025	54.6%	55.5%

These equity ratios are slightly higher than those of Cascade.

Q. What have been the average common equity ratios adopted by U.S. State Regulatory Agencies in recent years?

A. Over the past several years, the average common equity ratios cited in U.S. state regulated natural gas rate proceedings have been:[25]

2012	51.13%
2013	50.60%
2014	51.11%
2015	49.93%
2016	50.06%
2017	49.88%
2018	50.09%
2019	52.07%

These averages are comparable with Cascade's common equity ratios. It is noteworthy, on the other hand, that some of the companies included in these averages have capital structures which exclude short-term debt. Because the Commission typically includes short-term debt in capital structure,[26] the companies within these averages that exclude short-term debt inflate these common equity ratios above what they would be under Commission standard practice.

[25] Regulatory Research Associates, "Regulatory Focus", (Jan. 31, 2019).
[26] *See e.g.*, *Wash. Utils. & Transp. Comm'n v. Puget Sound Energy, Inc.*, Dockets UE-190529 and UG 190530, Order 08, 29, ¶ 81 (July 8, 2020) (2019 PSE GRC Order).

Q. What capital structure has Cascade requested in the proceedings?

A. Cascade proposes a capital structure comprised as follows:

	Percent
Debt	49.6%
Common Equity	50.4%

According to the Direct Testimony of Cascade witness Tammy J. Nygard, this requested capital structure "is based upon Cascade's actual average (and targeted) average capital structure for the last two years."[27] This is essentially a hypothetical capital structure since it does not match the Company's actual capital structures, either on a test year basis or historic basis.

Q. What capital structure do you propose to use in these proceedings?

A. I propose the use of a hypothetical capital structure for Cascade. As I noted above, the Company's common equity ratio has consistently been less than that proposed by the Company in this proceeding. My proposed capital structure is:

Short-Term Debt	0.0%
Long-Term Debt	51.5%
Common Equity	48.5%

Q. Why are you proposing a hypothetical capital structure for Cascade containing 48.5 percent common equity?

A. I first note that Cascade's actual capital structure as of December 31, 2019 contained 46.6 percent common equity, as shown on Exh. DCP-6. Thus, my proposed capital structure has more equity than the recent actual capital structure ratio of the Company. Second, the

[27] Nygard, Exh. TJN-1T at 4:4-5.

actual equity ratios of Cascade have been below 50 percent over the past five years, also as shown on Exh. DCP-6. Third, the 48.5 percent hypothetical common equity ratio is the same as that used by the Commission in establishing the respective costs of capital for both Avista and Puget Sound Energy.[28]

Q. What is your understanding of this Commission's recent policy on the proper capital structure to use to determine the COC?

A. It is my understanding that the Commission's policy on determining a capital structure balances safety (the preservation of investment quality credit ratings and access to capital) against economy (the lowest overall cost to attract and maintain capital).[29] The Commission has noted that the appropriate capital structure can either be the Company's historical capital structure, the projected capital structure, or a hypothetical capital structure.[30]

Q. In general, when is it more appropriate to use a hypothetical capital structure instead of an actual capital structure?

A. It is my experience that there are two instances where it is sometimes preferable to use a hypothetical capital structure, as opposed to a utility's actual capital structure. First, when a utility receives all of its capital (debt and equity) from its parent company, it is often preferable to use a hypothetical capital structure. Second, when a utility's actual capital structure is significantly different from the prevailing capital structures of other utilities

[28] 2019 PSE GRC Order at 2; *Wash. Utils. & Transp. Comm'n v. Avista Corp.*, Dockets UE-190334 and UG-190335, Order 09, 13, ¶ 34, Table 1 (March 25, 2020).
[29] 2004 PSE GRC Order at 13, ¶ 27.
[30] *Id.*

in the same industry, it is sometimes preferable to use a hypothetical capital structure. In addition, when a utility's actual capital structure changes significantly over a short time period, a hypothetical capital structure can be used to "stabilize" the regulatory capital structure. In each type of instances, the hypothetical capital structure is selected to be similar to that prevailing within the utility industry. Cascade's recent volatility of its equity ratio makes use of its actual capital structure somewhat problematic. As a result, it is appropriate to use a hypothetical capital structure for the Company.

Q. Why is your proposed hypothetical capital structure more appropriate than the one proposed by Cascade in this proceeding?

A. In this proceeding, the Company has attempted to justify its proposed capital structure by using an average and targeted capital structures over the past two years, instead of using the actual test period or a hypothetical capital structure. Cascade has failed to demonstrate that its proposed capital structure will be substantially different during the rate year than it was at the end of 2019, and has also failed to provide any documentation of a commitment of specific capital injections that will be made by investors (i.e., MDU Resources and/or other investors) during the rate year. Having a "targeted" [31] capital structure of 50 percent equity and 50 percent debt does not sufficiently ensure what financial strategies will take place during the rate year. Therefore, I believe the Company's attempt to use a capital structure with more equity than it has recently maintained, which is essentially a hypothetical methodology, is unsupported and unjustified in this instance

[31] Nygard, Exh. TJN-1T at 4:1-5.

Q. Cascade witness Nygard states that the "Enbridge incident" has impacted the Company's capital structure in recent years. Does this justify the hypothetical capital structure proposed by the Company?

A. No, it does not. Ms. Nygard states that Cascade had a $17.5 "unanticipated…short-term debt increase from higher gas costs in November and December" of 2018.[32] However, this does not justify her proposal to create a hypothetical capital structure with an equity ratio of over 50 percent. As is shown in Exh. DCP-6, Cascade did not have an equity ratio as high as 50 percent prior to 2018. During this period, Cascade's equity ratio was in a range of 47.21 percent to 49.2 percent. I also note that Cascade has been authorized to recover the "Enbridge incident" gas costs over a three-year period through rate schedule 590.[33] Through this schedule, the Company is collecting interest at the FERC interest rate.[34] Accordingly, there is no need to make this "adjustment" in the Company's capital structure ratios due to the gas costs related to the Enbridge incident.

Q. Is your recommended capital structure consistent with the Commission's policy?

A. Yes. The capital structure that I use contains more equity than the Company's actual 2019 capital structure and is similar to recent actual ratios of Cascade. Further, it is consistent with the capital structure approved by the commission for other Washington utilities. I also believe that the capital structure that I propose provides a "balance of safety and economy" as cited above.

[32] *Id*. at 4:4-8.
[33] *In re Petition for Proposed New Tariff Revisions, Schedule 590, Temporary Gas Cost Amortization*, Docket UG-190145, Order 01, 2-4 (March 28, 2019).
[34] WAC 480-90-223(4).

Q. What is the cost rate of debt in Cascade's application?

A. Cascade proposes the pro-forma cost of long-term debt as of December 31, 2019.[35] The Company's proposed cost of debt is 4.745 percent.[36]

Q. Do you agree with this debt cost?

A. Yes, I do, as this reflects the Company's pro-forma test period cost of debt.

Q. Can the ROE be determined with the same degree of precision as the cost of debt?

A. No. The cost rates of debt are largely determined by interest payments, issue prices, and related expenses. The ROE, on the other hand, cannot be precisely quantified, primarily because this cost is an opportunity cost. As mentioned previously, there are several models that can be employed to estimate the ROE. Four of the primary methods – DCF, CAPM, CE and RP – are developed in the following sections of my testimony.

VII. SELECTION OF PROXY GROUP

Q. How have you estimated the ROE for Cascade?

A. Cascade is not a publicly-traded company. Consequently, it is not possible to directly apply ROE models to Cascade. However, in COC analyses, it is customary to analyze groups of comparison, or "proxy," companies as a substitute for Cascade to determine its ROE.

[35] Nygard, Exh. TJN-1T at 2:15-23.
[36] *Id*. at 3:13, Table 1.

I have accordingly selected a proxy group of publicly-traded natural gas utility holding companies for comparison to Cascade. I am using the criteria cited on Exh. DCP-8. This proxy group also is the same as the proxy group used by Cascade witness Bulkley.

VIII. DCF ANALYSIS

Q. What is the theory and methodological basis of the DCF model?

A. The DCF model is one of the oldest and most commonly-used models for estimating the ROE for public utilities.

The DCF model is based on the "dividend discount model" of financial theory, which maintains that the value (price) of any security or commodity is the discounted present value of all future cash flows.

The most common variant of the DCF model assumes that dividends are expected to grow at a constant rate (the "constant growth" or "Gordon DCF model"). In this framework, the ROE is derived from the following formula:

$$K = \frac{\mathrm{D}}{\mathrm{P}} + \mathrm{g}$$

where: P = current price

D = current dividend rate

K = discount rate (cost of capital)

g = constant rate of expected growth

This formula essentially recognizes that the return expected or required by investors is comprised of two factors: the dividend yield (current income) and expected growth in dividends (future income).

Q. Please explain how you employ the DCF model.

A. I use the constant growth DCF model. In doing so, I combine the current dividend yield for each of the proxy utility stocks described in the previous section with several indicators of expected dividend growth.

Q. How did you derive the dividend yield component of the DCF equation?

A. Several methods can be used to calculate the dividend yield component. These methods generally differ in the manner in which the dividend rate is employed (i.e., current versus future dividends or annual versus quarterly compounding variant). I used a quarterly version of the dividend yield, which is expressed as follows:

$$Yield = \frac{D_0(1 + 0.5g)}{P_0}$$

This dividend yield component recognizes the timing of dividend payments and dividend increases.

The P_0 in my yield calculation is the average of the high and low stock price for each proxy company for the most recent three-month period (July - September 2020). The D_0 is the current annualized dividend rate for each proxy company.

Q. How do you estimate the dividend growth component of the DCF equation?

A. The DCF model's dividend growth rate component is usually the most crucial and controversial element involved in using this methodology. The objective of estimating the dividend growth component is to reflect the growth expected by investors that is embodied in the price (and yield) of a company's stock. As such, it is important to recognize that individual investors have different expectations and consider alternative

indicators in deriving their expectations. This is evidenced by the fact that every investment decision resulting in the purchase of a particular stock is matched by another investment decision to sell that stock.

A wide array of indicators exists for estimating investors' growth expectations. As a result, it is evident that investors do not always use one single indicator of growth. It therefore is necessary to consider alternative dividend growth indicators in deriving the growth component of the DCF model. I have considered five indicators of growth in my DCF analyses. These are:

1. Years 2015-2019 (5-year average) earnings retention, or fundamental growth (per Value Line);
2. Five-year average of historic growth in earnings per share (EPS), dividends per share (DPS), and book value per share (BVPS) (per Value Line);
3. Years 2020, 2021 and 2023-2025 projections of earnings retention growth (per Value Line);
4. Years 2017-2019 to 2023-2025 projections of EPS, DPS, and BVPS (per Value Line);
5. Five-year projections of EPS growth (per First Call, Zacks and Value Line).[37]

I believe this combination of growth indicators is a representative and appropriate set with which to begin the process of estimating investor expectations of dividend growth for the group of proxy companies. I also believe that these growth indicators reflect the types of information that investors consider in making their investment decisions. As I

[37] I have historically used only the First Call EPS growth rate estimates in my DCF analyses. In this proceeding, I am adding the Zack's and Value Line EPS growth rate estimates in order to give consideration to more EPS growth rate estimates. I note that Cascade witness Bulkley also uses these three sources of EPS growth rate projections in her DCF analyses.

indicated previously, investors have an array of information available to them, all of which would be expected to have some impact on their decision-making process.

Q. Please describe your DCF calculations.

A. Exh. DCP-9 presents my DCF analysis. Page 1 shows the calculation of the "raw" (i.e., prior to adjustment for growth) dividend yield for each proxy company. Pages 2, 3, and 4 show the growth rates for the group of proxy companies. Page 5 shows the DCF calculations, which are presented on several bases: mean, median, low and high values. These results can be summarized as follows:

	Mean	Median	Mean Low[38]	Mean High[39]	Median Low[40]	Median High[41]
Proxy Group	8.8%	9.0%	7.0%	10.1%	7.0%	10.9%

I note that the individual DCF calculations shown on Exh. DCP-9 should not be interpreted to reflect the expected cost of capital for individual companies in the proxy group; rather, the individual values shown should be interpreted as alternative information considered by investors.

Q. What do you conclude from your DCF analyses?

A. The DCF rates resulting from the analysis of the proxy groups fall into a wide range between 7.0 percent and 10.9 percent. The highest DCF rates, on both a mean and median basis, are 10.1 percent to 10.9 percent. The mean and median results are 8.8 percent and 9.0 percent.

[38] Using only the lowest average growth rate.
[39] Using only the highest average growth rate.
[40] Using the lowest median growth rate.
[41] Using only the highest median growth rate.

I believe a range of 9.0 percent to 10.0 percent (9.5 percent mid-point) represents the current DCF-derived ROE for the proxy group. This range includes many of the higher DCF rates and generally exceeds the low and mean/median DCF rates. I note that the highest DCF result (i.e., 10.9 percent) is an outlier figure and is significantly influenced by the historic results (i.e., historic per share growth) of a single company (i.e., One Gas) which was "spun off" from a former parent during this period and its corresponding growth rates are not necessarily reflective of its expected performance. In addition, the other "high" DCF results are upwardly impacted by the EPS forecasts of South Jersey Resources. However, it must be acknowledged that this entity had negative EPS over the preceding five years (as noted in Exh. DCP-9, page 3), resulting in a depressed "base" period from which the current EPS forecasts are being made. As a result, these EPS forecasts are not sustainable and do not reflect a proper basis for a unique DCF conclusion. This is an example of why it is not proper to rely exclusively on EPS growth projections, as I note below.

Q. Does Company witness Bulkley also perform DCF analyses in her testimony?

A. Yes. Ms. Bulkley cites DCF results in her testimony with a broad range of 8.84 percent to 9.97 percent.[42]

Q. What are your disagreements with Company witness Bulkley's Constant Growth DCF analyses?

[42] Bulkley, Exh. AEB-1T at 49, Figure 11.

A. Ms. Bulkley's Constant Growth DCF analyses are based on 30-day, 90-day, and 180-day average stock prices for the periods ending April 30, 2020, annualized dividends per share as of April 30, 2020, and the average of Value Line, Yahoo Finance and Zack's EPS projections. Her DCF analyses are applied to her proxy group of seven natural gas utility holding companies.[43]

Ms. Bulkley's Constant Growth DCF analyses are shown on her Exh. AEB-2 at Schedule 3. It is apparent from a review of her exhibit that her "Low DCF ROE" for each proxy company reflects the dividend yield and the lowest of the three growth rates she considers. Her "Mean DCF ROE" considers the average of all three growth rates and her "High DCF ROE" only considers the highest growth rate for each company. Stated differently, the "High DCF" result considers only the highest of the three growth rates for each individual company and ignores the other two growth rates for that company. Thus, the "Mean High DCF" result for one proxy company may reflect only the Zacks EPS Growth, while the "Mean High DCF" result for another proxy company may reflect only the Value Line growth result. It is apparent from Ms. Bulkley's testimony that none of her DCF Constant Growth results are as high as her 10.30 percent ROE conclusions.[44]

It is also apparent that the "High" DCF results are dominated by the results of a single company. The High 30-day DCF result, for example, of 9.97 percent is largely accounted for by the 25.95 percent indicated DCF result of Northwest Natural Gas, which has a 22.50 percent Value Line growth rate (but only a 3.75 percent growth rate by First Call). Clearly the 22.2 percent Value Line growth rate is an "outlier" and is not a sustainable growth rate, which is an assumption of the DCF method. As is indicated in

[43] Bulkley, Exh. AEB-2, Schedule 3.
[44] *Id*.

my Exh. DCP-9, page 3, Northwest Natural Gas had a significant asset impairment in 2017 which resulted in a substantial negative EPS historic growth rate, and correspondingly the forecast EPS growth rate is based on a beginning EPS rate that was depressed.[45]

Q. Do you believe there are any other problems with Company witness Bulkley's constant growth DCF analyses?

A. Yes. Even though Ms. Bulkley purports to examine three alternative growth rates in her constant growth DCF analyses, in reality all three focus on a single statistic: analysts' EPS forecasts. It is improper to implement a DCF analysis that exclusively utilizes a single source of the growth, or "g", component.

Q. Why do you believe it is it improper to rely exclusively on EPS forecasts in a DCF analysis?

A. There are several reasons why it is not appropriate to rely exclusively on analysts' EPS forecasts in a DCF context. First, it is not realistic to believe that investors rely exclusively on a single factor, such as analysts' EPS forecasts, in making their investment decisions. Investors have an abundance of available information to assist them in evaluating stocks; EPS forecasts are only one of many such statistics.

Second, Value Line – one of Ms. Bulkley's sources of EPS projections – publishes both historic and forecasted data, as well as ratios, for a large array of financial indicators for publicly-traded companies. Presumably, all types of information are

[45] *Id.*

published for the consideration of its subscribers/investors. Yet Ms. Bulkley exclusively considers only one factor, the forecast version of EPS, in her analyses.

Third, the vast majority of information available to investors, by both individual companies in the form of annual reports and offering circulars, and by investment publications such as Value Line, is historic data. It is neither realistic nor logical to maintain the investors only consider projected (estimated) data to the exclusion of historic (actual) data.

Fourth, the experience over the past several years should be a clear signal to investors that analysts cannot accurately predict EPS levels. Few, if any, analysts predicted the decline in security prices in the tech market crash of 2000-2002, as well as the financial crisis of 2008 and 2009.[46] Thus, relying exclusively on forecasted EPS levels, while ignoring historic EPS levels and other indicators, cannot and will not produce accurate results.

In summary, investors are now very much aware of recent inabilities of security analysts to accurately predict EPS growth. These problems clearly call into question the exclusive reliance on analysts' forecasts of EPS as the source of growth in a DCF context. As a result, the landscape has changed in recent years and investors have ample reasons to doubt the reliability of such forecasts at the present time. In light of the above, it is problematic to rely exclusively on such forecasts in determining the cost of equity for Cascade.

[46] As demonstration of this, see "Security Analysts and their Recommendations", *available at* http://thismatter.com/money/stocks/valuation/security-analysts.htm.

IX. CAPM ANALYSIS

Q. Please describe the theory and methodological basis of the CAPM.

A. CAPM was developed in the 1960s and 1970s as an extension of modern portfolio theory (MPT), which studies the relationships among risk, diversification, and expected returns. The CAPM describes and measures the relationship between a security's investment risk and its market rate of return.

Q. How is the CAPM derived?

A. The general form of the CAPM is:

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

where: K = cost of equity

R_f = risk free rate

R_m = return on market

β = beta

R_m-R_f = market risk premium

The CAPM is a variant of the RP method. I believe the CAPM is generally superior to the simple RP method because the CAPM specifically recognizes the risk of a particular company or industry (i.e., beta), whereas the simple RP method assumes the same ROE for all companies exhibiting similar bond ratings or other characteristics.

Q. What do you use for the risk-free rate?

A. The first input of the CAPM is the risk-free rate (R_f). The risk-free rate reflects the level of return that can be achieved without accepting any risk.

In CAPM applications, the risk-free rate is generally recognized by use of U.S. Treasury securities. Two general types of U.S. Treasury securities are often utilized as the R_f component, short-term U.S. Treasury bills and long-term U.S. Treasury bonds.

I have performed CAPM calculations using the three-month average yield (July - September 2020) for 20-year U.S. Treasury bonds. I use the yields on long-term Treasury bonds since this matches the long-term perspective of ROE analyses. Over this three-month period, these bonds had an average yield of 1.15 percent. I note that these yields reflect the impact of the Federal Reserve's efforts to mitigate the impacts of the financial and economic consequences of COVID-19.

Q. What is beta and what betas do you employ in your CAPM?

A. Beta is a measure of the relative volatility (and thus risk) of a particular stock in relation to the overall market. Betas less than 1.0 are considered less risky than the market, whereas betas greater than 1 are riskier. Utility stocks traditionally have had betas below 1. I utilize the most recent Value Line betas for each company in the proxy group.

Q. How do you estimate the market risk premium component?

A. The market risk premium component (R_m-R_f) represents the investor-expected premium of common stocks over the risk-free rate, or long-term government bonds. For the purpose of estimating the market risk premium, I considered alternative measures of

returns of the S&P 500 (a broad-based group of large U.S. companies) and 20-year U.S. Treasury bonds (i.e., same timeframe as employed in Duff & Phelps source [formerly Ibbotson and Morningstar] used to develop risk premiums).

First, I compared the actual annual returns on equity of the S&P 500 with the actual annual income returns of U.S. Treasury bonds. Exh. DCP-10 shows the ROE for the S&P 500 group for the period 1978-2019 (all available years reported by S&P). This exhibit also indicates the annual yields on 20-year U.S. Treasury bonds and the annual differentials (i.e., risk premiums) between the S&P 500 and U.S. Treasury 20-year bonds. Based upon these returns, I conclude that the risk premium from this analysis is 7.40 percent.

I next considered the total returns (i.e., dividends/interest plus capital gains/losses) for the S&P 500 group as well as for long-term government bonds, as tabulated by Duff & Phelps, using both arithmetic and geometric means. I considered the total returns for the entire 1926-2019 period reported by this source, which are as follows:

	S&P 500	L-T Gov't Bonds	Risk Premium
Arithmetic	12.1%	6.0%	6.1%
Geometric	10.2%	5.5%	4.7%

I conclude from this analysis that the expected risk premium is about 6.1 percent (i.e., average of all three risk premiums: 7.40 percent from Exh. DCP-10; 6.1 percent arithmetic and 4.7 percent geometric from Duff & Phelps). I believe that a combination of arithmetic and geometric means is appropriate since investors have access to both

types of means[47] and presumably, both types are reflected in investment decisions and thus, stock prices and the ROE.

Q. What are your CAPM results?

A. Exh. DCP-11 shows my CAPM calculations. The results are:

	Mean	Median
Proxy Group	6.4%	6.0%

Q. What is your conclusion concerning the CAPM ROE?

A. The CAPM results collectively indicate a ROE of 6.0 percent to 6.4 percent for the group of proxy utilities. I conclude that an appropriate CAPM ROE estimation for Cascade is 6.0 percent to 6.4 percent.

Q. How do your CAPM results compare to the CAPM results of Company witness Bulkley?

A. Ms. Bulkley's testimony reaches CAPM conclusions of 9.21 percent to 11.73 percent.[48] These greatly exceed the CAPM results my testimony supports.

Q. Do you have any comments concerning Company witness Bulkley's CAPM analyses?

[47] For example, Value Line uses compound (i.e., geometric) growth rates in its projection. In addition, mutual funds report growth rates on a compound basis.
[48] Bulkley, Exh. AEB-1T at 56, Figure 12.

A. Yes, I do. I disagree with Ms. Bulkley's use of projected interest rates as the risk-free rate CAPM component. I also disagree with her RP estimates.

Q. Why is it not proper to use projected interest rates as the risk-free rate?

A. It is proper to use the current (i.e., actual) yield as the risk-free rate in a CAPM context. This is the case since the current yield is known and measurable and reflects investors' current collective assessment of all capital market conditions. Prospective interest rates, in contrast, are not measurable and not achievable. For example, if the current yield on 20-year U.S. Treasury Bonds is less than 2.0 percent, this reflects the rate that investors can actually receive on their investment. Investors cannot receive a prospective yield on their investments since such a yield is speculative.

Use of the current risk-free rate in a CAPM context is similar to using the current yield in a DCF context. Analysts do not use prospective stock prices as the basis for the dividend yield in a DCF analysis, as use of prospective stock prices is speculative. Use of current stock prices is appropriate, which Company witness Bulkley's testimony recognized. Likewise, current levels of interest rates reflect all current information (i.e., the efficient market hypothesis) and should be used as the risk-free rate in the CAPM.

It should be noted that Ms. Bulkley's use of projected long-term (30-Year Treasury Bonds) interest rates (i.e., 3.20 percent) greatly exceeds the current level of long-term bonds. In addition, her proposed 3.20 percent projection even exceeds the level of Treasury bonds even prior to the COVID-19 pandemic, which were about 2.2 percent.[49]

[49] United States Government Publishing Office, "Economic Indicators," September 2020, page 30. *Available at*: https://www.govinfo.gov/app/collection/econi/2020/09.

Q. What are your concerns with Company witness Bulkley's market RP component?

A. Ms. Bulkley computes her market RP by calculating a constant growth DCF for the S&P 500 companies (using EPS forecasts as the growth component) of 13.45 percent and comparing this to current yields on 30-year U.S. Treasury securities. As I have previously indicated, her DCF methodology over-states the COC. In addition, the use of U.S. Treasury securities as the baseline for the market RP is improper at this time due to the effects of the Federal Reserve's QE on U.S. Treasury yields. As I note elsewhere in my testimony, the recent yields on U.S. Treasury bonds has been impacted the Federal Reserve monetary policies designed to offset the impacts of the Great Recession and the COVID-19 pandemic. As a result, these yields should not be used to develop a risk premium and doing so results in inflated risk premiums. This is further reflected in her market risk premium results (12.14 percent) which are nearly double the historic level of risk premiums between the 1926-2019 returns on the S&P 500 and long-term US Treasury bonds, as I described in my CAPM section.

X. CE ANALYSIS

Q. Please describe the basis of the CE methodology.

A. The CE method is derived from the "corresponding risk" concept discussed in the *Bluefield* and *Hope* cases. This method is thus based upon the economic concept of opportunity cost. As previously noted, the ROE is an opportunity cost: the prospective return available to investors from alternative investments of similar risk.

The CE method is designed to measure the returns expected to be earned on the original cost book value of similar risk enterprises. Thus, it provides a direct measure of the fair return since it translates into practice the competitive principle upon which regulation rests.

The CE method normally examines the experienced and/or projected return on book common equity. The logic for examining returns on book equity follows from the use of original cost rate base regulation for public utilities, which uses a utility's book common equity to determine the cost of capital. This cost of capital is, in turn, used as the fair rate of return which is then applied (multiplied) to the book value of rate base to establish the dollar level of capital costs to be recovered by the utility. This technique is thus consistent with the rate base-rate of return methodology used to set utility rates.

Q. How do you apply the CE methodology in your analysis of Cascade's ROE?

A. I apply the CE methodology by examining realized ROEs for the group of proxy utilities, as well as unregulated companies, and evaluating investor acceptance of these returns by reference to the resulting market-to-book ratios ("M/Bs"). In this manner it is possible to assess the degree to which a given level of return equates to the COC. It is generally recognized for utilities that an M/B of greater than one (i.e., 100 percent) reflects a situation where a company is able to attract new equity capital without dilution (i.e., above book value). As a result, one objective of a fair cost of equity is the maintenance of stock prices at or above book value. There is no regulatory obligation to set rates designed to maintain an M/B significantly above one.

I further note that my CE analysis is based upon market data (through the use of M/Bs) and is thus essentially a market test. As a result, my CE analysis is not subject to the criticisms occasionally made by some who maintain that past earned returns do not represent the cost of capital. In addition, my CE analysis also uses prospective returns and thus is not backward looking.

Q. What time periods do you examine in your CE analysis?

A. My CE analysis considers the experienced ROEs of the proxy group of utilities for the period 2002-2019 (i.e., the last 18 years). The CE analysis requires that I examine a relatively long period of time in order to determine trends in earnings over at least a full business cycle. Further, in estimating a fair level of return for a future period, it is important to examine earnings over a diverse period of time in order to avoid any undue influence from unusual or abnormal conditions that may occur in a single year or shorter period. Therefore, in forming my judgment of the current cost of equity, I focused on two historic periods: 2009-2019 (the current business cycle) and 2002-2008 (the most recent business cycle). I have also considered projected ROEs for 2020, 2021 and 2023-2025.

Q. Please describe your CE analysis.

A. Exhibit Nos. DCP-12 and DCP-13 contain summaries of experienced ROEs and M/Bs for two groups of companies, while Exh. DCP-14 presents a risk comparison of utilities versus unregulated firms.

Exh. DCP-12 shows the ROEs and M/Bs for the group of proxy utilities. These can be summarized as follows:

	Proxy Group
Historic ROE	
Mean	9.9-11.3%
Median	9.8-11.0%
Historic M/B	
Mean	177-191%
Median	174-183%
Prospective ROE	
Mean	7.6-9.2%
Median	8.0-9.0%

These results indicate that historic ROEs of 9.8 percent to 11.3 percent have been adequate to produce M/Bs of 174 percent to 191 percent for the proxy group of utilities. Furthermore, projected returns on equity for 2020, 2021 and 2023-2025 are within a range of 7.6 percent to 9.2 percent for the utility group. These relate to 2019 M/Bs of 210 percent or greater.

Q. Do you also review the earnings of unregulated firms?

A. Yes. As an alternative, I also examine the S&P 500 group. This is a well-recognized group of firms that is widely utilized in the investment community and is indicative of the competitive sector of the economy. Exh. DCP-13 presents the earned ROEs and M/Bs for the S&P 500 group over the past eighteen years (i.e., 2002-2019). As this schedule indicates, over the two business cycle periods, this group's average ROEs ranged from 12.4 percent to 13.8 percent, with average M/Bs ranging between 256 percent and 275 percent.

Q. How can the above information be used to estimate Cascade's ROE?

A. The recent ROEs of the proxy utilities and S&P 500 group can be viewed as an indication of the level of return realized and expected in the regulated and competitive sectors of the economy. In order to apply these returns to the ROE for the proxy utilities, however, it is necessary to compare the risk levels of the utilities and the competitive companies. I do this in Exh. DCP-14, which compares several risk indicators for the S&P 500 group and the natural gas proxy group. The information in this exhibit indicates that the S&P 500 group is riskier than the utility proxy group.

Q. What ROE is indicated by your CE analysis?

A. Based on recent ROEs and M/Bs, my CE analysis indicates that the ROE for the proxy utilities is no more than 8.5 percent to 9.5 percent (9.0 percent mid-point). Recent ROEs of 9.8 percent to 11.3 percent have resulted in M/Bs of 174 percent and over. Prospective ROEs of 7.6 percent to 9.2 percent have been accompanied by M/Bs over 210 percent. As a result, it is apparent that authorized returns below this level would continue to result in M/Bs of well above 100 percent. As I indicated earlier, the fact that M/Bs substantially exceed 100 percent indicates that historic and prospective ROEs of 9.0 percent reflect earning levels that are well above the actual cost of equity for those regulated companies. I also note that a company whose stock sells above book value can attract capital in a way that enhances the book value of existing stockholders, thus creating a favorable environment for financial integrity. Finally, I note that my 8.5 percent to 9.5 percent CE recommendation generally reflects the actual and prospective ROEs for the proxy group. I have made no adjustments to these return levels to reflect the high M/Bs.

Q. Please describe Company witness Bulkley's Expected Earnings Approach and your response to this approach.

A. Ms. Buckley's Expected Earnings Approach simply examines the Value Line projected ROEs for her proxy group for the period 2023 through 2025, which are then "adjusted" for her claim that Value Line's ROE projections use "common shares outstanding at the end of the period, as opposed to average shares outstanding over the period."[50] It is apparent that the 2023 through 2025 median and average ROEs, as reported by Value Line, was 7.31 percent to 11.92 percent.[51]

I note that more current estimates of the ROE for her proxy group by Value Line, as shown in my Exh. DCP-12, are much lower, at 9.2 percent average and 9.0 percent median. In addition, the exhibit shows the projected average ROEs for 2020 and 2021 are even lower, being 7.6 percent to 8.4 percent.

In addition, Ms. Bulkley's Expected Earnings Approach fails to take into consideration the M/Bs of her proxy group, which are currently over 200 percent (i.e., market price is double book value).[52] As I indicate in my earlier testimony, it is proper to consider the M/B when viewing ROEs of the proxy groups.

[50] Bulkley, Exh. AEB-1T at 61:21-24.
[51] Bulkley, Exh. AEB-2, Schedule 6.
[52] *Id*.

XI. RP ANALYSES

Q. What are your responses to Company witness Bulkley's bond yield plus RP analysis?

A. Ms. Bulkley's RP approach compares the allowed ROEs for natural gas utilities and 30-Year U.S. Government Bond yields over the period 1992 to April 2020. She applies a regression result to various projected levels of 30-year U.S. Treasury Bonds and correspondingly arrives at her 9.06 percent to 9.86 percent conclusion.[53]

Ms. Bulkley's bond yield plus RP analysis suffers from the same deficiencies as her market RP and CAPM analyses. This is demonstrated by the fact that, of the quarterly average natural gas decisions since 2012 that were used in part to develop her RP, none had an average awarded ROE as high as her 10.30 percent ROE recommendation.[54]

In addition, Ms. Bulkley's bond yield plus RP analysis improperly uses U.S. Treasury bond yields to develop the risk premium. As I indicated previously, the past several years have seen the yields on U.S. Treasury bonds being downwardly impacted by the actions of the Federal Reserve to offset the effects of the Great Recession and the COVID-19 pandemic. For the purposes of a risk premium for public utilities, it is more appropriate to use the yields on public utility bonds as the standard for determining the risk premium.

Q. Have you performed an independent RP analysis in order to avoid the deficiencies in Company witness Bulkley's RP analyses?

[53] Bulkley, Exh. AEB-1T at 59: 1-10.
[54] Bulkley, Exh. AEB-2, Schedule 5.

A. Yes, I have. As noted above, Ms. Bulkley's RP analyses consider the authorized ROEs of natural gas utilities dating back to 1992. As I have indicated in my testimony, this period has experienced significant declines in interest rates, which is another component of this RP analysis. Ms. Bulkley attempts to "correct" for changes in interest rates by performing a regression analysis that considers only the perceived relationship between authorized ROEs, interest rates, and the resulting period RPs. Such an analysis does not recognize any other changes in RPs, such as increased use of regulatory mechanisms (i.e., decoupling, cost recovery mechanisms, etc.). As a result, her regression analysis does not properly capture the current relationship between authorized ROEs and interest rates, as demonstrated above by the fact that her regression-suggested RP and resulting ROEs is not consistent with the recent level of authorized ROEs.

I have accordingly performed a RP analysis that focuses on the most recent five-year period of authorized ROEs and Triple-B (i.e., Cascade's rating category) utility bond yields. My analysis, by focusing on the current time period, as well as using the yields on public utility bonds, is not subject to the deficiencies in Ms. Bulkley's RP analyses.

Q. Please describe your RP analysis.

A. I have compared the authorized ROEs of natural gas utilities that were decided in the period 2015 to the first half of 2020, the most recent complete five-year period for which complete annual data is available. These are shown on Exh. DCP-15.

Also shown in Exh. DCP-15 are the levels of Triple-B utility bonds, with corresponding "lags" (between the level of interest rates and the respective commission decisions) of:

No months,
3 months,
6 months,
9 months, and
12 months.

The purpose of showing the lags is to recognize that authorized ROEs often reflect test period and/or hearing period financial conditions that are not simultaneous with the date of the respective commission's final decision establishing the authorized ROEs.

The data in Exh. DCP-15 shows the quarterly average authorized ROEs for natural gas utilities, along with several lagged interest rates, as well as the resulting RPs associated with the first two sets of figures.

Q. What are the results of your calculations?

A. As shown on Exh. DCP-15, the annual and 5 ½ -year RPs are as follows:

Year	Avg ROE	Risk Premiums
2015	9.58%	4.55-4.93%
2016	9.51%	4.27-4.83%
2017	9.73%	5.05-5.35%
2018	9.59%	4.92-5.27%
2019	9.74%	4.97-5.55%
2020	9.58%	4.97-5.93%
2015-2020 5 ½ -Year Avg	9.64%	4.94-5.16%

The most recent two years (i.e., 2019 and first half of 2020) generally show RPs of about 5.0 percent to 5.9 percent, whereas the 5 ½ -year period generally shows RPs of about 4.9 percent to 5.2 percent. I do not focus exclusively on the partial-year 2020 results since this is impacted by the low interest rate environment resulting from the

Federal Reserve policies associated with the COVID-19 pandemic, although I do include the partial-year 2020 results in the multi-year averages.

I conclude that a reasonable current RP estimate for natural gas utilities is a range of 5.2 percent to 5.9 percent, over the prevailing level of Triple-B utility bond yields. This focuses on the upper end portions of the two cited ranges.

Q. What is the appropriate RP ROE at the present time?

A. I focus on the level of Triple-B bond yields over two three-month periods. As is shown on Exh. DCP-4, over the three-month period July through September 2020, the average yield is 3.10 percent. Combining this 3.10 percent Triple-B bond yield with a RP range of 5.2 percent to 5.9 percent, the resulting RP-derived ROE is currently a range of 8.3 percent to 9.0 percent.

I have also considered the three-month period averages for November 2019 to January 2020, which is the period preceding the COVID-19 pandemic. Use of this period is not impacted by the lower level of interest rates resulting from the Federal Reserve's simulative monetary policies and the resulting decline in interest rates. Over this period, the average yield on BBB-rated utility bonds was 3.70 percent. Combining this with the RP range results in a RP-derived ROE of 8.9 percent to 9.6 percent.

I conclude from this that the proper RP derived ROE for Cascade is within a range of 8.3 percent to 9.6 percent, with a mid-point of about 9.0 percent.

XII. RETURN ON EQUITY RECOMMENDATION

Q. Please summarize the results of your four ROE analyses.

A. My four ROE analyses produced the following:

	Mid-Point	Range
DCF	9.5%	9.0-10.0%
CAPM	6.0%	6.0-6.4%
CE	9.0%	8.5-9.5%
RP	9.0%	8.3-9.6%

These results indicate an overall broad range of 6.0 percent to 10.0 percent, which focuses on the respective individual model results. Using mid-point values, the range is 6.2 percent to 9.5 percent. I recommend a ROE range of 9.0 percent to 9.5 percent for Cascade (mid-point of 9.25 percent). This range includes the mid-points of my DCF, CE, and RP results. My specific ROE recommendation is 9.25 percent. As noted previously, I do not give the CAPM results weight in making my ROE recommendation. These CAPM results are an outlier, and as the Commission has recently confirmed in the recent PSE 2019 GRC Order, it is appropriate for cost of capital witnesses to remove results that are truly outliers from their recommendations.[55]

Q. It appears that your CAPM results are less than your DCF, CAPM and RP results. Does this imply that the CAPM results should not be considered in determining the cost of equity for Cascade?

[55] *See* 2019 PSE GRC Order at 34-35, ¶¶ 102-03 (Accepting Staff's proposed range of reasonableness, which properly excluded an outlying result, but rejecting the Company recommendation, which improperly excluded a result which was not an outlier).

A. No. It is apparent that the CAPM results are less than the DCF, CAPM and RP results. There are two reasons for the lower CAPM results. First, risk premiums are lower currently than was the case in prior years. This is the result of lower equity returns that have been experienced over the past several years. This is also reflective of a decline in investor expectations of equity returns and risk premiums. Second, the level of interest rates on U.S. Treasury bonds (i.e., the risk-free rate) has been lower in recent years. This is partially the result of the actions of the Federal Reserve System to stimulate the economy. This also impacts investor expectations of returns in a negative fashion. I note that, initially, investors may have believed that the decline in Treasury yields was a temporary factor that would soon be replaced by a rise in interest rates. However, this has not been the case as interest rates have remained low and continued to decline for the past six-plus years.[56] As a result, it cannot be maintained that low interest rates (and low CAPM results) are temporary and do not reflect investor expectations. Consequently, the CAPM results should be considered as one factor in determining the cost of equity for Cascade within the Commission's chosen range of reasonableness.

XIII. TOTAL COST OF CAPITAL

Q. What is the total COC for Cascade?

A. Exh. DCP-3 reflects the total COC for Cascade using my proposed capital structure and embedded cost of debt, as well as my ROE recommendations. The resulting COC is a

[56] Parcell, Exh. DCP-4 at 2.

range of 6.81 percent to 7.05 percent. With my 9.25 percent ROE, my COC recommendation is 6.93 percent.

Q. Does this conclude your testimony?

A. Yes, it does.