BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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IN THE MATTER OF ADVICE NO. 961-GAS OF PUBLIC SERVICE COMPANY OF COLORADO TO REVISE ITS COLORADO PUC NO. 6-GAS TARIFF TO INCREASE JURISDICTIONAL BASE RATE REVENUES, IMPLEMENT NEW BASE RATES FOR ALL GAS RATE SCHEDULES, AND MAKE OTHER PROPOSED TARIFF CHANGES EFFECTIVE MARCH 7, 2020	**)**	**PROCEEDING NO. 20AL-_____G**

DIRECT TESTIMONY AND ATTACHMENTS OF ANN E. BULKLEY

ON

BEHALF OF

PUBLIC SERVICE COMPANY OF COLORADO

February 5, 2020

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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DIRECT TESTIMONY AND ATTACHMENTS OF ANN E. BULKLEY

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GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym/Defined Term	Meaning
ADIT	Accumulated Deferred Income Taxes
BPU	New Jersey Board of Public Utilities
CAPM	Capital Asset Pricing Model
Commission	Colorado Public Utilities Commission
Concentric	Concentric Energy Advisors, Inc.
CPI	Consumer Price Index
DCF	Discounted Cash Flow
DPU	Massachusetts Department of Public Utilities
ECAPM	Empirical Capital Asset Pricing Model
EIA	Energy Information Administration
EPS	Earnings Per Share
FERC	Federal Energy Regulatory Commission
FFO	Funds from Operations
Fitch	FitchRatings
FOMC	Federal Open Market Committee
GDP	Gross Domestic Product
ICC	Illinois Commerce Commission
LDC	Local Distribution Company
Missouri PSC	Missouri Public Service Commission
Moody’s	Moody’s Investors Service
NiSource	NiSource Inc.
OPUC	Oregon Public Utility Commission

PSIA	Pipeline Safety Integrity Adjustment
PGE	Portland General Electric Company
P/E	Price-to-Earnings
PPUC	Pennsylvania Public Utility Commission
Public Service or the Company	Public Service Company of Colorado
ROE	Return on Equity (or Cost of Equity)
ROR	Rate of Return
S&P	Standard and Poor's
TCJA	Tax Cuts and Jobs Act of 2017
U.S.	United States
Xcel Energy	Xcel Energy Inc.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

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DIRECT TESTIMONY AND ATTACHMENTS OF ANN E. BULKLEY

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Ann E. Bulkley. I am a Senior Vice President of Concentric Energy Advisors, Inc. ("Concentric"). My business address is 293 Boston Post Road West, Suite 500, Marlborough, Massachusetts 01752.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING THIS DIRECT TESTIMONY?

A. I am submitting this Direct Testimony on behalf of Public Service Company of Colorado ("Public Service" or the "Company"), a Colorado corporation and wholly-owned subsidiary of Xcel Energy Inc. ("Xcel Energy"). Xcel Energy is a registered holding company that owns several electric, natural gas, and steam

utility operating companies, a regulated natural gas pipeline company, and three transmission service companies.[1]

Q. PLEASE DESCRIBE YOUR BACKGROUND AND PROFESSIONAL EXPERIENCE IN THE ENERGY AND UTILITY INDUSTRIES.

A. I hold a Bachelor's degree in Economics and Finance from Simmons College and a Master's degree in Economics from Boston University, with over 20 years of experience consulting to the energy industry. I have advised numerous energy and utility clients on a wide range of financial and economic issues with primary concentrations in valuation and utility rate matters. Many of these assignments have included the determination of the cost of capital for valuation and ratemaking purposes. My resume and a summary of testimony that I have filed in other proceedings are included as Attachment AEB-1.

Q. PLEASE DESCRIBE CONCENTRIC'S ACTIVITIES IN ENERGY AND UTILITY ENGAGEMENTS.

A. Concentric provides financial and economic advisory services to many and various energy and utility clients across North America. Our regulatory, economic, and market analysis services include utility ratemaking and regulatory advisory services; energy market assessments; market entry and exit analysis;

[1] Xcel Energy is the parent company of four utility operating companies: Public Service, Northern States Power Company, a Minnesota corporation; Northern States Power Company, a Wisconsin corporation; and Southwestern Public Service Company, a New Mexico corporation. Xcel Energy's natural gas pipeline company is WestGas Interstate, Inc. Through a subsidiary company, Xcel Energy Transmission Holding Company, LLC, Xcel Energy also owns three transmission-only operating companies: Xcel Energy Southwest Transmission Company, LLC; Xcel Energy Transmission Development Company, LLC; and Xcel Energy West Transmission Company, LLC, all of which are or will be subject to Federal Energy Regulatory Commission ("FERC") jurisdiction.

corporate and business unit strategy development; demand forecasting; resource planning; and energy contract negotiations. Our financial advisory activities include buy- and sell-side merger, acquisition, and divestiture assignments; due diligence and valuation assignments; project and corporate finance services; and transaction support services. In addition, Concentric provides litigation support services on a wide range of financial and economic issues on behalf of clients throughout North America.

II. PURPOSE AND OVERVIEW OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. I present evidence and provide the Colorado Public Utilities Commission ("Commission") with a recommendation regarding Public Service's requested Return on Equity ("ROE") for its Gas distribution business. I also provide an assessment of the reasonableness of the proposed capital structure to be used for ratemaking purposes. In order to develop my ROE recommendation, I applied the Constant Growth Discounted Cash Flow ("DCF") model, the Multi-Stage DCF Model, the Capital Asset Pricing Model ("CAPM") and Empirical Capital Asset Pricing Model ("ECPAM"), the Bond Yield Plus Risk Premium approach, and the Expected Earnings analysis to two proxy groups of companies that are risk-comparable to Public Service.

Given the effect of capital market conditions on the results of the DCF models, my recommendation also gives weight to the results of alternative methodologies, including the CAPM and ECAPM analysis, the Risk Premium analysis and the Expected Earnings analysis. Relying on the mean and mean high results of the DCF models, the low end of the range would be approximately 9.75 percent. Considering the average results of the ECAPM and Risk Premium analyses, the high end of the range would be approximately 10.25 percent. Taking into consideration this range and the risk factors of Public Service's Gas distribution business, including its history of not earning the authorized ROE, I conclude that a reasonable ROE for Public Service in this proceeding is 10.10 percent. As discussed by Company witness Ms. Brooke A. Trammell in her

Direct Testimony, however, Public Service is requesting a more conservative authorized ROE of 9.95 percent. Public Service views the requested 9.95 percent ROE as a reasonable compromise in this proceeding to balance the views of intervenors and the Company regarding the appropriate level of ROE, while also implementing the legal requirement to provide the Company with an opportunity to earn a return that is adequate to compensate its investors, maintain financial integrity, and attract capital. In my view, the Company's ROE request is conservative and is likely to reduce the variability in the potential cash flow resulting from the case, which may be viewed by the financial community as somewhat risk-mitigating.

I also discuss Public Service's proposed regulated capital structure in support of the testimony of Company witness Ms. Sarah W. Soong. I compare Public Service's proposed capital structure to the capital structures of my proxy group companies and conclude that the Company's proposed capital structure for ratemaking purposes is reasonable.

My analyses and recommendations are supported by the data presented in Attachments AEB-2 through AEB-11, which were prepared by me or under my supervision.

Q. HOW IS THE REMAINDER OF YOUR DIRECT TESTIMONY ORGANIZED?

A. The remainder of my Direct Testimony is organized in eight sections. Section III provides a summary of my analyses and conclusions. Section IV reviews the regulatory guidelines pertinent to the development of the cost of capital. Section V discusses current and prospective capital market conditions and the effect of

those conditions on Public Service's cost of equity. Section VI explains my selection of a proxy group of combination gas and electric utilities and a second proxy group that includes the combination utilities plus seven gas distribution companies.[2] Section VII describes my analyses and the analytical basis for the recommendation of the appropriate ROE for Public Service. Section VIII provides a discussion of specific business and financial risks that have a direct bearing on the ROE to be authorized for Public Service in this case. Section IX discusses Public Service's capital structure as compared with the capital structures of the utility operating company subsidiaries of the proxy group companies. Section X presents my conclusions and recommendations.

[2] The gas distribution companies that are included in the proxy group are included in the Value Line natural gas distribution company business segment.

III. SUMMARY OF ANALYSES AND CONCLUSIONS

Q. PLEASE SUMMARIZE THE KEY FACTORS CONSIDERED IN YOUR ANALYSES AND UPON WHICH YOU BASE YOUR RECOMMENDED ROE.

A. My analyses and recommendations considered the following:

- The United States ("U.S.") Supreme Court's *Hope* and *Bluefield* decisions,[3] which established the standards for determining a fair and reasonable authorized ROE, including consistency of the authorized return with other businesses having similar risk, adequacy of the return to ensure access to capital and support credit quality, and the necessity for the end result to lead to just and reasonable rates;

- The required ROE should be a forward-looking estimate; therefore, the analyses supporting my recommendation rely on forward-looking inputs and assumptions (e.g., forecasted growth rates in the DCF model, projected interest rates and a forward-looking market risk premium in the CAPM.)

- The effect of current and prospective capital market conditions on the ROE estimation models and on investors' return requirements; and

- Public Service's business risks relative to the proxy group companies and the implications of those risks in arriving at the appropriate ROE.

Q. PLEASE EXPLAIN THE RATE OF RETURN IN THE CONTEXT OF A REGULATED UTILITY.

A. The regulatory construct requires that the regulatory agency establish a return for the company that is consistent with the expected return on invested capital in the market. Over the long-run the return on equity is intended to be comparable to the return on investments in the competitive market. It is the regulatory commission's responsibility, acting as a substitute for the market, to establish a

[3] *Bluefield Waterworks & Improvement Co. v. Pub. Serv. Comm'n of West Virginia*, 262 U.S. 679, 692-93 (1923); *Fed. Power Comm'n v. Hope Natural Gas Co*., 320 U.S. 591, 603 (1944).

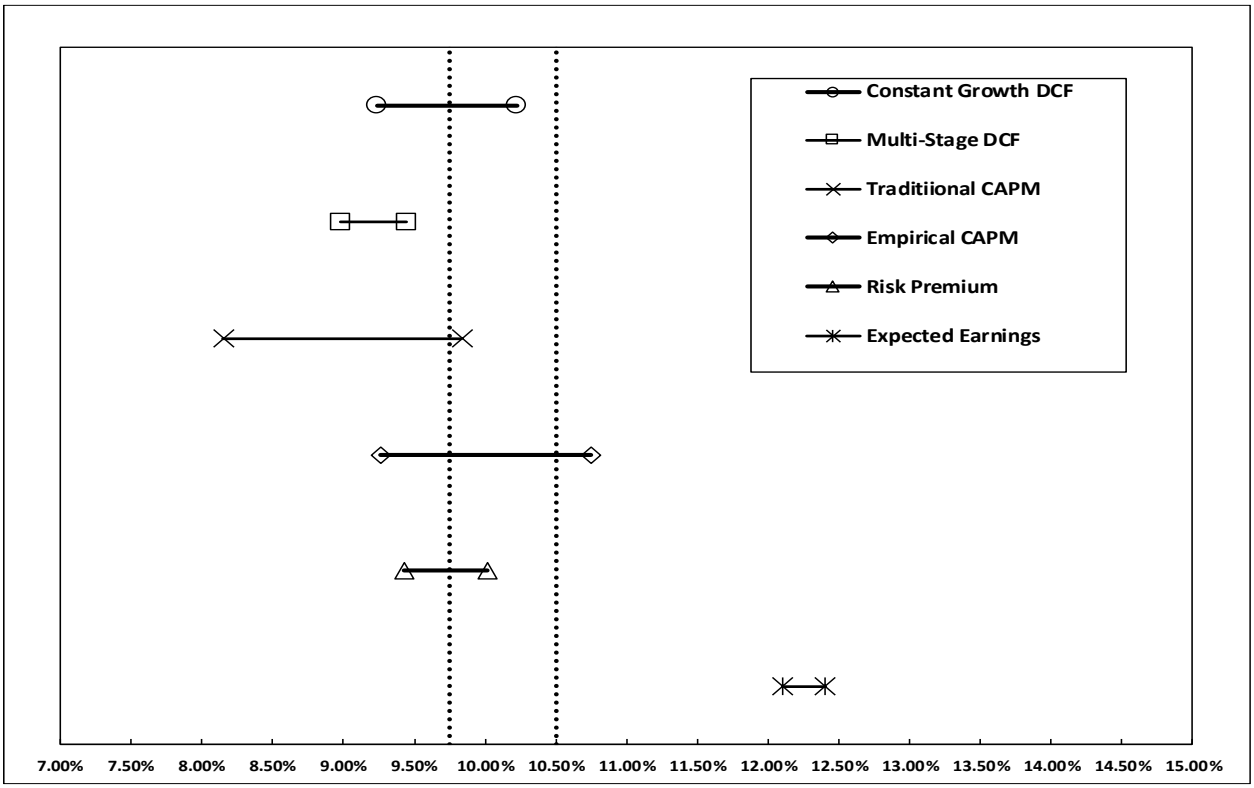
base level of ROE that is commensurate with the return that is expected in the market for investments of similar risk. While there can be adjustments to the ROE to reflect specific performance, those adjustments are typically positive adjustments recognizing strong management performance, cost savings and other important operational metrics, or they can be negative adjustments reflecting poor performance in similar metrics. Absent any adjustments for these types of performance measures, the base ROE is intended to reflect what investors expect to earn on investments in utility assets by considering the returns on risk comparable investments in the industry or competitive market.

The overall rate of return includes the return on debt and the return on equity. There is greater price certainty as to the appropriate cost of debt, because utilities issue bonds in the market and investors determine the required return on those bonds to take on the risks associated with debt repayment. Because equity investors are the claimants in the event of the dissolution of the business, the risk to equity investors is greater than that of debt investors. However, the return on equity is less observable for a regulated operating utility. Therefore, in order to determine the appropriate return on equity for a regulated utility operating company, the returns for comparable publicly traded companies are relied upon.

Q. PLEASE EXPLAIN HOW YOU CONSIDERED THE APPROPRIATE ROE FOR THE COMPANY.

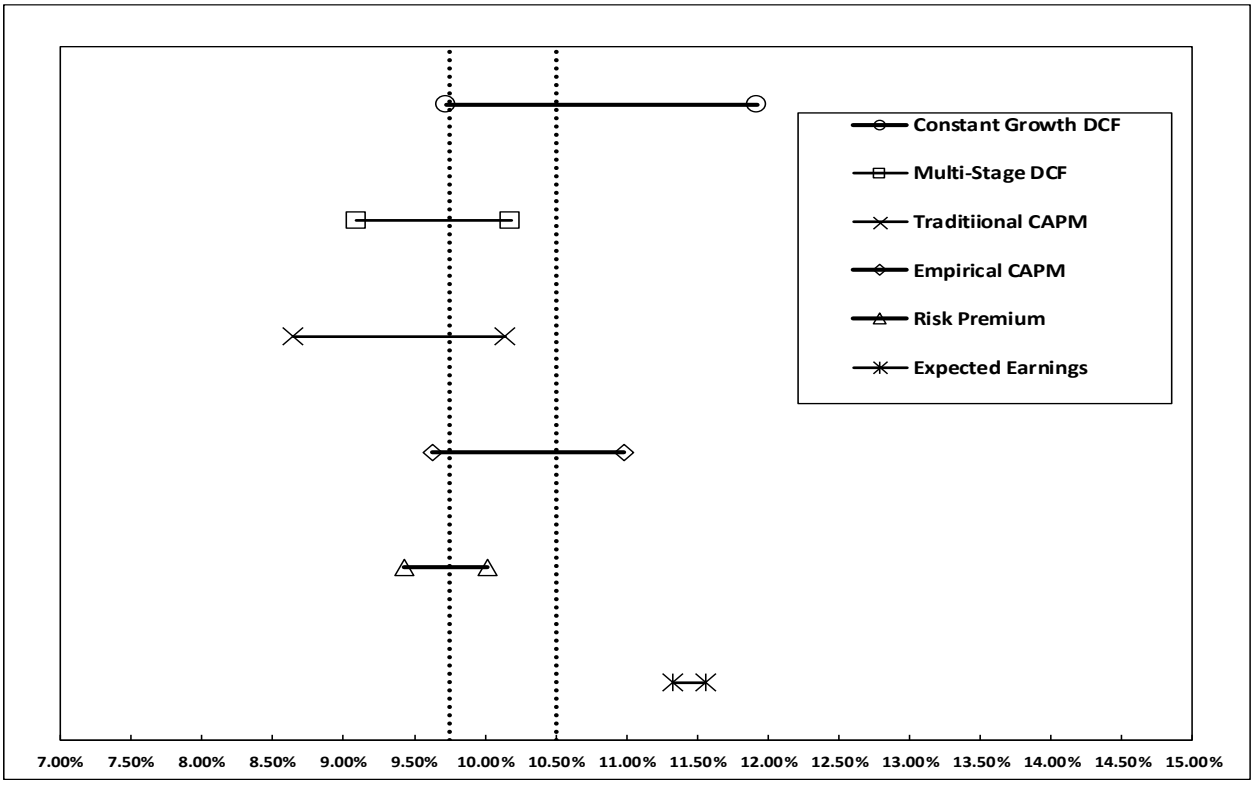
A. I have relied on several analytical approaches to estimate Public Service's cost of equity based on two proxy groups of publicly-traded companies. As shown in Tables AEB-D-1 and AEB-D-2, those ROE estimation models produce a wide range of results for the two proxy groups.

Table AEB-D-1: Summary of Analytical Results – Combination Gas and Electric Proxy Group[4]



[4] The range of results of the DCF models in Tables AEB-D-1 and AEB-D-2 include mean and mean high results only. The mean low results have been excluded.

Table AEB-D-2: Summary of Analytical Results – Combination Gas and Electric Plus Gas LDC Proxy Group



My conclusion as to where, within that range of results, Public Service's cost of equity falls is based on the Company's business and financial risk relative to the proxy group. Although the companies in my proxy groups are generally comparable to Public Service, the Company's Gas distribution business faces higher risk than the proxy group companies in several important ways that will be discussed later in my Direct Testimony. In order for Public Service to compete for capital on reasonable terms, those additional risk factors should be reflected in the Company's authorized ROE.

Q. PLEASE SUMMARIZE THE ROE ESTIMATION MODELS THAT YOU CONSIDERED TO ESTABLISH THE RANGE OF ROES FOR PUBLIC SERVICE'S GAS DISTRIBUTION BUSINESS.

A. I considered the results of two forms of the DCF model: the Constant Growth DCF and the Multi-Stage DCF. As discussed in more detail in Section V of my Direct Testimony, current and recent historical market conditions have affected the inputs and assumptions of the ROE estimation models. In particular, the current results of the DCF model are unduly depressed due to the low interest rate environment, which has suppressed dividend yields on utility stocks. In addition to the results of the DCF model, I have also considered risk premium approaches – forward-looking CAPM and ECAPM analyses and a Bond Yield Plus Risk Premium methodology – as well as an Expected Earnings analysis.

The mean low Constant Growth DCF results of 8.00 percent for the combined electric/gas proxy group and 7.77 percent for the combination gas/electric plus gas LDC proxy group are below an acceptable range of returns for a regulated utility and below any authorized ROE for an electric or gas distribution utility in the U.S. since at least 1980.[5] Based on prospective market conditions and the inverse relationship between the market risk premium and interest rates, I conclude that the mean low DCF results do not provide a sufficient risk premium to compensate equity investors for the residual risks of ownership, including the risk that they have the lowest claim on the assets and income of Public Service.

[5] Source: Regulatory Research Associates.

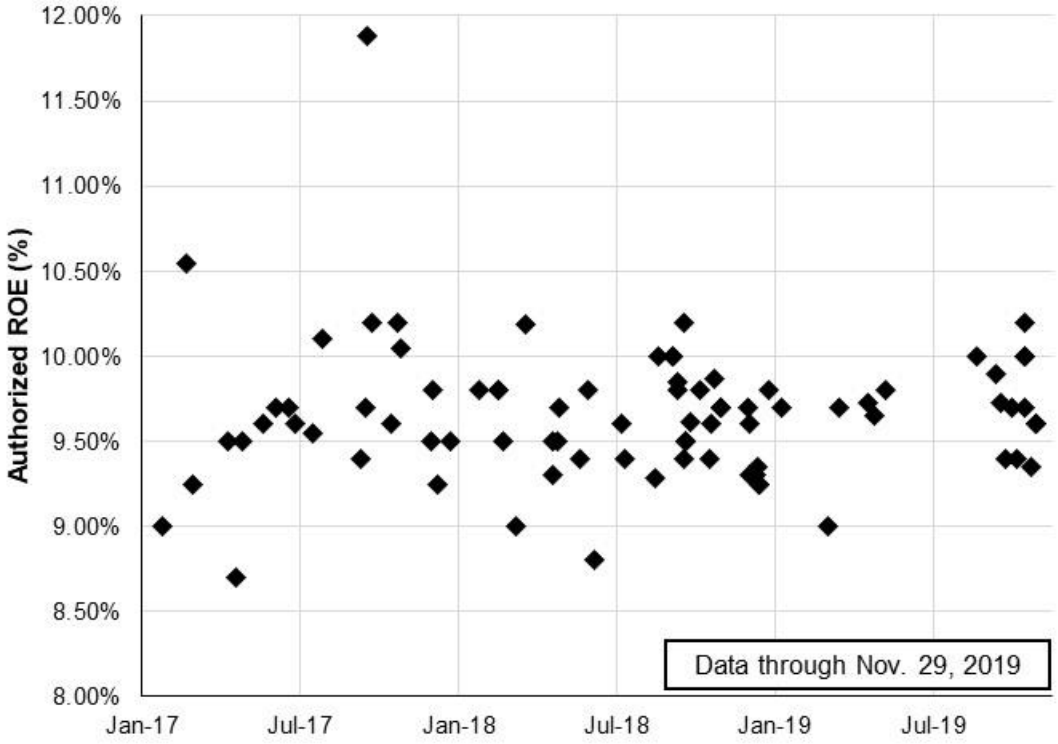
Although I have concerns about the results produced by the DCF models, my ROE recommendation considers the range between the mean and mean-high results of the DCF models. In addition, I consider the results of a forward-looking CAPM and ECAPM analyses, a Bond Yield Plus Risk Premium analysis, and an Expected Earnings analysis. I also consider company-specific risk factors, flotation costs, and current and prospective capital market conditions.

Q. HOW DOES THE CURRENT AUTHORIZED ROE FOR PUBLIC SERVICE'S GAS DISTRIBUTION BUSINESS COMPARE TO THE AUTHORIZED RETURNS FOR OTHER GAS DISTRIBUTION COMPANIES?

A. The current authorized ROE for Public Service's Gas distribution business is 9.35 percent, which was established by the Commission in December 2018 and is low by national standards. By comparison, the average authorized ROE for gas distribution companies nationwide from January 2017 through November 2019 has been 9.66 percent. As shown in Figure AEB-D-1, the large majority of authorized ROEs for gas distribution companies during this period (60 out of 82 decisions) have been greater than 9.50 percent. This is generally consistent with the equity return that was recently proposed by the Administrative Law Judge ("ALJ") in the Recommended Decision for Black Hills Energy.[6]

[6] Proceeding No. 19AL-0075G, Decision No. R19-1033, ¶ 193.

Figure AEB-D-1: Authorized ROEs for Gas Distribution Companies[7]



This is important because, as discussed in Section IV of my Direct Testimony, in order to attract capital on reasonable terms and conditions, Public Service must have an authorized return that is comparable to those available to investors in companies with comparable risk.

Q. **ARE THE AUTHORIZED ROE AND EQUITY RATIO IMPORTANT TO CREDIT RATING AGENCIES?**

A. Yes. The credit rating agencies consider the authorized ROE and equity ratio for regulated utilities to be very important for two reasons: 1) they help determine the cash flows and credit metrics of the regulated utility; and 2) they provide an indication of the degree of regulatory support for credit quality in the jurisdiction.

[7] Source: Regulatory Research Associates.

In addition, as discussed in Section V of my Direct Testimony, the credit rating agencies are particularly focused on the authorized ROE and equity ratio for regulated utilities following the passage of the Tax Cuts and Jobs Act ("TCJA") in December 2017. While many jurisdictions, including this one, have addressed the immediate uncertainty regarding the TCJA, the credit rating agencies continue to be very focused on the cash flows and credit metrics of regulated utilities. Furthermore, as discussed in more detail in Section V of my Direct Testimony, regulatory commissions have recognized that negative ratings actions would likely take time to be reversed.

Q. **PLEASE EXPLAIN THE CONCEPT OF "GRADUALISM."**

A. In utility regulation, the economic concept of "gradualism," in the context of the authorized ROE, means that the return on equity should not be determined solely based on short-term fluctuations in interest rates and other capital market conditions if those conditions are not considered likely to be sustained over the period during which rates will be in effect. Investors and credit rating agencies place high importance on the predictability of a utility's cash flows and earnings and on the stability of the regulatory environment in which the utility operates.

Gradualism suggests that the Commission should recognize that market conditions (i.e., the decline in government and utility bond yields) in 2019 are *likely temporary* in nature, as explained in Section V of my Direct Testimony. There have been several events that have had an effect on market conditions recently. In particular, yields on government and utility bonds declined in response to investors' concern that the trade dispute between the U.S. and China would slow the economic growth rate of the U.S. and global economies

and could push the U.S. economy into recession. As such, investors sought the relative safety of more defensive securities such as U.S. government bonds and utility bonds and stocks, and the Federal Reserve lowered short-term interest rates in order to sustain the economic expansion. However, as the trade dispute has subsided with the announcement of the Phase I trade agreement on January 15, 2020, investors expect that government and utility bond yields will increase over the coming quarters. It would not be appropriate for the Commission to set the authorized ROE for Public Service's Gas distribution business based on current or recent historical interest rates because it is likely that those rates will be higher during the period in which Public Service's rates will be in effect, as indicated by economic forecasts such as those published by Blue Chip Financial Forecasts.

Q. HAVE STATE REGULATORY COMMISSIONS CONSIDERED MARKET EVENTS AND THE UTILITY'S ABILITY TO ATTRACT CAPITAL IN DETERMINING THE EQUITY RETURN?

A. Yes. In a recent rate case for Consumers Energy Company in Michigan, Case No. U-18322, Staff recommended a 9.80 percent ROE based on the results of the DCF, CAPM and Risk Premium approaches, which was supported by the ALJ.[8] However, in its Order issued on March 29, 2018, the Michigan Public Service Commission ("Michigan PSC") partly disagreed with the ALJ and Staff

[8] Michigan Public Service Commission Order, Cause No. U-18322, Consumers Energy Company, March 29, 2018, at 37.

regarding expected market conditions and authorized a 10.00 percent ROE for Consumers Energy Company. The Michigan PSC noted that:

> [i]n setting the ROE at 10.00%, the Commission believes there is an opportunity for the company to earn a fair return during this period of atypical market conditions. This decision also reinforces the Commission's belief that customers do not benefit from a lower ROE if it means the utility has difficulty accessing capital at attractive terms and in a timely manner. The fact that other utilities have been able to access capital despite lower ROEs, as argued by many intervenors, is also a relevant consideration. It is also important to consider how extreme market reactions to singular events, as have occurred in the recent past, may impact how easily capital will be able to be accessed during the future test period should an unforeseen market shock occur. The Commission will continue to monitor a variety of market factors in future rate cases to gauge whether volatility and uncertainty continue to be prevalent issues that merit more consideration in setting the ROE.[9]

The Michigan PSC references "singular events" and the overall effect the events could have on the ability of a utility to access capital. Consistent with the Michigan PSC's views, it is important to consider that the TCJA has had a negative effect on the cash flows of utilities. In addition, it is important to consider this reduced cash flow in the context of overall market conditions when determining the appropriate ROE and equity ratio to enable Public Service to attract capital at reasonable terms during the period that rates will be in effect.

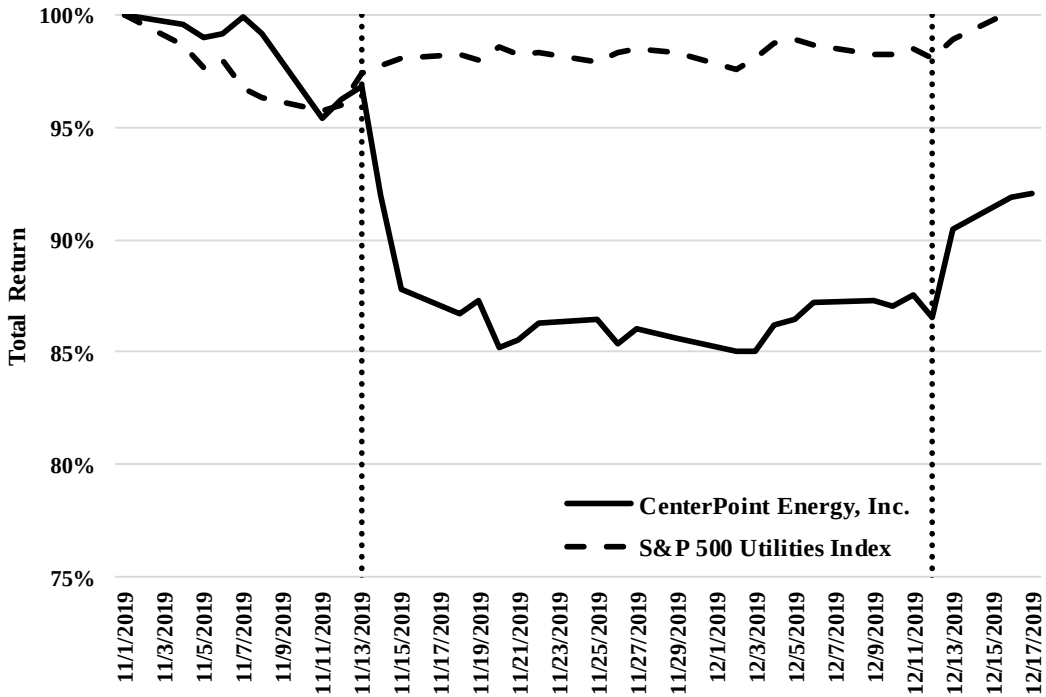
[9] *Id.,* at 43.

Q. **HAVE INVESTORS REACTED NEGATIVELY TO ANY RECENT ROE DECISIONS THAT WERE PERCEIVED AS BEING TOO LOW RELATIVE TO AVERAGE AUTHORIZED RETURNS?**

A. Yes. Investors consider authorized ROEs on a relative basis as demonstrated by the negative reaction to a November 14, 2019 oral deliberation of the Public Utility Commission of Texas ("PUCT"), in which the PUCT indicated that it would authorize a return on equity of 9.25 percent and an equity ratio of 40.00 percent for CenterPoint Energy Houston Electric ("CEHE"), both of which were well below both the company's requests and the recommendations of the ALJs in that proceeding. As shown in Figure AEB-D-2 below, returns on CenterPoint stock declined materially following those deliberations. In contrast, the S&P 500 Utilities Index remained relatively stable over the same period. On December 13, 2019, the PUCT indicated that it would postpone a final decision and encouraged the parties to the CEHE case to seek to reach a settlement.[10] In the trading days following that PUCT communication, CenterPoint Energy's stock price has modestly recovered.

Figure AEB-D-2: CenterPoint Stock Price Event Study[11]

[10] S&P Market Intelligence, Regulatory Research Associates, "Texas PUC puts off ruling on CenterPoint rate case to allow settlement talks," Regulatory Research Associates, December 13, 2019.
[11] Source: S&P Market Intelligence.



Furthermore, there are indications that this adverse rate case outcome may harm CenterPoint Energy's future ability to access capital. For example, Regulatory Research Associates noted:

> Investment banks have viewed the PUCT's decision as decidedly negative for CenterPoint, warning the PUCT's partial decision could result in earnings degradation, as well as equity issuances or asset sales to fortify CenterPoint's balance sheet. Moody's on Nov. 21 placed CEHE's senior unsecured, senior secured and issuer ratings on review for downgrade in anticipation that the utility's financial credit metrics will deteriorate.[12]

Moody's, in a November 21, 2019 rating action, placed the credit ratings of CEHE on review for possible downgrade, and noted:

> The review will focus on the impact that the lower 9.25% ROE and 40% equity layer will have on the utility, as well as any potential changes or revisions to the company's cash flow generation

[12] "Texas Rate Case Uncertainty Weighs on CenterPoint as Valuation Discount Expands", Regulatory Research Associates, November 25, 2019.

ability, its capital investment plan and its financial and dividend policy.[13]

This evidence demonstrates that unconstructive rate case outcomes can significantly affect the financial condition and credit worthiness of utilities.

To the extent the Commission's decision in this case materially differs from other jurisdictions' ROE decisions under the same or similar capital market conditions, it could result in an earned ROE that is not sufficient to allow Public Service to compete for capital with other similar risk investments, which would violate the *Hope* and *Bluefield* standards.

Q. WHAT IS YOUR CONCLUSION REGARDING THE APPROPRIATE AUTHORIZED ROE FOR PUBLIC SERVICE IN THIS PROCEEDING?

A. In developing the ROE for Public Service's Gas distribution business, I first established a reasonable range and ROE for a combination gas and electric utility. As is discussed in greater detail in the remainder of my Direct Testimony, I established a reasonable range of ROE results on the low end based on the average results of the DCF models and on the high end taking into consideration the results of the Risk Premium, ECAPM, and Expected Earnings approaches. The resulting range is from 9.75 percent to 10.25 percent, which is established based on a review of the results of the ROE estimation models, the risk factors of the Company as compared with the proxy group and the proposed capital structure. Within that range, I believe that an authorized ROE of 10.10 percent is just and reasonable for Public Service's gas distribution utility.

[13] Moody's Investor Services, Rating Action: Moody's places the ratings of CenterPoint Energy Houston Electric, LLC on review for downgrade, November 21, 2019.

The required ROE should be a forward-looking estimate; therefore, the analyses supporting my recommendation rely on forward-looking inputs and assumptions (e.g., projected growth rates in the DCF model, forecasted risk-free rate and Market Risk Premium in the CAPM analysis, etc.) and take into consideration capital market conditions, including the effect of the current low interest rate environment on utility stock valuations and dividend yields, the uncertainty associated with global economic events, and the rising interest rate environment.

IV. REGULATORY GUIDELINES

Q. PLEASE DESCRIBE THE PRINCIPLES THAT GUIDE THE ESTABLISHMENT OF THE COST OF CAPITAL FOR A REGULATED UTILITY.

A. The U.S. Supreme Court's precedent-setting *Hope* and *Bluefield* cases established the standards for determining the fairness or reasonableness of a utility's authorized ROE. Among the standards established by the Court in those cases are: (1) consistency with other businesses having similar or comparable risks; (2) adequacy of the return to support credit quality and access to capital; and (3) the principle that the specific means of arriving at a fair return are not important, only that the end result leads to just and reasonable rates.[14]

Q. HAS THE COMMISSION PROVIDED SIMILAR GUIDANCE IN ESTABLISHING THE APPROPRIATE RETURN ON COMMON EQUITY?

A. Yes. The Commission follows the precedents of the *Hope* and *Bluefield* cases and acknowledges that utility investors are entitled to a fair and reasonable return. For example, the Commission has stated:

> To be consistent with sound regulatory economics and the standards set forth by the Supreme Court in the *Bluefield* and *Hope* cases, a utility's allowed ROE should be: (i) similar to that of other financially sound businesses having similar or comparable risk, (ii) sufficient to ensure confidence in the financial integrity of the utility, and (iii) adequate to maintain and support the credit of the utility, thereby enabling it to attract, on a reasonable cost basis, the funds necessary to satisfy its capital requirements so that it can meet the obligation to provide adequate and reliable service to the public.[15]

[14] *Bluefield*, 262 U.S. at 692-93; *Hope*, 320 U.S. at 603.

[15] Proceeding Nos. 11AL-382E and 11AL-387E, Decision No. C11-1373, at ¶ 87.

Q. WHY IS IT IMPORTANT FOR A UTILITY TO BE ALLOWED THE OPPORTUNITY TO EARN A RETURN THAT IS ADEQUATE TO ATTRACT CAPITAL AT REASONABLE TERMS?

A. A return that is adequate to attract capital at reasonable terms enables Public Service to provide safe, reliable gas distribution service while maintaining its financial integrity. That return should be commensurate with returns required by investors elsewhere in the market for investments of equivalent risk. If it is lower, debt and equity investors will seek alternative investment opportunities for which the expected return reflects the perceived risks, thereby impairing Public Service's ability to attract capital at reasonable cost.

Q. WHAT ARE YOUR CONCLUSIONS REGARDING REGULATORY GUIDELINES?

A. The ratemaking process is premised on the principle that, in order for investors and companies to commit the capital needed to provide safe and reliable utility services, a utility must have the opportunity to recover the return of, and the market-required return on, its invested capital. Because utility operations are capital-intensive, regulatory decisions should enable the utility to attract capital at reasonable terms; doing so balances the long-term interests of the utility and its customers.

The financial community carefully monitors the current and expected financial condition of utility companies and the regulatory framework in which they operate. In that respect, the regulatory framework is one of the most important factors in both debt and equity investors' assessments of risk. The Commission's order in this proceeding, therefore, should establish rates that

provide Public Service with the opportunity to earn an ROE that is: (1) adequate to attract capital at reasonable terms; (2) sufficient to ensure its financial integrity; and (3) commensurate with returns on investments in enterprises with similar risk. To the extent Public Service is authorized the opportunity to earn its market-based cost of capital, the proper balance is achieved between customers' and shareholders' interests.

V. CAPITAL MARKET CONDITIONS

Q. WHY IS IT IMPORTANT TO ANALYZE CAPITAL MARKET CONDITIONS?

A. The ROE estimation models rely on market data that are either specific to the proxy group, in the case of the DCF model, or the expectations of market risk, in the case of the CAPM. The results of the ROE estimation models can be affected by prevailing market conditions at the time the analysis is performed. While the ROE established in a rate proceeding is intended to be forward-looking, the analyst uses current and projected market data, specifically stock prices, dividends, growth rates and interest rates in the ROE estimation models to estimate the required return for the subject company.

As discussed in the remainder of this section, analysts and many regulatory commissions have concluded that recent market conditions have affected the results of the ROE estimation models. As a result, it is important to consider the effect of these conditions on the ROE estimation models when determining the appropriate range and recommended ROE for a future period. If investors do not expect current market conditions to be sustained in the future, it is possible that the ROE estimation models will not provide an accurate estimate of investors' required return during that rate period. Therefore, it is very important to consider projected market data to estimate the return for that forward-looking period.

Q. WHAT FACTORS ARE AFFECTING THE COST OF EQUITY FOR REGULATED UTILITIES IN THE CURRENT AND PROSPECTIVE CAPITAL MARKETS?

A. The cost of equity for regulated utility companies is being affected by several factors in the current and prospective capital markets, including: (1) the current market uncertainty has resulted in valuations of utility stocks that are at historically high levels, which have an inverse relationship to dividend yields; (2) current market uncertainty and its effect on interest rates and long-term expectations for interest rates; and (3) recent Federal tax reform. In this section, I discuss each of these factors and how it affects the models used to estimate the cost of equity for regulated utilities.

A. <u>Effect of Market Conditions on Valuations</u>

Q. HOW HAS THE FEDERAL RESERVE'S MONETARY POLICY AFFECTED CAPITAL MARKETS IN RECENT YEARS?

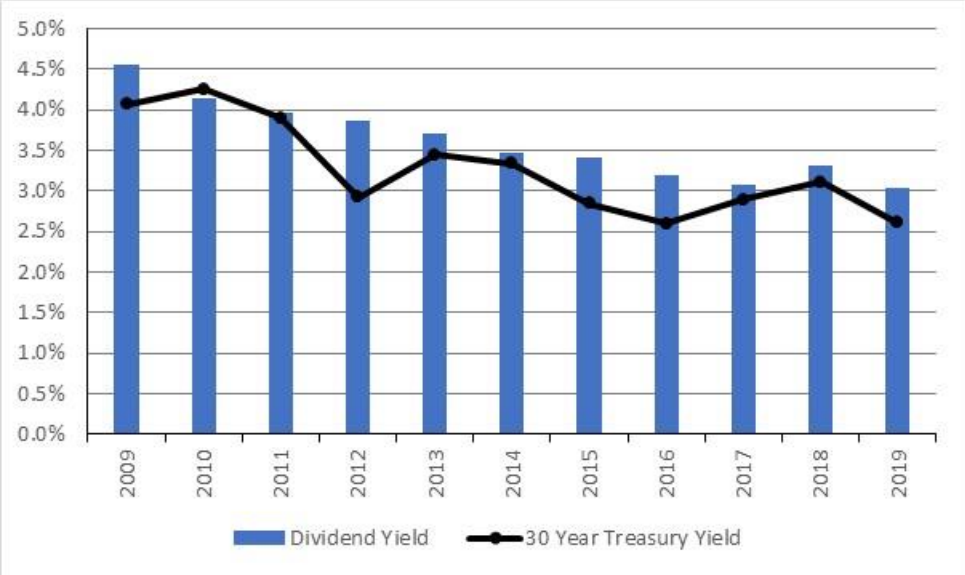
A. Extraordinary and persistent federal intervention in capital markets artificially lowered government bond yields after the Great Recession of 2008-09, as the Federal Open Market Committee ("FOMC") used monetary policy (both reductions in short-term interest rates and purchases of Treasury bonds and mortgage-backed securities) to stimulate the U.S. economy. As a result of very low returns on short-term government bonds, yield-seeking investors have been forced into longer-term instruments, bidding up prices and reducing yields on those investments. As investors have moved along the risk spectrum in search

of yields that meet their return requirements, there has been increased demand for dividend-paying equities, such as utility stocks.

Q. HOW HAVE RECENT MARKET CONDITIONS AFFECTED THE VALUATIONS AND DIVIDEND YIELDS OF UTILITY SHARES?

A. The Federal Reserve's accommodative monetary policy has caused investors to seek alternatives to the historically low interest rates available on Treasury bonds. A result of this search for higher yield is that the share prices for many common stocks, especially dividend-paying stocks such as utilities, have been driven higher while the dividend yields (which are computed by dividing the dividend payment by the stock price) have decreased to levels well below the historical average. As shown in Figure AEB-D-3, over the period from 2009 through 2019, which is the period the Federal Reserve has intervened to stabilize financial markets and support the economic recovery after the Great Recession of 2008-09, Treasury bond yields and utility dividend yields declined. Specifically, Treasury bond yields declined by approximately 147 basis points, and combination gas and electric utility dividend yields decreased by about 154 basis points over this period.

Figure AEB-D-3: Dividend Yields for Utility Stocks[16]



Q. HAVE EQUITY ANALYSTS COMMENTED ON THE VALUATIONS OF UTILITY STOCKS?

A. Yes. Several equity analysts have recognized that utility stock valuations are very high relative to historical levels. In the electric utilities industry report, Value Line noted the high valuations:

> Most stocks covered in the Electric Utility Industry have fared very well in 2019. For the vast majority of these issues, the price has risen more than 10%. For some stocks, including Entergy, the quotation has soared 35%. The aforementioned reduction in interest rates (from a level that was already low) has induced income-oriented investors to reach for yield. This is despite the fact that the valuations of electric utility issues are historically high. The group's average dividend yield is just 3.2%, and the price-earnings ratios of most of these stocks is well above that of the market. In fact, some recent quotations are above the 2022-2024 Target Price Range.[17]

[16] Source: Bloomberg Professional. Figure AEB-D-1 includes 2019 data through November 29, 2019.

[17] Value Line Investment Survey, Electric Utility (Central) Industry, December 13, 2019, at 901.

This is further supported by a recent Edward Jones report on the utility sector:

> Utility valuations have climbed back to record levels as 10-year Treasury bond rates have fallen back below 2%. On a price-to-earnings basis, [utility valuations] remain significantly above their historical average and have been trading near all-time highs. We have seen utility valuations moving in line with interest rate movements, although there have been exceptions to this. Overall, however, we believe the low-interest-rate environment has been the biggest factor in pushing utilities higher since many investors buy them for their dividend yield.
>
> Utilities recently hit new all-time highs and are still trading significantly above their average price-to-earnings ratio over the past decade. The premium valuation continues to reflect not only the low interest rate environment, but also the stable and predominantly regulated earnings growth we foresee.[18]

Furthermore, Bank of America Merrill Lynch recently commented on the risks of underperformance for certain utilities based on concerns about the valuation of the sector, in particular the concern that the current premium on share prices may be largely unwarranted.[19]

As noted by equity analysts, utility stocks have experienced high valuations and low dividend yields, driven by investors moving into dividend paying stocks from bonds due to the low interest rates in the bond market. Conversely, if interest rates increase, bonds become a substitute for utility stocks, which results in an increase in dividend yields. As noted in the next

[18] Andy Smith. Edward Jones, Utilities Sector Outlook (October 18, 2019), at 2. [Reference to figure omitted.]

[19] BofAML, American Water Works AWKward valuation: Downgrading premium utility to under perform, July 15, 2019. BofAML, Eversource Energy, Reiterating our Underperform: Shares pricey relative to few updates, July 15, 2019.

section of my Direct Testimony, this change in market conditions that is expected over the long-term implies that the ROE calculated using historical market data in the DCF model may understate the forward-looking cost of equity.

Q. WHAT IS THE EFFECT OF HIGH VALUATIONS ON UTILITY STOCKS ON THE DCF MODEL?

A. High valuations on utility shares have the effect of depressing the dividend yields, which results in overall lower estimates of the cost of equity from the DCF model.

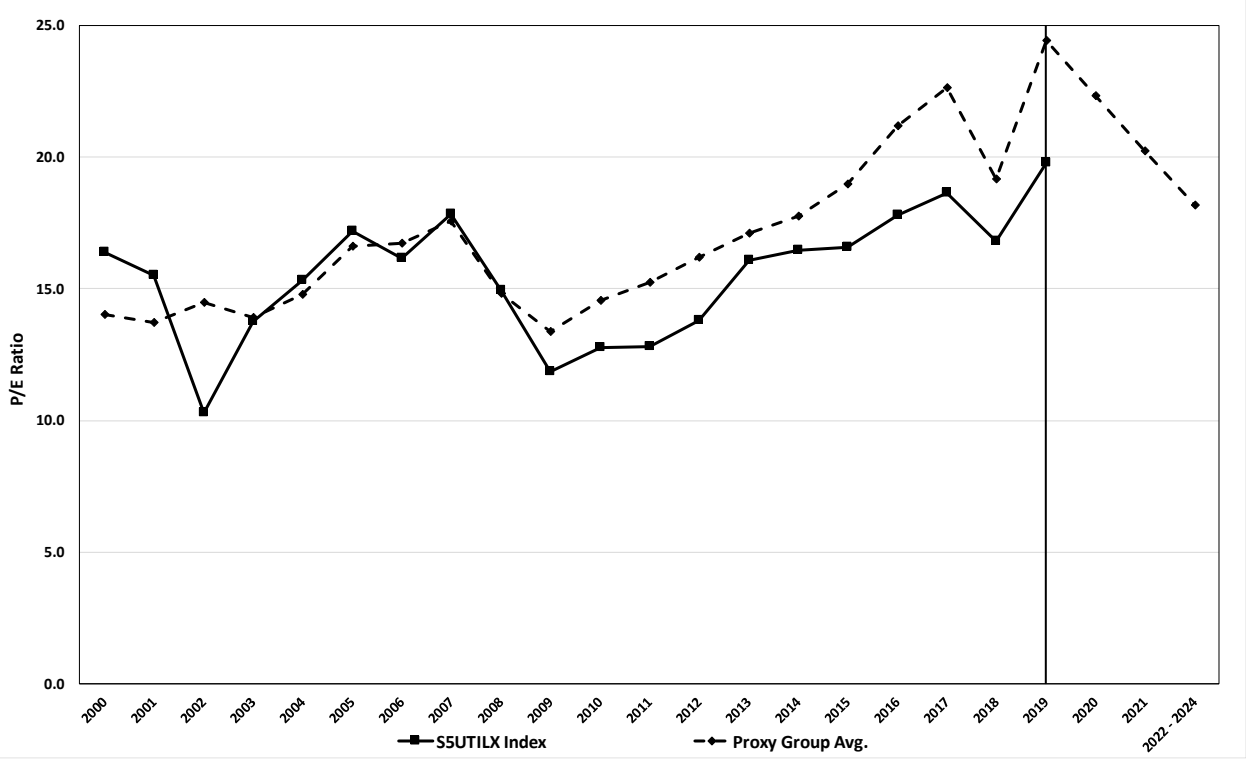
Q. HOW DO THE VALUATIONS OF PUBLIC UTILITIES COMPARE TO THE HISTORICAL AVERAGE?

A. Figure AEB-D-4 summarizes the average historical and projected Price-to-Earnings ("P/E") ratios for the companies in the combination gas and electric proxy group calculated using data from Bloomberg Professional and Value Line.[20] As shown in that Figure, the average P/E ratio for the proxy companies increased from 2018 to 2019 as a result of uncertainty in the market surrounding the trade dispute between the U.S. and China. This uncertainty has resulted in investors shifting to defensive sectors such as utilities and consumer staples. This has driven the prices of utility stocks, and thus the P/E ratios, back to the unsustainably high levels of 2017. The average P/E ratio for the combination gas and electric proxy companies was 24.43 in 2019, which is well above the average for the period of 2000-2019 of 16.86. It is not reasonable to expect the proxy companies to maintain P/E ratios that are well above long-term averages

[20] Selection of the Proxy Companies is discussed in detail in Section VI of my Direct Testimony.

over the long-term. As shown in Figure AEB-D-4, Value Line is projecting that P/E ratios will decline from current levels over the period through 2022. All else equal, if P/E ratios for the proxy companies decline, as Value Line projects, the ROE results from the DCF model would be higher. Therefore, the DCF model using historical market data is likely understating the forward-looking cost of equity for the proxy group companies.

Figure AEB-D-4: Average Historical Proxy Group P/E Ratios[21]



[21] Source: Bloomberg Professional, includes historical data through November 29, 2019, and projected data from Value Line Investment Survey as of November 29, 2019.

Q. HAVE YOU REVIEWED ANY OTHER MARKET INDICATORS THAT COMPARE THE CURRENT VALUATION OF UTILITIES TO THE HISTORICAL AVERAGE?

A. Yes. To further assess how the current low interest rate environment has affected the valuations of the companies in my proxy group, I reviewed the price/earnings to growth ("PEG") ratio for the S&P Utilities Index. The PEG ratio is commonly used by investors to determine if a company is considered over- or under-valued. The ratio compares the P/E ratio of a company to the expected growth rate of future earnings. This allows investors to compare companies with similar P/E ratios but different earnings growth projections. If two companies have a P/E ratio of 20, but Company A is growing at a rate of 6 percent and Company B is growing at a rate of 15 percent, then on a relative valuation basis Company B is the better investment.

As shown on page 5 of a report published by Yardeni Research, Inc., the PEG ratio for the S&P Utilities Index is significantly higher than it has historically been because of the accommodative monetary policy pursued by the Federal Reserve following the Great Recession of 2008/09. [22] In general, stocks with lower long-term PEG ratios are considered better values. As the PEG ratio increases above the long-term historical average, as has been the case with the S&P Utilities Index, then the stocks are considered relatively over-valued unless the growth rate increases to support the higher valuation. The PEG ratio for the

[22] Yardeni Research, Inc. "S&P 500 Industry Briefing: Utilities." December 16, 2019, p. 5.

S&P Utilities Index as of December 2019 is 4.0, which indicates that many of the stocks contained in the index are currently trading at levels well above the historical average. This analysis supports the P/E Ratio projections produced by Value Line, which as shown in

Figure **AEB-D-4**, are projecting the P/E ratios of utilities to decline over the near-term.

Q. HOW DO EQUITY INVESTORS VIEW THE UTILITIES SECTOR BASED ON THESE RECENT MARKET CONDITIONS?

A. Investment advisors have suggested that utility stocks may underperform as a result of market conditions. Denise Chisholm, sector strategist at Fidelity Investments, recently commented in an interview with Barron's that the high valuations of defensive sector stocks such as utilities is likely to result in sector rotation (i.e., investor movement away from these sectors back to others). Specifically, Ms. Chisholm explained:

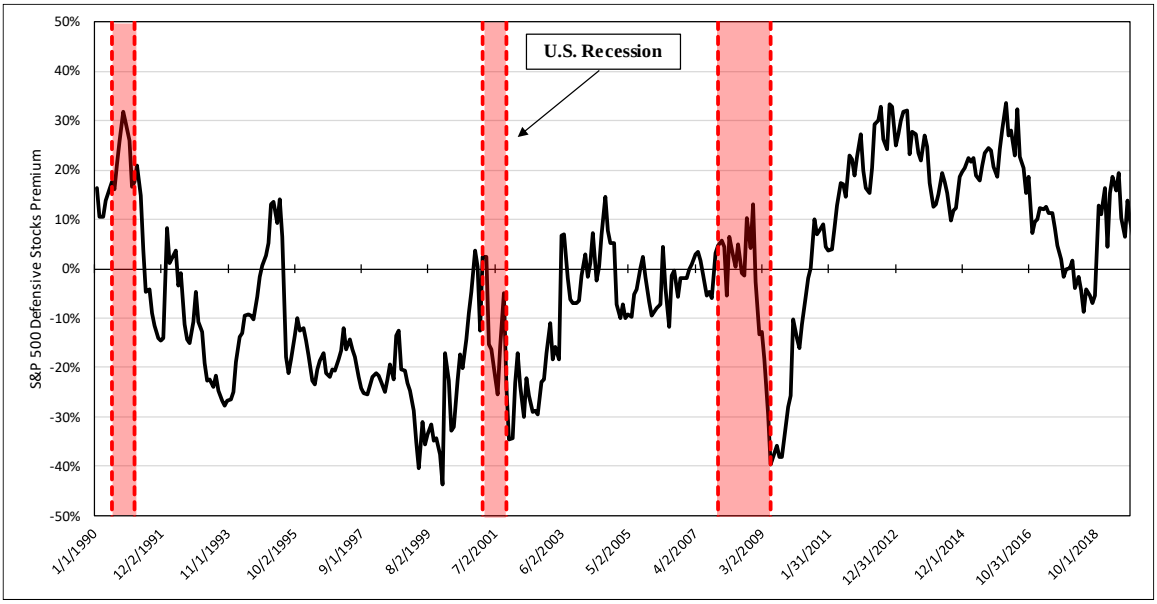
> Consumer staples, utilities, and health care are the most expensive they've been since 1970, in the top percentile. That data point has been not just informative, but also predictive in history. It's a rare signal that has only really occurred five times. You see a 1,000-basis-point rotation back to the economically sensitive sectors and an average underperformance of the defensive sectors.[23]

Moreover, to show the current high valuations of defensive sector stocks, I compared the forward P/E ratio of defensive sector stocks in the S&P 500 to the forward P/E ratio of cyclical sector stocks in the S&P 500. This comparison is shown in Figure AEB-D-5. As shown this Figure, the ratio of the forward P/E of

[23] Norton, Leslie P. "It's Time to Stop Playing Defense in Stocks." Barron's, 28 Oct. 2019, www.barrons.com/articles/its-time-to-stop-playing-defense-in-stocks-51571418847.

S&P 500 defensive sector stocks to S&P 500 cyclical sector stocks is currently approximately 5.00, well above the historical average from 1990 to 2019 of -2.22. Thus, defensive sector stocks are currently trading a very high premium over cyclical sectors stocks, indicating that the valuations of defensive sectors such as utilities are currently too high.

Figure AEB-D-5: Forward P/E Ratio Comparison of the S&P 500 defensive sector to the S&P 500 cyclical sector[24]



B. The Current and Expected Interest Rate Environment

Q. PLEASE PROVIDE A BRIEF SUMMARY OF THE RECENT MONETARY POLICY ACTIONS OF THE FEDERAL RESERVE.

A. At its December 2019 meeting, the Federal Reserve decided to maintain the current federal funds rate range of 1.50 percent to 1.75 percent and noted that the current range was appropriate for sustaining the current economic expansion

[24] Bloomberg Professional, Data through November 29, 2019.

and satisfying the Federal Reserve's goals of full employment and price stability.[25] Prior to the December 2019 meeting, the Federal Reserve reduced the federal funds rate three times in 2019 in response to economic effects of the trade dispute between the U.S. and China. The ongoing trade dispute has affected the global economy and caused a rise in volatility in financial markets; thus, the Federal Reserve reacted by reducing the federal funds rate to sustain the current economic expansion.

Q. PLEASE PROVIDE ADDITIONAL CONTEXT FOR THESE RECENT CHANGES IN THE FEDERAL FUNDS RATE.

A. Before the Federal Reserve lowered the federal funds rate in July, September, and October of 2019, the Federal Reserve raised the rate in 25-basis-point increments on four occasions in 2018 based on stronger conditions in employment markets, a relatively stable inflation rate, steady economic growth, and increased household spending. Since December 2015, the Federal Reserve increased interest rates nine times, bringing the federal funds rate to the range of 2.25 percent to 2.50 percent, before the recent three reductions.

Q. HAS THE FEDERAL RESERVE SIGNALED THAT IT DOES NOT PLAN TO FURTHER REDUCE THE FEDERAL FUND RATE AT THIS TIME?

A. Yes. At the press conference following the December 2019 meeting, Chairman Powell acknowledged that weaker global growth and trade disputes had forced the Federal Reserve to shift to a more accommodative policy over the past year,

[25] FOMC, Federal Reserve press release, December 11, 2019.

but that the change helped support the economy and keep the economic outlook on track.[26] However, given the stability in the Federal Reserve's current economic outlook, the Federal Reserve decided to maintain the current federal funds rate range at the December 2019 meeting. Moreover, at the December 2019 press conference, Chairman Powell indicated that there would likely not be further changes in federal funds rate. Specifically, Chairman Powell noted:

> We believe that the current stance of monetary policy will support sustained growth, a strong labor market, and inflation near our symmetric 2 percent objective. As long as incoming information about the economy remains broadly consistent with this outlook, the current stance of monetary policy likely will remain appropriate. Looking ahead, we will be monitoring the effects of our recent policy actions, along with other information bearing on the outlook, as we assess the appropriate path of the target range for the federal funds rate. Of course, if developments emerge that cause a material reassessment of our outlook, we would respond accordingly. Policy is not on a preset course.[27]

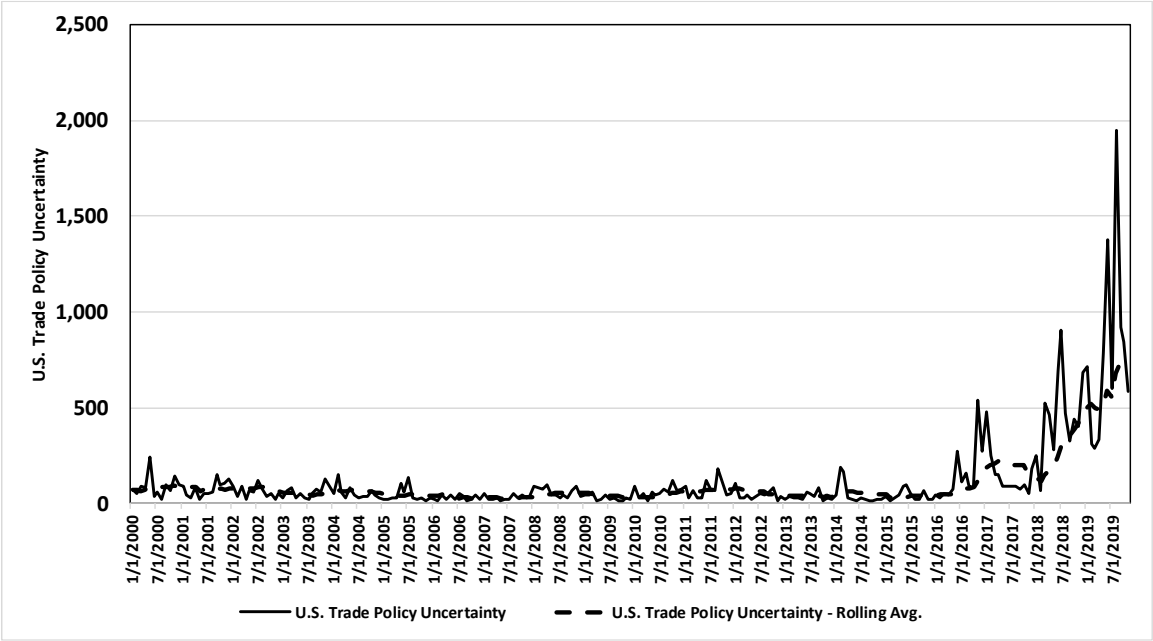
Q. HAVE YOU REVIEWED ANY MARKET INDICATORS THAT MEASURE UNCERTAINTY IN THE MARKET RELATED TO U.S. TRADE POLICY?

A. Yes, I have. I reviewed the U.S. trade policy uncertainty index developed by economists Scott Baker, Nicholas Bloom and Steven Davis. The index measures the frequency that articles in U.S. publications discuss economic policy uncertainty and reference trade policy.[28] As shown in Figure AEB-D-6, uncertainty regarding U.S. trade policy is at its highest level since at least 2000,

[26] FOMC, Transcript of Chairman Powell's Press Conference, December 11, 2019, at 3.
[27] FOMC, Transcript of Chairman Powell's Press Conference, December 11, 2019, at 3-4.
[28] Source: Economic Policy Uncertainty: https://www.policyuncertainty.com/index.html.

with the largest increase occurring in the last two years as a result of the ongoing trade dispute between the U.S. and China.

Figure AEB-D-6: U.S. Trade Policy Uncertainty Index



Q. HOW HAVE THE TRADE DISPUTE WITH CHINA AND THE RECENT UNCERTAINTY IN THE MARKET AFFECTED THE YIELDS ON LONG-TERM GOVERNMENT BONDS?

A. The uncertainty surrounding the trade dispute between the U.S. and China resulted in a flight-to-quality as investors purchased safer assets, such as U.S. Treasuries and utility stocks and bonds, due to increased fears of a possible recession. This was evident in 2019 as investors responded to news of increases in tariffs by both China and the U.S.

To illustrate the recent reactions of investors, I conducted an event study of the yield on the 10-year U.S. Treasury bond between July 1, 2019, and November 29, 2019. As shown in Figure AEB-D-7, the yield on the 10-year U.S.

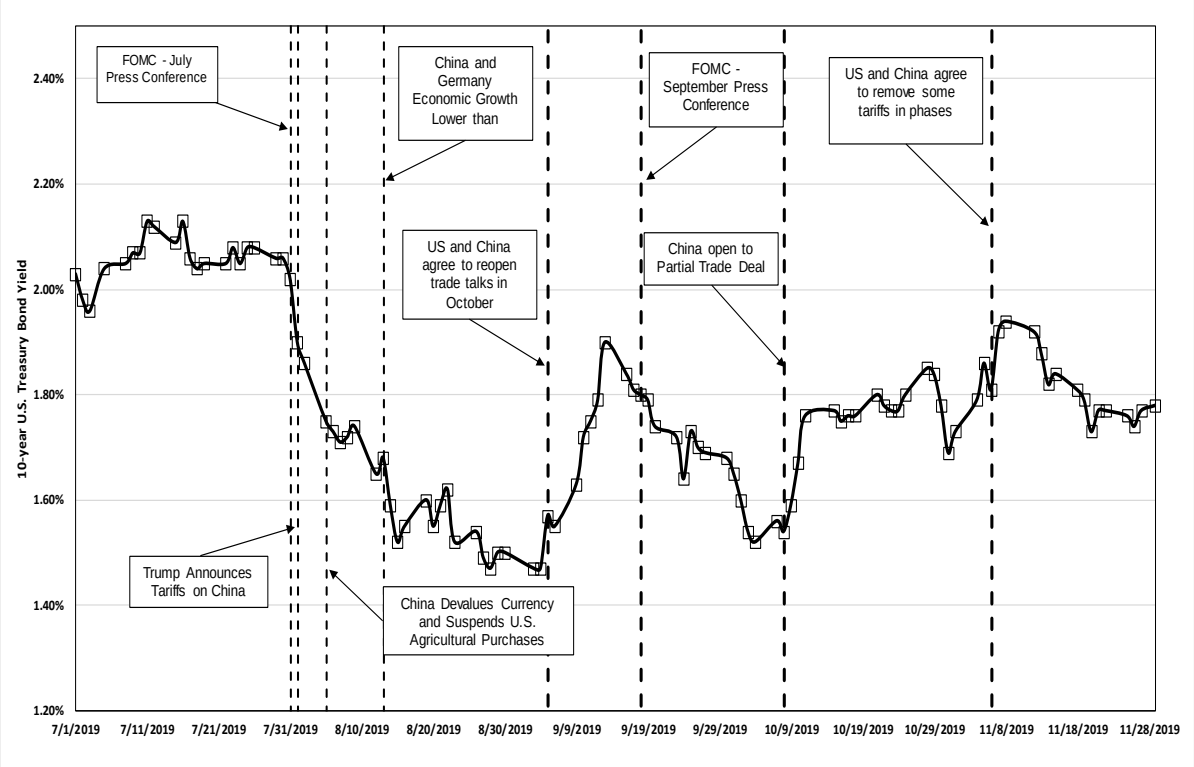
Treasury Bond was relatively stable for the month of July; however, the yield decreased by approximately 50 basis points from the end of July to the middle of August. This decline was due to investors responding to events associated with the trade dispute. For example, the market reacted negatively to Chairman Powell's comments following the FOMC meeting at the end of July and President Trump's announcement that the U.S. was going to impose tariffs on the remaining set of goods imported from China. These two events accounted for an approximately 25 basis point decrease in the yield on the 10-year Treasury between July 30, 2019 and August 5, 2019.

Conversely, positive developments in the trade dispute between the U.S. and China have led to increases in the yield on the 10-year Treasury Bond. For example, the yield on the 10-year Treasury Bond increased following news on September 5, 2019, that the U.S. and China would reopen trade discussions in October 2019. Moreover, with recent news of a partial trade deal and the removal of some of the tariffs in phases, the 10-year Treasury bond yield was at 1.78 percent as of November 29, 2019, which is a 31-basis point increase over the low in August 2019 of 1.47 percent.[29] The recent volatility in the market as a result of the trade dispute led Bloomberg to note that the volatility in the market

[29] The Phase I trade deal between the U.S. and China was signed on January 15, 2020. However, there are ongoing negotiations between the two countries on other aspects of the trade agreement.

on any given day is being determined more and more by the words and actions of Chairmen Powell, President Trump, and the President of China, Xi Jinping.[30]

Figure AEB-D-7: 10-year U.S. Treasury Bond Yield



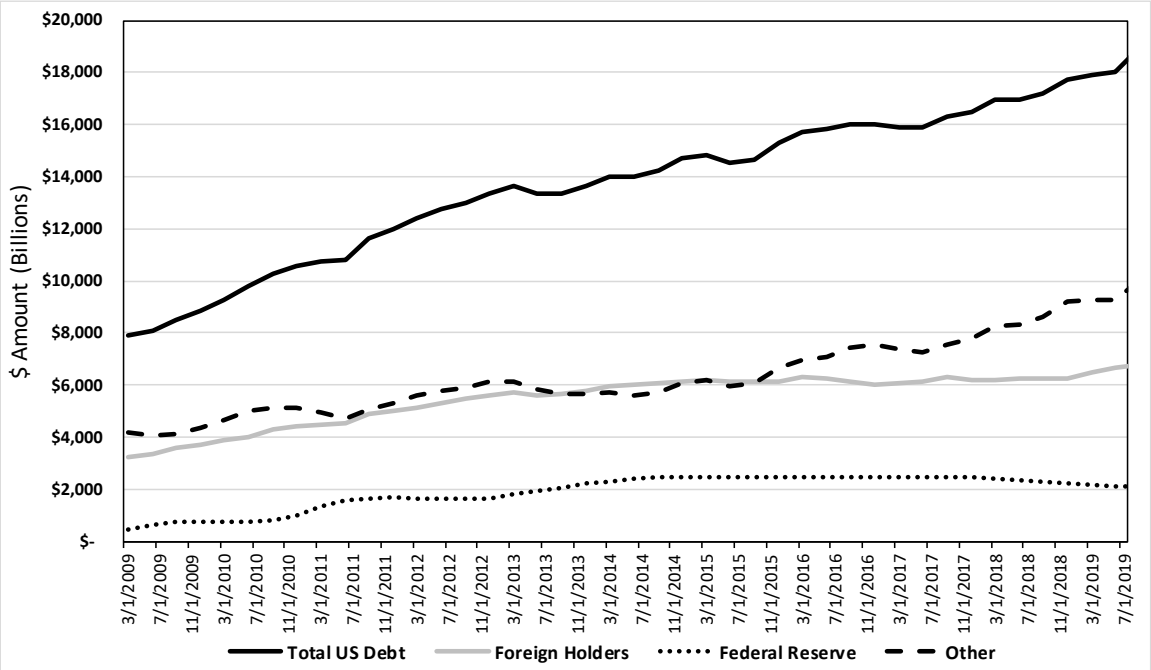
Q. IS THE RECENT DECLINE IN LONG-TERM GOVERNMENT BOND YIELDS AS A RESULT OF U.S. TRADE POLICY UNCERTAINTY INDICATIVE OF THE LONG-TERM OUTLOOK FOR YIELDS ON LONG-TERM GOVERNMENT BONDS?

A. No, it is not. While the yields on long-term government bonds have decreased recently, this is not indicative of a long-term trend. It is more indicative of a shift in the type of investors purchasing the long-term government bonds. As shown in

[30] Regan, Michael P. "Powell Speaks, Trump Tweets, China Reacts, Markets Freak. Repeat." Bloomberg.com, Bloomberg, 8 Aug. 2019, www.bloomberg.com/news/articles/2019-08-08/powell-speaks-trump-tweets-china-reacts-markets-freak-repeat.

Figure AEB-D-8, the total amount of debt owned by the Federal Reserve and Foreign Holders has been relatively stable or slightly declining over the past few years, while the demand from private sector investors has been increasing. This is important because private sector investors are more price-sensitive and more likely to respond quickly to changes that occur in the market. This explains the decline in long-term government bond yields in 2019, as investors reacted to the uncertain economic conditions due to the trade dispute between the U.S. and China. However, as shown in Figure AEB-D-7, long-term Treasury yields increased between August 2019 and November 2019 in response to positive developments in the trade dispute between the U.S. and China.

Figure AEB-D-8: Ownership of U.S. Debt – 2009 - 2019[31]



[31] Bloomberg Professional, Data through November 29, 2019.

Q. WHAT IS THE FINANCIAL MARKET'S PERSPECTIVE ON THE FUTURE PATH OF LONG-TERM GOVERNMENT BOND YIELDS?

A. According to the December 2019 issue of Blue Chip Financial Forecasts, the yields on 10- and 30-year Treasury bonds are expected to increase over the near-term of Q4 2019 to Q1 2021.[32] Similarly, strategists at both JP Morgan Chase and Merrill Lynch are projecting increases in long-term government bond yields over the near-term. Merrill Lynch has projected that the yield on the 10-year Treasury Bond will increase to 2.00 percent by the end of 2019,[33] while strategists at JP Morgan Chase indicated that yields on the 10-year Treasury Bond could increase up to 100 basis points over the next six months.[34]

Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE CURRENT INTEREST RATE ENVIRONMENT AND ITS EFFECT ON THE COST OF EQUITY FOR PUBLIC SERVICE?

A. Investors responded to the trade dispute between the U.S. and China by divesting higher-risk assets and purchasing lower-risk assets such as U.S. Treasury bonds. However, the trade dispute between the U.S. and China is not expected to continue over the long-term. This view is consistent with that of Chairman Powell who, as noted above, sees an improvement in the risk associated with trade policy. In fact, given the increase in price-sensitive

[32] Blue Chip Financial Forecasts, Vol. 38, No. 12, December 1, 2019, at 2.
[33] Merrill Lynch, Chief Investment Officer. "Capital Market Outlook." November 18, 2019, at 8.
[34] Ossinger, Joanna. "JPMorgan Says Treasury Yields to Surge in 1995 Cycle Replay." Bloomberg, 3 Nov. 2019, www.bloomberg.com/news/articles/2019-11-04/jpmorgan-says-treasury-yields-to-surge-in-replay-of-1995-cycle.

investors purchasing U.S. Treasuries bonds, if a comprehensive trade deal were to be reached, it is likely the yields on long-term government bonds would increase substantially. As interest rates increase, the cost of equity for the proxy companies using the DCF model is likely to be an overly-conservative estimate of investors required returns because the proxy group average dividend yield reflects the increase in stock prices that resulted from substantially lower interest rates. As such, rising interest rates support the selection of a return well above the median ROE estimate resulting from the DCF analysis. Alternatively, my CAPM and Bond Yield Plus Risk Premium analyses include estimated returns based on near-term projected interest rates, reflecting investors' expectations of market conditions over the period that the rates established in this proceeding will be in effect.

C. Effect of Tax Reform on the Return on Equity

Q. ARE THERE OTHER FACTORS THAT SHOULD BE CONSIDERED IN DETERMINING THE COST OF EQUITY FOR PUBLIC SERVICE?

A. Yes. After the passage of the TCJA in December 2017, the credit rating agencies commented on the negative effect of the TCJA on regulated utilities. Specifically, the rating agencies noted that the TCJA was expected to reduce utility revenues due to the lower federal income taxes and the requirement to return excess Accumulated Deferred Income Taxes ("ADIT") to utility customers. That change in revenue was expected to reduce Funds from Operations ("FFO") metrics across the sector, and absent regulatory mitigation strategies, was expected to lead to weaker credit metrics and negative ratings actions for some

utilities.[35] While many jurisdictions, including Colorado, have addressed the immediate uncertainty regarding the TCJA, the credit rating agencies continue to be very focused on the cash flows and credit metrics of regulated utilities and whether the utility has a reasonable opportunity to earn its authorized ROE.

Q. HAVE CREDIT OR EQUITY ANALYSTS COMMENTED ON THE EFFECT OF THE TCJA ON UTILITIES?

A. Yes. Each of the credit rating agencies has indicated that the TCJA would have an overall negative credit impact on regulated operating companies of utilities and their holding companies due to the reduction in cash flow that results from the change in the federal tax rate and the loss of most bonus depreciation.[36]

Moody's noted that the rates that regulators allow utilities to charge customers is based on a cost-plus model, with tax expense being one of the pass-through items. Utilities collect less tax at the lower rate, reducing revenue. In addition, with the loss of most bonus depreciation, the timing of future cash tax payments is accelerated. Therefore, the utilities collect less tax revenue as a result of the lower tax rate and retain less of the collected taxes as a result of the loss of bonus depreciation. All else being equal, the changes have a negative

[35] FitchRatings, Special Report, What Investors Want to Know, "Tax Reform Impact on the U.S. Utilities, Power & Gas Sector", January 24, 2018.

[36] In September 2019, the Treasury and the IRS issued additional proposed regulations regarding bonus depreciation. Among other things, the additional proposed regulations addressed the extent to which public utilities may qualify for bonus depreciation. These additional proposed regulations provide that public utility property under construction as of September 27, 2017 and placed in service after 2017 may continue to qualify for bonus depreciation as it existed prior to the enactment of the TCJA. Company witness Ms. Naomi Koch provides additional information on the bonus depreciation in her Direct Testimony.

effect on utility cash flows and, ultimately, negatively impact the utilities' ability to fund ongoing operations and capital improvement programs.

In Standard & Poor's ("S&P") 2019 trends report, the rating agency notes that the utility industry's financial measures weakened in 2018 and attributed that weakness to tax reform, capital spending, and negative load growth. In addition, S&P expects that weaker credit metrics will continue into 2019 for those utilities operating with minimal financial cushion. S&P further expects that these utilities will look to offset the revenue reductions from tax reform with equity issuances. The rating agency reported that in 2018 regulated utilities issued nearly $35 billion in equity, which is more than twice the equity issuances in either 2016 or 2017.[37]

FitchRatings ("Fitch") also indicated that any ratings actions will be guided by the response of regulators and the management of the utilities. Fitch noted that the solution would depend on the ability of utility management to manage the cash flow implications of the TCJA. Fitch offered several solutions to provide rate stability and to moderate changes to cash flow in the near term, including increasing the authorized ROE and/or equity ratio.[38]

[37] Standard & Poor's Ratings, "Industry Top Trends 2019, North America Regulated Utilities", November 8, 2018.
[38] FitchRatings, Special Report, What Investors Want to Know, "Tax Reform Impact on the U.S. Utilities, Power & Gas Sector", January 24, 2018.

Q. HAS MOODY'S RESPONDED TO THE INCREASED RISK FOR UTILITIES RESULTING FROM THE TCJA?

A. Yes. Moody's responded in 2018 by downgrading the rating outlook for several regulated utilities from Stable to Negative, noting that the rating change affected companies with limited cushion in their ratings for deterioration in financial performance.[39] Later that year, Moody's downgraded the outlook for the entire regulated utility industry from Stable to Negative for the first time ever, citing ongoing concerns about the negative effect of the TCJA on cash flows of regulated utilities. Since that time, Moody's has continued to review the response of utilities and regulatory commissions and has downgraded the credit ratings of several utilities based in part on the effect of federal tax reform on financial metrics. As shown in Figure AEB-D-9, the downgrades continued throughout 2019.

[39] Moody's Investors Service, Global Credit Research, Rating Action: Moody's changes outlooks on 25 US regulated utilities primarily impacted by tax reform, January 19, 2018.

Figure AEB-D-9: Credit Rating Downgrades Resulting from TCJA

Utility	Rating Agency	Credit Rating before TCJA	Credit Rating after TCJA	Downgrade Date
Wisconsin Power and Light Company	Moody's	A2	A3	12/11/2019
Vectren Utility Holdings	Moody's	A2	A3	10/25/2019
Southern Indiana Gas & Electric Company	Moody's	A2	A3	10/25/2019
Indiana Gas Company	Moody's	A2	A3	10/25/2019
El Paso Electric Company	Moody's	Baa1	Baa2	9/17/2019
Questar Gas Company	Moody's	A2	A3	8/15/2019
DTE Gas Company	Moody's	A2	A3	7/22/2019
South Jersey Gas Company	Moody's	A2	A3	7/17/2019
Central Hudson Gas & Electric	Moody's	A2	A3	7/12/2019
Oklahoma Gas & Electric Company	Moody's	A2	A3	5/31/2019
American Water Works	Moody's	A3	Baa1	4/1/2019
Niagara Mohawk Power Corporation	Moody's	A2	A3	3/29/2019
KeySpan Gas East Corporation (KEDLI)	Moody's	A2	A3	3/29/2019
Xcel Energy	Moody's	A3	Baa1	3/28/2019
ALLETE, Inc.	Moody's	A3	Baa1	3/26/2019
Brooklyn Union Gas Company (KEDNY)	Moody's	A2	A3	2/22/2019
Avista Corp.	Moody's	Baa1	Baa2	12/30/2018
Consolidated Edison Company of New York	Moody's	A2	A3	10/30/2018
Consolidated Edison, Inc.	Moody's	A3	Baa1	10/30/2018
Orange and Rockland Utilities	Moody's	A3	Baa1	10/30/2018
Southwestern Public Service Company	Moody's	Baa1	Baa2	10/19/2018
Dominion Energy Gas Holdings	Moody's	A2	A3	9/20/2018
Piedmont Natural Gas Company, Inc.	Moody's	A2	A3	8/1/2018
WEC Energy Group, Inc.	Moody's	A3	Baa1	7/12/2018
Integrys Holdings Inc.	Moody's	A3	Baa1	7/12/2018
OGE Energy Corp.	Moody's	A3	Baa1	7/5/2018
Oklahoma Gas & Electric Company	Moody's	A1	A2	7/5/2018

Q. HOW HAS THE TCJA CHANGED THE WAY IN WHICH CREDIT RATING AGENCIES AND EQUITY INVESTORS VIEW THE UTILITY SECTOR?

A. After the passage of the TCJA, there has been renewed emphasis on cash flows and credit metrics among credit rating agencies, equity investors, and utility regulators. While the authorized ROE and capital structure have always been important considerations for investors in regulated utilities, these factors have taken on increased importance as rating agencies and utility regulators have reviewed and addressed the consequences of the TCJA on the cash flows of regulated utilities.

For example, in February 2019, the Oregon Public Utilities Commission ("OPUC") adopted Staff's memo recommending approval of an application by Avista Corp. ("Avista") to issue stock. Staff's memo included the following statements about the TCJA and the importance of maintaining strong credit ratings:

> Staff finds that the Tax Cuts and Jobs Act of 2017 created unanticipated stresses on the Company's credit ratings. The requested authorization signals to rating agencies that the Company is committed to the equity portion of its capital structure. However, it is Staff's finding that restoring a notch in credit ratings involves more than just remedying the cause for the downgrade. On December 21, 2018, Moody's stated, "Avista's credit profile reflects its low-risk vertically integrated electric and gas utility business, regulatory uncertainty in WA and the expected negative cash flow impact of tax reform." Authorization herein as recommended by Staff starts the process of addressing rating agency concerns and restoring a positive credit outlook.[40]

[40] 2019 Ore. PUC Lexis 57, Oregon Public Utility Commission, February 28, 2019, Order No. 19-067, UF 4308, at 4.

In July 2019, the OPUC approved Avista's application to issue debt securities, adopting the Staff's memo stating that, "Raising the Company's credit ratings back up a notch will require hard work and persistence on the part of Avista's finance group as well as a supportive regulatory environment and achieving target metrics."[41]

Similarly, in January 2019, the OPUC adopted Staff's memo recommending approval of Portland General Electric Company's ("PGE") application to refresh a revolving credit facility. Staff's memo contained similar observations about the TCJA and credit ratings:

> Of concern to Staff is Moody's approach to the impacts of the Tax Reform and Jobs Act of 2017. While one might expect lower taxes would be inherently positive news for utilities, Moody's has focused in on cash flow metrics that are stressed by the recent tax reform. Timely refreshment of this credit facility while PGE is under no heavy time or market pressure is consistent with provision for ongoing liquidity in support of current credit ratings. While approval of this Application does not by itself answer all of Moody's concerns regarding tax reform impacts on the utility sector, the proposed replacement credit facility is consistent with prudent financial management by the Company and will likely be seen as credit positive by both Standard and Poor's and Moody's. As the spreads over benchmark interest rates applicable to PGE depend on the level of the Company's credit ratings, this will be an area for the Commission to continue to monitor.[42]

As shown in Figure AEB-D-9, Moody's has continued to evaluate the effect of the TCJA on the cash flows of regulated utilities and to downgrade individual utilities when their credit metrics do not support the current rating. As

[41] 2019 Ore. PUC Lexis 243, Oregon Public Utility Commission, July 30, 2019, Order No 19-249, UF 4313, at 7.
[42] 2019 Ore. PUC Lexis 23, Oregon Public Utility Commission, January 23, 2019, Order No. 19-025, UF 4272(3), at 8.

part of the credit evaluation, rating agencies have considered the recent rate case decisions of utilities to determine if the results of these cases help to mitigate the effect of the TCJA on cash flows. In summary, the credit rating agencies are continuing to monitor the cash flows and credit metrics of regulated utilities in the wake of the TCJA, with an eye toward the support for credit quality demonstrated by each individual jurisdiction.

Q. WHAT CONCLUSIONS DO YOU DRAW FROM YOUR ANALYSIS OF CAPITAL MARKET CONDITIONS?

A. The important conclusions resulting from capital market conditions are:

- The assumptions used in the ROE estimation models have been affected by recent historical market conditions.

- Recent market conditions are not expected to persist as yields on long-term bonds are expected to increase. As a result, the recent historical market conditions do not reflect the market conditions that will be present when the rates for Public Service will be in effect.

- It is important to consider the results of a variety of ROE estimation models, using forward-looking assumptions to estimate the cost of equity.

- While the Commission has addressed the immediate issues regarding the TCJA for Public Service's Gas Distribution business, it is important to credit rating agencies and utility investors that the Commission continue to consider whether its decisions adequately support the financial soundness and credit quality of Public Service going forward. As such, a continuing emphasis on maintaining sufficient cash flows and credit metrics is important, along with providing Public Service's Gas distribution business a reasonable opportunity to earn its authorized ROE.

VI. PROXY GROUP SELECTION

Q. WHY HAVE YOU USED GROUPS OF PROXY COMPANIES TO ESTIMATE THE COST OF EQUITY FOR PUBLIC SERVICE?

A. In this proceeding, I am estimating the cost of equity for Public Service, a rate-regulated subsidiary of Xcel Energy. Since the ROE is a market-based concept, and given the fact that Public Service's Gas distribution business does not make up the entirety of a publicly-traded entity, it is necessary to establish a group of companies that is both publicly-traded and comparable to Public Service in certain fundamental business and financial respects to serve as its "proxy" for purposes of estimating the cost of equity.

Even if Public Service's regulated natural gas distribution business made up the entirety of a publicly-traded entity, it is possible that transitory events could bias its market value in one way or another over a given time period. A significant benefit of using a proxy group is that it mitigates the effects of anomalous events that may be associated with any one company. The proxy companies used in my analyses all possess a set of operating and financial risk characteristics that are substantially comparable to Public Service, and, therefore, provide a reasonable basis for deriving the appropriate ROE for the Company.

Q. PLEASE PROVIDE A BRIEF PROFILE OF PUBLIC SERVICE.

A. Public Service is a wholly-owned subsidiary of Xcel Energy that provides electric generation, transmission, and distribution services to approximately 1.5 million retail customers and gas distribution service to approximately 1.4 million retail

customers primarily in eastern Colorado.[43] Public Service accounts for approximately 35 to 45 percent of Xcel Energy's consolidated net income.[44] Public Service's current credit ratings on senior unsecured debt are:

Table AEB-D-3: Public Service Company Credit Ratings[45]

Credit Rating Agency	Rating	Outlook
Standard & Poor's	A-	Stable
Moody's Investors Service	A3	Stable
FitchRatings	A-	Stable

Q. HOW DID YOU SELECT THE COMPANIES IN YOUR FIRST PROXY GROUP?

A. I began with the group of 37 domestic U.S. utilities that Value Line classifies as Electric Utilities, and I simultaneously applied the following screening criteria to select a group of combination gas and electric utility companies that:

- Are covered by at least two utility industry analysts;
- Have positive long-term earnings growth forecasts from at least two sources;
- Pay quarterly cash dividends that have not been reduced in the last three years because companies that do not pay dividends cannot be analyzed using the DCF model;
- Have investment grade long-term issuer ratings from S&P and/or Moody's;
- Own regulated generation assets that are in rate base;
- Derive more than 70 percent of total operating income from regulated utility operations;

[43] Xcel Energy Inc., SEC Form 10-K, filed February 2019, at 7.
[44] *Ibid*, at 5.
[45] Source: SNL Financial, accessed December 30, 2019.

- Derive more than 50 percent of regulated operating income from electric utility operations;
- Derive more than 10 percent of regulated operating income from gas distribution operations; and
- Are not engaged in mergers or other transformative transactions during the analytical period (180 days).

Q. DID YOU INCLUDE XCEL ENERGY IN YOUR ANALYSIS?

A. No. In order to avoid the circular logic that otherwise would occur, it is my practice to exclude the subject company, or its parent holding company, from the proxy group.

Q. WHAT IS THE COMPOSITION OF YOUR COMBINATION PROXY GROUP?

A. The screening criteria discussed above result in a proxy group consisting of the combination gas and electric companies shown in Table AEB-D-4.

Table AEB-D-4: Combination Proxy Group

Company	Ticker
Ameren Corporation	AEE
CMS Energy	CMS
Dominion Resources, Inc.	D
DTE Energy	DTE
NorthWestern Corporation	NWE
Sempra Energy	SRE
Southern Company	SO
WEC Energy Group	WEC

Each of the companies in my combination gas and electric proxy group has an investment grade credit rating between A- and BBB from S&P, which indicates that the company has similar business and financial risk characteristics as Public Service. In addition, the combination gas and electric proxy group companies derive the vast majority of their operating income (i.e., approximately

92 percent on average) from regulated utility operations, making them comparable to Public Service on that risk factor. Lastly, each of companies in the combination gas and electric proxy group owns generation assets in rate base, which is an important similarity to Public Service.

Q. HAS THE COMMISSION TRADITIONALLY RELIED ON COMBINATION GAS AND ELECTRIC COMPANIES TO ESTABLISH THE PROXY GROUP FOR PUBLIC SERVICE?

A. Yes. This is because Public Service operates as a combination gas and electric utility and is viewed by investors as a combination company. In particular, Public Service raises capital as a combination company, and does not issue separate debt or equity for the gas and electric operations. In addition, the business and financial risks of Public Service are comparable to those of a combination gas and electric utility. As shown in Table AEB-D-5, the combination gas and electric companies in the proxy group derive a similar percentage of revenues and operating income from gas distribution utility operations as Public Service, making them risk comparable to the Company in terms of business mix.

Table AEB-D-5: Proxy Group 2016-18 Gas Percentages[46]

Company	Revenue	Operating Income
Ameren Corporation	14%	12%
CMS Energy	29%	26%
Dominion Resources	29%	34%
DTE Energy	21%	19%
NorthWestern Corp	21%	16%
Sempra Energy	52%	47%
Southern Company	16%	19%
WEC Energy Group	40%	41%
Proxy Group Avg.	**28%**	**27%**
Public Service Company	24%	19%

For these reasons, a proxy group consisting of combination gas and electric utilities is risk comparable to Public Service and is what investors generally use to establish their return requirements for the Company.

Q. HAVE YOU CONSIDERED ANOTHER PROXY GROUP AS WELL?

A. Yes, I have. In addition to the combination gas and electric proxy group, I have also considered the results of another proxy group that includes the eight companies in the combination gas and electric proxy group plus seven gas distribution companies. Given that the Commission is setting the authorized ROE for Public Service's Gas distribution business, I believe it is appropriate to consider a second proxy group that includes gas distribution companies as well as combination gas and electric utilities.

[46] Source: United States Securities and Exchange Commission, Form 10-K for each company.

Q. WHAT IS THE COMPOSITION OF YOUR SECOND PROXY GROUP?

A. The second proxy group consists of the combination gas and electric companies and gas local distribution companies shown in Table AEB-D-6.

Table AEB-D-6: Combination Proxy Group Plus Gas LDCs

Company	Ticker
Ameren Corporation	AEE
CMS Energy	CMS
Dominion Resources, Inc.	D
DTE Energy	DTE
NorthWestern Corporation	NWE
Sempra Energy	SRE
Southern Company	SO
WEC Energy Group	WEC
Atmos Energy	ATO
New Jersey Resources	NJR
Northwest Natural Gas	NWN
OneGas Inc	OGS
South Jersey Industries, Inc.	SJI
Southwest Gas	SWX
Spire Inc	SR

Q. DID YOU ELIMINATE ANY COMPANIES THAT OTHERWISE MET YOUR SCREENING CRITERIA?

A. Yes. On September 13, 2018, Columbia Gas of Massachusetts, a wholly-owned subsidiary of NiSource Inc. ("NiSource"), experienced a significant event as a result of over-pressured lines on its system. The incident resulted in immediate financial implications for NiSource, including a 12 percent drop in the NiSource stock price immediately following the incident. Given the effect of that incident on

the stock price of NiSource, and the potential effect on the company's financial performance, it is appropriate to exclude NiSource from my second proxy group.

VII. COST OF EQUITY ESTIMATION

Q. PLEASE BRIEFLY DISCUSS THE ROE IN THE CONTEXT OF THE REGULATED RATE OF RETURN ("ROR").

A. The overall ROR for a regulated utility is based on its weighted average cost of capital, in which the costs of the individual sources of capital are weighted by their respective book values. While the costs of debt and preferred stock can be directly observed, the cost of equity is market-based and, therefore, must be estimated based on observable market data.

Q. HOW IS THE REQUIRED ROE DETERMINED?

A. The required ROE is estimated by using multiple analytical techniques that rely on market data to quantify investors' return requirements, adjusted for certain incremental costs and risks. Quantitative models produce a range of reasonable results from which the market-required ROE is selected. That selection must be based on a comprehensive review of relevant data and information and does not necessarily lend itself to a strict mathematical solution. The key consideration in determining the cost of equity is to ensure that the methodologies employed reasonably reflect investors' views of the financial markets in general and of the subject company (in the context of the proxy group) in particular.

Q. WHAT METHODS DID YOU USE TO ESTIMATE PUBLIC SERVICE'S COST OF EQUITY?

A. I considered the results of two forms of the DCF model, the CAPM and ECAPM analyses, the Bond Yield Plus Risk Premium methodology, and an Expected Earnings analysis. I believe that a reasonable ROE estimate considers

alternative methodologies, observable market data, and the reasonableness of their individual and collective results.

A. Importance of Multiple Analytical Approaches

Q. WHY IS IT IMPORTANT TO USE MORE THAN ONE ANALYTICAL APPROACH?

A. Because the cost of equity is not directly observable, it must be estimated based on both quantitative and qualitative information. When faced with the task of estimating the cost of equity, analysts and investors are inclined to gather and evaluate as much relevant data as reasonably can be analyzed. Several models have been developed to estimate the cost of equity, and I use multiple approaches to estimate the cost of equity. As a practical matter, however, all of the models available for estimating the cost of equity are subject to limiting assumptions or other methodological constraints. Consequently, many well-regarded finance texts recommend using multiple approaches when estimating the cost of equity. For example, Copeland, Koller, and Murrin[47] suggest using the CAPM and Arbitrage Pricing Theory model, while Brigham and Gapenski[48] recommend the CAPM, DCF, and Bond Yield Plus Risk Premium approaches. Consistent with the *Hope* finding, it is the analytical result, not the methodology employed, which is controlling in arriving at ROE determinations.

[47] Tom Copeland, Tim Koller and Jack Murrin, Valuation: Measuring and Managing the Value of Companies, 3rd Ed. (New York: McKinsey & Company, Inc., 2000), at 214.

[48] Eugene Brigham, Louis Gapenski, Financial Management: Theory and Practice, 7th Ed. (Orlando: Dryden Press, 1994), at 341.

Q. WHY IS IT PARTICULARLY IMPORTANT GIVEN THE CURRENT MARKET CONDITIONS TO USE MORE THAN ONE ANALYTICAL APPROACH?

A. As discussed in Section VI, low interest rates and the effects of the investor "flight to quality" can be seen in high utility share valuations, relative to historical levels and relative to the broader market. Higher utility stock valuations produce lower dividend yields and result in lower cost of equity estimates from a DCF analysis. Low interest rates also impact the CAPM in two ways: (1) the risk-free rate is lower, and (2) because the market risk premium is a function of interest rates, (i.e., it is the return on the broad stock market less the risk-free interest rate), the risk premium should move higher when interest rates are lower. Therefore, it is important to use multiple analytical approaches to moderate the impact that the current low interest rate environment is having on the ROE estimates for the proxy group and, where possible, consider projected market data in the models to estimate the return for the forward-looking period.

Q. ARE YOU AWARE OF ANY REGULATORY COMMISSIONS THAT HAVE RECOGNIZED THAT CURRENT CONDITIONS IN CAPITAL MARKETS ARE CAUSING ROE RECOMMENDATIONS BASED ON DCF MODELS TO BE UNREASONABLE?

A. Yes, several regulatory commissions have addressed the effect of capital market conditions on the DCF model, including the Pennsylvania Public Utility Commission ("PPUC"), the Illinois Commerce Commission ("ICC"), the Missouri Public Service Commission ("Missouri PSC"), and the New Jersey Board of

Public Utilities ("BPU").

Q. HOW HAVE THE PPUC, THE ICC, THE MISSOURI PSC AND THE NEW JERSEY BPU ADDRESSED THE EFFECT OF MARKET CONDITIONS ON THE DCF?

A. In a 2012 decision for PPL Electric Utilities, the PPUC noted that it had traditionally relied primarily on the DCF method to estimate the cost of equity for regulated utilities, but the PPUC recognized that market conditions were causing the DCF model to produce results that were much lower than other models, such as the CAPM and Bond Yield Plus Risk Premium. The PPUC's Order explained:

> Sole reliance on one methodology without checking the validity of the results of that methodology with other cost of equity analyses does not always lend itself to responsible ratemaking. We conclude that methodologies other than the DCF can be used as a check upon the reasonableness of the DCF derived equity return calculation.[49]

The PPUC ultimately concluded:

> As such, where evidence based on the CAPM and RP methods suggest that the DCF-only results may understate the utility's current cost of equity capital, we will give consideration to those other methods, to some degree, in determining the appropriate range of reasonableness for our equity return determination.[50]

In a 2016 ICC case, the ICC Staff relied on a DCF analysis that resulted in average returns for their proxy groups of 7.24 percent to 7.51 percent. The utility company demonstrated that these results were uncharacteristically low, by comparing the results of ICC Staff's models to recently authorized ROEs for

[49] Pennsylvania Public Utility Commission, PPL Electric Utilities, R-2012-2290597, meeting held December 5, 2012, at 80.
[50] *Id.*, at 81.

regulated utilities and the return on the S&P 500.[51] The ICC agreed with the utility that the ICC Staff's proposed ROE of 8.04 percent was anomalous and recognized that a non-competitive return will deter investment in Illinois.[52] In setting the return in that proceeding, the ICC found that it was necessary to consider other factors beyond the outputs of the financial models, particularly whether the return is sufficient to attract capital and to maintain financial integrity, and is commensurate with returns for companies of comparable risk, while balancing the interests of customers and shareholders.[53]

In February 2018, the Missouri PSC issued a decision in Spire's 2017 gas rate case. In explaining the rationale for its decision, the Commission cited the importance of considering multiple methodologies to estimate the cost of equity and the need for the authorized ROE to be consistent with returns in other jurisdictions and to reflect the growing economy and investor expectations for higher interest rates.

> Based on the competent and substantial evidence in the record, on its analysis of the expert testimony offered by the parties, and on its balancing of the interests of the company's ratepayers and shareholders, as fully explained in its findings of fact and conclusions of law, the Commission finds that 9.8 percent is a fair and reasonable return on equity for Spire Missouri. That rate is nearly the midpoint of all the experts' recommendations and is consistent with the national average, the growing economy, and the anticipated increasing interest rates. The Commission finds that this

[51] State of Illinois Commerce Commission, Docket No. 16-0093, Illinois-American Water Company Initial Brief, August 31, 2016, at 10.

[52] Illinois Staff's analysis and recommendation in that proceeding were based on its application of the multi-stage DCF model and the CAPM to a proxy group of water utilities.

[53] State of Illinois Commerce Commission Decision, Docket No. 16-0093, Illinois-American Water Company, 2016 WL 7325212 (2016), at 55.

rate of return will allow Spire Missouri to compete in the capital market for the funds needed to maintain its financial health.[54]

Finally, in its order in Docket No. ER12111052 for Jersey Central Power and Light Company, the NJ BPU noted that rate of return experts use a number of models including the DCF, CAPM, Risk Premium, and Comparable Earnings to estimate the return required by investors.[55] Moreover, the NJ BPU stated that each of these models provides estimates of the return required by investors; however, the estimates are not necessarily precise and have been affected by the current economic environment, which is still recovering from the Great Recession of 2008/09.[56] In the order, the NJ BPU accepted the ROE recommendation by Staff, which was supported by the ALJ and based on a review of each of the model results presented by the witnesses in the case and recently authorized ROEs in other jurisdictions.[57] In supporting the recommendation of Staff, the ALJ concluded that the results of each model are affected by multiple factors, including current market conditions.

Q. DOES THE COMMISSION SUPPORT THE USE OF MULTIPLE MODELS IN SETTING THE APPROPRIATE ROE?

A. Yes. I understand that, in its deliberations in the Company's most recent electric utility rate case, the Commission indicated that it did not have a preference for any particular rate of return model, and that all model results have relevance and should be considered.

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[54] File No. GR-2017-0215 and File No. GR-2017-0216, Missouri Public Service Commission, Report and Order, Issue Date February 21, 2018, at 34.

[55] BPU Docket No. ER12111052, OAL Docket No. PUC16310-12, Order Adopting Initial Decision with Modifications and Clarifications, March 18, 2015, at 71.

[56] *Ibid.*

[57] *Id.*, at 10.

Q. WHAT ARE YOUR CONCLUSIONS ABOUT THE RESULTS OF THE DCF AND CAPM MODELS?

A. Recent market data that is used as the basis for the assumptions for both models have been affected by market conditions. As a result, relying exclusively on historical assumptions in these models, without considering whether these assumptions are consistent with investors' future expectations, will underestimate the cost of equity that investors would require over the period that the rates in this case are to be in effect. In this instance, relying on the historical average of abnormally high stock prices results in low dividend yields that are not expected to continue over the period that the new rates will be in effect. This, in turn, underestimates the ROE for the rate period.

The use of recent historical Treasury bond yields in the CAPM also tends to underestimate the projected cost of equity. Recent experience indicates that interest rates are increasing. The expectation that bond yields will not remain at currently low levels means that the expected cost of equity would be higher than is suggested by the CAPM using historical average yields. The use of projected yields on Treasury bonds results in CAPM estimates that are more reflective of the market conditions that investors expect during the period that the Company's rates will be in effect.

B. <u>Constant Growth DCF Model</u>

Q. ARE DCF MODELS WIDELY USED TO ESTIMATE THE COST OF EQUITY FOR REGULATED UTILITIES?

A. Yes. DCF models are widely used in regulatory proceedings and have sound theoretical bases, although neither the DCF model nor any other model can be

applied without considerable judgment in the selection of data and the interpretation of results. As discussed in Section VII.A of my Direct Testimony, the currently high valuations and low dividend yields for utility companies and the expectation that those high valuations and low dividend yields are not sustainable are creating concerns among analysts and regulators that the DCF model is understating the cost of equity at this time.

Q. PLEASE DESCRIBE THE DCF APPROACH.

A. The DCF approach is based on the theory that a stock's current price represents the present value of all expected future cash flows. In its most general form, the DCF model is expressed as follows:

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + ... + \frac{D_\infty}{(1+k)^\infty} \quad [1]$$

Where P_0 represents the current stock price, D1…D∞ are all expected future dividends, and k is the discount rate, or required ROE. Equation [1] is a standard present value calculation that can be simplified and rearranged into the following form:

$$k = \frac{D_0(1+g)}{P_0} + g \quad [2]$$

Equation [2] is often referred to as the Constant Growth DCF model in which the first term is the expected dividend yield and the second term is the expected long-term growth rate.

Q. WHAT ASSUMPTIONS ARE REQUIRED FOR THE CONSTANT GROWTH DCF MODEL?

A. The Constant Growth DCF model requires the following assumptions: (1) a constant growth rate for earnings and dividends; (2) a stable dividend payout ratio; (3) a constant price-to-earnings ("P/E") ratio; and (4) a discount rate greater than the expected growth rate. To the extent any of these assumptions is violated, considered judgment and/or specific adjustments should be applied to the results.

Q. WHAT MARKET DATA DID YOU USE TO CALCULATE THE DIVIDEND YIELD IN YOUR CONSTANT GROWTH DCF MODEL?

A. The dividend yield in my Constant Growth DCF model is based on the proxy companies' current annual dividend and average closing stock prices over the 30-, 90-, and 180-trading days ended November 29, 2019.

Q. DID YOU MAKE ANY ADJUSTMENTS TO THE DIVIDEND YIELD TO ACCOUNT FOR PERIODIC GROWTH IN DIVIDENDS?

A. Yes. Since utility companies tend to increase their quarterly dividends at different times throughout the year, it is reasonable to assume that dividend increases will be evenly-distributed over calendar quarters. Given that assumption, it is reasonable to apply one-half of the expected annual dividend growth rate for purposes of calculating the expected dividend yield component of

the DCF model. This adjustment ensures that the expected first year dividend yield is, on average, representative of the coming twelve-month period, and does not overstate the aggregated dividends to be paid during that time.

Q. WHY IS IT IMPORTANT TO SELECT APPROPRIATE MEASURES OF LONG-TERM GROWTH IN APPLYING THE DCF MODEL?

A. In its Constant Growth form, the DCF model (i.e., Equation [2]) assumes a single long-term growth rate in perpetuity. In order to reduce the long-term growth rate to a single measure, one must assume that the dividend payout ratio remains constant and that Earnings Per Share ("EPS"), dividends per share, and book value per share all grow at the same constant rate. Over the long run, dividend growth can only be sustained by earnings growth. Earnings growth rates tend to be least influenced by capital allocation decisions that companies may make in response to near-term changes in the business environment. Since such decisions may directly affect near-term dividend payout ratios, estimates of earnings growth are more indicative of long-term investor expectations than are dividend or book value growth estimates.

Q. WHAT SOURCES OF LONG-TERM GROWTH RATES DID YOU RELY ON IN YOUR CONSTANT GROWTH DCF MODEL?

A. As shown in Attachments AEB-2.1 and AEB-2.2, my Constant Growth DCF model incorporates the following sources of long-term growth rates: consensus long-term earnings growth estimates from Zacks Investment Research and

Thomson First Call (provided by Yahoo! Finance) and long-term earnings growth

estimates from Value Line.

C. Multi-Stage DCF Model

Q. WHAT OTHER FORMS OF THE DCF MODEL HAVE YOU CONSIDERED?

A. In order to address some of the limiting assumptions underlying the Constant Growth form of the DCF model, I also considered the results of a Multi-Stage form of the DCF model. As with the Constant Growth DCF model, the Multi-Stage form defines the cost of equity as the discount rate that sets the current price equal to the discounted value of future cash flows.

Q. HAS THE COMMISSION INDICATED A PREFERENCE FOR THE RESULTS OF THE MULTI-STAGE DCF MODEL IN RECENT YEARS?

A. The Commission had previously referred to the Multi-Stage DCF model as its preferred methodology in rate case decisions, but in its recent deliberations in the Company's electric utility rate case, the Commission indicated that it did not have a preference for any particular model in the determination of the authorized ROE. Therefore, I consider the multi-stage just one model among several that should be considered when established the utility's required ROE.

Q. WHAT ARE THE BENEFITS OF USING A MULTI-STAGE MODEL?

A. The Multi-Stage DCF model, which is an extension of the Constant Growth form, enables the analyst to specify different growth rates over multiple stages. The Multi-Stage DCF model allows for a gradual transition from the first-stage growth rate to the long-term growth rate, thereby avoiding the unrealistic assumption that growth changes abruptly between the first and final stages.

Q. PLEASE GENERALLY DESCRIBE THE STRUCTURE OF YOUR MULTI-STAGE DCF MODEL.

A. The Multi-Stage DCF model sets a company's current stock price equal to the present value of future cash flows received over three "stages." In all three stages, cash flows are equal to the annual dividend payments that stockholders receive. Stage One is a short-term growth period that consists of the first five years; Stage Two is a transition period from the short-term growth rate to the long-term growth rate (i.e., years six through 24); and Stage Three is a long-term growth period that begins in year 25 and continues in perpetuity (i.e., year 200). The ROE is then calculated as the rate of return that results from the initial stock investment and the dividend payments over the analytical period.

Q. PLEASE SUMMARIZE THE EPS GROWTH RATES USED IN YOUR MULTI-STAGE DCF MODEL.

A. As shown in Attachments AEB-3.1 through AEB-3.6, I began with the current annualized dividend as of November 29, 2019 for each proxy group company. In the first stage of the model, the current annualized dividend is escalated based on the average of the three- to five-year earnings growth estimates reported by Zacks, Thomson First Call, and Value Line. For the third stage, I relied on long-term projected growth in Gross Domestic Product ("GDP"). The second stage growth rate is a transition from the first stage growth rate to the long-term growth rate on a geometric average basis.

Q. HOW DID YOU CALCULATE THE LONG-TERM GDP GROWTH RATE?

A. As shown in Attachment AEB-4, the long-term growth rate of 5.53 percent is based on real GDP growth rate of 3.22 percent from 1929 through 2018,[58] and a projected inflation rate of 2.23 percent. The projected inflation rate is based on three measures: (1) the average long-term projected growth rate in the Consumer Price Index ("CPI") of 2.10 percent;[59] (2) the compound annual growth rate of the CPI for all urban consumers for 2029-2050 of 2.31 percent as projected by the Energy Information Administration ("EIA"); and (3) the compound annual growth rate of the GDP chain-type price index for 2029-2050 of 2.29 percent, also reported by the EIA.[60]

Q. DO THE ASSUMPTIONS USED IN THE MULTI-STAGE DCF MODEL ADDRESS THE EFFECT OF LOW DIVIDEND YIELDS ON THE DCF RESULTS?

A. No, they do not. While the Multi-Stage DCF model provides for changes in growth over time, it does not address the abnormally low dividend yields for utility stocks and the effect of those low dividend yields on the DCF model, specifically the understated ROEs that result from the use of these assumptions. For that reason, I have also considered the results of alternative risk-premium based methodologies, which I will discuss later in my Direct Testimony.

[58] U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Tables, Table 1.1.1, November 27, 2019.
[59] Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1, 2019, at 14.
[60] U.S. Energy Information Administration, Annual Energy Outlook 2019, Table 20, Macroeconomic Indicators.

D. Flotation Costs

Q. WHAT ARE FLOTATION COSTS?

A. Flotation costs are the costs associated with the sale of new issues of common stock. These costs include out-of-pocket expenditures for preparation, filing, underwriting, and other issuance costs.

Q. ARE FLOTATION COSTS PART OF THE UTILITY'S INVESTED COSTS OR ITS EXPENSES?

A. Flotation costs are part of the invested costs of the utility, which are properly reflected on the balance sheet under "paid in capital." They are not current expenses, and, therefore, are not reflected on the income statement. Rather, like investments in rate base or the issuance costs of long-term debt, flotation costs are incurred over time. As a result, the majority of a utility's flotation cost is incurred prior to the test year but remains part of the cost structure that exists during the test year and beyond. As such, these costs should be recovered through the allowed ROE. To the extent a company is denied the opportunity to recover prudently-incurred flotation costs, actual returns will fall short of expected (or required) returns, thereby diminishing a company's ability to attract adequate capital on reasonable terms.

Q. IS THE NEED TO CONSIDER FLOTATION COSTS ELIMINATED BECAUSE PUBLIC SERVICE IS A WHOLLY-OWNED SUBSIDIARY OF XCEL ENERGY?

A. No. Although Public Service is a wholly-owned subsidiary of Xcel Energy, it is appropriate to consider flotation costs for two reasons. First, a substantial

portion of Public Service's paid-in equity is the result of prior public issuances of common stock made by Public Service at a time when Public Service was itself a publicly-traded entity. Second, wholly-owned subsidiaries receive equity capital from their parent and provide returns on the capital that roll up to the parent, which is designated to attract and raise capital based upon the returns of those subsidiaries. To deny recovery of issuance costs associated with the capital that is invested in the subsidiaries ultimately penalizes the investors that fund the utility operations and inhibits the utility's ability to obtain new equity capital at a reasonable cost. This is particularly important for Public Service because it is planning significant capital expenditures in the near term.

Q. HAS XCEL ENERGY RECENTLY ISSUED COMMON EQUITY?

A. Yes, Xcel Energy issued approximately $453 million of common equity (9,359,100 common shares issued) in August 2019. Flotation cost recovery is appropriate, however, regardless of whether an issuance occurs during, or is planned for, the test year because flotation costs reduce the permanent capital stock of the company at the time of issuance, if these costs have not been expensed. Therefore, failure to allow recovery of flotation costs may deny Public Service the opportunity to earn its authorized cost of equity in the future.

Q. IS THE NEED TO CONSIDER FLOTATION COSTS RECOGNIZED BY THE ACADEMIC AND FINANCIAL COMMUNITIES?

A. Yes. The academic and financial communities recognize the need to reimburse investors for equity issuance costs in the same spirit that they recognize that investors should be reimbursed for the costs of issuing debt. This treatment is

consistent with the philosophy of a fair rate of return. According to Dr. Shannon Pratt:

> Flotation costs occur when new issues of stock or debt are sold to the public. The firm usually incurs several kinds of flotation or transaction costs, which reduce the actual proceeds received by the firm. Some of these are direct out-of-pocket outlays, such as fees paid to underwriters, legal expenses, and prospectus preparation costs. Because of this reduction in proceeds, the firm's required returns on these proceeds equate to a higher return to compensate for the additional costs. Flotation costs can be accounted for either by amortizing the cost, thus reducing the cash flow to discount, or by incorporating the cost into the cost of capital. Because flotation costs are not typically applied to operating cash flow, one must incorporate them into the cost of capital.[61]

Q. HOW DID YOU CALCULATE THE FLOTATION COSTS FOR PUBLIC SERVICE?

A. My flotation cost calculation was based on the equity issuance costs that were incurred by Xcel Energy and its predecessors. That flotation cost percentage is then applied to the expected dividend yields for the proxy group companies. Based on the issuance costs shown in Attachment AEB-5, flotation costs for Public Service are approximately 0.08 percent (i.e., 8 basis points) for the combination gas and electric proxy group and 0.08 percent (i.e., 8 basis points) for the combination gas and electric plus gas distribution proxy group.

Q. DID YOU MAKE AN EXPLICIT ADJUSTMENT TO YOUR DCF RESULTS FOR FLOTATION COSTS?

A. No, I did not. Rather, I considered flotation costs along with company-specific business and financial risks in determining where within the range of reasonable results the ROE for the Company should be set.

[61] Shannon P. Pratt, Cost of Capital Estimation and Applications, Second Edition at 220-221.

E. Discounted Cash Flow Results

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR DCF ANALYSES.

A. The results of my Constant Growth and Multi-Stage DCF analyses are summarized in Table AEB-D-7. As shown in that Table, for the combination gas and electric proxy group, the mean and mean high results for the Constant Growth DCF analysis using the 90-day average dividend yield are 9.26 percent and 10.11 percent, and the mean and mean high results for the Multi-Stage DCF analysis using the 90-day average dividend yield are 9.00 percent to 9.32 percent. For the combination gas and electric plus gas distribution proxy group, the mean and mean high results for the Constant Growth DCF analysis using the 90-day average dividend yield are 9.72 percent and 11.87 percent, and the mean and mean high results for the Multi-Stage DCF analysis using the 90-day average dividend yield are 9.09 percent and 10.12 percent.

Table AEB-D-7: Summary of DCF Results[62]

	Mean Low	Mean	Mean High
Combination Gas/Electric Proxy Group			
Constant Growth DCF			
30-day average	8.71%	9.24%	10.09%
90-day average	8.72%	9.26%	10.11%
180-day average	8.81%	9.38%	10.23%
Multi-Stage DCF			
30-day average	8.65%	8.98%	9.30%
90-day average	8.66%	9.00%	9.32%
180-day average	8.77%	9.11%	9.44%
Combination Gas/Electric + Gas LDC Proxy Group			
Constant Growth DCF			
30-day average	8.81%	9.75%	11.90%
90-day average	8.78%	9.72%	11.87%
180-day average	8.85%	9.78%	11.92%
Multi-Stage DCF			
30-day average	8.48%	9.13%	10.17%
90-day average	8.45%	9.09%	10.12%
180-day average	8.51%	9.15%	10.19%

Q. HOW DID YOU CALCULATE THE RANGE OF RESULTS FOR THE CONSTANT GROWTH AND MULTI-STAGE DCF MODELS?

A. I calculated the mean low result for both DCF models using the lowest growth rate (i.e., the lowest of the Zacks, Thomson First Call, and Value Line earnings growth rates) for each of the proxy group companies. Thus, the mean low result reflects the lowest expected DCF result for the proxy groups. I used a similar approach to calculate the mean high results, using the highest growth rate for each proxy group company. The mean results were calculated using the average growth rates from all sources.

[62] Results shown in Table AEB-D-7 do not include flotation costs.

Q. HAVE YOU EXCLUDED ANY OF THE CONSTANT GROWTH DCF RESULTS FOR INDIVIDUAL COMPANIES IN YOUR PROXY GROUP?

A. Yes, I have. Because equity holders are the residual claimants in the event of the dissolution of a company, it is well accepted that the return on equity should be sufficiently above the return on debt, which has priority repayment. Therefore, it is appropriate to exclude Constant Growth DCF results below a specified threshold at which equity investors would consider such returns to provide an insufficient return increment above long-term debt costs. The average credit rating for the companies in my proxy group is BBB+/Baa1. The average yield on Moody's Baa-rated utility bonds for the 30 trading days ending November 29, 2019, was 3.77 percent.[63] While the equity risk premium above the cost of debt that is implied through recently authorized ROEs has been in the range of approximately 5.00 percent to 6.25 percent,[64] in Attachments AEB-2.1 and AEB-2.2, I have eliminated Constant Growth DCF results lower than 7.00 percent, which reflects an equity risk premium of approximately 3.23 percent because such returns would provide equity investors an insufficient risk premium above the yield on Baa-rated utility bonds.

Q. WHAT ARE YOUR CONCLUSIONS ABOUT THE RESULTS OF THE DCF MODELS?

A. As discussed previously, one primary assumption of the DCF models is a constant P/E ratio. That assumption is heavily influenced by the market price of

[63] Source: Bloomberg Professional.

[64] Equity risk premium is based on the difference between the high and low of the recently authorized ROEs for electric utilities in 2019 through November 2019 and the 30 day average yield on the Moody's Baa utility bond index ending November 29, 2019.

utility stocks. To the extent that utility valuations are high and may not be sustainable, it is important to consider the results of the DCF models with caution. The average dividend yield for the combination gas and electric proxy group companies has declined from 4.56 percent in 2009 to 3.03 percent in 2019 due to stock price appreciation, enabled by the significant decline in interest rates. The dividend yield on the 90-day average Constant Growth DCF analysis is 3.14 percent, which is significantly below the average dividend yield for combined gas and electric utilities over the last 10 years. On that basis, I believe it is appropriate to place less weight on the DCF model results and more weight on the results of alternative methodologies such as the CAPM, the Risk-Premium analysis, and an Expected Earnings analysis.

F. CAPM Analysis

Q. PLEASE BRIEFLY DESCRIBE THE CAPITAL ASSET PRICING MODEL.

A. The CAPM is a risk premium approach that estimates the cost of equity for a given security as a function of a risk-free return plus a risk premium to compensate investors for the non-diversifiable or "systematic" risk of that security. Systematic risk is the risk inherent in the entire market or market segment. This form of risk cannot be diversified away using a portfolio of assets.

Non-systematic risk is the risk of a specific company that can be mitigated through portfolio optimization.

The CAPM is defined by four components, each of which must theoretically be a forward-looking estimate:

$$K_e = r_f + \beta\left(r_m - r_f\right) \quad [3]$$

Where:

K_e = the required market ROE;
β = Beta coefficient of an individual security;
r_f = the risk-free ROR; and
r_m = the required return on the market as a whole.

In this specification, the term (r_m – r_f) represents the Market Risk Premium. According to the theory underlying the CAPM, since unsystematic risk can be diversified away, investors should only be concerned with systematic risk. Systematic risk is measured by Beta, which is a measure of the volatility of a security as compared to the overall market. Beta is defined as:

$$\beta = \frac{Covariance(r_e, r_m)}{Variance(r_m)} \quad [4]$$

The variance of the market return (i.e., Variance (r_m)) is a measure of the uncertainty of the general market. The covariance between the return on a specific security and the general market (i.e., Covariance (r_e, r_m)) reflects the extent to which the return on that security will respond to a given change in the general market return. Thus, Beta represents the risk of the security relative to the general market.

Q. WHAT RISK-FREE RATE DID YOU USE IN YOUR CAPM ANALYSIS?

A. I relied on three sources for my estimate of the risk-free rate: (1) the current 30-day average yield on 30-year U.S. Treasury bonds (i.e., 2.28 percent);[65] (2) the projected 30-year U.S. Treasury bond yield for Q1 2020 through Q1 2021 (i.e., 2.36 percent);[66] and (3) the projected 30-year U.S. Treasury bond yield for 2021 through 2025 (i.e., 3.60 percent).[67]

Q. WOULD YOU PLACE MORE WEIGHT ON ONE OF THESE SCENARIOS?

A. Yes. Based on current market conditions, I place more weight on the results of the projected yields on 30-year Treasury bonds. As discussed previously, the estimation of the cost of equity should be forward-looking since it is the return that investors would receive over the future rate period. Therefore, the inputs and assumptions used in the CAPM analysis should reflect the expectations of the market at that time. As discussed in Section V of my Direct Testimony, leading economists surveyed by Blue Chip are expecting an increase in long-term interest rates over the next five years. This is an important consideration for equity investors as they assess their return requirements. While I have included the results of a CAPM analysis that relies on the current average risk-free rate, this analysis fails to take into consideration the effect of the market's expectations for interest rate increases on the cost of equity.

Q. ARE YOU AWARE OF ANY REGULATORY COMMISSIONS THAT HAVE RECOGNIZED THAT CURRENT CAPITAL MARKET CONDITIONS HAVE

[65] Bloomberg Professional, as of November 29, 2019.
[66] Blue Chip Financial Forecasts, Vol. 38, No. 11, November 1, 2019, at 2.
[67] Blue Chip Financial Forecasts, Vol 38, No. 6, June 1, 2019, at 14.

AFFECTED THE INPUTS, IN PARTICULAR THE RISK-FREE RATE, OF THE CAPM?

A. Yes, in a 2017 decision, the Massachusetts Department of Public Utilities ("DPU") recognized that the accommodative monetary policy pursued by the Federal Reserve to stimulate the economy following the recession in 2008-2009 has resulted in historic lows on the yields for both short-term and long-term government bonds. As a result, the CAPM results calculated using current Treasury yields may be understating the ROE required by investors. The DPU's Order explained:

> Current federal monetary policy that is intended to stimulate the economy has pushed treasury yields to near historic lows. Consequently, the Department has found that a CAPM analysis based on current treasury yields may tend to underestimate the risk-free rate over the long term and, thereby, understate the required ROE. The CAPM is based on investor expectations and, therefore, it is appropriate to use a prospective measure for the risk-free rate component. The Department has found that Blue Chip Financial Forecasts is widely relied on by investors and provides a useful proxy for investor expectations for the risk-free rate.[68]

Q. WHAT BETA COEFFICIENTS DID YOU USE IN YOUR CAPM ANALYSIS?

A. As shown in Attachments AEB-6.1 and 6.2, I used the average Beta coefficients for the proxy group companies as reported by Value Line and Bloomberg. Value Line's calculation is based on five years of weekly returns relative to the New York Stock Exchange Composite Index. The Bloomberg betas are based on ten years of weekly returns relative to the S&P 500 Index.

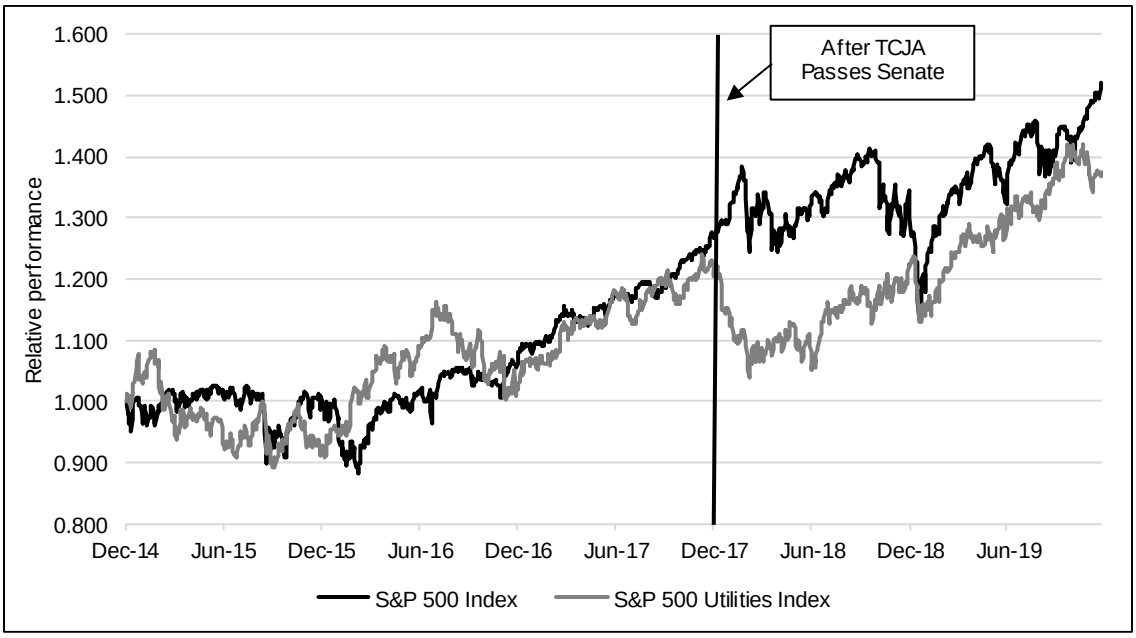
[68] D.P.U. 17-05 Petition of NSTAR Electric Company and Western Massachusetts Electric Company, each doing business as Eversource Energy, Pursuant to G.L. c. 164, § 94 and 220 CMR 5.00 et seq., for Approval of General Increases in Base Distribution Rates for Electric Service and a Performance Based Ratemaking Mechanism, November 30, 2017, at 693.

Q. WHY DID YOU SELECT A TEN-YEAR PERIOD TO CALCULATE THE BETA COEFFICIENTS FROM BLOOMBERG?

A. As I discussed in Section IV, the TCJA has had a significant effect on utility companies. While other industries are able to retain the benefits of a reduced corporate income tax rate, this benefit has largely been passed through to customers by utility companies. This fundamental difference had an effect on investors' view of the utility industry relative to other industries. As shown in **Figure AEB-D-10**, after the Senate passed the TCJA on December 2, 2017, utilities significantly deviated from the broader market.

Figure AEB-D-10:

Performance of the Utility Industry Relative to the S&P 500[69]



The TCJA's effect on the utility industry relative to other industries caused a significant short-term shift in the returns on the utility industry relative to the broader market. Over the last three-to-five years, volatility for the utility industry

[69] Bloomberg Professional. Data through November 29, 2019.

has been higher than the broader market (as measured by the S&P 500),[70] suggesting higher beta coefficients for utility companies. However, in short-term calculations of the Beta coefficient, the significant effect of the shift in returns related to the TCJA has outweighed the effect of longer-term measures of relative volatility. As such, to reflect the long-term relationship that suggests utility stocks are less volatile than the broader market (*i.e.* the relative volatility for utility companies has been lower than the S&P 500 over the ten-year measure[71]), I selected a ten-year period to calculate the Beta coefficients from Bloomberg.

Q. HOW DID YOU ESTIMATE THE MARKET RISK PREMIUM IN THE CAPM?

A. I used two methods to estimate the forward-looking Market Risk Premium. First, I estimated the Market Risk Premium based on the expected total return on the S&P 500 Index less the 30-year Treasury bond yield. The expected total return on the S&P 500 Index is calculated using the Constant Growth DCF model for the companies in the S&P 500 Index. As shown in Attachment AEB-7.3, based on an estimated dividend yield of 1.89 percent and a long-term earnings growth rate of 10.61 percent, the estimated required market return for the S&P 500 Index is 12.60 percent. The implied Market Risk Premiums over the current and projected yields on the 30-year U.S. Treasury bond range from 9.00 percent to 10.32 percent.

Second, I used S&P's estimate of five-year earnings growth for the companies in the S&P 500 Index of 11.56 percent and S&P's estimate of the dividend yield on the S&P 500 of 1.83 percent, which produces an implied total

[70] *See,* S&P Dow Jones Indices, Equity, S&P 500 Utilities, February 28, 2019.
[71] *Id.*

return on the S&P 500 of 13.50 percent.[72] Under this method, the implied Market Risk Premiums over current and projected yields on the 30-year U.S. Treasury bond range from 9.90 percent to 11.22 percent.

Q. WHAT ARE THE RESULTS OF YOUR CAPM ANALYSIS?

A. As shown in Table AEB-D-8 (see also Attachments AEB-7.1 and AEB-7.4), my CAPM analysis for the combination gas and electric proxy group produces a range of returns from 8.15 percent to 9.84 percent, depending on the inputs and assumptions of the model. Similarly, as shown in Attachments AEB-7.2 and AEB-7.5, my CAPM analysis for the combination gas and electric plus gas distribution proxy group produces a range of returns from 8.64 percent to 10.14 percent, depending on the inputs and assumptions.

[72] Standard and Poor's Earnings and Estimates, November 29, 2019.

Table AEB-D-8: Forward-Looking CAPM Results

	Current Risk-Free Rate (2.28%)	2020-2021 Projected Risk-Free Rate (2.36%)	2021-2025 Projected Risk-Free Rate (3.60%)
Market DCF			
Combination Gas/Electric – Value Line beta	8.15%	8.18%	8.72%
Combination Gas/Electric – Bloomberg beta	8.78%	8.81%	9.27%
Combination + Gas LDC – Value Line beta	8.64%	8.67%	9.15%
Combination + Gas LDC – Bloomberg beta	9.10%	9.13%	9.55%
S&P Earnings and Estimate Report			
Combination Gas/Electric – Value Line beta	8.66%	8.69%	9.23%
Combination Gas/Electric – Bloomberg beta	9.35%	9.38%	9.84%
Combination + Gas LDC – Value Line beta	9.19%	9.23%	9.70%
Combination + Gas LDC – Bloomberg beta	9.69%	9.72%	10.14%

Q. DID YOU CONSIDER ANOTHER FORM OF THE CAPM?

A. Yes. In addition to the "traditional" form of the CAPM, I have also considered the "Empirical CAPM" in estimating the cost of equity for Public Service. The ECAPM calculates the product of the Beta coefficient and the market risk premium and applies a weight of 75 percent to that result. The model then applies a 25 percent weight to the market risk premium, without any effect from the Beta coefficient. The results of the two calculations are summed, along with the risk-free rate, to produce the ECAPM result, as noted in Equation [5] below:

$$k_e = r_f + 0.75\beta(r_m - r_f) + 0.25(r_m - r_f) \qquad [5]$$

where:

k_e = the required market ROE
β = Beta coefficient of an individual security
r_f = the risk-free rate of return
r_m = the required return on the market as a whole

The Empirical form of the CAPM addresses the tendency of the "traditional" CAPM to underestimate the cost of equity for companies with low Beta coefficients such as regulated utilities. The ECAPM is not redundant to the use of adjusted Betas; rather, it recognizes the results of academic research indicating that the risk-return relationship is different (in essence, flatter) than estimated by the CAPM, and that the CAPM underestimates the "alpha," or the constant return term.[73] Staff of the Commission has previously performed an ECAPM analysis and included the ECAPM results in arriving at its ROE recommendation.[74]

As with the CAPM, my application of the ECAPM uses the forward-looking market risk premium estimates, the three yields on 30-year Treasury securities noted earlier as the risk-free rate, and the Value Line and Bloomberg beta coefficients. As shown in Table AEB-D-9 (see also Attachments AEB-7.1 and AEB-7.4), my ECAPM analysis for the combination gas and electric proxy group produces a range of returns from 9.26 percent to 10.75 percent, depending on the inputs and assumptions of the model. Similarly, as shown in Attachments AEB-7.2 and AEB-7.5, my ECAPM analysis for the combination gas and electric

[73] Roger A. Morin, New Regulatory Finance, Public Utilities Reports, Inc., 2006, at 191.
[74] See, for example, Answer Testimony of Scott E. England, Proceeding No. 14AL-0300G, In the Matter of Advice Letter No. 511 Filed by Atmos Energy Corporation For a Rate Increase to Become Effective May 5, 2014, Filed on July 8, 2014, at 39-41.

plus gas distribution proxy group produces a range of returns from 9.63 percent to 10.98 percent, depending on the inputs and assumptions.

Table AEB-D-9: Forward-Looking ECAPM Results

	Current Risk-Free Rate (2.28%)	2020-2021 Projected Risk-Free Rate (2.36%)	2021-2025 Projected Risk-Free Rate (3.60%)
Market DCF			
Combination Gas/Electric – Value Line beta	9.26%	9.29%	9.69%
Combination Gas/Electric – Bloomberg beta	9.74%	9.76%	10.10%
Combination + Gas LDC – Value Line beta	9.63%	9.65%	10.01%
Combination + Gas LDC – Bloomberg beta	9.97%	10.00%	10.31%
S&P Earnings and Estimate Report			
Combination Gas/Electric – Value Line beta	9.87%	9.89%	10.30%
Combination Gas/Electric – Bloomberg beta	10.38%	10.41%	10.75%
Combination + Gas LDC – Value Line beta	10.27%	10.29%	10.65%
Combination + Gas LDC – Bloomberg beta	10.64%	10.67%	10.98%

G. Bond Yield Plus Risk Premium Analysis

Q. PLEASE DESCRIBE THE BOND YIELD PLUS RISK PREMIUM APPROACH YOU EMPLOYED.

A. In general terms, this approach is based on the fundamental principle that equity investors bear the residual risk associated with ownership and, therefore, require a premium over the return they would have earned as a bondholder. That is, since returns to equity holders have greater risk than returns to bondholders, equity investors must be compensated to bear that risk. Risk premium approaches estimate the cost of equity as the sum of the equity risk premium and the yield on a particular class of bonds. In my analysis, I used actual authorized returns for gas distribution companies as the historical measure of the cost of equity to determine the risk premium.

Q. ARE THERE OTHER CONSIDERATIONS THAT SHOULD BE ADDRESSED IN CONDUCTING THIS ANALYSIS?

A. Yes. Both academic literature and market evidence indicate that the equity risk premium (as used in this approach) is inversely related to the level of interest rates. That is, as interest rates increase (decrease), the equity risk premium decreases (increases). Consequently, the analysis should: (1) reflect the inverse relationship between interest rates and the equity risk premium; and (2) be based on current and expected market conditions. Such an analysis can be developed based on a regression of the risk premium as a function of U.S. Treasury bond yields. If we let authorized ROEs for gas distribution companies serve as the measure of required equity returns and define the yield on the long-term U.S.

Treasury bond as the relevant measure of interest rates, the risk premium is simply the difference between those two points.[75]

Q. WHAT DID YOUR BOND YIELD PLUS RISK PREMIUM ANALYSIS REVEAL?

A. As shown in Figure AEB-D-11, from 1992 through November 2019, there was a strong negative relationship between risk premia and interest rates. To estimate that relationship, I conducted a regression analysis using the following equation:

$$RP = a + b(T) \quad [6]$$

Where:

RP = Risk Premium (difference between allowed ROEs and the yield on 30-year U.S. Treasury bonds)

a = intercept term

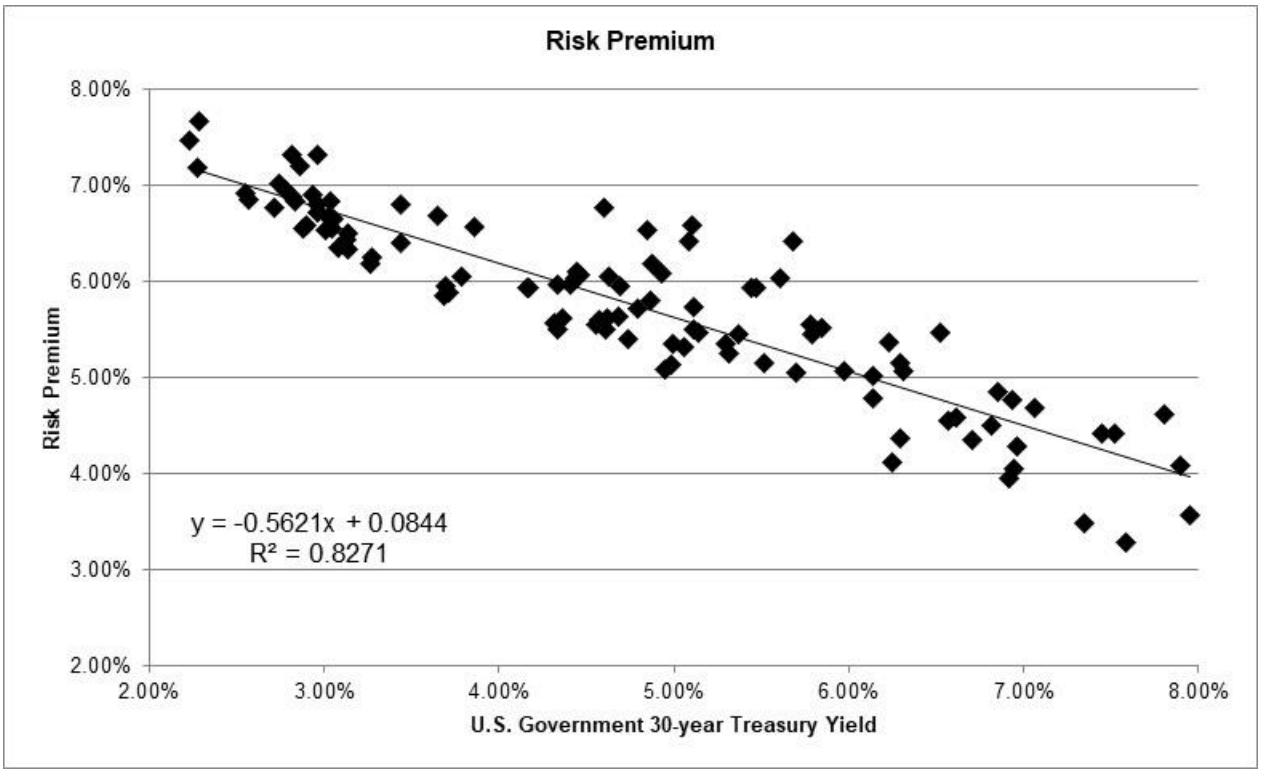
b = slope term

T = 30-year U.S. Treasury bond yield

Data regarding allowed ROEs were derived from 630 gas distribution rate case decisions from 1992 through November 2019 as reported by Regulatory Research Associates. This equation's coefficients were statistically significant at the 99.0 percent confidence interval.

[75] See e.g., S. Keith Berry, Interest Rate Risk and Utility Risk Premia during 1982-93, Managerial and Decision Economics, Vol. 19, No. 2 (March 1998), in which the author used a methodology similar to the regression approach described below, including using allowed ROEs as the relevant data source, and came to similar conclusions regarding the inverse relationship between risk premia and interest rates. See also Robert S. Harris, Using Analysts' Growth Forecasts to Estimate Shareholders Required Rates of Return, Financial Management, Spring 1986, at 66.

Figure AEB-D-11: Risk Premium Results



As shown in Attachment AEB-8, based on the 30-day average of the 30-year U.S. Treasury bond yield as of November 29, 2019 (i.e., 2.28 percent), the risk premium would be 7.16 percent, resulting in an estimated ROE of 9.43 percent. Based on the near-term (2020-2021) projections of the 30-year U.S. Treasury bond yield (i.e., 2.36 percent), the risk premium would be 7.11 percent, resulting in an estimated ROE of 9.47 percent. Based on longer-term (2021-2025) projections of the 30-year U.S. Treasury bond yield (i.e., 3.60 percent), the risk premium would be 6.41 percent, resulting in an estimated ROE of 10.01 percent.

Q. HOW DO THE RESULTS OF THE BOND YIELD RISK PREMIUM ANALYSIS INFORM YOUR RECOMMENDED ROE FOR PUBLIC SERVICE?

A. The results of the Bond Yield Risk Premium analysis support my view that the mean results of the DCF models are understating investors' return requirements

under current market conditions. For that reason, I believe the results of the Bond Yield Risk Premium analysis support selection of an authorized ROE higher than the mean DCF results for the proxy group.

H. <u>Expected Earnings Analysis</u>

Q. HAVE YOU CONSIDERED ANY ADDITIONAL ANALYSIS TO ESTIMATE THE COST OF EQUITY FOR PUBLIC SERVICE?

A. Yes. I have also considered an Expected Earnings analysis based on the projected ROEs for each of the proxy group companies.

Q. WHAT IS AN EXPECTED EARNINGS ANALYSIS?

A. The Expected Earnings methodology is a comparable earnings analysis that calculates the earnings that an investor expects to receive on the book value of a stock. The Expected Earnings analysis is a forward-looking estimate of investors' expected returns. The use of an Expected Earnings approach based on the proxy companies provides a range of the expected returns on a group of risk comparable companies to the subject company. This range is useful in helping to determine the opportunity cost of investing in the subject company, which is relevant in determining a company's ROE.

Q. HOW DID YOU DEVELOP THE EXPECTED EARNINGS APPROACH?

A. I relied on the projected return on equity capital for the proxy companies as reported by Value Line for the period from 2022-2024. As shown in Attachments AEB-9.1 and 9.2, the Expected Earnings analysis produces mean and median results of 12.10 percent and 12.40 percent, respectively, for the combination

company proxy group and 11.55 percent and 11.33 percent, respectively, for the combination company plus LDC proxy group.

VIII. BUSINESS RISKS

Q. DO THE MEAN DCF, CAPM, ECAPM, RISK PREMIUM AND EXPECTED EARNINGS RESULTS FOR THE PROXY GROUP PROVIDE AN APPROPRIATE ESTIMATE OF THE COST OF EQUITY FOR PUBLIC SERVICE?

A. No. These results provide only a range of the appropriate estimate of Public Service's cost of equity. Several additional factors must be considered when determining where the Company's cost of equity falls within the range of analytical results. These risk factors, discussed below, should be considered with respect to their overall effect on Public Service's risk profile relative to the proxy group.

Q. HAVE YOU PERFORMED AN ANALYSIS OF THE REGULATORY MECHANISMS FOR PUBLIC SERVICE'S GAS DISTRIBUTION BUSINESS AS COMPARED TO THOSE FOR THE PROXY GROUP COMPANIES?

A. Yes. I have conducted an analysis of the regulatory mechanisms that are in place for Public Service's Gas distribution business compared with those for the operating utility companies held by the proxy groups. The results of my analysis are presented in Attachments AEB-10.1 and AEB-10.2. Specifically, I examined the following factors that affect the business risk of Public Service and the proxy group companies: (1) test year convention; (2) rate base convention; (3) revenue decoupling; and (4) capital cost recovery.

As shown in Attachment AEB-10.1, 53 percent of the operating companies (i.e., 21 out of 40) in the combination gas and electric proxy group provide

service in jurisdictions that allow the use of a fully or partially forecasted test year. Colorado statute allows for the use of a forecasted test year, and Public Service is requesting that rates be based on a test period for the twelve months ending September 30, 2020. Public Service's Gas distribution business has an adjustment clause that allows for recovery of lost revenues associated with customer participation in demand side management programs, but it does not have protection against volumetric risk through a weather normalization clause. By comparison, 45 percent of the operating companies (i.e., 18 out of 40) in the combination gas and electric proxy group have either full or partial revenue decoupling mechanisms. Finally, 50 percent of the operating utilities held by the proxy group (i.e., 20 out of 40) have capital cost tracking mechanisms that allow them to recover capital investments that are placed into service between rate cases. Public Service has the ability to recover capital investments for its Gas distribution business through the Pipeline Safety Integrity Adjustment ("PSIA") rider.

Q. IS THERE EVIDENCE THAT PUBLIC SERVICE HAS BEEN UNABLE TO EARN ITS AUTHORIZED RETURN ON EQUITY FOR THE GAS DISTRIBUTION BUSINESS?

A. Yes. As shown in Table AEB-D-10, Public Service's Gas distribution business has persistently and substantially under-earned its authorized ROE in each year since 2010. Over this period, the average earned ROE on the Company's Gas distribution business was 7.81 percent as compared with the average authorized ROE of 9.75 percent, for an average under-earning of 194 basis points per year.

This under-earning occurred despite the fact that Public Service was allowed to add interim capital investment through the PSIA rider.

Table AEB-D-10: Earned vs. Authorized ROE – Gas Distribution

	Earned ROE	Authorized ROE	Earnings differential (bps)
2018	8.49%	9.35%	(84)
2017	6.64%	9.50%	(286)
2016	7.34%	9.50%	(216)
2015	6.04%	9.50%	(346)
2014	7.59%	9.72%	(213)
2013	9.01%	9.72%	(71)
2012	7.23%	10.10%	(287)
2011	8.78%	10.10%	(132)
2010	9.16%	10.25%	(109)
Average	**7.81%**	**9.75%**	**(194)**

The above data demonstrate that earnings attrition has been persistent and substantial for Public Service's Gas distribution business since 2010.

Q. BASED ON THESE ANALYSES, WHAT IS YOUR CONCLUSION REGARDING THE LEVEL OF REGULATORY RISK FOR PUBLIC SERVICE'S GAS DISTRIBUTION BUSINESS RELATIVE TO THAT OF THE PROXY GROUP COMPANIES?

A. As discussed above, Public Service has somewhat greater regulatory risk than the proxy group companies. For example, several of the proxy companies rely on a fully forecasted test year and have protection against volumetric risk including the recovery of revenues lost through demand side management

programs, as well as the ability to recover non-PSIA capital costs that are incurred between rate cases through a tracking mechanism. My conclusion is that Public Service's Gas distribution business has somewhat higher regulatory risk than the proxy group. This is shown through the inability of Public Service to earn its authorized ROE for the Gas distribution business and supports an authorized ROE above the proxy group mean.

Q. PLEASE DISCUSS ANY OTHER BUSINESS RISKS OF PUBLIC SERVICE'S GAS DISTRIBUTION BUSINESS AS COMPARED WITH THE PROXY GROUP COMPANIES.

A. The substantial growth in Public Service's Gas distribution business has also created several unique business and financial risks that differentiate it from the companies in the proxy groups. In particular, Public Service's gas distribution rate base has increased by more than $1.1 billion since the Company's previous gas rate case, which was based on a 13-month average historical rate base in 2016. The increase in the Company's gas rate base has been driven not only by new customer growth (which provides some additional revenue), but also by replacement of aging infrastructure (which does not produce additional revenue), by safety and reliability enhancements, and by a significant increase in the number of design days for the distribution system. Only new customer growth provides additional revenue to Public Service; all of the other capital expenditures are required in order to maintain the safety and reliability of the system, but do not result in increased revenue for the Company. This magnitude

of rate base growth is atypical for gas distribution companies, including those in the proxy group.

IX. CAPITAL STRUCTURE

Q. WHAT IS PUBLIC SERVICE'S PROPOSED CAPITAL STRUCTURE?

A. As discussed in the direct testimony of Company witness Ms. Soong, Public Service is proposing its actual 2019 HTY capital structure as a rate-making capital structure, which is composed of 55.81 percent common equity, 42.97 percent long-term debt and 1.22 percent short-term debt.

Q. HAVE YOU ANALYZED THE CAPITAL STRUCTURES OF THE PROXY GROUP COMPANIES?

A. Yes. I calculated the percentages of common equity, long-term debt and short-term debt over the most recent two years for each of the proxy group companies at the utility operating company level. My analysis of the proxy groups' utility operating company capital structures is provided in Attachment AEB-11.1 and AEB-11.2. As shown in those Attachments, the equity ratios for the combination gas and electric proxy group range from 47.88 percent to 54.95 percent. The equity ratios for the combination plus gas distribution proxy group range from 47.00 percent to 62.07 percent. Public Service's proposed equity ratio of 55.81 percent is within the range established by the combination plus gas distribution proxy group capital structures.

Q. WHAT IS YOUR CONCLUSION REGARDING PUBLIC SERVICE'S PROPOSED CAPITAL STRUCTURE?

A. The proposed equity ratio for Public Service is well within the ranges established by the two proxy groups. As such, my conclusion is that the Company's

proposed capital structure is reasonable and appropriate for ratemaking purposes.

X. CONCLUSIONS AND RECOMMENDATION

Q. WHAT IS YOUR CONCLUSION REGARDING A FAIR ROE FOR PUBLIC SERVICE?

A. As discussed throughout my Direct Testimony, the authorized ROE should be a forward-looking estimate; therefore, the analyses supporting my recommendation rely on forward-looking inputs and assumptions (e.g., projected earnings growth rates in the DCF model, forecasted risk-free rate and Market Risk Premium in the CAPM analyses, etc.) and take into consideration capital market conditions, including the effect of the current low interest rate environment on utility stock valuations and dividend yields, the uncertainty associated with global economic events, and the rising interest rate environment. The authorized ROE should also consider the relative regulatory, business, and financial risks of Public Service compared to the two proxy groups, the unique risks associated with the Gas distribution business, and the conditions in capital markets that are causing the DCF models to understate the cost of equity.

As discussed previously, the range of 9.75 percent to 10.25 percent is established on the low end based on the mean and mean high results of the DCF model and on the high end based on the results of the ECAPM and Risk Premium approaches. Taking into consideration this range and the company-specific risk factors of Public Service's Gas distribution business, including its history of not earning the authorized ROE, I conclude that a reasonable ROE for Public Service in this proceeding is 10.10 percent.

Q. PLEASE COMMENT ON THE REASONABLENESS OF PUBLIC SERVICE'S REQUESTED ROE IN THIS PROCEEDING.

A. As previously noted, Public Service is requesting an authorized ROE of 9.95 percent for its Gas distribution business Because Public Service believes this represents a reasonable compromise in this proceeding between balancing the views of intervenors and the Company regarding the appropriate level of ROE and the legal requirement to provide the Company with an opportunity to earn a return that is adequate to compensate its investors, maintain financial integrity, and attract capital. The Company's ROE request is conservative and is likely to reduce the variability in the potential cash flow resulting from the case, which may be viewed by the financial community as somewhat risk mitigating.

Q. WHAT IS YOUR CONCLUSION WITH RESPECT TO PUBLIC SERVICE'S REQUESTED CAPITAL STRUCTURE?

A. My conclusion is that Public Service's requested capital structure consisting of 55.81 percent common equity, 42.97 percent long-term debt and 1.22 percent short-term debt is well within the range established by the proxy groups. As such, I believe the requested capital structure is reasonable.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

STATEMENT OF QUALIFICATIONS

Ann E. Bulkley

Ms. Bulkley has more than two decades of management and economic consulting experience in the energy industry. Ms. Bulkley has extensive state and federal regulatory experience on both electric and natural gas issues including rate of return, cost of equity and capital structure issues. Ms. Bulkley has provided expert testimony on the cost of capital in more than 60 regulatory proceedings before regulatory commissions in Arizona, Arkansas, Colorado, Connecticut, Indiana, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Montana, New Hampshire, New Jersey, New Mexico, New York, North Dakota, Oklahoma, Pennsylvania, South Dakota, Texas, Virginia, Washington, West Virginia, Wisconsin, Wyoming and the Federal Energy Regulatory Commission. In addition, Ms. Bulkley has prepared and provided supporting analysis for at least forty Federal and State regulatory proceedings.

Further, Ms. Bulkley has worked on acquisition teams with investors seeking to acquire utility assets, providing valuation services including an understanding of regulation, market expected returns, and the assessment of utility risk factors. Ms. Bulkley has assisted clients with valuations of public utility and industrial properties for ratemaking, purchase and sale considerations, ad valorem tax assessments, and accounting and financial purposes. Ms. Bulkley also has experience in the areas of contract and business unit valuation, strategic alliances, market restructuring and regulatory and litigation support.

Prior to joining Concentric, Ms. Bulkley held senior expertise-based consulting positions at several firms, including Reed Consulting Group and Navigant Consulting, Inc. where she specialized in valuation. Ms. Bulkley holds an M.A. in economics from Boston University and a B.A. in economics and finance from Simmons College. Ms. Bulkley is a Certified General Appraiser licensed in the Commonwealth of Massachusetts and the State of New Hampshire.

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

* * * *

IN THE MATTER OF ADVICE NO. 961-GAS OF PUBLIC SERVICE COMPANY OF COLORADO TO REVISE ITS COLORADO PUC NO. 6-GAS TARIFF TO INCREASE JURISDICTIONAL BASE RATE REVENUES, IMPLEMENT NEW BASE RATES FOR ALL GAS RATE SCHEDULES, AND MAKE OTHER PROPOSED TARIFF CHANGES EFFECTIVE MARCH 7, 2020.	)	**PROCEEDING NO. 20AL-_____G**

AFFIDAVIT OF ANN E. BULKLEY
ON BEHALF OF
PUBLIC SERVICE COMPANY OF COLORADO

I, Ann E. Bulkley, being duly sworn, state that the Direct Testimony and attachments were prepared by me or under my supervision, control, and direction; that the Direct Testimony and attachments are true and correct to the best of my information, knowledge and belief; and that I would give the same testimony orally and would present the same attachments if asked under oath.

Dated at Marlborough, Massachusetts, this 31ST day of January, 2020.

Ann E. Bulkley
Senior Vice President, Concentric Energy Advisors, Inc.

Subscribed and sworn to before me this 31st day of January 2020.

REGINA A. KOLB
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires On
November 27, 2026

Notary Public

My Commission expires NOV. 27, 2026