

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO**

* * * * *

RE: IN THE MATTER OF ADVICE NO.)
1797 - ELECTRIC OF PUBLIC SERVICE)
COMPANY OF COLORADO TO REVISE)
ITS COLORADO P.U.C. NO. 8-) PROCEEDING NO. 19AL-_____E
ELECTRIC TARIFF TO IMPLEMENT)
RATE CHANGES EFFECTIVE ON)
THIRTY-DAYS' NOTICE.)
)

DIRECT TESTIMONY AND ATTACHMENTS OF ANN E. BULKLEY

ON

BEHALF OF

PUBLIC SERVICE COMPANY OF COLORADO

May 20, 2019

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GLOSSARY OF ACRONYMS AND DEFINED TERMS

<u>Acronym/Defined Term</u>	<u>Meaning</u>
ADIT	Accumulated Deferred Income Taxes
CACJA	Clean Air – Clean Jobs Act
CAPM	Capital Asset Pricing Model
Commission	Colorado Public Utilities Commission
Concentric	Concentric Energy Advisors, Inc.
ConEd	Consolidated Edison Inc.
CPI	Consumer Price Index
CWIP	Construction Work in Progress
DCF	Discounted Cash Flow
DPU	Massachusetts Department of Public Utilities
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
HTY	Historical Test Year
ICC	Illinois Commerce Commission
Missouri PSC	Missouri Public Service Commission
Moody's	Moody's Investors Service
O & M	Operating and Maintenance

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
TCA	Transmission Cost Adjustment
U.S.	United States
Xcel Energy	Xcel Energy Inc.

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I. INTRODUCTION AND QUALIFICATIONS

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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

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

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

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

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

15 A. Concentric provides financial and economic advisory services to many and
16 various energy and utility clients across North America. Our regulatory,
17 economic, and market analysis services include utility ratemaking and regulatory
18 advisory services; energy market assessments; market entry and exit analysis;
19 corporate and business unit strategy development; demand forecasting; resource

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 either currently regulated by the Federal Energy Regulatory Commission ("FERC") or expected to be regulated by FERC.

1 planning; and energy contract negotiations. Our financial advisory activities
2 include buy- and sell-side merger, acquisition, and divestiture assignments; due
3 diligence and valuation assignments; project and corporate finance services; and
4 transaction support services. In addition, Concentric provides litigation support
5 services on a wide range of financial and economic issues on behalf of clients
6 throughout North America.

1 **II. PURPOSE AND OVERVIEW OF TESTIMONY**

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

3 A. I present evidence and provide the Colorado Public Utilities Commission
4 (“Commission”) with a recommendation regarding Public Service’s requested
5 Return on Equity (“ROE”) for its Electric business. I also provide an assessment
6 of the reasonableness of the proposed capital structure to be used for
7 ratemaking purposes. In order to develop my ROE recommendation, I applied
8 the Constant Growth Discounted Cash Flow (“DCF”) model, the Multi-Stage DCF
9 model, the Capital Asset Pricing Model (“CAPM”), the Bond Yield Plus Risk
10 Premium approach, and the Expected Earnings analysis to a proxy group of
11 companies that are risk-comparable to Public Service.

12 Given the effect of capital market conditions on the results of the DCF
13 models, my recommendation gives weight to the results of alternative
14 methodologies, including the CAPM, Risk Premium and Expected Earnings
15 analyses. The results of these analyses produce a range from 9.98 percent (the
16 mean of the four methodologies) to 11.18 percent (the upper boundary of the
17 DCF, CAPM and Expected Earnings approaches). Based on this range, I
18 conclude that a reasonable ROE for Public Service’s Electric operations is 10.35
19 percent. This recommendation is conservative when compared to the midpoint
20 results that can be derived using the averaging methodology that has been
21 established by Federal Energy Regulatory Commission (“FERC”). As shown in
22 Table AEB-D-7, the midpoint of the mean and upper bound using the FERC

1 methodology is 10.44 percent. I also take into consideration flotation costs
2 associated with issuing common equity and the company-specific risks of Public
3 Service's Electric business, including the regulatory lag associated with the use
4 of a historical test year ("HTY") and average rate base, which is reflected in the
5 inability of the Company's Electric business to earn its authorized return in recent
6 years.

7 Finally, I discuss Public Service's proposed regulated capital structure in
8 support of the testimony of Company witness Ms. Sarah W. Soong. I compare
9 Public Service's proposed capital structure to the capital structures of my proxy
10 group companies at the operating company level and conclude that the
11 Company's proposed capital structure for ratemaking purposes is reasonable.

12 My analyses and recommendations are supported by the data presented
13 in Attachments AEB-2 through AEB-12, which were prepared by me or under my
14 supervision.

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

16 A. The remainder of my Direct Testimony is organized in eight sections. Section III
17 provides a summary of my analyses and conclusions. Section IV reviews the
18 regulatory guidelines pertinent to the development of the cost of capital. Section
19 V discusses current and prospective capital market conditions and the effect of
20 those conditions on Public Service's cost of equity. Section VI explains my
21 selection of a proxy group of combination electric and gas utilities. Section VII
22 describes my analyses and the analytical basis for the recommendation of the

1 appropriate ROE for Public Service. Section VIII provides a discussion of
2 specific business and regulatory risks that have a direct bearing on the ROE to
3 be authorized for Public Service in this case. Section IX discusses Public
4 Service's capital structure as compared with the capital structures of the utility
5 operating company subsidiaries of the proxy group companies. Section X
6 presents my conclusions and recommendations.

1 **III. SUMMARY OF ANALYSES AND CONCLUSIONS**

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

4 A. My analyses and recommendations considered the following:

- 5 • the United States (“U.S.”) Supreme Court’s *Hope* and *Bluefield* decisions,²
6 which established the standards for determining a fair and reasonable
7 authorized ROE, including consistency of the authorized return with other
8 businesses having similar risk, adequacy of the return to ensure access to
9 capital and support credit quality, and the necessity for the end result to
10 lead to just and reasonable rates;
- 11 • The required ROE should be a forward-looking estimate; therefore, the
12 analyses supporting my recommendation rely on forward-looking inputs
13 and assumptions (e.g., forecasted growth rates in the DCF model);
- 14 • The effect of current and prospective capital market conditions on the
15 ROE estimation models and on investors’ return requirements; and
- 16 • Public Service’s business risks relative to the proxy group companies and
17 the implications of those risks in arriving at the appropriate ROE.

18 **Q. PLEASE EXPLAIN HOW YOU CONSIDERED THOSE FACTORS.**

19 A. I have relied on several analytical approaches to estimate Public Service’s cost
20 of equity based on a proxy group of publicly-traded companies. As shown in
21 Table AEB-D-1, those ROE estimation models produce a wide range of results.

²*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).

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Table AEB-D-1: Summary of Analytical Results³

	Mean Low	Mean	Mean High
DCF Analyses			
Constant Growth DCF – 90 day	8.30%	8.94%	9.73%
Multi-Stage DCF – 90 day	8.85%	9.08%	9.40%
Risk Premium Analyses			
	Current Risk-Free Rate (2.99%)	2019-2020 Projected Risk-Free Rate (3.16%)	2020-2024 Projected Risk-Free Rate (3.90%)
Capital Asset Pricing Model – Value Line Beta	9.63%	9.70%	9.98%
Capital Asset Pricing Model – Bloomberg Beta	10.45%	10.50%	10.73%
Bond Yield Plus Risk Premium	9.94%	10.02%	10.34%
Expected Earnings Analysis			
Value Line 2021-23 projected ROE	11.21%		
Flotation Cost	0.08%		

2

My conclusion as to where, within that range of results, Public Service’s cost of equity falls is based on market conditions, and the Company’s business and financial risk relative to the proxy group. Although the companies in my proxy group are generally comparable to Public Service, the Company’s Electric business faces higher risk than the proxy group companies in several important ways that will be discussed later in my 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.

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³ The table presents the DCF results based on 90-day average stock prices. Attachments AEB-2 and AEB-3 also present results based on 30-day and 180-day average stock prices, which are similar to the 90-day results.

1 **Q. PLEASE SUMMARIZE THE ROE ESTIMATION MODELS THAT YOU**
2 **CONSIDERED TO ESTABLISH THE RANGE OF ROES FOR PUBLIC**
3 **SERVICE'S ELECTRIC BUSINESS.**

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

13 The Constant Growth DCF model is producing individual company results
14 as low as 6.10 percent (NorthWestern Corp.).⁴ The mean low Constant Growth
15 DCF results of 8.30 percent are below an acceptable range of returns for a
16 regulated utility and below any authorized ROE for an electric or gas distribution
17 utility in the U.S. since at least 1980.⁵ Based on prospective market conditions
18 and the inverse relationship between the market risk premium and interest rates,
19 I conclude that the mean low DCF results do not provide a sufficient risk premium
20 to compensate equity investors for the residual risks of ownership, including the
21 risk that they have the lowest claim on the assets and income of Public Service.

⁴ See Attachment AEB-2, using 90-day average stock price.

⁵ Source: Regulatory Research Associates.

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

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

9 A. In developing the ROE for Public Service's Electric business, I first established a
10 reasonable range and ROE for an electric utility. The Public Service Electric
11 business has greater risks than the proxy companies. This includes the elevated
12 level of its projected capital expenditures and the regulatory lag associated with
13 the customary use of a historical test year and average rate base to set electric
14 rates. Because of those factors, it is reasonable to expect that on a stand-alone
15 basis, investors would expect that the return on the Electric business would be
16 higher than the return that would be established for the proxy companies.

17 As is discussed in greater detail in the remainder of my testimony, I
18 established a reasonable range of ROE results on the low end based on the
19 average results of the DCF models and on the high end taking into consideration
20 the results of the Risk Premium and Expected Earnings approaches. The
21 resulting range is from 9.98 percent to 11.18 percent. Within that range, I believe
22 that an ROE of 10.35 percent is appropriate for Public Service's Electric utility
23 operations. This recommended ROE is conservative when compared with the

1 return that results from the FERC's ROE estimation methodology shown in Table
2 AEB-D-7.

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

1 **IV. REGULATORY GUIDELINES**

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

4 A. The U.S. Supreme Court's precedent-setting Hope and Bluefield cases
5 established the standards for determining the fairness or reasonableness of a
6 utility's authorized ROE. Among the standards established by the Court in those
7 cases are: (1) consistency with other businesses having similar or comparable
8 risks; (2) adequacy of the return to support credit quality and access to capital;
9 and (3) the principle that the specific means of arriving at a fair return are not
10 important, only that the end result leads to just and reasonable rates.⁶

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

13 A. Yes. The Commission follows the precedents of the Hope and Bluefield cases
14 and acknowledges that utility investors are entitled to a fair and reasonable
15 return. In a 2011 Order, the Commission stated:

16 To be consistent with sound regulatory economics and the
17 standards set forth by the Supreme Court in the Bluefield and Hope
18 cases, a utility's allowed ROE should be: (i) similar to that of other
19 financially sound businesses having similar or comparable risk, (ii)
20 sufficient to ensure confidence in the financial integrity of the utility,
21 and (iii) adequate to maintain and support the credit of the utility,
22 thereby enabling it to attract, on a reasonable cost basis, the funds
23 necessary to satisfy its capital requirements so that it can meet the
24 obligation to provide adequate and reliable service to the public.⁷

⁶ *Bluefield*, 262 U.S. at 692-93; *Hope*, 320 U.S., at 603.

⁷ Proceeding Nos. 11AL-382E and 11AL-387E, Decision No. C11-1373, at para. 87.

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

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

11 **Q. WHAT ARE YOUR CONCLUSIONS REGARDING REGULATORY**
12 **GUIDELINES?**

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

20 The financial community carefully monitors the current and expected
21 financial condition of utility companies and the regulatory framework in which
22 they operate. In that respect, the regulatory framework is one of the most
23 important factors in both debt and equity investors' assessments of risk. The

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

1 **V. CAPITAL MARKET CONDITIONS**

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

3 A. The ROE estimation models rely on market data that are either specific to the
4 proxy group, in the case of the DCF model, or the expectations of market risk, in
5 the case of the CAPM. The results of the ROE estimation models can be
6 affected by prevailing market conditions at the time the analysis is performed.
7 While the ROE established in a rate proceeding is intended to be forward-
8 looking, the analyst uses current and projected market data, specifically stock
9 prices, dividends, growth rates and interest rates in the ROE estimation models
10 to estimate the required return for the subject company. As discussed in the
11 remainder of this section, analysts and many regulatory commissions have
12 concluded that recent market conditions have affected the results of the ROE
13 estimation models. As a result, it is important to consider the effect of these
14 conditions on the ROE estimation models when determining the appropriate
15 range and recommended ROE for a future period. If investors do not expect
16 current market conditions to be sustained in the future, it is possible that the ROE
17 estimation models will not provide an accurate estimate of investors' required
18 return during that rate period. Therefore, it is very important to consider
19 projected market data to estimate the return for that forward-looking period.

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

4 A. The cost of equity for regulated utility companies is being affected by several
5 factors in the current and prospective capital markets, including: (1) the current
6 low interest rate environment and the corresponding effect on valuations and
7 dividend yields of utility stocks relative to historical levels; (2) the market's
8 expectation for higher interest rates; and (3) recent Federal tax reform. In this
9 section, I discuss each factor and how it affects the models used to estimate the
10 cost of equity for regulated utilities.

11 **A. Effect of Market Conditions on Valuations and Dividend Yields**

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

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

1 met their return requirements, there was increased demand for dividend-paying
2 equities, such as utility stocks.

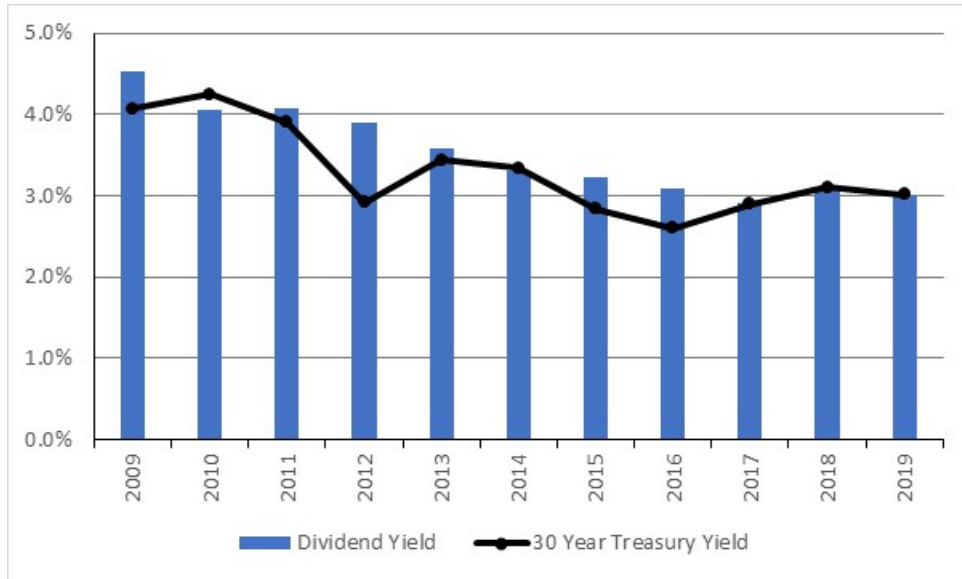
3 **Q. HOW HAS THE PERIOD OF ABNORMALLY LOW INTEREST RATES**
4 **AFFECTED THE VALUATIONS AND DIVIDEND YIELDS OF UTILITY**
5 **SHARES?**

6 A. The Federal Reserve's monetary policy has caused investors to seek alternatives
7 to the historically low interest rates available on Treasury bonds. As a result of
8 this search for higher yield, the share prices for many common stocks, especially
9 dividend-paying stocks such as utilities, have been driven higher while the
10 dividend yields (which are computed by dividing the dividend payment by the
11 stock price) have decreased to levels well below the historical average. As
12 shown in Figure AEB-D-1, over the period from 2009 through 2017, as the
13 Federal Reserve intervened to stabilize financial markets and support the
14 economic recovery after the Great Recession of 2008-09, Treasury bond yields
15 and utility dividend yields declined. Specifically, Treasury bond yields declined
16 by approximately 118 basis points, and combination electric and gas utility
17 dividend yields decreased by about 161 basis points over this period.

18

1

Figure AEB-D-1: Dividend Yields for Utility Stocks⁸



2 **Q. HOW HAVE HIGHER STOCK VALUATIONS AND LOWER DIVIDEND YIELDS**
3 **FOR UTILITY COMPANIES AFFECTED THE RESULTS OF THE DCF**
4 **MODEL?**

5 A. During periods of general economic and capital market stability, the DCF model
6 may adequately reflect market conditions and investor expectations. However, in
7 the current market environment, the DCF model results are distorted by the
8 historically low level of interest rates and the higher valuation of utility stocks.
9 Value Line recently commented on the high valuations of electric utilities:

⁸ Source: Bloomberg Professional. Figure AEB-D-1 includes 2019 data through March 29, 2019.

1 Even after a pullback in late 2018, most stocks in the Electric Utility
2 Industry are still priced expensively, in our view. Many of the
3 equities are still trading within our 2021-2023 Target Price Range.
4 The industry's average dividend yield is 3.5%, and some stocks
5 have yields that aren't significantly higher than the median of all
6 stocks under our coverage. For the 3- to 5-year period, the group's
7 average total return potential is just 5%.⁹

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

10 Utility valuations have come down as 10-year Treasury bond rates
11 have climbed back over 3%. On a price-to-earnings basis, they do
12 remain significantly above their historical average, but have
13 declined to less unreasonable levels. We have seen utility
14 valuations moving in line with interest rate movements, although
15 there have been exceptions to this. Overall, however, we believe
16 the low-interest rate environment has been the biggest factor in
17 pushing utilities higher since many investors buy them for their
18 dividend yield.

19 Utilities have declined from their all-time highs reached late in 2017,
20 but are still trading significantly above their average price-to-
21 earnings ratio over the past decade. The premium valuation
22 continues to reflect not only the low interest rate environment, but
23 also the stable and predominantly regulated earnings growth we
24 foresee.¹⁰

25 As noted by analysts, over the last few years, utility stocks have
26 experienced high valuations and low dividend yields driven by investors moving
27 into dividend paying stocks from bonds due to the low interest rates in the bond
28 market; however, those dynamics are changing. Analysts recognize that as
29 interest rates increase, bonds become a substitute for utility stocks. As utility
30 stock prices decline, the dividend yields will increase. This change in market

⁹ Value Line Investment Survey, Electric Utility (West) Industry, January 25, 2019, at 2217.

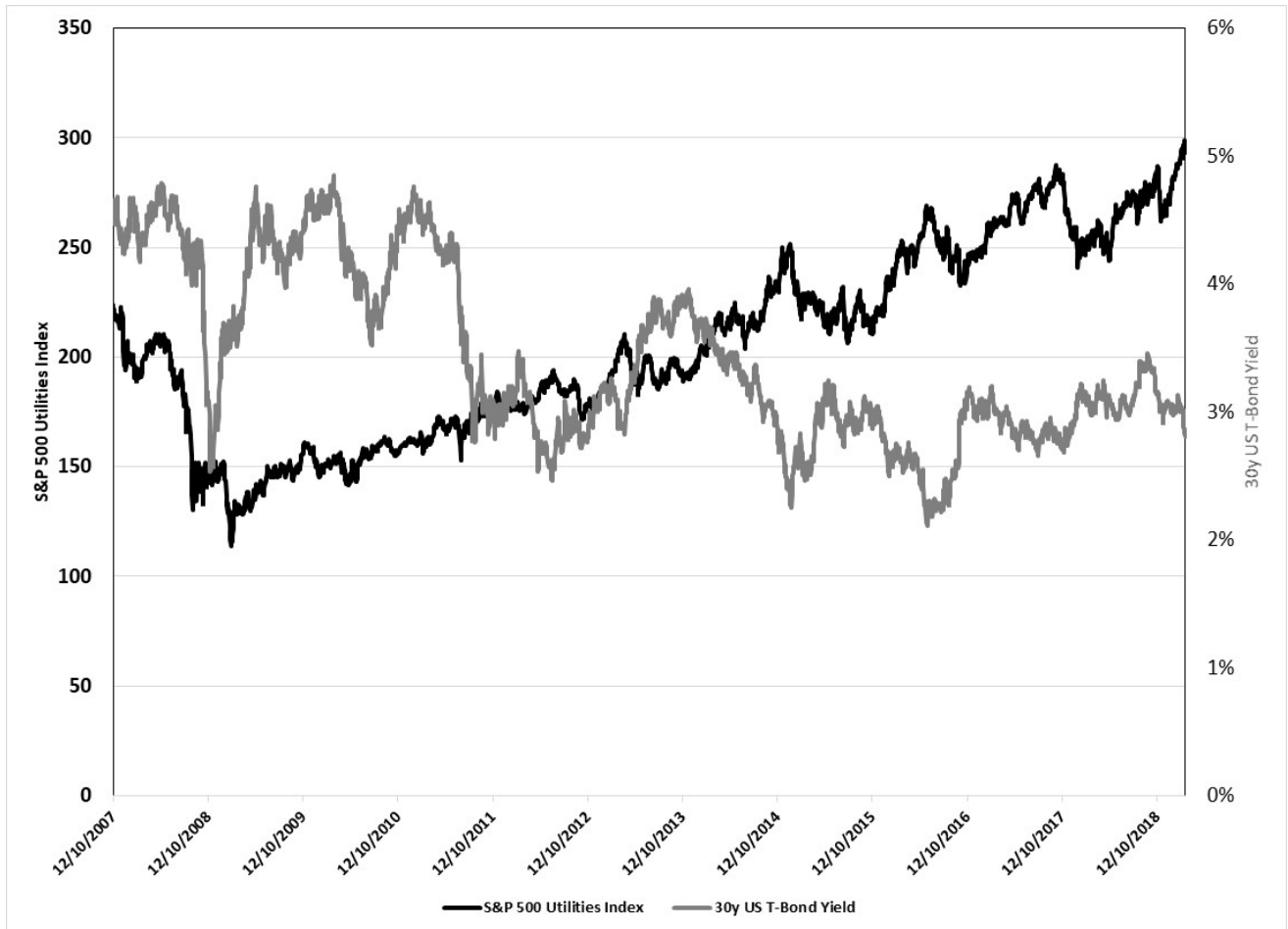
¹⁰ Andy Pusateri and Andy Smith. Edward Jones, Utilities Sector Outlook (January 16, 2019), at 2-3.
[Reference to figure omitted.]

1 conditions implies that the ROE calculated using historical market data in the
2 DCF model may understate the forward-looking cost of equity.

3 **Q. HOW HAS THE STANDARD & POOR'S ("S&P") UTILITIES INDEX**
4 **RESPONDED TO THE LOW INTEREST RATE ENVIRONMENT OF RECENT**
5 **YEARS?**

6 A. Figure AEB-D-2 demonstrates market conditions from 2007-2019 as measured
7 by the S&P Utilities index and the yield on 30-year Treasury bonds. As shown in
8 that Figure, the S&P Utilities index increased steadily from the beginning of 2009
9 through early November 2017, as yields on 30-year Treasury bonds declined in
10 response to accommodative federal monetary policy.

1 **Figure AEB-D-2: S&P Utilities Index and Treasury Bond Yields - 2007 – 2019¹¹**



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

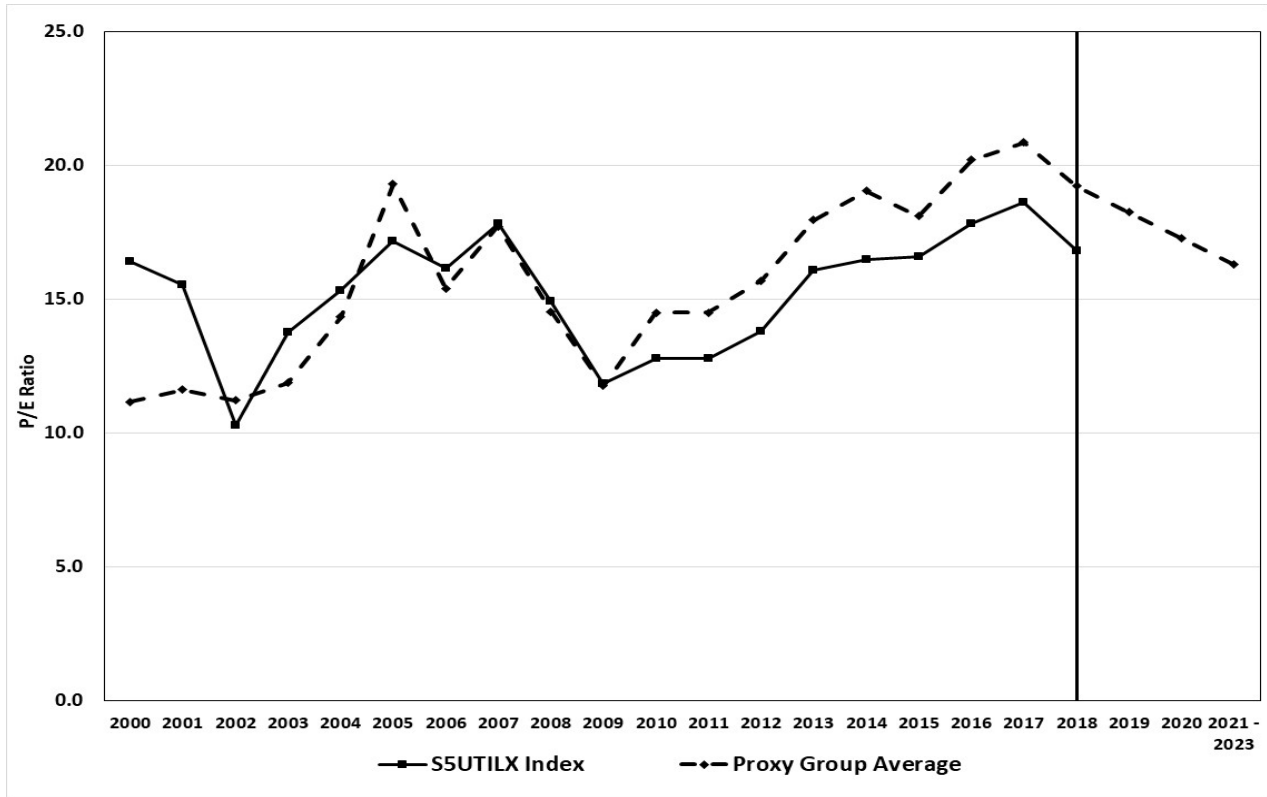
4 A. Figure AEB-D-3 summarizes the average historical and projected Price-to-
5 Earnings (“P/E”) ratios for the companies in the combination electric and gas
6 proxy group calculated using data from Bloomberg Professional and Value
7 Line.¹² As shown in that Figure, the average P/E ratio for the proxy companies

¹¹ Bloomberg Professional. Data through March 29, 2019.

¹² Selection of the Proxy Companies is discussed in detail in Section V of my Testimony.

1 was higher in 2017 than at any time since 2000 and is significantly higher than
 2 the average projected P/E ratio for the group for the period from 2021-2023. In
 3 2018, however, the average P/E ratio for the proxy companies decreased to
 4 19.23 from the high in 2017 of 20.86. All else equal, if P/E ratios for the proxy
 5 companies continue to decline, as Value Line projects, the ROE results from the
 6 DCF model would be higher. This is further evidence that the DCF model, which
 7 uses historical stock prices, is likely understating the forward-looking cost of
 8 equity for the proxy group companies.

9 **Figure AEB-D-3:**
Average Historical Proxy Group P/E Ratios¹³



¹³ Source: Bloomberg Professional. Includes data through March 29, 2019.

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

3 A. Investment advisors have suggested that utility stocks may underperform as a
4 result of market conditions. Barron's recently published its seventh annual
5 review of income-producing investments in which Barron's ranked eleven
6 different sectors based on projected performance in 2019. The utility sector
7 ranked ninth out of the eleven sectors with Barron's noting that:

8 Utilities, however, aren't cheap; they are valued at an average of 17
9 times projected 2019 earnings, a premium to the S&P 500, at about
10 14. That may make it hard for utilities to best the index in 2019,
11 barring a market collapse. Earnings growth is running at a mid-
12 single-digits yearly pace.¹⁴

13 Similarly, a recent report on the market outlook for 2019 from J.P. Morgan
14 Asset Management noted that due to higher volatility, the Federal Reserve may
15 pause increasing the federal funds rate; however, they are not recommending
16 rotation into the utility sector:

17 As prospects for slower economic growth become clearer in the
18 middle of next year, the Fed may signal it will pause. Such a signal,
19 or a trade agreement with China, could lead multiples to expand,
20 pushing the stock market higher and potentially adding years to this
21 already old bull market. However, even if the bull market does end
22 in the next few years, it is important to remember that late-cycle
23 returns have typically been quite strong.

¹⁴ Bary, Andrew. "Best Income Investments for 2019." Barron's, Barron's, 4 Jan. 2019, www.barrons.com/articles/the-best-income-ideas-for-2019-51546632171.

1 This leaves investors in a tough spot – should they focus on a
2 fundamental story that is softening, or invest with an expectation
3 that multiples will expand as the bull market runs its course? The
4 best answer is probably a little bit of each. We are comfortable
5 holding stocks as long as earnings growth is positive, but do not
6 want to be over-exposed given an expectation for higher volatility.
7 As such, higher-income sectors like financials and energy look
8 more attractive than technology and consumer discretionary, and
9 we would lump the new communication services sector in with the
10 latter names, rather than the former. However, given our
11 expectation of still some further interest rate increases, it does not
12 yet seem appropriate to fully rotate into defensive sectors like
13 utilities and consumer staples. Rather, a focus on cyclical value
14 should allow investors to optimize their upside/downside capture as
15 this bull market continues to age.¹⁵

16 This view was further supported by UBS who underweights utilities:

17 Our underweight views on consumer staples and utilities sectors
18 reflect our preference for sectors that are more leveraged to
19 continued favorable economic growth than these two defensive
20 sectors. In addition, consumer staples are contending with sluggish
21 organic growth. High dividend yields for the utilities sector makes it
22 most negatively exposed to higher interest rates. Our industrials
23 underweight is a bit of a hedge against a potential increase in trade
24 frictions.¹⁶

25 **Q. HAVE REGULATORS RECENTLY RESPONDED TO THE HISTORICALLY**
26 **LOW DIVIDEND YIELDS FOR UTILITY COMPANIES AND THE**
27 **CORRESPONDING EFFECT ON THE DCF MODEL?**

28 **A.** Yes. As I discuss in more detail later in my testimony, FERC recently proposed a
29 methodology that reflects its current view that investors rely on multiple ROE
30 estimation models. The proposed methodology includes an equal weighting of

¹⁵ J.P. Morgan Asset Management, “The investment outlook for 2019: Late-cycle risks and opportunities”, November 30, 2018, at 5.

¹⁶ UBS, “2019 outlook: Aging gracefully”, December 5, 2018, at 7.

1 the DCF, CAPM, Expected Earnings and Risk Premium models to better reflect
2 investor behavior and capital market conditions.¹⁷

3 In addition, the Illinois Commerce Commission (“ICC”), the Pennsylvania
4 Public Utility Commission (“PPUC”) and the Missouri Public Service Commission
5 (“Missouri PSC”) have all considered the effect of low dividend yields on the DCF
6 results in recent decisions. I discuss the response of these regulators to
7 historically low dividend yields and the impact on the DCF model in detail later in
8 my testimony.

9 **B. The Current and Expected Interest Rate Environment**

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

12 A. Based on stronger conditions in employment markets, a relatively stable inflation
13 rate, steady economic growth, and increased household spending, the Federal
14 Reserve raised the short-term borrowing rate by 25 basis points on four
15 occasions in 2018. Since December 2015, the Federal Reserve has increased
16 interest rates nine times, bringing the federal funds rate to the range of 2.25
17 percent to 2.50 percent. However, the Federal Reserve recently indicated at the
18 March 2019 meeting that going forward it will be patient in determining future
19 adjustments to the federal funds rate due to recent global economic and financial
20 developments and low inflationary pressures.¹⁸

¹⁷ FERC Docket No. EL11-66-001, et. al., Order Directing Briefs, issued October 16, 2018, at para. 32.

¹⁸ FOMC, Federal Reserve press release, March 20, 2019.

1 Additionally, in October 2017, the FOMC started reducing the size of the
2 Federal Reserve's \$4.5 trillion bond portfolio by no longer reinvesting the
3 proceeds of the bonds it holds. In response to the Great Recession, the Federal
4 Reserve pursued a policy known as "Quantitative Easing," in which it
5 systematically purchased mortgage-backed securities and long-term Treasury
6 bonds to provide liquidity in financial markets and drive down yields on long-term
7 government bonds. Although the Federal Reserve discontinued the Quantitative
8 Easing program in October 2014, it continued to reinvest the proceeds from the
9 bonds it holds. Under the initial balance sheet normalization policy, the FOMC
10 gradually reduced the Federal Reserve's securities holdings by \$10 billion per
11 month initially, ramping up to \$50 billion per month by the end of the first twelve
12 months.¹⁹ However, at the March 2019 meeting, the FOMC announced that it
13 intends to slow the reduction of its holdings of Treasury Securities starting in May
14 2019 and ultimately conclude the program in September 2019.²⁰

15 **Q. HOW DOES THE RECENT CHANGE IN THE FEDERAL RESERVE'S POLICY**
16 **AFFECT THE YIELDS ON LONG-TERM GOVERNMENT BONDS?**

17 A. While the Federal Reserve has recently indicated that it will be patient in
18 determining future adjustments to the federal funds rate, this is not unusual as
19 monetary policy has a lagged effect on the economy. As the Federal Reserve
20 Bank of San Francisco notes:

¹⁹ Federal Reserve press release, Addendum to the Policy Normalization Principles and Plans, June 14, 2017, implemented at FOMC meeting, September 20, 2017.

²⁰ Federal Reserve press release, Balance Sheet Normalization Principles and Plans, March 20, 2019.

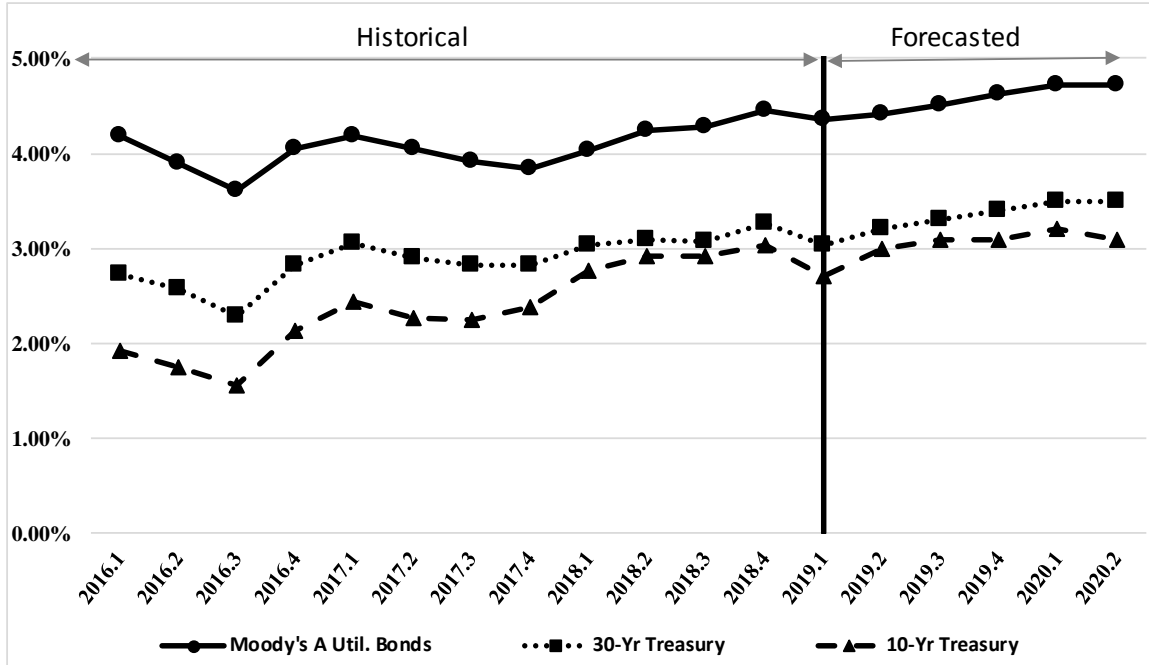
1 It can take a fairly long time for a monetary policy action to affect
2 the economy and inflation. And the lags can vary a lot, too. For
3 example, the major effects on output can take anywhere from three
4 months to two years. And the effects on inflation tend to involve
5 even longer lags, perhaps one to three years, or more.²¹

6 Since December 2015, the Federal Reserve has increased the federal
7 funds rate nine times, four times in 2018 and three times in 2017. Given recent
8 market volatility and the lagged effect that monetary policy has on the economy,
9 it is reasonable to expect the Federal Reserve to be patient with future increases.
10 However, it is important to note that the Federal Reserve is continuing to reduce
11 the size of its balance sheet by no longer reinvesting the proceeds of the bonds it
12 holds over the near-term. This policy, in conjunction with the lagged effect of
13 past increases in the federal funds rate, suggests that the yields on long-term
14 government bonds should continue to increase over the near-term, which is
15 consistent with investors' expectations. As shown in Figure AEB-D-4, investors
16 are expecting continued increases in interest rates on both government and
17 corporate/utility bonds over the next few years.

²¹ Federal Reserve Bank of San Francisco, "U.S. Monetary Policy: An Introduction - How does monetary policy affect the U.S. economy?", February 6, 2004. <https://www.frbsf.org/education/teacher-resources/us-monetary-policy-introduction/real-interest-rates-economy/>

1

Figure AEB-D-4: Interest Rate Conditions²²



2 **Q. HAVE YOU EXAMINED THE EFFECT OF THE FEDERAL RESERVE'S**
 3 **MONETARY POLICY ON THE YIELDS OF LONG-TERM GOVERNMENT**
 4 **BONDS OVER THE PAST FEW YEARS?**

5 **A.** Yes. As shown in Figure AEB-D-5, yields on long-term government bonds have
 6 increased since the Federal Reserve started to raise the federal funds rate.
 7 However, the increase in long-term government bond yields has not been as
 8 pronounced as the rise in short-term interest rates. This is due to a shift in the
 9 supply and demand of long-term government bonds that has occurred since
 10 2009. Since the Great Recession of 2008-2009, federal debt has increased
 11 significantly, which has resulted in an increase in the supply of Treasury bonds in

²² Source: Historical data from Bloomberg Professional. Forecast data from Blue Chip Financial Forecasts, Volume. 38, No. 2, February 1, 2019, at 2.

1 the market. In general, an increase in supply should result in a decrease in the
2 price of Treasury bonds and an increase in yield. However, long-term
3 government bond yields have not increased as fast as expected given the
4 increase in supply. This is because the demand for Treasury bonds has also
5 increased since 2009. As noted in a recent article published by the St. Louis
6 Federal Reserve, the demand for government bonds increased for a number of
7 reasons, some of which included increased holdings by foreign governments, as
8 countries in Europe and Asia faced their own economic uncertainty, and
9 increased holdings from commercial banks due to new regulations that required
10 banks to hold a larger portion of high-quality liquid assets.²³ This has resulted in
11 a more gradual increase in the yields on long-term government bonds over the
12 past few years.

13 **Q. IS THE DEMAND FOR LONG-TERM GOVERNMENT BONDS CURRENTLY**
14 **INCREASING?**

15 A. No, it is not. As noted in the Federal Reserve article:

²³ David Andolfatto and Andrew Spewak, Federal Reserve Bank of St. Louis, "On the Supply of, and Demand for, U.S. Treasury Debt," Economic Synopses, No. 5, 2018. <https://doi.org/10.20955/es.2018.5>.

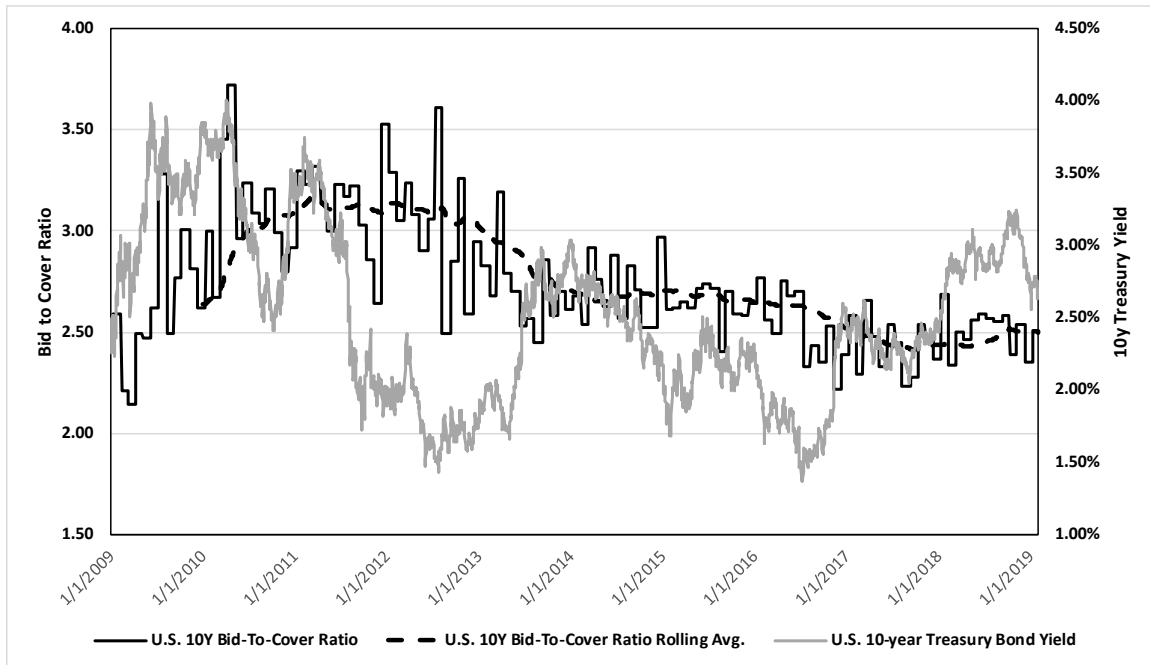
1 Some evidence suggests that the growth in demand for Treasuries
2 has already begun to soften. Returning to Figures 1 and 2, foreign
3 holdings have remained more or less constant since 2014, largely
4 because of declining holdings in Japan and China. Likewise,
5 regulation and policy changes such as the Dodd-Frank Act and new
6 rules for prime money market funds may have only transitory
7 effects on the demand for Treasuries. For example, the pace of
8 growth of the ratio of commercial bank Treasury security holdings
9 to private loans has slowed since 2014 (see Figure 3), as has the
10 growth of investment in government money market funds since
11 2017 (Figure 4).²⁴

12 Furthermore, another indicator of the demand for Treasury bonds is the
13 bid-to-cover ratio, which represents the dollar amount of bids received versus the
14 dollar amount sold in a Treasury security auction. A higher bid-to-cover ratio is
15 indicative of an increase in the demand for government bonds. As shown in
16 Figure AEB-D-5, the bid-to-cover ratio for the 10-year U.S. Treasury bond is
17 currently at its lowest point since 2009, which indicates that the demand for long-
18 term government bonds has declined. The decline in demand is occurring at a
19 time when the supply of Treasury bonds is expected to increase as the Federal
20 Reserve continues its balance sheet unwind over the near-term, and the federal
21 government issues bonds to offset the reduced tax revenue associated with the
22 implementation of the Tax Cuts and Jobs Act of 2017 ("TCJA"). As a result,
23 yields on long-term government bonds are expected to continue to increase over
24 the near-term, which is consistent with investors' expectations, as shown in
25 Figure AEB-D-5.

²⁴ *Ibid.*

1

Figure AEB-D-5: U.S. 10-year Treasury Bond Bid-to-Cover-Ratio



2 **Q. WHAT EFFECT DO RISING INTEREST RATES HAVE ON THE COST OF**
3 **EQUITY?**

4 A. As interest rates continue to increase, the cost of equity for the proxy companies
5 using the DCF model is likely to be an overly-conservative estimate of investors'
6 required returns because the proxy group average dividend yield reflects the
7 increase in stock prices that resulted from substantially lower interest rates. As
8 such, rising interest rates support the selection of a return toward the upper end
9 of a reasonable range of ROE estimates resulting from the DCF analysis.
10 Alternatively, my CAPM and Bond Yield Plus Risk Premium analyses include
11 estimated returns based on near-term projected interest rates, reflecting

1 investors' expectations of market conditions over the period that the rates that
2 are determined in this proceeding will be in effect.

3 **C. Effect of Tax Reform on the ROE**

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

6 A. Yes. The effect of the TCJA should also be considered in the determination of
7 the cost of equity. The credit rating agencies have commented on the effect of
8 the TCJA on regulated utilities. In summary, the TCJA is expected to reduce
9 utility revenues due to the lower federal income taxes and the requirement to
10 return excess Accumulated Deferred Income Taxes ("ADIT"). This change in
11 revenue is expected to reduce Funds from Operations ("FFO") metrics across the
12 sector, and absent regulatory mitigation strategies, is expected to lead to weaker
13 credit metrics and negative ratings actions for some utilities.²⁵

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

16 A. Yes. Moody's Investors Service ("Moody's") indicated that while the TCJA was
17 credit positive for many sectors, it has an overall negative credit impact on
18 regulated operating companies of utilities and their holding companies due to the
19 reduction in cash flow metrics that results from the change in the federal tax rate
20 and the loss of bonus depreciation.

²⁵ FitchRatings, Special Report, What Investors Want to Know, "Tax Reform Impact on the U.S. Utilities, Power & Gas Sector", January 24, 2018.

1 Moody's noted that the rates that regulators allow utilities to charge
2 customers is based on a cost-plus model, with tax expense being one of the
3 pass-through items. Utilities will collect less tax at the lower rate, reducing
4 revenue. While the taxes are ultimately paid out as an expense, under the new
5 tax law, utilities lose the timing benefit, reducing cash that may have been carried
6 over a number of years. The lower tax rate combined with the loss of bonus
7 depreciation will have a negative effect on utility cash flows and will ultimately
8 negatively impact the utilities' ability to fund ongoing operations and capital
9 improvement programs.

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

12 A. In January 2018, Moody's issued a report changing the rating outlook for several
13 regulated utilities from Stable to Negative. Moody's noted that the rating change
14 affected companies with limited cushion in their ratings for deterioration in
15 financial performance. In June 2018, Moody's issued a report in which the rating
16 agency downgraded the outlook for the entire regulated utility industry from
17 Stable to Negative for the first time ever, citing ongoing concerns about the
18 negative effect of the TCJA on cash flows of regulated utilities. While noting that
19 "[r]egulatory commissions and utility management teams are taking important
20 first steps"²⁶ and that "we have seen some credit positive developments in some

²⁶ Moody's Investors Service, "Regulated utilities – US: 2019 outlook shifts to negative due to weaker cash flows, continued high leverage", June 18, 2018, at 3.

1 states in response to tax reform,”²⁷ Moody’s concludes that “we believe that it
2 will take longer than 12-18 months for the majority of the sector to show any
3 material financial improvement from such efforts.”²⁸

4 **Q. HAS MOODY’S CHANGED ITS OUTLOOK FOR UTILITIES IN 2019?**

5 A. No. Consistent with the prior reports issued by Moody’s in January and June of
6 2018, Moody’s is maintaining its negative outlook for regulated utilities in 2019 as
7 a result of continued concerns over the effect of the TCJA on cash flows as well
8 as increasing debt.²⁹ Moody’s notes that “[t]he combination of financial
9 pressures is expected to keep the sector’s ratio of funds from operations to debt
10 down around 15% in the year ahead.”³⁰

11 **Q. WHAT DOES IT MEAN FOR MOODY’S TO DOWNGRADE A CREDIT
12 OUTLOOK?**

13 A. A Moody’s rating outlook is an opinion regarding the likely rating direction over
14 what it refers to as “the medium term.” A Stable outlook indicates a low
15 likelihood of a rating change in the medium term. A Negative outlook indicates a
16 higher likelihood of a rating change over the medium term. While Moody’s
17 indicates that the time period for changing a rating subsequent to a change in the

²⁷ *Ibid.*

²⁸ *Ibid.*

²⁹ Moody’s Investors Service, “Research Announcement: Moody’s: US regulated utilities sector outlook for 2019 remains negative,” November 8, 2018.

³⁰ *Ibid.*

1 outlook from Stable will vary, on average Moody's indicates that a rating change
2 will follow within a year of a change in outlook.³¹

3 **Q. HAS THE CREDIT RATING FOR XCEL ENERGY, THE PARENT COMPANY**
4 **OF PUBLIC SERVICE, BEEN DOWNGRADED RECENTLY?**

5 A. Yes. On March 28, 2019, Moody's downgraded the credit rating for Xcel Energy
6 to Baa1 from A3, citing concerns that the "negative impact of tax reform, an
7 elevated capital expenditure program and limited plans to issue equity contribute
8 to the sustained weaker financial profile."³² In particular, Moody's expressed
9 concern with Xcel Energy's cash flow to debt ratio declining to around 16 percent
10 as compared to the historical level of around 20 percent.

11 **Q. ARE YOU AWARE OF ANY OTHER UTILITIES THAT HAVE BEEN**
12 **DOWNGRADED AS A RESULT OF THE EFFECT OF THE TCJA?**

13 A. Yes. Figure AEB-D-6 contains a list of additional utilities that have been
14 downgraded as a result of tax reform.

³¹ Moody's Investors Service, Rating Symbols and Definitions, July 2017, at 27.

³² Moody's Investors Service, Ratings Action: Moody's downgrades Xcel Energy to Baa1 from A3; outlook stable, March 28, 2019.

1

**Figure AEB-D-6:
 Credit Rating Downgrades Resulting from TCJA**

Utility	Rating Agency	Credit Rating before TCJA	Credit Rating after TCJA	Downgrade Date
American Water	Moody's	A3	Baa1	4/1/2019
Keyspan Gas East Corporation	Moody's	A2	A3	3/29/2019
Niagara Mohawk Power Corporation	Moody's	A2	A3	3/29/2019
Xcel Energy	Moody's	A3	Baa1	3/28/2019
ALLETE	Moody's	A3	Baa1	3/26/2019
Brooklyn Union Gas Company	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
Integrus 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

2 **Q. HAVE OTHER RATING AGENCIES COMMENTED ON THE EFFECT OF THE**
 3 **TCJA ON CREDIT RATINGS?**

4 A. Yes. S&P and Fitch have also commented on the implications of the TCJA on
 5 utilities. S&P published a report on January 24, 2018 entitled "U.S. Tax Reform:
 6 For Utilities' Credit Quality, Challenges Abound" in which S&P concludes:

7 The impact of tax reform on utilities is likely to be negative to
 8 varying degrees depending on a company's tax position going into
 9 2018, how its regulators react, and how the company reacts in
 10 return. It is negative for credit quality because the combination of a
 11 lower tax rate and the loss of stimulus provisions related to bonus
 12 depreciation or full expensing of capital spending will create
 13 headwinds in operating cash-flow generation capabilities as
 14 customer rates are lowered in response to the new tax code. The

1 impact could be sharpened or softened by regulators depending on
2 how much they want to lower utility rates immediately instead of
3 using some of the lower revenue requirement from tax reform to
4 allow the utility to retain the cash for infrastructure investment or
5 other expenses. Regulators must also recognize that tax reform is a
6 strain on utility credit quality, and we expect companies to request
7 stronger capital structures and other means to offset some of the
8 negative impact.

9 Finally, if the regulatory response does not adequately compensate
10 for the lower cash flows, we will look to the issuers, especially at
11 the holding company level, to take steps to protect credit metrics if
12 necessary. Some deterioration in the ability to deduct interest
13 expense could occur at the parent, making debt there relatively
14 more expensive. More equity may make sense and be necessary to
15 protect ratings if financial metrics are already under pressure and
16 regulators are aggressive in lowering customer rates. It will
17 probably take the remainder of this year to fully assess the financial
18 impact on each issuer from the change in tax liabilities, the
19 regulatory response, and the company's ultimate response. We
20 have already witnessed differing responses. We revised our outlook
21 to negative on PNM Resources Inc. and its subsidiaries on Jan. 16
22 after a Public Service Co. of New Mexico rate case decision
23 incorporated tax savings with no offsetting measures taken to
24 alleviate the weaker cash flows. It remains to be seen whether
25 PNM will eventually do so, especially as it is facing other regulatory
26 headwinds. On the other hand, FirstEnergy Corp. issued \$1.62
27 billion of mandatory convertible stock and \$850 million of common
28 equity on Jan. 22 and explicitly referenced the need to support its
29 credit metrics in the face of the new tax code in announcing the
30 move. That is exactly the kind of proactive financial management
31 that we will be looking for to fortify credit quality and promote
32 ratings stability.³³

33 In S&P's 2019 industry trends report, the rating agency notes that the
34 utility industry's financial measures weakened in 2018 and attributed that to tax
35 reform, capital spending and negative load growth. In addition, S&P expects that
36 weaker credit metrics will continue into 2019 for those utilities operating with

³³ Standard and Poor's Global Ratings, "U.S. Tax Reform: For Utilities' Credit Quality, Challenges Abound," January 24, 2018.

1 minimal financial cushion. S&P further expects that these utilities will look to
2 offset the revenue reductions from tax reform with equity issuances. The rating
3 agency reported that in 2018 regulated utilities issued nearly \$35 billion in equity,
4 which is more than twice the level of equity issuances for utilities in 2016 and
5 2017.³⁴

6 FitchRatings (“Fitch”) recognized the implications of tax reform for
7 regulated utilities, but indicated that any ratings actions will be guided by the
8 response of regulators and the management of the utilities. Fitch notes that the
9 solution will depend on the ability of utility management to manage the cash flow
10 implications of the TCJA. Fitch offers several solutions to provide rate stability
11 and to moderate changes to cash flow in the near term, including increasing the
12 authorized ROE and/or equity ratio.³⁵

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

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

- 16 • The assumptions used in the ROE estimation models have been affected
17 by unsustainably low dividend yields. Therefore, it is important to also
18 consider alternative financial models, such as the CAPM, Risk Premium
19 and Expected Earnings analyses, together with the DCF results.
- 20 • Recent market conditions are not expected to persist as the Federal
21 Reserve continues to normalize monetary policy. As a result, the recent

³⁴ Standard & Poor’s Ratings, “Industry Top Trends 2019, North America Regulated Utilities”, November 8, 2018.

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

1 historical market conditions are not reflective of the market conditions that
2 will be present when the rates for Public Service will be in effect.

- 3 • Without adequate regulatory support, the TCJA will have a negative effect
4 on utility cash flows, and may result in ratings actions, which increase
5 investor risk expectations for utilities.

1 **VI. PROXY GROUP SELECTION**

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

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

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

19 **Q. PLEASE PROVIDE A BRIEF PROFILE OF PUBLIC SERVICE.**

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

1 customers primarily in eastern Colorado.³⁶ Public Service's current credit ratings
2 on senior unsecured debt are:

3 **Table AEB-D-2:**
Public Service Company Credit Ratings³⁷

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

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

5 A. I began with the group of 40 domestic U.S. utilities that Value Line classifies as
6 Electric Utilities, and I simultaneously applied the following screening criteria to
7 select a group of combination electric and gas utility companies that:

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

³⁶ Xcel Energy Inc., SEC Form 10-K, filed February 2018, at 8.

³⁷ Source: SNL Financial, accessed January 28, 2019.

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

7 **Q. DID YOU INCLUDE XCEL ENERGY IN YOUR ANALYSIS?**

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

11 **Q. WHAT IS THE COMPOSITION OF YOUR PROXY GROUP?**

12 A. The screening criteria discussed above result in a proxy group consisting of the
13 combination electric and gas companies shown in Table AEB-D-3.

14 **Table AEB-D-3:
Combination Proxy Group**

Company	Ticker
Ameren Corporation	AEE
Black Hills Corporation	BKH
CMS Energy	CMS
DTE Energy	DTE
NorthWestern Corporation	NWE
Sempra Energy	SRE
WEC Energy Group	WEC

15 Each of the companies in my proxy group has an investment grade credit
16 rating between A- and BBB from S&P, which indicates that the company has
17 similar business and financial risk characteristics as Public Service. In addition,

1 the proxy group companies derive the vast majority of their operating income
2 (i.e., approximately 90 percent on average) from regulated utility operations,
3 making them comparable to Public Service on that risk factor. Lastly, each of
4 companies in the proxy group owns generation assets in rate base, which is an
5 important similarity to Public Service.

6 **Q. WHY WAS CONSOLIDATED EDISON EXCLUDED FROM THE**
7 **COMBINATION ELECTRIC AND GAS PROXY GROUP?**

8 A. Consolidated Edison Inc. ("ConEd") was excluded from the proxy group because
9 the company does not own generation assets in rate base. Generation
10 ownership is an important risk distinction between Public Service and ConEd.

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

14 A. Yes. This is because Public Service operates as a combination electric and gas
15 utility and is viewed by investors as a combination company. In particular, Public
16 Service raises capital as a combination company, and does not issue separate
17 debt or equity for the electric and gas operations. In addition, the business and
18 financial risks of Public Service are comparable to those of a combination electric
19 and gas utility. As shown in Table AEB-D-4, the combination electric and gas
20 companies in the proxy group derive a similar percentage of revenues and
21 operating income from electric utility operations as Public Service, which makes
22 them risk comparable to the Company in terms of business mix.

1

Table AEB-D-4:
Proxy Group 2015-17 Electric Percentages³⁸

Company	Revenue	Operating Income
Ameren Corporation	86%	89%
Black Hills Corporation	47%	56%
CMS Energy	71%	74%
DTE Energy	79%	80%
NorthWestern Corp	79%	85%
Sempra Energy	48%	53%
WEC Energy Group	64%	62%
Proxy Group Avg.	68%	71%
Public Service Company	76%	81%

2

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

3

4

³⁸ Source: United States Securities and Exchange Commission, 2017 Form 10-K for each company.

1 analysis. I believe that a reasonable ROE estimate considers alternative
2 methodologies, observable market data, and the reasonableness of their
3 individual and collective results.

4 **A. Importance of Multiple Analytical Approaches**

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

7 A. Because the cost of equity is not directly observable, it must be estimated based
8 on both quantitative and qualitative information. When faced with the task of
9 estimating the cost of equity, analysts and investors are inclined to gather and
10 evaluate as much relevant data as reasonably can be analyzed. Several models
11 have been developed to estimate the cost of equity, and I use multiple
12 approaches to estimate the cost of equity. As a practical matter, however, all of
13 the models available for estimating the cost of equity are subject to limiting
14 assumptions or other methodological constraints. Consequently, many well-
15 regarded finance texts recommend using multiple approaches when estimating
16 the cost of equity. For example, Copeland, Koller, and Murrin³⁹ suggest using
17 the CAPM and Arbitrage Pricing Theory model, while Brigham and Gapenski⁴⁰
18 recommend the CAPM, DCF, and Bond Yield Plus Risk Premium approaches.
19 Consistent with the *Hope* finding, it is the analytical result, not the methodology
20 employed, which is controlling in arriving at ROE determinations.

³⁹ 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.

⁴⁰ Eugene Brigham, Louis Gapenski, Financial Management: Theory and Practice, 7th Ed. (Orlando: Dryden Press, 1994), at 341.

1 **Q. IS IT IMPORTANT GIVEN THE CURRENT MARKET CONDITIONS TO USE**
2 **MORE THAN ONE ANALYTICAL APPROACH?**

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

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

20 A. Yes, several regulatory commissions have addressed the effect of capital market
21 conditions on the DCF model, including the FERC, PPUC, ICC, and Missouri
22 PSC.

1 **Q. PLEASE SUMMARIZE HOW THE FERC HAS RESPONDED TO THE EFFECT**
2 **OF MARKET CONDITIONS ON THE DCF.**

3 A. Understanding the important role that dividend yields play in the DCF model, the
4 FERC determined that anomalous capital market conditions have caused the
5 DCF model to understate equity costs for regulated utilities. In Opinion No. 531,
6 the FERC noted:

7 There is ‘model risk’ associated with the excessive reliance or
8 mechanical application of a model when the surrounding conditions
9 are outside of the normal range. ‘Model risk’ is the risk that a
10 theoretical model that is used to value real world transactions fails
11 to predict or represent the real phenomenon that is being
12 modeled.⁴¹

13 In Opinion No. 531, the FERC also noted that the low interest rates and
14 bond yields that persisted throughout the analytical period that was relied on
15 (study period) resulted in anomalous market conditions and recognized the need
16 to move away from the midpoint of the DCF analysis. In that case, the FERC
17 relied on the CAPM and other risk premium methodologies to inform its judgment
18 to set the return above the midpoint of the DCF results.

19 In Opinion No. 551, issued in September 2016, the FERC recognized that
20 those same anomalous market conditions continued into the study period, and
21 again concluded that it was necessary to rely on ROE estimation methodologies
22 other than the DCF model to set the appropriate ROE:

⁴¹ FERC Docket No. EL11-66-001, Opinion No. 531 (June 19, 2014), fn 286.

1 Our decision to rely on multiple methodologies in these four
2 complaint proceedings is based on our conclusion that the DCF
3 methodology may no longer singularly reflect how investors make
4 their decisions. We believe that, since we adopted the DCF
5 methodology as our sole method for determining utility ROEs in the
6 1980s, investors have increasingly used a diverse set of data
7 sources and models to inform their investment decisions. Investors
8 appear to base their decisions on numerous data points and
9 models, including the DCF, CAPM, Risk Premium, and Expected
10 Earnings methodologies. As demonstrated in Figure 2 below, which
11 shows the ROE results from the four models over the four test
12 periods at issue in this proceeding, these models do not correlate
13 such that the DCF methodology captures the other methodologies.
14 In fact, in some instances, their cost of equity estimates may move
15 in opposite directions over time. Although we recognize the greater
16 administrative burden on parties and the Commission to evaluate
17 multiple models, we believe that the DCF methodology alone no
18 longer captures how investors view utility returns because investors
19 do not rely on the DCF alone and the other methods used by
20 investors do not necessarily produce the same results as the DCF.
21 Consequently, it is appropriate for our analysis to consider a
22 combination of the DCF, CAPM, Risk Premium, and Expected
23 Earnings approaches.⁴⁵

24 **Q. HOW HAVE THE PPUC, THE ICC AND THE MISSOURI PSC ADDRESSED**
25 **THE EFFECT OF MARKET CONDITIONS ON THE DCF?**

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

⁴⁵ Federal Energy Regulatory Commission, Docket No. EL 11-66-001, et al., Order Directing Briefs, issued October 16, 2018, at para. 40. [Figure 2 was omitted]

1 Sole reliance on one methodology without checking the validity of
2 the results of that methodology with other cost of equity analyses
3 does not always lend itself to responsible ratemaking. We conclude
4 that methodologies other than the DCF can be used as a check
5 upon the reasonableness of the DCF derived equity return
6 calculation.⁴⁶

7 The PPUC ultimately concluded:

8 As such, where evidence based on the CAPM and RP methods
9 suggest that the DCF-only results may understate the utility's
10 current cost of equity capital, we will give consideration to those
11 other methods, to some degree, in determining the appropriate
12 range of reasonableness for our equity return determination.⁴⁷

13 In a 2016 ICC case, the ICC Staff relied on a DCF analysis that resulted in
14 average returns for their proxy groups of 7.24 percent to 7.51 percent. The
15 company demonstrated that these results were uncharacteristically low, by
16 comparing the results of ICC Staff's models to recently authorized ROEs for
17 regulated utilities and the return on the S&P 500.⁴⁸ The ICC agreed with the
18 Company that the ICC Staff's proposed ROE of 8.04 percent was anomalous and
19 recognized that a non-competitive return will deter investment in Illinois.⁴⁹ In
20 setting the return in that proceeding, the ICC found that it was necessary to
21 consider other factors beyond the outputs of the financial models, particularly
22 whether the return is sufficient to attract capital, maintain financial integrity, and

⁴⁶ Pennsylvania Public Utility Commission, PPL Electric Utilities, R-2012-2290597, meeting held December 5, 2012, at 80.

⁴⁷ *Id.*, at 81.

⁴⁸ State of Illinois Commerce Commission, Docket No. 16-0093, Illinois-American Water Company Initial Brief, August 31, 2016, at 10.

⁴⁹ 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.

1 commensurate with returns for companies of comparable risk, while balancing
2 the interests of customers and shareholders.⁵⁰

3 Finally, in February 2018, the Missouri PSC issued a decision in Spire's
4 2017 gas rate case. In explaining the rationale for its decision, the Commission
5 cited the importance of considering multiple methodologies to estimate the cost
6 of equity and the need for the authorized ROE to be consistent with returns in
7 other jurisdictions and to reflect the growing economy and investor expectations
8 for higher interest rates.

9 Based on the competent and substantial evidence in the record, on
10 its analysis of the expert testimony offered by the parties, and on its
11 balancing of the interests of the company's ratepayers and
12 shareholders, as fully explained in its findings of fact and
13 conclusions of law, the Commission finds that 9.8 percent is a fair
14 and reasonable return on equity for Spire Missouri. That rate is
15 nearly the midpoint of all the experts' recommendations and is
16 consistent with the national average, the growing economy, and the
17 anticipated increasing interest rates. The Commission finds that this
18 rate of return will allow Spire Missouri to compete in the capital
19 market for the funds needed to maintain its financial health.⁵¹

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

22 A. Recent market data that is used as the basis for the inputs and assumptions for
23 both models have been affected by market conditions. As a result, relying
24 exclusively on historical inputs and assumptions in these models, without
25 considering whether these inputs and assumptions are consistent with investors'
26 future expectations, will underestimate the cost of equity that investors would

⁵⁰ State of Illinois Commerce Commission Decision, Docket No. 16-0093, Illinois-American Water Company, 2016 WL 7325212 (2016), at 55.

⁵¹ 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.

1 require over the period that the rates in this case are to be in effect. In this
2 instance, relying on the historical average of abnormally high stock prices results
3 in low dividend yields that are not expected to continue over the period that the
4 new rates will be in effect. This, in turn, underestimates the ROE for the rate
5 period.

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

14 **B. Constant Growth DCF Model**

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

17 A. Yes. DCF models are widely used in regulatory proceedings and have sound
18 theoretical bases, although neither the DCF model nor any other model can be
19 applied without considerable judgment in the selection of data and the
20 interpretation of results. As discussed in Section VII.A of my Direct Testimony,
21 the currently high valuations and low dividend yields for utility companies and the
22 expectation that those high valuations and low dividend yields are not

1 sustainable are creating concerns among analysts and regulators that the DCF
2 model is understating the cost of equity at this time.

3 **Q. PLEASE DESCRIBE THE DCF APPROACH.**

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

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

7
8 Where P_0 represents the current stock price, $D_1 \dots D_\infty$ are all expected future
9 dividends, and k is the discount rate, or required ROE. Equation [1] is a standard
10 present value calculation that can be simplified and rearranged into the following
11 form:

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

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

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

18 A. The Constant Growth DCF model requires the following assumptions: (1) a
19 constant growth rate for earnings and dividends; (2) a stable dividend payout
20 ratio; (3) a constant P/E ratio; and (4) a discount rate greater than the expected

1 growth rate. To the extent any of these assumptions is violated, considered
2 judgment and/or specific adjustments should be applied to the results.

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

5 A. The dividend yield in my Constant Growth DCF model is based on the proxy
6 companies' current annual dividend and average closing stock prices over the
7 30-, 90-, and 180-trading days ended March 29, 2019. In my summary tables, I
8 have presented the DCF results using 90-day average stock prices as
9 representative of the investor-required return.

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

12 A. Yes. Since utility companies tend to increase their quarterly dividends at
13 different times throughout the year, it is reasonable to assume that dividend
14 increases will be evenly-distributed over calendar quarters. Given that
15 assumption, it is reasonable to apply one-half of the expected annual dividend
16 growth rate for purposes of calculating the expected dividend yield component of
17 the DCF model. This adjustment ensures that the expected first year dividend
18 yield is, on average, representative of the coming twelve-month period, and does
19 not overstate the aggregated dividends to be paid during that time.

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

22 A. In its Constant Growth form, the DCF model (i.e., Equation [2]) assumes a single

1 long-term growth rate in perpetuity. In order to reduce the long-term growth rate
2 to a single measure, one must assume that the dividend payout ratio remains
3 constant and that Earnings Per Share (“EPS”), dividends per share, and book
4 value per share all grow at the same constant rate. Over the long run, dividend
5 growth can only be sustained by earnings growth. Earnings growth rates tend to
6 be least influenced by capital allocation decisions that companies may make in
7 response to near-term changes in the business environment. Since such
8 decisions may directly affect near-term dividend payout ratios, estimates of
9 earnings growth are more indicative of long-term investor expectations than are
10 dividend or book value growth estimates.

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

13 A. As shown in Attachment AEB-2, my Constant Growth DCF model incorporates
14 the following sources of long-term growth rates: consensus long-term earnings
15 growth estimates from Zacks Investment Research and Thomson First Call
16 (provided by Yahoo! Finance) and long-term earnings growth estimates from
17 Value Line.

18 **C. Multi-Stage DCF Model**

19 **Q. What other forms of the DCF model have you considered?**

20 A. In order to address some of the limiting assumptions underlying the Constant
21 Growth form of the DCF model, I also considered the results of a Multi-Stage
22 form of the DCF model. As with the Constant Growth DCF model, the Multi-

1 Stage form defines the cost of equity as the discount rate that sets the current
2 price equal to the discounted value of future cash flows.

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

5 A. Yes, the Commission has referred to the Multi-Stage DCF model as its preferred
6 methodology in rate case decisions since 2012. While I agree that the Multi-
7 Stage DCF model is a commonly-used method among investors and regulators,
8 it is important to consider whether any model used to estimate the ROE is
9 producing reliable results at a given point in time. This can be accomplished by
10 comparing the individual and collective results of the various models used to
11 estimate the cost of equity, and by evaluating whether the inputs and
12 assumptions of the models are being affected by conditions in capital markets or
13 the economy.

14 **Q. WHAT ARE THE DIFFERENCES BETWEEN THE CONSTANT GROWTH AND**
15 **MULTI-STAGE DCF MODELS?**

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

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

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

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

14 A. As shown in Attachments AEB-3.1 through AEB-3.3, I began with the current
15 annualized dividend as of March 29, 2019 for each proxy group company. In the
16 first stage of the model, the current annualized dividend is escalated based on
17 the average of the three- to five-year earnings growth estimates reported by
18 Zacks, Thomson First Call, and Value Line. For the third stage, I relied on long-
19 term projected growth in Gross Domestic Product ("GDP"). The second stage
20 growth rate is a transition from the first stage growth rate to the long-term growth
21 rate on a geometric average basis.

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

2 A. As shown in Attachment AEB-4, the long-term growth rate of 5.56 percent is
3 based on real GDP growth rate of 3.22 percent from 1929 through 2018,⁵² and a
4 projected inflation rate of 2.27 percent. The projected inflation rate is based on
5 three measures: (1) the average long-term projected growth rate in the
6 Consumer Price Index (“CPI”) of 2.20 percent;⁵³ (2) the compound annual growth
7 rate of the CPI for all urban consumers for 2029-2050 of 2.21 percent as
8 projected by the Energy Information Administration (“EIA”); and (3) the
9 compound annual growth rate of the GDP chain-type price index for 2029-2050
10 of 2.29 percent, also reported by the EIA.⁵⁴

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

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

⁵² U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Tables, Table 1.1.1, March 28, 2019.

⁵³ Blue Chip Financial Forecasts, Vol. 37, No. 12, December 1, 2018, at 14.

⁵⁴ U.S. Energy Information Administration, Annual Energy Outlook 2019, Table 20, Macroeconomic Indicators.

1 **D. Flotation Costs**

2 **Q. WHAT ARE FLOTATION COSTS?**

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

6 **Q. ARE FLOTATION COSTS PART OF THE UTILITY’S INVESTED COSTS OR**
7 **ITS EXPENSES?**

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

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

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

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

11 **Q. HAS XCEL ENERGY RECENTLY ISSUED COMMON EQUITY?**

12 A. Yes, Xcel Energy issued approximately \$227 million of common equity
13 (4,733,400 common shares issued) in September 2018. Flotation cost recovery
14 is appropriate, however, regardless of whether an issuance occurs during, or is
15 planned for, the test year because failure to allow recovery of flotation costs may
16 deny Public Service the opportunity to earn its authorized cost of equity in the
17 future.

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

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

1 consistent with the philosophy of a fair ROR. According to Dr. Shannon Pratt:

2 Flotation costs occur when new issues of stock or debt are sold to
3 the public. The firm usually incurs several kinds of flotation or
4 transaction costs, which reduce the actual proceeds received by
5 the firm. Some of these are direct out-of-pocket outlays, such as
6 fees paid to underwriters, legal expenses, and prospectus
7 preparation costs. Because of this reduction in proceeds, the firm's
8 required returns on these proceeds equate to a higher return to
9 compensate for the additional costs. Flotation costs can be
10 accounted for either by amortizing the cost, thus reducing the cash
11 flow to discount, or by incorporating the cost into the cost of capital.
12 Because flotation costs are not typically applied to operating cash
13 flow, one must incorporate them into the cost of capital.⁵⁵

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

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

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

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

⁵⁵ Shannon P. Pratt, Cost of Capital Estimation and Applications, Second Edition at 220-221.

1 **E. Discounted Cash Flow Results**

2 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR DCF ANALYSES.**

3 A. The results of my Constant Growth and Multi-Stage DCF analyses using 90-day
4 average stock prices are summarized in Table AEB-D-5.

5 **Table AEB-D-5:**
 Summary of DCF Results⁵⁶

	Mean Low	Mean	Mean High
Constant Growth DCF	8.30%	8.94%	9.73%
Multi-Stage DCF	8.85%	9.08%	9.40%

6 As shown in that Table, the Constant Growth DCF analysis using the 90-
7 day average dividend yield produces a range of results from 8.30 percent to 9.73
8 percent, and the Multi-Stage DCF analysis using the 90-day average dividend
9 yield produces a range of results from 8.85 percent to 9.40 percent.

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

12 A. I calculated the mean low result for both DCF models using the lowest growth
13 rate (i.e., the lowest of the Zacks, Thomson First Call, and Value Line earnings
14 growth rates) for each of the proxy group companies. Thus, the mean low result
15 reflects the lowest expected DCF result for the proxy group. I used a similar
16 approach to calculate the mean high results, using the highest growth rate for

⁵⁶ DCF results in the table are based on 90-day average stock prices. Attachments AEB-2 and AEB-3 also present results based on 30-day and 180-day average stock prices which are similar to the 90-day results.

1 each proxy group company. The mean results were calculated using the
2 average growth rates from all sources.

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

5 A. As discussed previously, one primary assumption of the DCF models is a
6 constant P/E ratio. That assumption is heavily influenced by the market price of
7 utility stocks. To the extent that utility valuations are high and may not be
8 sustainable, it is important to consider the results of the DCF models with
9 caution. The average dividend yield for the proxy group companies has declined
10 from 4.54 percent in 2009 to 3.10 percent in 2018 due to stock price
11 appreciation, enabled by the significant decline in interest rates. The dividend
12 yield on the 90-day average Constant Growth DCF analysis is 3.14 percent,
13 which is significantly below the average dividend yield for combined electric and
14 gas utilities over the last 10 years. On that basis, I believe it is appropriate to
15 place less weight on the DCF model results and more weight on the results of
16 alternative methodologies such as the CAPM, the Risk-Premium analysis, and
17 the Expected Earnings analysis.

18 **F. CAPM Analysis**

19 **Q. PLEASE BRIEFLY DESCRIBE THE CAPITAL ASSET PRICING MODEL.**

20 A. The CAPM is a risk premium approach that estimates the cost of equity for a
21 given security as a function of a risk-free return plus a risk premium to
22 compensate investors for the non-diversifiable or “systematic” risk of that

1 security. Systematic risk is the risk inherent in the entire market or market
2 segment. This form of risk cannot be diversified away using a portfolio of assets.
3 Non-systematic risk is the risk of a specific company that can be mitigated
4 through portfolio optimization.

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

7
$$K_e = r_f + \beta(r_m - r_f) \quad [3]$$

8 Where:

9 K_e = the required market ROE;

10 β = Beta coefficient of an individual security;

11 r_f = the risk-free ROR; and

12 r_m = the required return on the market as a whole.

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

18
$$\beta = \frac{\text{Covariance}(r_e, r_m)}{\text{Variance}(r_m)} \quad [4]$$

19 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

1 specific security and the general market (i.e., Covariance (re, rm)) reflects the
2 extent to which the return on that security will respond to a given change in the
3 general market return. Thus, Beta represents the risk of the security relative to
4 the general market.

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

6 A. I relied on three sources for my estimate of the risk-free rate: (1) the current
7 30-day average yield on 30-year U.S. Treasury bonds (i.e., 2.99 percent);⁵⁷ (2)
8 the projected 30-year U.S. Treasury bond yield for Q3 2019 through Q3 2020
9 (i.e., 3.16 percent);⁵⁸ and (3) the projected 30-year U.S. Treasury bond yield for
10 2020 through 2024 (i.e., 3.90 percent).⁵⁹

11 **Q. DID YOU PLACE MORE WEIGHT ON ONE OF THESE SCENARIOS?**

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

⁵⁷ Bloomberg Professional, as of December 31, 2018.

⁵⁸ Blue Chip Financial Forecasts, Vol. 38, No. 1, January 1, 2019, at 2.

⁵⁹ Blue Chip Financial Forecasts, Vol 37, No. 12, December 1, 2018, at 14.

1 this analysis fails to take into consideration the effect of the market's
2 expectations for interest rate increases on the cost of equity.

3 **Q. ARE YOU AWARE OF ANY REGULATORY COMMISSIONS THAT HAVE**
4 **RECOGNIZED THAT CURRENT CAPITAL MARKET CONDITIONS HAVE**
5 **AFFECTED THE INPUTS, IN PARTICULAR THE RISK-FREE RATE, OF THE**
6 **CAPM?**

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

14 Current federal monetary policy that is intended to stimulate the
15 economy has pushed treasury yields to near historic lows.
16 Consequently, the Department has found that a CAPM analysis
17 based on current treasury yields may tend to underestimate the
18 risk-free rate over the long term and, thereby, understate the
19 required ROE. The CAPM is based on investor expectations and,
20 therefore, it is appropriate to use a prospective measure for the
21 risk-free rate component. The Department has found that Blue Chip
22 Financial Forecasts is widely relied on by investors and provides a
23 useful proxy for investor expectations for the risk-free rate.⁶⁰

⁶⁰D.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.

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

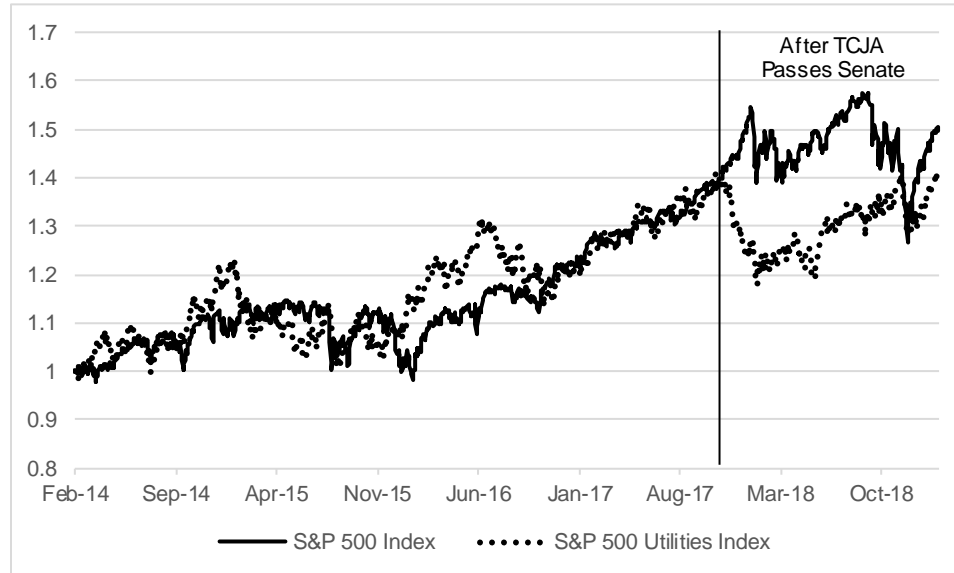
2 A. As shown in Attachment AEB-6, I used Beta coefficients for the proxy group
3 companies as reported by Value Line and Bloomberg. Value Line's Beta
4 calculation is based on five years of weekly returns relative to the New York
5 Stock Exchange Composite Index, while Bloomberg's Beta calculation is based
6 on ten years of weekly returns relative to the S&P 500 Index.

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

9 A. As I discussed in Section IV, the TCJA has had a significant effect on utility
10 companies. While other industries are able to retain the benefits of a reduced
11 corporate income tax rate, this benefit has largely been passed through to
12 customers by utility companies. This fundamental difference had an effect on
13 investors' view of the utility industry relative to other industries. As shown in
14 Figure AEB-D-7, after the Senate passed the TCJA on December 2, 2017,
15 utilities significantly deviated from the broader market.

1

**Figure AEB-D-7:
Relative Performance of the Utility Industry Relative to the S&P 500**



2 The TCJA's effect on the utility industry relative to other industries caused a
3 significant short-term shift in the returns on the utility industry relative to the
4 broader market. Over the last three-to-five years, volatility for the utility industry
5 has been higher than the broader market (as measured by the S&P 500),⁶¹
6 suggesting higher beta coefficients for utility companies. However, in short-term
7 calculations of the Beta coefficient, the significant effect of the shift in returns
8 related to the TCJA has outweighed the effect of longer-term measures of
9 relative volatility. As such, to reflect the long-term relationship that suggests
10 utility stocks are less volatile than the broader market (i.e. the relative volatility for
11 utility companies has been lower than the S&P 500 over the ten-year

⁶¹See, S&P Dow Jones Indices, Equity, S&P 500 Utilities, February 28, 2019.

1 measure⁶²), I selected a ten-year period to calculate the Beta coefficients from
2 Bloomberg.

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

4 A. I estimated the Market Risk Premium based on the expected total return on the
5 S&P 500 Index less the 30-year Treasury bond yield. The expected total return
6 on the S&P 500 Index is calculated using the Constant Growth DCF model for
7 the companies in the S&P 500 Index. As shown in Attachment AEB-7.2, based
8 on an estimated dividend yield of 2.00 percent and a long-term earnings growth
9 rate of 11.69 percent, the estimated required market return for the S&P 500
10 Index is 13.80 percent. The implied Market Risk Premiums over the current and
11 projected yields on the 30-year U.S. Treasury bond range from 9.90 percent to
12 10.81 percent.

13 **Q. WHAT ARE THE RESULTS OF YOUR CAPM ANALYSIS?**

14 A. As shown in Table AEB-D-6 (see also Attachment AEB-7.1), my forward-looking
15 CAPM analysis for the proxy group produces a range of returns from 9.63
16 percent to 10.73 percent, depending on the risk-free rate and the source of the
17 Beta coefficient, with an average CAPM estimate of 9.77 percent using Value
18 Line betas and 10.56 percent using Bloomberg betas.

⁶²*Id.*

1

**Table AEB-D-6:
Forward-Looking CAPM Results**

	Value Line Beta	Bloomberg Beta
Current Risk-Free Rate (2.99%)	9.63%	10.45%
2019-2020 Projected Risk-Free Rate (3.16%)	9.70%	10.50%
2020-2024 Projected Risk-Free Rate (3.90%)	9.98%	10.73%
Mean Result	9.77%	10.56%

2

G. Bond Yield Plus Risk Premium Analysis

3

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

4

5

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 vertically-integrated electric utility companies as the historical measure of the cost of equity to determine the risk premium.

6

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

3 A. Yes. Both academic literature and market evidence indicate that the equity risk
4 premium (as used in this approach) is inversely related to the level of interest
5 rates. That is, as interest rates increase (decrease), the equity risk premium
6 decreases (increases). Consequently, the analysis should: (1) reflect the inverse
7 relationship between interest rates and the equity risk premium; and (2) be based
8 on current and expected market conditions. Such an analysis can be developed
9 based on a regression of the risk premium as a function of U.S. Treasury bond
10 yields. If we let authorized ROEs for vertically-integrated electric utility
11 companies serve as the measure of required equity returns and define the yield
12 on the long-term U.S. Treasury bond as the relevant measure of interest rates,
13 the risk premium is simply the difference between those two points.⁶³

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

15 A. As shown in Figure AEB-D-8, from 1992 through March 2019, there was a strong
16 negative relationship between risk premia and interest rates. To estimate that
17 relationship, I conducted a regression analysis using the following equation:

$$RP = a + b(T) \quad [5]$$

18
19 Where:

⁶³ 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.

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

3 a = intercept term

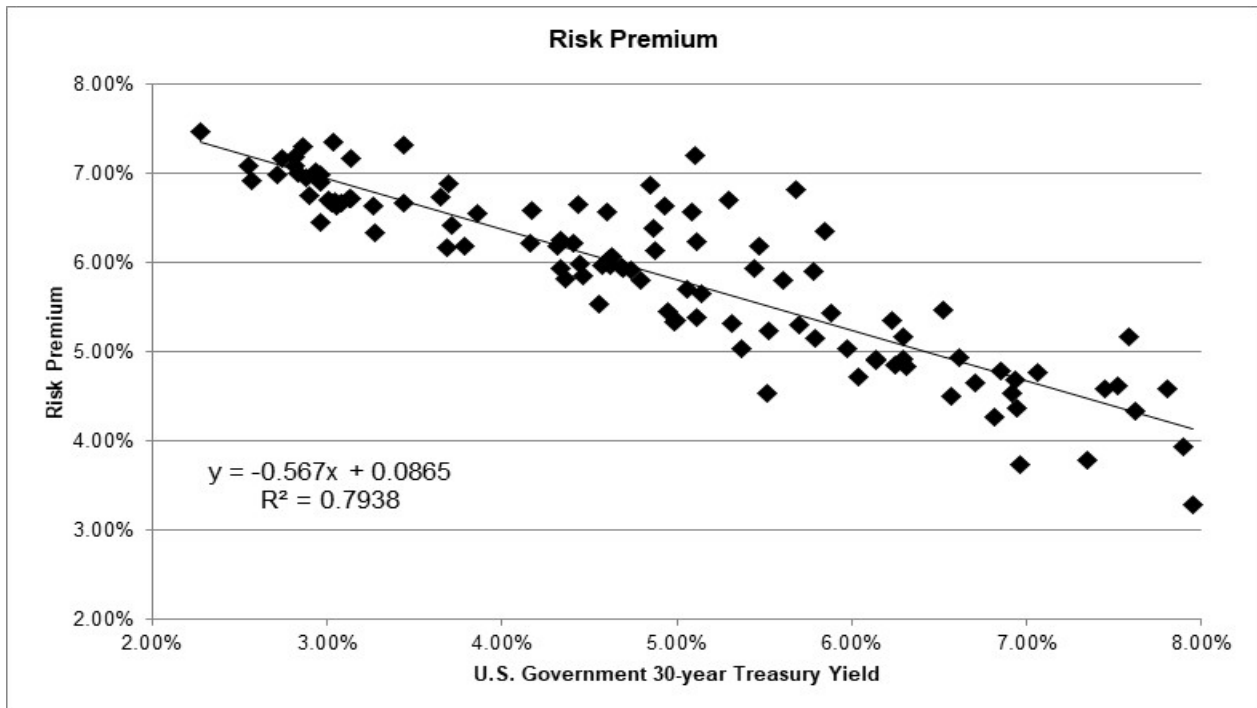
4 b = slope term

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

6 Data regarding allowed ROEs were derived from 603 vertically-integrated
7 electric utility rate case decisions from 1992 through March 2019 as reported by
8 Regulatory Research Associates. This equation's coefficients were statistically
9 significant at the 99.0 percent confidence interval.

10

**Figure AEB-D-8:
Risk Premium Results**



1 As shown in Attachment AEB-8, based on the 30-day average of the 30-
2 year U.S. Treasury bond yield as of March 29, 2019 (i.e., 2.99 percent), the risk
3 premium would be 6.95 percent, resulting in an estimated ROE of 9.94 percent.
4 Based on the near-term (2019-2020) projections of the 30-year U.S. Treasury
5 bond yield (i.e., 3.16 percent), the risk premium would be 6.86 percent, resulting
6 in an estimated ROE of 10.02 percent. Based on longer-term (2020-2024)
7 projections of the 30-year U.S. Treasury bond yield (i.e., 3.90 percent), the risk
8 premium would be 6.44 percent, resulting in an estimated ROE of 10.34 percent.

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

11 A. The results of the Bond Yield Risk Premium analysis support my view that the
12 mean results of the DCF models are understating investors' return requirements
13 under current market conditions. For that reason, I believe the results of the
14 Bond Yield Risk Premium analysis support selection of an authorized ROE
15 higher than the mean DCF results for the proxy group.

16 **H. Expected Earnings Analysis**

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

19 A. Yes. Consistent with the FERC's recent Order on remand, I have considered an
20 Expected Earnings analysis based on the projected ROEs for each of the proxy
21 group companies.

1 **Q. WHAT IS AN EXPECTED EARNINGS ANALYSIS?**

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

10 **Q. HOW DID YOU DEVELOP THE EXPECTED EARNINGS APPROACH?**

11 A. I relied on the projected ROE capital for the proxy companies as reported by
12 Value Line for the period from 2021-2023. As shown in Attachment AEB-9, the
13 Expected Earnings analysis produces mean results of 11.21 percent for the
14 combination proxy group.

15 **Q. HOW DOES YOUR ROE RECOMMENDATION COMPARE WITH THE**
16 **RETURN THAT WOULD BE DERIVED USING THE FERC'S APPROACH OF**
17 **AVERAGING THE FOUR METHODOLOGIES USED TO ESTIMATE THE**
18 **COST OF EQUITY?**

19 A. My ROE recommendation of 10.35 percent is conservative when compared with
20 the mean and midpoint results derived using the FERC's new approach of
21 averaging the results of the DCF, CAPM, Risk Premium and Expected Earnings
22 analyses. The FERC methodology establishes a lower and upper threshold

1 ROE, as well as an ROE for the average risk utility. In order to set the return for
 2 a higher risk company, the FERC approach calculates the ROE based on the
 3 measure of central tendency between the mean result and the upper bound of
 4 the range of results. As shown in Attachment AEB-10, and as summarized in
 5 Table AEB-D-7 below, the mean of these four methods is 9.98 percent, the
 6 midpoint is 10.44 percent, and the mean result for the upper bound is 11.18
 7 percent for the proxy group.

8 **Table AEB-D-7:
 Summary of the FERC Methodology**

Model	Lower Bound	Upper Bound	Mean	Midpoint of Mean and Upper Bound
Discounted Cash Flow	8.58%	9.56%	9.01%	9.29%
Capital Asset Pricing Model	9.63%	9.98%	9.70%	9.84%
Expected Earnings	9.00%	14.00%	11.21%	12.61%
Risk Premium			10.02%	10.02%
Average - ROE Estimate		11.18%	9.98%	10.44%

1 **VIII. BUSINESS RISKS**

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

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

11 **A. Elevated Level of Capital Expenditures**

12 **Q. PLEASE SUMMARIZE PUBLIC SERVICE'S PROJECTED CAPITAL**
13 **EXPENDITURES.**

14 A. Public Service currently projects that the Company will spend approximately \$7.0
15 billion on capital investments for the period from 2019-2023, including significant
16 investment in renewable energy resources, electric transmission and distribution
17 operations, and gas pipeline infrastructure.

18 **Q. HOW IS PUBLIC SERVICE'S RISK PROFILE AFFECTED BY ITS**
19 **SUBSTANTIAL CAPITAL EXPENDITURE PROGRAM?**

20 A. As with any utility faced with substantial capital expenditures, Public Service's
21 risk profile is adversely affected in two significant and related ways: (1) the
22 heightened level of investment increases the risk of under recovery, or delayed

1 recovery, of the invested capital; and (2) an inadequate return would put
2 downward pressure on key credit metrics.

3 **Q. DO CREDIT RATING AGENCIES RECOGNIZE THE RISKS ASSOCIATED**
4 **WITH INCREASED CAPITAL EXPENDITURES?**

5 A. Yes. To the extent that Public Service's rates do not permit it to recover its full
6 cost of doing business, the Company will face increased recovery risk and thus
7 increased pressure on its credit metrics. In an August 2016 report, S&P explains
8 the importance of regulatory support for large capital projects:

9 When applicable, a jurisdiction's willingness to support large capital
10 projects with cash during construction is an important aspect of our
11 analysis. This is especially true when the project represents a major
12 addition to rate base and entails long lead times and technological
13 risks that make it susceptible to construction delays. Broad support
14 for all capital spending is the most credit-sustaining. Support for
15 only specific types of capital spending, such as specific
16 environmental projects or system integrity plans, is less so, but still
17 favorable for creditors. Allowance of a cash return on construction
18 work-in-progress or similar ratemaking methods historically were
19 extraordinary measures for use in unusual circumstances, but when
20 construction costs are rising, cash flow support could be crucial to
21 maintain credit quality through the spending program. Even more
22 favorable are those jurisdictions that present an opportunity for a
23 higher return on capital projects as an incentive to investors.⁶⁴

24 **Q. HAVE RATING AGENCIES COMMENTED SPECIFICALLY ON THE RISK**
25 **ASSOCIATED WITH THE ELEVATED LEVEL OF PUBLIC SERVICE'S**
26 **PLANNED CAPITAL EXPENDITURES?**

27 A. Yes, rating agencies have observed that elevated capital expenditure levels at
28 Public Service place pressure on the Company's cash flows and credit metrics.

⁶⁴ S&P Global Ratings, "Assessing U.S. Investor-Owned Utility Regulatory Environments," August 10, 2016, at 7.

1 In its July 2018 credit report, for example, Fitch commented that Public Service's
2 capital spending plan was a key ratings driver, noting:

3 Large Capex Plan: PSCo has a large capex plan that includes
4 significant spending associated with management's "steel for fuel"
5 renewable energy investment strategy, along with spending on gas
6 pipeline integrity and distribution system enhancement. Capex was
7 just under \$1 billion in 2015 and has increased significantly since
8 then. Fitch Ratings expects capex to peak at nearly \$1.7 billion in
9 2018 and average approximately \$1.25 billion per year over 2018–
10 2022.⁶⁵

11 **Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE EFFECT OF PUBLIC**
12 **SERVICE'S CAPITAL SPENDING PROGRAM ON ITS RISK PROFILE?**

13 A. Public Service's projected level of capital expenditures over the next five years is
14 significant, and timely cost recovery is needed to maintain the Company's credit
15 metrics at a level consistent with the current credit ratings.⁶⁶ It is clear that the
16 financial community also recognizes the additional risks associated with
17 substantial capital expenditures. In my view, continued access to capital on
18 reasonable terms is required and supports an authorized ROE for the Company
19 above the proxy group mean.

⁶⁵ FitchRatings, Public Service Company of Colorado, July 11, 2018, at 1-2.

⁶⁶ I recognize that approximately \$80 million in revenue requirement for the gas distribution business is recovered through the PSIA, which is fully forecasted.

1 **B. Regulatory Risk Assessment**

2 **Q. HAVE YOU PERFORMED A RISK ASSESSMENT OF PUBLIC SERVICE'S**
3 **ELECTRIC BUSINESS AS COMPARED TO THOSE OF THE PROXY GROUP**
4 **COMPANIES?**

5 **A.** Yes. Specifically, I examined the following factors that affect the business risk of
6 Public Service and the proxy group companies: (1) test year convention; (2) rate
7 base convention; (3) ability to earn a cash return on Construction Work in
8 Progress ("CWIP"); and (4) capital cost recovery mechanisms such as trackers
9 and riders.

10 As shown in Attachment AEB-11, 58 percent of the operating companies
11 (i.e., 19 out of 33) in the proxy group provide service in jurisdictions that allow the
12 use of a fully or partially forecasted test year. Colorado statute allows for the use
13 of a forecasted test year, but Public Service's electric rates are currently based
14 on a HTY. Further, 27 percent of the operating utilities in the proxy group (i.e., 9
15 out of 33) are allowed to use year-end rate base, while 73 percent use average
16 rate base. Public Service's electric rates are currently based on average rate
17 base on a HTY. The most restrictive combination of test year and rate base
18 convention from an investment perspective is a HTY with an average rate base,
19 which has been the basis for setting Public Service's electric rates in recent
20 years, but which is only used by 24 percent of the operating utilities in the proxy
21 group. This contributes to the regulatory lag and earnings attrition for the
22 Company's Electric operations.

1 In addition, 41 percent of the operating utilities held by the proxy group
2 (i.e., 13 out of 32) have capital cost tracking mechanisms that allow them to
3 recover capital investments that are placed into service between rate cases. If
4 the Commission approves the Company's request to roll the Clean Air – Clean
5 Jobs Act ("CACJA") Rider into base rates as part of this rate review request,
6 Public Service will only have a Transmission Cost Adjustment ("TCA")
7 mechanism for its Electric business. Lastly, 67 percent of the operating utilities in
8 the proxy group are allowed to include CWIP in rate base and earn a cash return
9 on CWIP, which helps to offset the pressure on cash flows of major capital
10 projects.

11 **Q. IS THERE EVIDENCE THAT REGULATORY LAG HAS CAUSED PUBLIC**
12 **SERVICE TO BE UNABLE TO EARN ITS AUTHORIZED ROE FOR THE**
13 **ELECTRIC UTILITY BUSINESS IN RECENT YEARS?**

14 A. Yes. As shown in Table AEB-D-8, the earned ROE for Public Service's Electric
15 business has steadily declined from 2015 through 2017, before stabilizing in
16 2018 at approximately 100 basis points below the authorized level. Public
17 Service failed to earn its authorized ROE in 2016 through 2018. Over the three-
18 year period from 2016-2018, the Company's Electric utility business earned 8.97
19 percent on average as compared with the average authorized ROE of 9.83
20 percent, for an average under-earning of 86 basis points per year.

1

**Table AEB-D-8:
Earned vs. Authorized ROE – Electric Business**

	EARNED ROE	AUTHORIZED ROE
2018	8.83%	9.83%
2017	8.81%	9.83%
2016	9.27%	9.83%
2015	9.96%	9.83%
Average from 2016-2018	8.97%	9.83%

2

The data demonstrate that earnings attrition has occurred at Public Service's Electric utility business despite frequent rate case filings and the implementation of the CACJA Rider, which allowed the Company to recover both capital and variable, non-fuel Operating and Maintenance ("O&M") costs for eligible CACJA projects.

3

4

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

5

6

7

A. As discussed above, Public Service has greater regulatory risk than the proxy group companies due to the use of a HTY, average rate base, and the Company's limited cost tracker that allows for capital recovery between rate cases. The above average risk of Public Service's Electric business is demonstrated through the inability of Public Service to earn its authorized ROE for the Electric business in recent years. The incremental risk supports an authorized ROE above the proxy group mean result.

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1 **IX. CAPITAL STRUCTURE**

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

3 A. As discussed in the testimony of Company witness Ms. Soong, Public Service is
4 proposing to calculate rates using its actual capital structure as of March 31,
5 2019, which is composed of 56.46 percent common equity and 43.54 percent
6 long-term debt.

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

9 A. Yes. I calculated the mean and median proportions of common equity and long-
10 term debt over the most recent eight quarters (i.e., Q4 2016 through Q3 2018) for
11 each of the proxy group companies at the utility operating company level. My
12 analysis of the proxy groups' utility operating company capital structures is
13 provided in Attachment AEB-12. As shown in that Attachment, the equity ratios
14 for the proxy group averaged 53.13 percent over this period, within a range from
15 48.54 percent to 57.69 percent. Public Service's proposed equity ratio of 56.46
16 percent is above the average but within the range established by the proxy group
17 capital structures.⁶⁷

⁶⁷ As Ms. Soong explains in her testimony, the Company's alternative request is for a capital structure composed of 56.11 percent equity and 43.89 percent long-term debt if the Commission denies the Company's request to recover a return of and on plant investment placed in service in 2019. That alternative capital structure is also within the range established by the proxy group capital structures.

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

3 A. The proposed equity ratio for Public Service is well within the range established
4 by the proxy group. As such, my conclusion is that the Company's proposed
5 capital structure is reasonable and appropriate for ratemaking purposes.

1 **X. CONCLUSIONS AND RECOMMENDATION**

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

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

16 As discussed previously, the range of 9.98 percent to 11.18 percent is
17 based on the results of the four approaches considered by the FERC in its recent
18 Order on remand. The ROE is established by considering the mean and mean
19 high results of the Constant Growth and Multi-Stage DCF analyses, and the
20 mean results of the CAPM, Risk Premium and Expected Earnings analyses for
21 the proxy group. Given the company-specific risks of Public Service's Electric
22 business, including its elevated level of projected capital expenditures and the

1 regulatory lag associated with the use of a HTY and average rate base to set
2 electric rates, I am recommending an ROE of 10.35 percent. The ROE
3 recommendation of 10.35 percent is conservative when compared to the
4 midpoint results of the FERC methodology shown in Table AEB-D-7 and
5 Attachment AEB-10.

6 **Q. WHAT IS YOUR CONCLUSION WITH RESPECT TO PUBLIC SERVICE'S**
7 **PROPOSED CAPITAL STRUCTURE?**

8 A. My conclusion is that Public Service's proposed capital structure consisting of
9 56.46 percent common equity and 43.54 percent long-term debt is near the
10 midpoint of the range established by the proxy group. As such, I believe the
11 proposed capital structure is reasonable.

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

13 A. Yes.

Statement of Qualifications

Ann E. Bulkley

1 Ms. Bulkley has more than two decades of management and economic
2 consulting experience in the energy industry. Ms. Bulkley has extensive state
3 and federal regulatory experience on both electric and natural gas issues
4 including rate of return, cost of equity and capital structure issues. Ms. Bulkley
5 has provided expert testimony on the cost of capital in more than 30 regulatory
6 proceedings before several regulatory commissions including Arizona, Arkansas,
7 Colorado, Connecticut, Indiana, Kansas, Kentucky, Maine, Massachusetts,
8 Michigan, Minnesota, Missouri, New Jersey, New Mexico, New York, North
9 Dakota, Oklahoma, Pennsylvania, Texas, South Dakota, Virginia, West Virginia,
10 and the FERC. In addition, Ms. Bulkley has prepared and provided supporting
11 analysis for at least forty Federal and State regulatory proceedings.

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

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

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF COLORADO

* * * *

RE: IN THE MATTER OF ADVICE)
NO. 1797-ELECTRIC OF PUBLIC)
SERVICE COMPANY OF)
COLORADO TO REVISE ITS) PROCEEDING NO. 19AL-____E
COLORADO P.U.C. NO. 8-)
ELECTRIC TARIFF TO IMPLEMENT)
RATE CHANGES EFFECTIVE ON)
THIRTY-DAYS' NOTICE.)

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

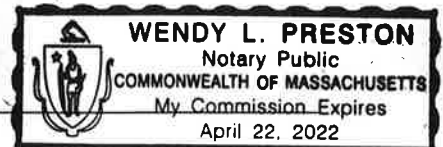
I, Ann E. Bulkley, being duly sworn, state that the Direct Testimony and attachments were prepared by me or under my supervision, control, and direction; that the Direct Testimony and attachments are true and correct to the best of my information, knowledge and belief; and that I would give the same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

Dated at Marlborough, Massachusetts, this 3rd day of May, 2019.

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

Subscribed and sworn to before me this 3 day of May, 2019.

W Preston
Notary Public



My Commission expires _____