BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

IN THE MATTER OF THE APPLICATION OF DOMINION ENERGY UTAH TO INCREASE DISTRIBUTION RATES AND CHARGES AND MAKE TARIFF MODIFICATIONS	Docket No. 22-057-03

DIRECT TESTIMONY OF

JENNIFER E. NELSON

FOR

DOMINION ENERGY UTAH

May 2, 2022

DEU Exhibit 2.0

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I. WITNESS IDENTIFICATION AND QUALIFICATIONS

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

A. My name is Jennifer E. Nelson. I am an Assistant Vice President at Concentric Energy Advisors. My business address is 293 Boston Post Road West, Suite 500, Marlborough, Massachusetts, 01752.

Q. On whose behalf are you submitting this testimony?

A. I am submitting this direct testimony ("Direct Testimony") before the Public Service Commission of Utah ("Commission") on behalf of Dominion Energy Utah ("DEU" or the "Company").

Q. Please describe your educational background.

A. I hold a Bachelor's degree in Business Economics from Bentley College (now Bentley University) and a Master's degree in Resource and Applied Economics from the University of Alaska.

Q. Please describe your experience in the energy and utility industries.

A. I have worked in the energy industry for fourteen years, having served as a consultant and energy/regulatory economist for state government agencies. Since 2013, I have provided consulting services to utility and regulated energy clients on a range of financial and economic issues including rate case support, ratemaking policy, and regulatory strategy issues. Prior to consulting, I was a staff economist at the Massachusetts Department of Public Utilities, where I worked on regulatory filings related to energy efficiency, renewable power contracts, smart grid and electric grid modernization, and retail choice. Prior to that, I was a petroleum economist at the

State of Alaska Department of Revenue. A summary of my professional and educational background, including a list of my testimony filed before regulatory commissions, is included as DEU Exhibit 2.01.

Q. Have you previously testified before the Commission?

A. No, I have not. However, I have previously filed testimony before regulatory commissions in Arkansas, Kentucky, Maine, New Mexico, New Hampshire, North Carolina, Oklahoma, Texas, and West Virginia. During my time as a consultant, I have supported the development of expert witness testimony and analyses regarding the cost of capital (*i.e.*, Return on Equity ("ROE") and capital structure) in more than 100 proceedings filed before numerous U.S. state regulatory commissions and the Federal Energy Regulatory Commission.

II. PURPOSE AND OVERVIEW OF TESTIMONY

Q. What is the purpose of your Direct Testimony?

A. The purpose of my Direct Testimony is to present evidence and provide the Commission with a recommendation regarding the appropriate ROE[1] for the Company to be used for ratemaking purposes, and to assess the reasonableness of the Company's requested capital structure and cost of debt. My analyses and conclusions are supported by the data presented in DEU Exhibit 2.02 through DEU Exhibit 2.09, which have been prepared by me or those under my direction.

[1] Throughout my testimony, I use the terms "ROE" and "Cost of Equity" interchangeably.

Q. What are your conclusions regarding the appropriate Cost of Equity, capital structure, and cost of debt in this proceeding?

A. Based on my analyses of three widely used market-based financial models, the Company's specific risk profile, and the current capital market environment, I conclude the Company's ROE currently falls within a range of 9.60 percent to 10.75 percent; within that range, I conclude that 10.30 percent is a reasonable, if not conservative, estimate of DEU's Cost of Equity.

As to the Company's capital structure, I conclude its requested capital structure consisting of 53.21 percent common equity and 46.79 percent long-term debt is consistent with the proportions of long-term capital that finance the regulated natural gas operations of the proxy group and is therefore reasonable. Additionally, the Company's proposed 4.00 percent cost of debt is consistent with yields on similarly rated utility debt. As such, I recommend the Commission approve the Company's requested capital structure and cost of debt.

Q. Please provide a brief overview of the analyses that led to your ROE determination.

A. To develop my ROE range and estimate, I relied on three widely accepted financial modeling approaches: (1) the constant growth and quarterly forms of the Discounted Cash Flow ("DCF") model; (2) the traditional and empirical forms of the Capital Asset Pricing Model ("CAPM"); and (3) the Bond Yield Plus Risk Premium approach. The results of those analytical approaches are summarized in Figure 1 below.

62 **Figure 1: Summary of Results[2]**

Constant Growth DCF	**Low**	**Mean**	**High**
30-Day Average	8.29%	9.79%	10.65%
90-Day Average	8.38%	9.89%	10.76%
180-Day Average	8.35%	9.86%	10.73%
Quarterly Growth DCF	**Low**	**Mean**	**High**
30-Day Average	8.39%	9.93%	10.83%
90-Day Average	8.48%	10.05%	10.94%
180-Day Average	8.45%	10.01%	10.90%
CAPM		**Current 30-Year Treasury Yield (2.20%)**	**Projected 30-Year Treasury Yield (3.13%)**
Long-Term Historical Average Market Return and 10-year Beta Coefficients		10.24%	10.43%
DCF-based Market Return and *Value Line* Beta Coefficients		12.97%	13.12%
Empirical CAPM		**Current 30-Year Treasury Yield (2.20%)**	**Projected 30-Year Treasury Yield (3.13%)**
Long-Term Historical Average Market Return and 10-year Beta Coefficients		10.76%	10.91%
DCF-based Market Return and *Value Line* Beta Coefficients		13.49%	13.60%
Bond Yield Plus Risk Premium			
Current 30-Year Treasury Yield (2.20%)		9.75%	
Projected 30-Year Treasury Yield (3.13%)		9.76%	

63 In addition to the analytical results summarized above, my recommendation
64 considers the Company's significant capital investment requirements, the regulatory
65 environment in which it operates, and the increase in financial leverage associated

[2] *See,* DEU Exhibits 2.02 to 2.06. DCF and CAPM model results are the average of the mean and median proxy group results. Data as of February 28, 2022.

with its requested capital structure. I also consider the current economic and capital market conditions and recent authorized ROEs for similar natural gas utilities in the United States.

Q. How did you determine your recommendation from the results summarized above?

A. The Cost of Equity is an opportunity cost that cannot be precisely quantified. Therefore, it must be estimated through the use of various financial models. Since ROE-estimation models are subject to various assumptions and constraints (which may become more or less relevant as market conditions change), each provides a different perspective on investors' return requirements under varying market conditions. The use of a variety of financial models, therefore, enables a robust and comprehensive assessment of the Cost of Equity.

In keeping with investor and regulatory practice, I considered the quantitative results produced by each model and their comparability to returns available to other similarly situated natural gas utilities, as well as each model's consistency with, and reflection of, the current volatile capital market environment. Lastly, I considered the Company's risk profile relative to a group of proxy companies to assist in the determination of the appropriate ROE from within the range of my analytical results. Based on all those considerations, it is my opinion that an ROE of 10.30 percent is a reasonable, if not conservative, estimate of DEU's Cost of Equity.

Q. Have you reviewed recent orders by the Commission with respect to its ROE and capital structure determinations?

A. Yes. In preparing my Direct Testimony, I reviewed the Commission's Report and Order in the Company's last rate case issued February 25, 2020 (Docket No. 19-057-02), and its Redacted Order issued December 30, 2020 for Rocky Mountain Power in Docket No. 20-035-04.

These orders confirm that the Commission appreciates that no single financial model conclusively determines a utility's appropriate ROE.[3] Additionally, while the Commission considers recent authorized ROEs for other utilities in other jurisdictions to be relevant information in determining an appropriate ROE, it understands the limitations of comparisons to authorized ROEs in other jurisdictions, and recognizes that each utility and jurisdiction differs with respect to the factors that affect utility risk.[4] Lastly, the Commission recognizes the fundamental "symbiotic" relationship between the capital structure and the ROE.[5]

[3] Docket No. 20-035-04, Redacted Order, at 14 (December 30, 2020); Docket No. 19-057-02, Report and Order, at 7 (February 25, 2020).

[4] Docket No. 20-035-04, Redacted Order, at 15 (December 30, 2020); Docket No. 19-057-02, Report and Order, at 8 (February 25, 2020).

[5] Docket No. 20-035-04, Redacted Order, at 16 (December 30, 2020); see also Docket No. 19-057-02, Report and Order, at 9 (February 25, 2020).

Q. Does your recommendation consider changes in economic and financial market conditions since DEU's last rate case, consistent with the Commission's practice?[6]

A. Yes, it does. As a preliminary matter, the Cost of Equity is forward-looking. As such, the relevant point of emphasis in the Cost of Equity estimation process is on forward-looking data and expectations. Nonetheless, I recognize the Commission's practice and consider the changes in the economic and capital market environment since February 25, 2020 when the Commission issued its Report and Order in DEU's last rate case. Specifically, I observe:

- An increase in equity market volatility, indicating higher risk and therefore higher return requirements;
- An increase in Beta coefficients for utilities generally and the proxy group specifically, indicating an increase in investors' perceptions of higher risk for utilities;
- Underperformance of natural gas utility stocks relative to the Standard & Poor's ("S&P") 500 Index, indicating that natural gas utility stocks have not recovered from the market dislocation observed at the onset of the COVID-19 pandemic as have other sectors of the market;
- Widening spreads between utility and Treasury bond yields, which indicate higher credit risk for utility bonds over safer government bonds;

[6] Docket No. 20-035-04, Redacted Order, at 13-14 (December 30, 2020); Docket No. 19-057-02, Report and Order, at 6 (February 25, 2020).

- An increase in Treasury bond yields and monetary policy tightening by the Federal Reserve, which supports an increase in current and expected capital costs; and
- A significant increase in inflation, which affects both investors' cost of capital and utilities' financial profiles as highly capital-intensive enterprises.

These changes in the economic and financial market are all consistent with higher costs of capital since the Commission's order in the Company's last rate case, and hence an increase in investors' required Return on Equity. I discuss these factors in more detail in Section V below.

Q. How is the remainder of your Direct Testimony organized?

A. The remainder of my Direct Testimony is organized as follows:

- Section III – Summarizes the issues and regulatory guidelines relevant to the cost of capital estimation in regulatory proceedings, explains my selection of the proxy group used to develop my analytical results, and describes the analyses on which my ROE determination is based;
- Section IV – Discusses the effect of the Company's planned capital expenditures and its regulatory environment on its Cost of Equity;
- Section V – Reviews the current capital market conditions and the implication on the Cost of Equity;
- Section VI – Provides an assessment of the Company's requested capital structure and cost of long-term debt; and
- Section VII – Summarizes my conclusions.

III. COST OF EQUITY ESTIMATION

A. Regulatory Guidelines and Principles

Q. Before addressing the specific aspects of this proceeding, please explain the cost of capital conceptually.

A. The cost of capital (*i.e.*, the costs of both debt and equity) is the return that investors require to commit capital to a firm. Investors will provide funds to a firm only if the return they *expect* is equal to, or greater than, the return they *require* to accept the risk of investing capital in the firm. Simply, the cost of capital is the expected rate of return prevailing in the capital markets on alternative investments of similar risk.[7] Conceptually, the cost of capital is: (1) forward looking and reflects an *expected* rate of return; (2) an opportunity cost; (3) determined in the capital markets; and (4) dependent on, and proportional to, the risk of the investment.[8]

Because the Cost of Equity is expectational and premised on the principle of opportunity costs, it is not directly observable. Instead, it must be estimated using market data applied to various financial models that reflect simplified representations of investor behavior and expectations. Further, equity investors have a claim on cash flows only *after* debt holders are paid; the uncertainty (or risk) associated with those residual cash flows determines the Cost of Equity. Because equity investors bear the residual risk, they take greater risks and require higher returns than debt holders. In

[7] Lawrence A. Kolbe, James A. Read, Jr., and George R. Hall, The Cost of Capital – Estimating the Rate of Return for Public Utilities, The MIT Press, Cambridge, MA (1985).

[8] Lawrence A. Kolbe, James A. Read, Jr., and George R. Hall, The Cost of Capital – Estimating the Rate of Return for Public Utilities, The MIT Press, Cambridge, MA (1985).

the end, the estimated Cost of Equity should reflect the return that investors require considering the subject company's risk profile and the returns available on comparable investments.

Q. Please summarize the guiding principles used in establishing the cost of capital for a regulated utility.

A. Public utility regulation is rooted in the principle that utilities receive a fair rate of return sufficient to attract the capital required to provide public utility service for customers at reasonable rates. The U.S. Supreme Court ("Supreme Court") established the guiding principles for establishing a fair rate of return for a public utility in two seminal cases: (1) *Bluefield Water Works and Improvement Co. v. Public Service Comm'n*. ("*Bluefield*");[9] and (2) *Federal Power Comm'n v. Hope Natural Gas Co.* ("*Hope*").[10] In *Bluefield*, the Supreme Court stated:

> A public utility is entitled to such rates as will permit it to earn a return upon the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit, and enable it to raise the money necessary for the proper discharge of its public duties.[11]

[9] *See, Bluefield Water Works and Improvement Co. v. Public Service Comm'n*. 262 U.S. 679, 692 (1923).

[10] *See, Federal Power Comm'n v. Hope Natural Gas Co.,* 320 U.S. 591, 603 (1944).

[11] *Bluefield Water Works and Improvement Co. v. Public Service Comm'n.* 262 U.S. 679, 692 (1923).

In *Hope*, the Supreme Court reiterated the three primary standards for a regulated rate of return:

> [Th]e return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.[12]

In summary, the Supreme Court has recognized that the fair rate of return on equity should be: (1) comparable to returns investors expect to earn on other investments of similar risk (the "comparable risk" standard); (2) sufficient to assure confidence in the company's financial integrity (the "financial integrity" standard); and (3) adequate to maintain and support the company's credit and to attract capital (the "capital attraction" standard). Importantly, a fair and reasonable return satisfies all three of these standards.

Q. Have Utah Courts and the Commission also looked to the *Hope* and *Bluefield* standards as guidance for setting rates?

A. Yes. Utah courts and the Commission have followed the principles set out in *Hope* and *Bluefield* in establishing a fair rate of return, which have been upheld by the Utah Supreme Court.[13] In Docket No. 97-049-08, the Commission stated the following in reference to *Hope* and *Bluefield*:

> As we have stated many times, these cases counsel us to reach a

[12] *Federal Power Comm'n v. Hope Natural Gas Co.,* 320 U.S. 591, 603 (1944).

[13] *See generally Utah Power & Light v. Public Serv. Comm'n*, 152 P.2d 542 (Utah 1944) (general discussion of and reliance on *Hope*); *Mountain Fuel Supply Co. v. Public Serv. Comm'n*, 861 P.2d 414, 427 (Utah 1993) (citing *Bluefield* and *Hope* for the proposition that "[t]he primary substantive limitation on the Commission's authority is that it cannot establish a rate of return that is insufficient to assure confidence in the financial integrity of the utility, such that it would undermine its credit and capital.").

> decision which gives investors the opportunity to earn returns sufficient to attract capital and that are comparable to returns investors require to assume the same degree of risk in other investments they might make. Investors' required return, the opportunity cost of capital, is the utility's cost of capital.[14]

Based on those standards, the authorized ROE should provide the Company with a reasonable opportunity (which is not a guarantee) to earn a fair return and enable efficient access to external capital under a variety of market conditions.

Q. How is the Cost of Equity estimated in regulatory proceedings?

A. Regulated utilities primarily use long-term capital (*i.e.*, common stock, preferred stock, and long-term debt) to finance their permanent rate base. The allowed rate of return for a regulated utility is calculated as its weighted average cost of capital, in which the costs of the individual sources of capital are weighted by their respective book values. The ROE reflects the cost of raising and retaining equity capital and is estimated by using one or more market-based analytical approaches. However, as noted earlier and the Commission has recognized, although quantitative models are used to estimate the ROE, it cannot be precisely quantified through a strict mathematical exercise.[15] As such, a reasonable and appropriate ROE reflects the financial, economic, and regulatory environment in which the estimate is developed, as well as the subject company's relative risk profile.

[14] Docket No. 97-049-08, *Re U S West Communications, Inc*., 1997 WL 875832, *438 (Utah PSC 1997).

[15] This is consistent with the *Hope* and *Bluefield* principle that the analytical result, as opposed to the method employed, controls the determination of just and reasonable rates.

Q. What are your conclusions regarding the regulatory principles pertaining to the cost of capital for a public utility?

A. The ratemaking process is based on the principle that, for investors and companies to commit the capital needed to provide safe and reliable utility services, the utility must have a reasonable opportunity to recover the return of, and the market-required return on, invested capital. The outcome of the Commission's order in this case, therefore, should provide DEU with the opportunity to earn an ROE that is: (1) adequate to attract capital at reasonable terms; (2) sufficient to ensure its financial integrity; and (3) commensurate with returns on investments in enterprises having corresponding risks.

Further, as explained in more detail in Section IV, the regulatory environment is one of the most important factors considered by both debt and equity investors in their assessments of risk. In that respect, the financial community carefully monitors the current and expected financial condition of utility companies, which is significantly influenced by the regulatory decisions and environment in which they operate. Because utilities are capital intensive and investors have many investment alternatives (even within a given market sector), the Company's financial profile must be adequate on a relative basis to ensure its ability to attract capital under a variety of economic and financial market conditions. To the extent DEU is provided a reasonable opportunity to earn its market-based Cost of Equity, neither customers nor shareholders are disadvantaged.

246 ***B. Proxy Group Selection***

247 **Q. Why is it necessary to select a group of proxy companies to determine the Cost**
248 **of Equity for DEU?**

249 A. Because the ROE is a market-based concept, and DEU is not a separate entity with its
250 own stock price, it is necessary to establish a group of companies that are both publicly
251 traded and comparable to the Company in certain fundamental respects to serve as its
252 "proxy" in the ROE estimation process. Even if the Company were a publicly traded
253 entity, short-term events could bias its market value during a given period. A
254 significant benefit of using a proxy group is that it moderates the effects of anomalous,
255 temporary events associated with any one company.

256 **Q. Please provide a summary profile of DEU.**

257 A. DEU is a wholly owned subsidiary of Dominion Energy, Inc ("DEI"). DEU provides
258 natural gas distribution services to approximately 1.1 million customers in Idaho,
259 Utah, and Wyoming.[16] For the twelve months ended December 31, 2021, the
260 Company reported 211,526,342 dekatherms in sales volume, net operating income
261 (per GAAP) of $151.4 million and net plant of $2,609.3 million for its total company
262 operations.[17] Its Utah and Idaho[18] operations (which are the subject of this proceeding)
263 constitute approximately 98 percent of total company sales volume and customers.
264 DEI's and DEU's current long-term issuer credit ratings are as follows:

[16] American Gas Association, 2020 Ranking of Companies by Total Sales Customers.

[17] Company provided data.

[18] The Idaho Commission contracts with the Utah Commission for rate oversight of DEU's operations in a small area of southeastern Idaho. Dominion Energy, Inc. SEC Form 10-K, at 28 (December 31, 2021).

Figure 2: Current Credit Ratings[19]

	S&P	Moody's	Fitch
Dominion Energy, Inc.	BBB+	Baa1	BBB+
DEU (Questar Gas Corp.)	BBB+	A3	A-

Q. What criteria do you use to select the proxy group used to derive DEU's ROE?

A. I began with the ten companies that *Value Line* classifies as Natural Gas Utilities and applied the following screening criteria:

- Because certain of the models assume that earnings and dividends grow over time, I excluded companies that do not consistently pay quarterly cash dividends, or have cut their dividend in the last two years;
- To ensure that the growth rates used in my analyses are not biased by a single analyst, all the companies in my proxy group are consistently covered by at least two utility industry equity analysts;
- All the companies in my proxy group (or their primary regulated natural gas utility subsidiary) have investment grade (*i.e.*, BBB- or higher from S&P and Fitch Ratings, and Baa3 or higher from Moody's Investors Service ("Moody's")) senior unsecured bond and/or corporate credit ratings from S&P and Moody's;
- To incorporate companies that are primarily regulated natural gas distribution utilities, I included companies with at least 60.00 percent of total net operating

[19] Sources: S&P Capital IQ; FitchRatings.

income from regulated natural gas utility operations, on average, over the three years between 2018 to 2020; and

- I eliminated companies that have significant merger activity or transactions or have had any recent financial event that could materially affect its market data or financial condition.

Q. Do you include DEI in your analyses?

A. No. DEI is not classified by *Value Line* as a natural gas utility, nor does it meet my screening criterion of having at least 60.00 percent of net operating income from regulated natural gas utility operations. Further, it would involve circular logic to include DEU's ultimate parent company in my analyses.

Q. Which companies meet your screening criteria?

A. The criteria discussed above results in a proxy group of the following six companies:

Figure 3: Proxy Group Screening Results

Company	Ticker
Atmos Energy Corporation	ATO
New Jersey Resources Corporation	NJR
NiSource, Inc.	NI
Northwest Natural Holding Company	NWN
ONE Gas, Inc.	OGS
Spire Inc.	SR

The screening criteria results in a group of natural gas utilities that are comparable (but not identical) to the financial and operational characteristics of DEU. The screening criterion requiring an investment grade credit rating ensures that the proxy companies, like DEU, are in sound financial condition. Additionally, the criterion

screening on the percent of net operating income from regulated natural gas operations distinguishes between utilities that are subject to regulation and those with substantial unregulated operations and are exposed to higher risks. In my opinion, these screens collectively reflect key risk factors that investors consider in making investments in natural gas utilities.

Q. Is a proxy group of six companies sufficiently large?

A. Yes. The analyses performed in estimating the ROE are more likely to be representative of the subject utility's Cost of Equity to the extent that the selected proxy companies are fundamentally comparable to the subject utility. Because all analysts use some form of screening process to arrive at a proxy group, by definition, the proxy group is not randomly drawn from a larger population. Moreover, a larger proxy group does not necessarily improve the representative nature of the proxy group. In my opinion, including companies whose fundamental comparability may be tenuous at best, simply for the purpose of expanding the number of observations, does not improve the reliability of the results or the conclusions drawn from them.

Q. Do the screening criteria result in a proxy group that is identical in risk to DEU?

A. No. Developing an appropriate proxy group requires balancing the competing objectives of ensuring that the proxy companies are comparable in risk to the subject company, while at the same time ensuring a sufficient number of companies in the proxy group. As such, no proxy group will be identical in risk to DEU. Therefore, because the proxy group is not identical in risk to the Company, a relative risk assessment between DEU and the proxy group must be performed to arrive at an

appropriate ROE for DEU. Nonetheless, it is my opinion that my proxy group is reasonably comparable to DEU and therefore is an appropriate basis for the ROE estimation process.

C. Cost of Equity Models

Q. What analytical approaches do you rely on to determine the Company's ROE?

A. As discussed earlier, I rely on the constant growth and quarterly growth forms of the DCF model, the traditional and empirical forms of the CAPM, and the Bond Yield Plus Risk Premium approach. I rely on these models for two reasons. First, the purpose of an ROE analysis is to estimate the return that investors require. Therefore, it is important to use the models on which investors rely. The models I apply are commonly used in practice,[20] as well as in regulatory proceedings. Second, the models focus on different aspects of return requirements, and provide different insights to investors' views of risk and return. As explained earlier, using multiple methods provides a more comprehensive, and therefore, more reliable perspective on investors' return requirements.

1. Constant Growth Discounted Cash Flow Model

Q. Please describe the Constant Growth DCF approach.

A. The Constant Growth DCF model is based on the theory that a stock's current price represents the present value of all expected future cash flows. In its simplest form, the

[20] *See, for example,* Eugene Brigham, Louis Gapenski, Financial Management: Theory and Practice, 7th Ed., 1994, at 341.

Constant Growth DCF model expresses the Cost of Equity as the discount rate that sets the current price equal to expected cash flows:

$$P = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \cdots + \frac{D_\infty}{(1+k)^\infty} \qquad [1]$$

where P represents the current stock price, $D_1 \ldots D_\infty$ represent expected future dividends, and k is the discount rate, or required ROE. Equation [1] is a standard present value calculation that can be simplified and rearranged into the familiar form:

$$k = \frac{D_0\ (1+g)}{\mathrm{P}} + g \qquad [2]$$

Equation [2] often is referred to as the "Constant Growth DCF" model, in which the ROE is equal to the expected dividend yield plus the expected long-term annual growth rate in perpetuity.

Q. What assumptions underlie the Constant Growth DCF model?

A. The Constant Growth DCF model assumes: (1) a constant average annual growth rate for earnings and dividends; (2) a stable dividend payout ratio; (3) a constant Price/Earnings multiple; and (4) a discount rate greater than the expected growth rate. The model also assumes that the current Cost of Equity remains constant in perpetuity.

Q. What market data do you use as inputs of your Constant Growth DCF analysis?

A. I calculate the Constant Growth DCF result for each of the proxy companies using the following inputs:

- The average daily closing prices for the 30-, 90-, and 180-trading days ended February 28, 2022, for the term P_0;

- The current quarterly dividend as of February 28, 2022 multiplied by 4, for the term D_0; and
- Long-term earnings per share ("EPS") growth rate projections as of February 28, 2022 reported by Zacks, Yahoo! Finance, and *Value Line*.

Q. Why do you use three averaging periods to calculate an average stock price?

A. I do so to ensure that the model's results are not skewed by anomalous events that may affect stock prices on any given trading day. At the same time, the averaging period should be reasonably reflective of expected capital market conditions over the long term. Using 30-, 90-, and 180-trading day averaging periods balances those concerns.

Q. How do you calculate the expected dividend yield over the coming year?

A. Because utility companies tend to increase their quarterly dividends at different times throughout the year, it is reasonable to assume that dividend increases will be evenly distributed over calendar quarters. Given that assumption, it is appropriate to calculate the expected dividend yield by applying one-half of the long-term growth rate to the current dividend yield. That adjustment ensures that the expected dividend yield is, on average, representative of the coming 12-month period.

Q. Why do you rely on projected EPS growth as the appropriate measure of long-term growth in the Constant Growth DCF model?

A. In its Constant Growth form, the DCF model (*i.e.*, as presented in Equation [2] above) assumes a single expected growth rate in perpetuity. Accordingly, one must assume a fixed payout ratio, and the same constant growth rate in EPS, dividends per share, and book value per share to reduce the long-term growth rate to a single measure.

Moreover, in the long-term, dividend growth can only be sustained by earnings growth. As noted by Brigham and Houston "[g]rowth in dividends occurs primarily as a result of growth in *earnings per share* (EPS)."[21]

Further, academic studies have clearly and consistently indicated that measures of earnings and cash flow are strongly related to returns, and that analysts' forecasts of growth are superior to other measures of growth in predicting stock prices.[22] To that point, the research of Vander Weide and Carleton demonstrates that earnings growth projections have a statistically significant relationship to stock valuation levels, while dividend growth rates do not.[23] Those findings suggest that investors form their investment decisions based on expectations of growth in earnings, not dividends. In addition, the only forward-looking growth rates that are available on a consensus basis are analysts' EPS growth rates. The fact that earnings growth projections are the only widely available estimates of growth further supports the position that earnings growth is the most meaningful measure of growth among the investment community. Consequently, earnings growth, not dividend growth is the appropriate measure of long-term growth in the DCF model.

[21] Eugene F. Brigham and Joel F. Houston, Fundamentals of Financial Management (Concise Fourth Edition, Thomson South-Western), at 317 (emphasis added).

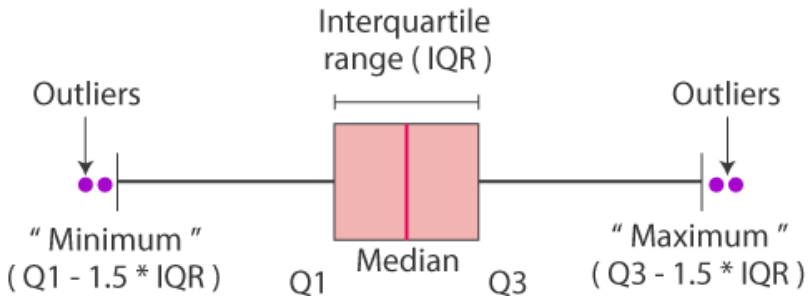
[22] *See, e.g.*, Andreas C. Christofi, Petros C. Christofi, Marcus Lori and Donald M. Moliver, *Evaluating Common Stocks Using Value Line's Projected Cash Flows and Implied Growth Rate*, Journal of Investing (Spring 1999); Harris and Marston, *Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts*, Financial Management (Summer 1992); and Vander Weide and Carleton, *Investor Growth Expectations: Analysts vs. History*, The Journal of Portfolio Management (Spring 1988); Robert S. Harris, *Using Analysts' Growth Forecasts to Estimate Shareholder Required Rate of Return*, Financial Management (Spring 1986).

[23] *See* Vander Weide and Carleton, *Investor Growth Expectations: Analysts vs. History*, The Journal of Portfolio Management (Spring 1988).

Q. Did you review the earnings growth rates included in your analysis for outliers?

A. Yes, I did. In DEU's last rate case the Commission noted that "the quality of any financial model results depends primarily on the quality of the inputs."[24] Therefore, I tested for outliers using the interquartile range ("IQR") test. In statistics, the IQR is a measure of statistical dispersion and is defined as the spread between the top of the third quartile and the bottom of the first quartile of the data sample. Values that are more than 1.5x below the bottom of the IQR and 1.5x above the top of the IQR are considered outliers, as illustrated in Figure 4 below.

Figure 4: Interquartile Range Box Plot Outlier Test



The median of all the projected EPS growth rates from Zacks, Yahoo! Finance, and *Value Line* is 6.00 percent. The top of the third quartile is the EPS growth rate of 7.25 percent, and the bottom of the first quartile is the EPS growth rate of 5.00 percent. The IQR, therefore, is 2.25 percent (*i.e.,* 7.25 percent minus 5.00 percent). The low outlier threshold is 1.63 percent, and the high outlier threshold is 10.63 percent.[25] All of the EPS growth rates fall within 1.63 percent and 10.63 percent. Therefore, based on the IQR test, I did not remove any growth rates as outliers.

[24] Docket No. 19-057-02 Report and Order, at 7 (February 25, 2020).
[25] 1.63% = 5.00% - (1.5*2.25%); 10.63% = 7.25% + (1.5*2.25%)

Q. What are the results of your Constant Growth DCF analysis?

A. For each proxy company, I calculate the low, mean, and high Constant Growth DCF result. For the mean result, I combine the average of the three EPS growth rate estimates listed above with each proxy company's expected dividend yield. I calculate the high DCF result by combining the maximum EPS growth rate estimate with each proxy company's expected dividend yield. I use the same approach to calculate the low DCF result, using instead the minimum EPS growth rate estimate for each proxy company. I then calculate the mean and median low, mean, and high DCF results for the proxy group. In developing my ROE recommendation, I rely on the average of the mean and median proxy group Constant Growth DCF results (*see* Figure 5, below, and DEU Exhibit 2.02). By relying on the average of the mean and median proxy group results, I consider the individual DCF results of each proxy company without giving undue weight to the highest or lowest estimates.

Figure 5: Constant Growth DCF Results[26]

	Low	Mean	High
30-Day Average	8.29%	9.79%	10.65%
90-Day Average	8.38%	9.89%	10.76%
180-Day Average	8.35%	9.86%	10.73%

[26] DEU Exhibit 2.02 (average of the mean and median proxy group results).

2. Quarterly Growth DCF Model

Q. Please briefly describe the Quarterly Growth DCF model.

A. As noted earlier, the Constant Growth DCF model is based on several limiting assumptions, one of which is that dividends are paid annually. However, most dividend-paying companies, including utilities, pay dividends on a quarterly (as opposed to an annual) basis. Although the dividend yield adjustment discussed earlier is meant to address that assumption (by increasing the current dividend yield by one-half of the expected growth rate), it does not fully account for the quarterly receipt and reinvestment of dividends. As a consequence, the Constant Growth DCF model likely understates the Cost of Equity. The Quarterly Growth DCF model specifically incorporates investors' expectations of the quarterly payment of dividends, and the associated quarterly compounding of those dividends as they are reinvested at the required ROE. As noted by Dr. Roger Morin:

> Clearly, given that dividends are paid quarterly and that the observed stock price reflects the quarterly nature of dividend payments, the market-required return must recognize quarterly compounding, for the investor receives dividend checks and reinvests the proceeds on a quarterly schedule ... The annual DCF model inherently understates the investors' true return because it assumes all cash flows received by investors are paid annually.[27]

[27] Roger A. Morin, Ph.D., New Regulatory Finance, Public Utility Reports, Inc., 2006 at 344.

Q. How is the dividend yield component of the Quarterly Growth DCF model calculated?

A. To reflect the timing and compounding of quarterly dividends more accurately, the model replaces the "D" component of the Constant Growth DCF equation with the following equation:

$$D = d_1(1+k)^{0.75}+d_2(1+k)^{0.50}+d_3(1+k)^{0.25}+d_4(1+k)^{0} \quad [3]$$

where:

d_1, d_2, d_3, d_4 = expected quarterly dividends over the coming year; and

k = the required Return on Equity.

Because the required ROE (k) is a variable in the dividend yield calculation, the Quarterly Growth DCF model is solved iteratively.

To calculate the expected dividends over the coming year for the proxy companies (*i.e.*, d_1, d_2, d_3, and d_4), I obtained the last four paid quarterly dividends for each company and multiplied them by one plus the growth rate (*i.e.,* 1 + g). For the P_0 component of the dividend yield, I used the same average stock prices applied in the Constant Growth DCF analysis for each proxy company.

Q. What are the results of your Quarterly Growth DCF analysis?

A. My Quarterly Growth DCF results are summarized in Figure 6, below (*see also* DEU Exhibit 2.03). As with my Constant Growth DCF results, I rely on the average of the mean and median proxy group results.

Figure 6: Quarterly Growth DCF Results[28]

	Low	Mean	High
30-Day Average	8.39%	9.93%	10.83%
90-Day Average	8.48%	10.05%	10.94%
180-Day Average	8.45%	10.01%	10.90%

3. Capital Asset Pricing Model and Empirical Capital Asset Pricing Model

Q. Please describe the general form of the CAPM.

A. The CAPM is a risk premium method that estimates the Cost of Equity for a given security as a function of a risk-free return plus a risk premium to compensate investors for the non-diversifiable or "systematic" risk of that security. As shown in Equation [4], the CAPM is defined by four components, each of which theoretically is a forward-looking estimate:

$$K_e = r_f + \beta(r_m - r_f) \qquad [4]$$

where:

K_e = the required market ROE for a security;

β = the Beta coefficient of that security;

r_f = the risk-free rate of return; and

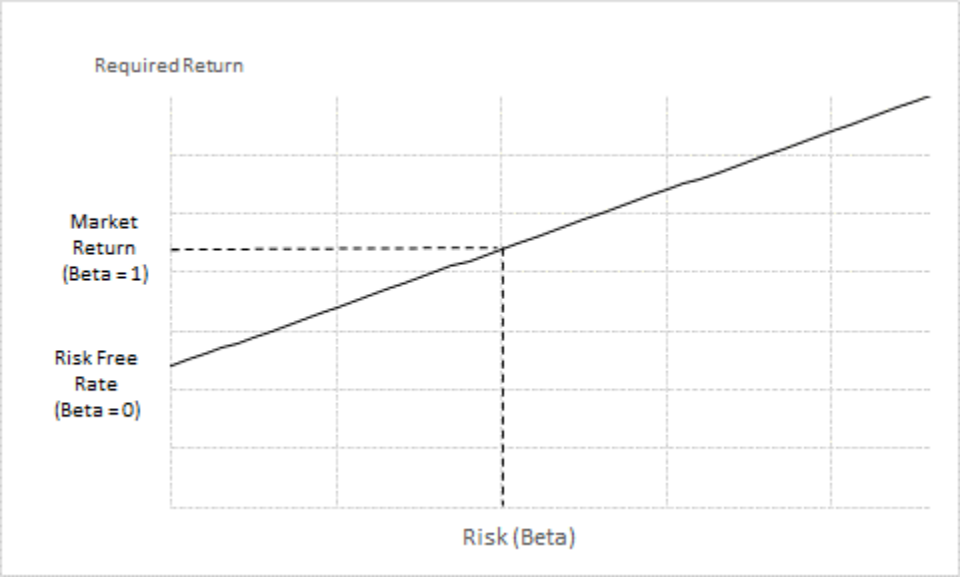
r_m = the required return on the market as a whole.

Equation [4] describes the Security Market Line ("SML"), or the CAPM risk-return relationship, depicted in Figure 7 below. The intercept is the risk-free rate (r_f)

[28] DEU Exhibit 2.03. Average of the mean and median proxy group results.

that has a Beta coefficient of zero, and the slope is the expected market risk premium ($r_m - r_f$). As shown in Figure 7, the slope of the line is upward sloping, illustrating the principle that investments of higher risk require a higher return. By definition, r_m, the return on the market, has a Beta coefficient of 1.00.

Figure 7: Security Market Line



The CAPM assumes that all non-market or unsystematic risk, can be eliminated through diversification. The risk that cannot be eliminated through diversification is called market, or systematic risk. Therefore, the CAPM assumes that investors require compensation only for systematic, or market, risk. Systematic (or non-diversifiable) risk is measured by the Beta coefficient, which is defined as:

$$\beta_j = \frac{\sigma_j}{\sigma_m} \times \rho_{j,m} \quad [5]$$

where σ_j is the standard deviation of returns for company "j," σ_m is the standard deviation of returns for the broad market (as measured, for example, by the S&P 500 Index), and $\rho_{j,m}$ is the correlation of returns in between company j and the broad

market. The Beta coefficient, therefore, represents both relative volatility (*i.e.*, the standard deviation) of returns, and the correlation in returns between the subject company and the overall market. Intuitively, higher Beta coefficients indicate that the subject company's returns have been relatively volatile and have moved in tandem with the overall market.

Q. What risk-free rates do you assume in your CAPM analysis?

A. I apply two estimates of the risk-free rate: (1) the current 30-day average yield on 30-year Treasury bonds (*i.e.*, 2.20 percent)[29] and (2) a projected 30-year Treasury yield (*i.e.*, 3.13 percent).[30]

Q. Why do you rely on the 30-year Treasury yield in your CAPM analysis?

A. In determining the security most relevant to the application of the CAPM, the term (or maturity) should approximate the life of the underlying investment. Natural gas utilities are typically long-duration investments. Therefore, the 30-year Treasury yield is more suitable for the risk-free rate applied in the CAPM.

Q. What Beta coefficients do you use in your CAPM model?

A. I consider two estimates of the Beta coefficient for each proxy company. First, I consider the current Beta coefficients reported by *Value Line* as of February 28, 2022. *Value Line* calculates the Beta coefficient using weekly returns over a five-year period. The proxy group mean and median *Value Line* Beta coefficients are 0.85 and 0.83,

[29] Source: Bloomberg Professional Service.

[30] The average of: (1) the average projected 30-year Treasury yield for the six quarters ended Q2 2023 and (2) the average long-term projected 30-year Treasury yield for the years 2023-2027 and 2028-2032 reported by *Blue Chip Financial Forecasts. See, Blue Chip Financial Forecasts* Vol. 41, No. 3, March 1, 2022 at 2 and *Blue Chip Financial Forecasts,* Vol. 40, No. 12, December 1, 2021 at 14.

523 respectively. *Value Line* adjusts the raw Beta coefficients to reflect the tendency of
524 the Beta coefficient to regress toward the market mean of 1.00.

525 The second estimate is the adjusted Beta coefficient calculated using weekly
526 return data from Bloomberg over the ten years ended February 28, 2022, rather than
527 the five-year period used by *Value Line*. The proxy group mean and median ten-year
528 Bloomberg Beta coefficients are 0.79 and 0.80, respectively. As with the *Value Line*
529 Beta coefficients, the raw Bloomberg Beta coefficients are adjusted to reflect the
530 tendency of the Beta coefficient to regress toward the market mean of 1.00.

531 **Q. In your opinion, are the current *Value Line* Beta coefficients a reasonable**
532 **reflection of the proxy companies' Beta coefficients in the future during the time**
533 **rates will be in effect?**

534 A. Yes. As explained in Section V below, utility Beta coefficients have increased
535 substantially since February 2020, indicating higher volatility (and therefore risk) of
536 utility company stocks. However, because *Value Line* uses five years of weekly return
537 data in calculating its Beta coefficients, the market's current reflection of utility
538 stocks' higher risk captures a trend that began five years ago and will remain in the
539 data for at least the next three to five years during the time rates will be in effect.
540 Moreover, *Value Line's* current Beta coefficients are not substantially different from
541 the ten-year Beta coefficients from Bloomberg. Nonetheless, to the extent *Value*
542 *Line's* current Beta coefficients are considered to be inconsistent with expectations for
543 utility Beta coefficients going forward, the ten-year Beta coefficients provide a longer-
544 term perspective of Beta coefficients for the proxy group.

Q. What estimates of the expected market return do you use to calculate the market risk premium?

A. I applied two estimates of the expected market return. The first calculates the market capitalization-weighted ROE of the S&P 500 Index by applying the Constant Growth DCF model described earlier to each of the companies in the S&P 500 Index. The second estimate applies the long run historical arithmetic average market return of 12.33 percent between 1926 and 2021 reported by Duff & Phelps.[31]

Q. Please more fully explain your forward-looking DCF approach to estimating the market return.

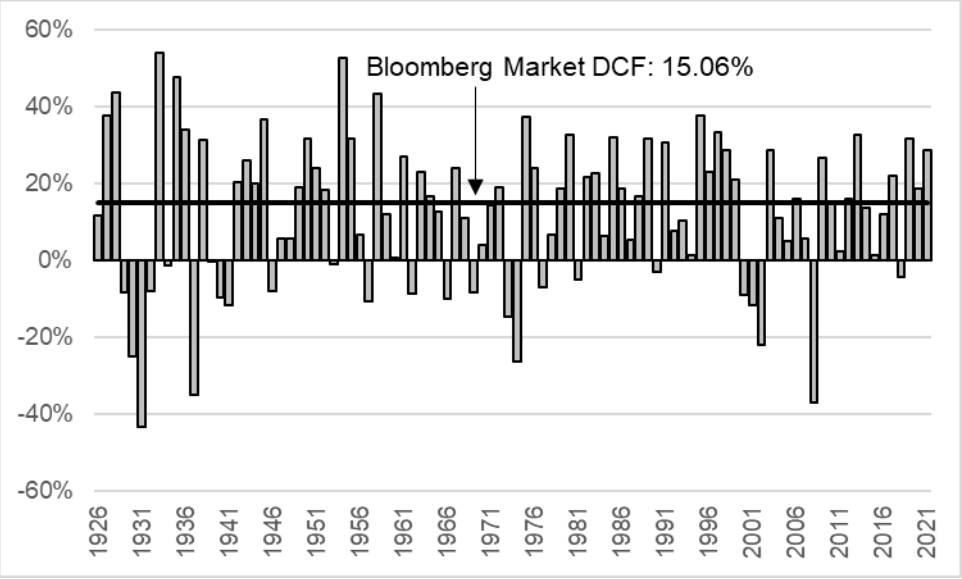
A. As noted earlier, I apply the Constant Growth DCF model to each of the S&P 500 Index companies using data from both Bloomberg and *Value Line* to calculate the market capitalization-weighted ROE for the S&P 500 Index. I calculate the expected dividend yield (using the same one-half growth rate assumption described earlier) and combined that value with *Value Line's* projected earnings growth rate for each of the S&P 500 companies that *Value Line* provides consensus EPS growth rates. I perform the same analysis using Bloomberg's consensus earnings growth rate projection for each of the S&P 500 companies it provides consensus growth rates. The expected market return from *Value Line* and Bloomberg are 16.14 percent and 15.06 percent, respectively (*see* DEU Exhibit 2.04). To be conservative, I rely on Bloomberg's expected market return estimate of 15.06 percent in my CAPM analysis.

[31] Duff & Phelps, 2022 SBBI Yearbook, Appendix A-1.

565 **Q. Is the Bloomberg-based market DCF-based estimate of 15.06 percent consistent**
566 **with actual observed market returns?**

567 A. Yes, it is. As shown in Figure 8 below, an expected market required return of 15.06
568 percent or higher occurred in 48 of the last 96 years (*i.e.,* 50 percent of the time). Since
569 2009, the annual market return has averaged 16.55 percent, and equaled or exceeded
570 15.06 percent in eight of the last 13 years, and ten of the last 20 years. In other words,
571 an annual market return of 15.06 percent, or higher, has occurred frequently.

572 **Figure 8: Annual Market Return (1926 – 2021)[32]**



573

[32] Source: Duff & Phelps, 2022 SBBI Yearbook, Appendix A-1.

574 **Q. Why do you also consider the long-term arithmetic average historical return on**
575 **the market of 12.33 percent as an alternate estimate of the expected market**
576 **return?**

577 A. My objective is to develop a reasonable estimate of the expected market return over
578 the long term to calculate an expected market risk premium. Because the Cost of
579 Equity is forward looking, any estimate – whether based on historical or projected data
580 – assumes the estimate reflects investors' expectations into the future. Although the
581 15.06 percent expected market return is highly consistent with historically observed
582 market returns (as shown in Figure 8 above), it is above the long-term arithmetic
583 annual average market return. Therefore, it may be reasonable to expect that, over the
584 long-term, the market return will revert to its long-run historical arithmetic average.
585 From that perspective, the application of the long-run historical arithmetic average
586 market return as an alternate estimate of the expected market return is prospective in
587 nature.

588 **Q. With the risk-free rates and *ex-ante* market required return estimates described**
589 **above, how do you calculate the market risk premium?**

590 A. I apply two estimates of the risk-free rate and two estimates of the expected market
591 return. Combined, those variables produce four estimates of the expected market risk
592 premium, shown below in Figure 9.

Figure 9: Market Risk Premium Estimates

	Current Risk-Free Rate (2.20%)	Projected Risk-Free Rate (3.13%)
Bloomberg DCF-based Expected Market Return (15.06%)	12.85%	11.93%
Long-Term Historical Average Market Return (12.33%)	10.13%	9.20%

Q. What are the results of your CAPM analysis?

A. To present a spectrum of CAPM estimates from the inputs described above, DEU Exhibit 2.05 calculates CAPM estimates under two approaches. The first approach applies the most conservative estimates of each variable; specifically, Bloomberg 10-year Beta coefficients and the long-term arithmetic average historical market return, resulting in a low-end range of CAPM estimates. The second approach applies the current *Value Line* Beta coefficients and the DCF-based expected market return from Bloomberg, which provides a high-end range of CAPM estimates. Figure 10 below presents the CAPM results (*see also* DEU Exhibit 2.05).

Figure 10: Summary of CAPM Results[33]

	Current 30-Year Treasury Yield (2.20%)	Projected 30-Year Treasury Yield (3.13%)
Long-Term Historical Average Market Return and Bloomberg 10-year Beta Coefficient		
Proxy Group Mean	10.21%	10.40%
Proxy Group Median	10.27%	10.46%
Average of Mean and Median	10.24%	10.43%
Bloomberg DCF-Based Expected Market Return and Value Line 5-year Beta Coefficient		
Proxy Group Mean	13.13%	13.27%
Proxy Group Median	12.81%	12.97%
Average of Mean and Median	12.97%	13.12%

Q. Do you consider another form of the CAPM?

A. Yes, I also consider the Empirical CAPM ("ECAPM") approach, which calculates the product of the adjusted Beta coefficient and the Market Risk Premium and applies a weight of 75.00 percent to that result. The model then applies a 25.00 percent weight to the Market Risk Premium, without any effect from the Beta coefficient.[34] The results of the two calculations are summed, along with the risk-free rate, to produce the ECAPM result, as noted in Equation [6] below:

$$k_e = r_f + 0.75\beta(r_m - r_f) + 0.25(r_m - r_f) \quad [6]$$

where:

k_e = the required market ROE;

[33] DEU Exhibit 2.05.

[34] *See, e.g.*, Roger A. Morin, Ph.D., New Regulatory Finance, at 189-190 (2006).

β = the adjusted Beta coefficient of an individual security;

r_f = the risk-free rate of return; and

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

Q. What is the benefit of the ECAPM approach?

A. The ECAPM addresses the tendency of the CAPM to underestimate the Cost of Equity for companies, such as regulated utilities, with low Beta coefficients. As discussed below, the ECAPM recognizes academic research that indicates the risk-return relationship is flatter than that estimated by the CAPM, and that the CAPM under-estimates the Alpha (α), or the constant return term.[35]

Numerous tests of the CAPM have measured the extent to which security returns and Beta coefficients are related as predicted by the CAPM. The ECAPM method reflects the finding that the actual SML described by the CAPM formula is not as steeply sloped as the predicted SML.[36] Fama and French state that "[t]he returns on the low beta portfolios are too high, and the returns on the high beta portfolios are too low."[37] Similarly, Morin states:

> With few exceptions, the empirical studies agree that . . . low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. . . .
>
> Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:

[35] Roger A. Morin, Ph.D., New Regulatory Finance, at 191 (2006).

[36] Roger A. Morin, Ph.D., New Regulatory Finance, at 175 (2006). The Security Market Line plots the CAPM estimate on the Y-axis, and Beta coefficients on the X-axis.

[37] Eugene F. Fama & Kenneth R. French, *The Capital Asset Pricing Model: Theory and Evidence*, Journal of Economic Perspectives, Vol. 18, No. 3, Summer 2004, at 33.

$$K = R_F + x\,(R_M - R_F) + (1-x)\beta(R_M - R_F)$$

where x is a fraction to be determined empirically. The value of x that best explains the observed relationship Return = 0.0829 + 0.0520 β is between 0.25 and 0.30. If x = 0.25, the equation becomes:

$$K = R_F + 0.25(R_M - R_F) + 0.75\,\beta(R_M - R_F)$$ [38]

Q. Does the application of adjusted Beta coefficients in the ECAPM address the empirical issues with the CAPM?

A. No, it does not. Beta coefficients are adjusted because of their general regression tendency to converge toward 1.00 over time, *i.e.*, over successive calculations. As also noted earlier, numerous studies have determined that at any given point in time, the SML described by the CAPM formula is not as steeply sloped as the predicted SML. To that point, Morin explains:

> Some have argued that the use of the ECAPM is inconsistent with the use of adjusted betas, such as those supplied by Value Line and Bloomberg. This is because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since Value Line betas are already adjusted for such trend, an ECAPM analysis results in double-counting. This argument is erroneous. Fundamentally, the ECAPM is not an adjustment, increase or decrease, in beta. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formal recognition that the observed risk-return tradeoff is flatter than predicted by the CAPM based on myriad empirical evidence. The ECAPM and the use of adjusted betas comprised two separate features of asset pricing. Even if a company's beta is estimated accurately, the CAPM still understates the return for low-beta stocks. Even if the ECAPM is used, the return for low-beta securities is understated if the betas are understated. Referring back to Figure 6-1, the ECAPM is a

[38] Roger A. Morin, Ph.D., New Regulatory Finance at 175, 190 (2006).

665 return (vertical axis) adjustment and not a beta (horizontal axis)
666 adjustment. Both adjustments are necessary. [39]

667 Therefore, it is appropriate to rely on adjusted Beta coefficients in both the CAPM and
668 ECAPM.

669 **Q. What are the results of your ECAPM analyses?**

670 A. I apply the same market return, Beta coefficient, and risk-free rates described earlier
671 in my ECAPM analysis to Equation [6] above. The results of my ECAPM analyses
672 are summarized in Figure 11 below.

673 **Figure 11: Summary of ECAPM Results[40]**

	Current 30-Year Treasury Yield (2.20%)	**Projected 30-Year Treasury Yield (3.13%)**
Long-Term Historical Average Market Return and Bloomberg 10-year Beta Coefficient		
Proxy Group Mean	10.74%	10.88%
Proxy Group Median	10.79%	10.93%
Average of the Mean and Median	10.76%	10.91%
DCF-Based Expected Market Return and Value Line 5-year Beta Coefficient		
Proxy Group Mean	13.61%	13.71%
Proxy Group Median	13.37%	13.49%
Average of the Mean and Median	13.49%	13.60%

674

[39] Roger A. Morin, Ph.D., New Regulatory Finance, at 191 (2006).
[40] DEU Exhibit 2.05.

675 **4. Bond Yield Plus Risk Premium Approach**

676 **Q. Please describe the Bond Yield Plus Risk Premium approach.**

677 A. The Bond Yield Plus Risk Premium approach is based on the basic financial principle
678 of risk and return, which states that equity investors require a premium over the return
679 required as a bondholder to account for the incremental residual risk associated with
680 equity ownership. Risk premium approaches estimate the Cost of Equity as the sum
681 of the equity risk premium and the yield on a particular class of bonds.

682 **Q. Please explain how you perform your Bond Yield Plus Risk Premium analysis.**

683 A. I first define the equity risk premium as the difference between the authorized ROE
684 and the then-prevailing 30-year Treasury bond yield, using the authorized ROE for
685 1,223 natural gas utility rate proceedings between January 1, 1980, and February 28,
686 2022. To reflect the prevailing level of bond yields during the pendency of the
687 proceedings, I calculate the average 30-year Treasury yield over the average lag period
688 between the filing of the rate case and the date of the final order (approximately 187
689 days).

690 Because the data covers several economic cycles, the analysis is helpful in
691 assessing the change in the equity risk premium over time. Prior research, for
692 example, has shown that the equity risk premium is inversely related to the level of

bond yields.[41] That finding is particularly relevant given the relatively low, but increasing, level of current Treasury bond yields.

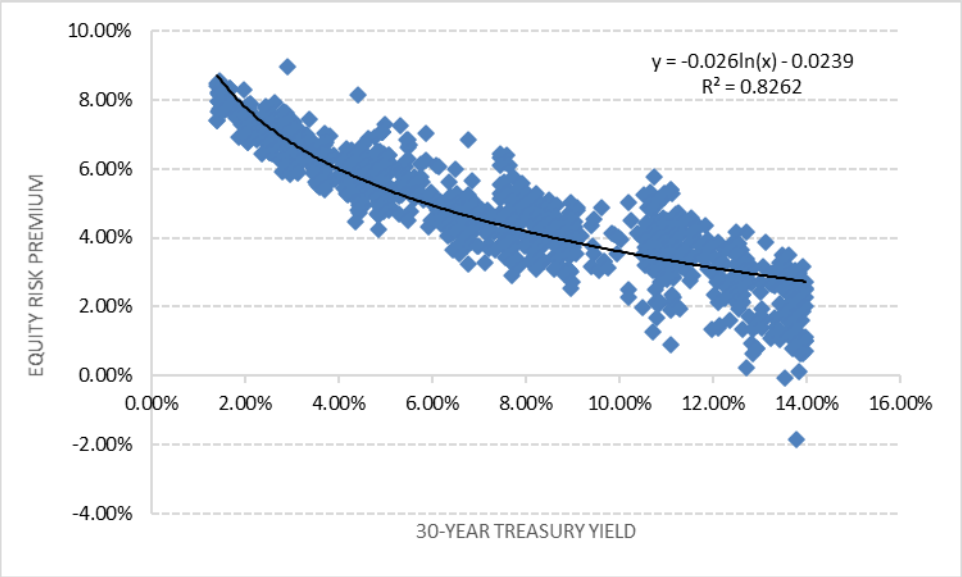
Q. How do you analyze the relationship between bond yields and the equity risk premium?

A. I estimate the relationship between bond yields and the equity risk premium by applying a regression analysis, in which the equity risk premium described above is the dependent variable, and the 30-year Treasury yield is the independent variable. To account for the variability in bond yields and authorized ROEs over several decades, I use the semi-log regression, in which the equity risk premium is expressed as a function of the natural log of the 30-year Treasury yield:

$$\text{RP} = \alpha + \beta\left(LN\left(T_{30}\right)\right) \quad [7]$$

[41] *See*, *e.g.,* Robert S. Harris and Felicia C. Marston, *Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts*, Financial Management at 63-70 (Summer 1992); Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, Financial Management at 33-45 (Spring 1985); and Farris M. Maddox, Donna T. Pippert, and Rodney N. Sullivan, *An Empirical Study of Ex Ante Risk Premiums for the Electric Utility Industry*, Financial Management at 89-95 (Autumn 1995).

Figure 12: Equity Risk Premium[42]



As Figure 12 illustrates, the equity risk premium increases as interest rates fall. The finding that the equity risk premium and interest rates are inversely related is supported by published research. For example, Dr. Roger Morin notes that: "… [p]ublished studies by Brigham, Shome, and Vinson (1985), Harris (1986), Harris and Marston (1992, 1993), Carleton, Chambers, and Lakonishok (1983), Morin (2005), McShane (2005), and others demonstrate that, beginning in 1980, risk premiums varied inversely with the level of interest rates – rising when rates fell and declining when interest rates rose."[43] Based on the regression coefficients in Figure 12, the implied ROE is between 9.75 percent and 9.76 percent (*see* Figure 13 and DEU Exhibit 2.06).

[42] DEU Exhibit 2.06.

[43] Roger A: Morin, Ph.D., New Regulatory Finance, Public Utilities Reports, Inc., 2006, at 128 [clarification added].

Figure 13: Summary of Bond Yield Plus Risk Premium Results[44]

	Return on Equity
Current 30-Year Treasury (2.20%)	9.75%
Projected 30-Year Treasury (3.13%)	9.76%

IV. THE COMPANY'S CAPITAL EXPENDITURE PLAN, REGULATORY ENVIRONMENT, AND CAPITAL ACCESS

Q. Did you consider additional factors when developing your ROE recommendation for DEU?

A. Yes, I did. As explained below, I considered DEU's capital expenditure requirements and the regulatory environment in which it operates when determining where its Cost of Equity falls within the range of results.

Q. Do you have any preliminary thoughts on the importance of access to capital for natural gas utilities such as DEU?

A. Yes, I do. As a capital-intensive enterprise, the allowed ROE should enable DEU to finance capital expenditures and working capital requirements at reasonable rates and to maintain its financial integrity in a variety of economic and capital market conditions. As discussed throughout my Direct Testimony, a return that is adequate to attract capital at reasonable terms enables the utility to provide safe, reliable service while maintaining its financial soundness to the benefit of customers.

Natural gas utilities are one of the most capital-intensive market sectors. On average, natural gas utilities generate less than half as much revenue per dollar of

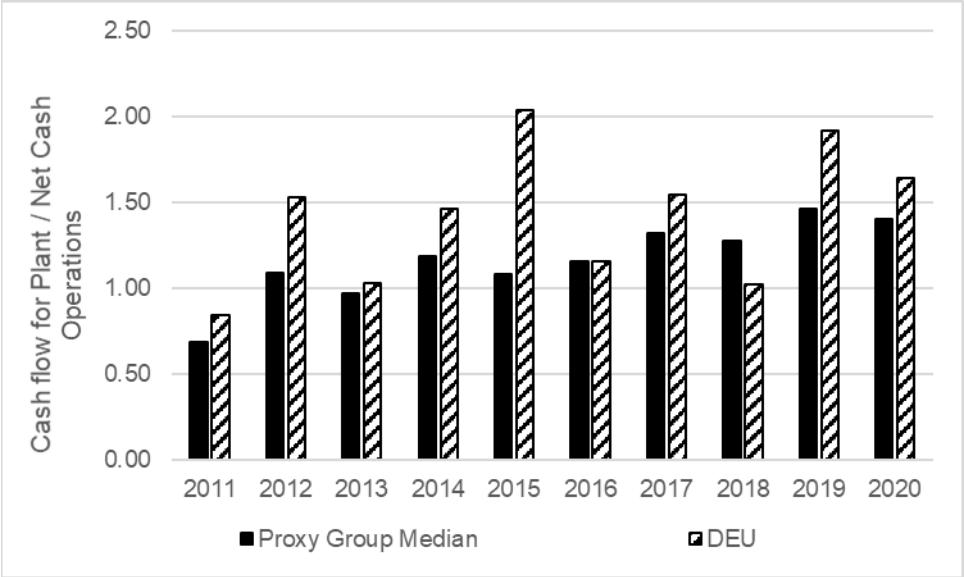
[44] DEU Exhibit 2.06.

assets as the non-utility U.S. companies covered by *Value Line*.[45] To fund the significant capital expenditures needed to maintain, expand, and modernize existing infrastructure, natural gas utilities require sufficient internally-generated cash flow and ongoing access to investor supplied capital. Because natural gas utilities' ratio of cash outflow for plant to net cash flow from operations is generally above 1.0 (that is, cash spent on plant exceeds cash flow received from operations), it is critical that regulation provide predictable, adequate, and achievable allowed returns that support the financial integrity of the utility.

As shown in Figure 14 below, the Company's ratio of cash outflow for plant to net cash flow from operations has been above the proxy group median ratio in eight of the last ten years, indicating that the Company generally relies more heavily on external capital than the proxy group does to fund its capital investment.

[45] Source: *Value Line,* accessed March 15, 2022.

743 **Figure 14: Cash Outflow for Plant to Net Cash Flow from Operations (2011 to 2020)[46]**



744

745 **Q. Please briefly summarize the Company's capital investment requirements.**

746 A. The Company is planning approximately $1.53 billion in capital expenditures during
747 the 2022 to 2026 timeframe,[47] which is approximately 59 percent of its net utility plant
748 as of December 31, 2021 noted earlier. Because the Company must continue to make
749 substantial investments in its utility operations regardless of the economic and
750 financial market environment at the time, it will require efficient access to external
751 capital.

[46] Source: S&P Capital IQ.

[47] Company provided data.

Q. How does the regulatory environment influence utilities' efficient access to capital?

A. The regulatory environment is one of the most important factors investors consider when assessing a utility's risk, as it is a significant driver of earnings and cash flow.[48] Investors and rating agencies understand that a constructive regulatory environment is critical to support utilities' credit and financial integrity, especially during adverse market conditions. Moody's considers a utility's regulatory environment to be so important that 50 percent of the factors that weigh in its ratings determinations are related to the nature of regulation.[49] Among the factors considered by Moody's in assessing the regulatory framework are the predictability and consistency of regulatory actions:

> As the revenues set by the regulator are a primary component of a utility's cash flow, the utility's ability to obtain predictable and supportive treatment within its regulatory framework is one of the most significant factors in assessing a utility's credit quality.
>
> ***
>
> In situations where the regulatory framework is less supportive, or is more contentious, a utility's credit quality can deteriorate rapidly.[50]

Similarly, as S&P notes, "[o]ne significant aspect of regulatory risk that influences credit quality is the regulatory environment in the jurisdictions where a utility

[48] Moody's Investor Service, Rating Methodology, *Regulated Electric and Gas Utilities,* at 4 (June 23, 2017).

[49] Moody's Investors Service, Rating Methodology, *Regulated Gas and Electric Utilities* at 4 (June 23, 2017).

[50] Moody's Investors Service, *Regulatory Frameworks – Ratings and Credit Quality for Investor-Owned Utilities* at 2 (June 18, 2010).

operates."[51] S&P explains that "[w]hen we evaluate U.S utility regulatory environments, we consider financial stability to be of substantial importance. Cash takes precedence in credit analysis. A regulatory jurisdiction that recognizes the significance of cash flow in its decision-making is one that will appeal to creditors."[52]

Consequently, a utility that operates in a less predictable and more challenging regulatory environment is likely to be viewed as a riskier investment, and may result in lower credit ratings, constrained access to capital (particularly in adverse market environments), and higher costs of both debt and equity, all else being equal. From that perspective, customers benefit from a constructive regulatory environment.

Q. Do credit rating agencies recognize risk associated with increased capital expenditures?

A. Yes, they do. The additional pressure on cash flows associated with high levels of capital expenditures exerts corresponding pressure on credit metrics and, therefore, credit ratings. S&P has noted that:

> Over the past few years, the industry's financial measures have weakened. This reflects rising capital spending, regulatory lag, and lower authorized returns on equity. The industry's return on capital was about 6% a decade ago and today it is closer to 4%. During the initial stages of the COVID pandemic, utilities delayed their rate case filings and many rate case orders were below expectations. More recently, energy transformation has increased capital spending, further weakening the industry's financial measures, pressuring credit quality. We expect that energy transformation will take more than a decade to

[51] S&P Global Ratings, RatingsDirect, Assessing U.S. *Investor-Owned Utility Regulatory Environments,* at 2 (August 10, 2016).

[52] S&P Global Ratings, RatingsDirect, Assessing U.S. *Investor-Owned Utility Regulatory Environments,* at 6 (August 10, 2016).

> complete, likely continuing to pressure the industry's credit quality over this timeframe.[53]

S&P's views noted above support my observations discussed earlier in my testimony: (1) the benefits of maintaining a strong financial profile are significant when capital access is required and become particularly acute during periods of market instability; and (2) the Commission's decision in this proceeding will directly affect the Company's credit profile and access to the capital needed to fund its investments.

Q. Please summarize your review of the Company's regulatory risk relative to the proxy group.

A. The regulatory environment significantly affects both the access to and the cost of capital. Regulatory decisions regarding the authorized ROE and capital structure have direct consequences for the subject utility's internal cash flow generation, and therefore the financial metrics reviewed by ratings agencies in their ratings assessments. Because credit ratings are intended to reflect the ability to meet financial obligations as they come due, the ability to generate the cash flows required to meet those obligations (and to provide an additional amount for unexpected events) is of critical importance to both debt and equity investors.

To assess the regulatory environment of the proxy companies and DEU, I reviewed the key cost recovery mechanisms and ratemaking frameworks for each of the natural gas operating companies within the proxy group in the jurisdictions in

[53] S&P Global Ratings, *Industry Top Trends 2022: North America Regulated Utilities: Credit Quality Remains Pressured,* at 6 (January 26, 2022).

which they operate, including cost recovery and revenue stabilization mechanisms, test year, and rate base methodology.

As shown in DEU Exhibit 2.07:

- 100 percent of the proxy group's operating companies have fuel cost recovery mechanisms, like DEU;
- 96 percent have capital and infrastructure replacement cost recovery mechanisms, like DEU;
- Like DEU, 88 percent have some form of revenue stabilization such as a full or partial decoupling mechanism, or annual rate review mechanism;
- 63 percent recover costs associated with energy efficiency and conservation programs as does DEU; and
- 54 percent are able to use a partially- or fully-forecast test year like DEU.

Based on this review, I conclude that DEU's regulatory risk is comparable to its peers. Therefore, its risk relative to the proxy group is not reduced as a result of its rate structures. Further, because the proxy companies all have similar mechanisms, any effects related to rate mechanisms are captured in the analytical model results.

Q. Do DEU's accounting and rate adjustment mechanisms reduce its risk?

A. No, they do not. It is important to remember that the assessment of risk is necessarily a comparative exercise. There are three perspectives from which to assess the effect of the Company's accounting and rate adjustment mechanisms on its relative risk: (1) the effect of its mechanisms on the Company's risk relative to the proxy group of its peers, (2), whether the mechanisms address an incremental risk factor relative to its

peers, putting it on par with other utilities, and (3) whether the continuation of its mechanisms reflects a change in the Company's risk relative to prior circumstances.

Turning first to the effect on the Company's risk relative to its peers, as noted earlier, the proxy companies all have similar mechanisms available to them. While the specific details of the mechanics of the rate adjustment mechanisms may differ from utility to utility and jurisdiction to jurisdiction, their objective is the same: to improve the timeliness of cost recovery and mitigate (but not necessarily eliminate) earnings erosion associated with regulatory lag. Because the proxy companies all have mechanisms that improve the opportunity to earn the authorized return, DEU is no less risky than its peers on account of its rate structures. In other words, the Company's rate adjustment mechanisms simply render it more comparable to its peers, and do not reduce its risk.

More importantly, there is no change in the Company's risk by virtue of the continued operation of its rate adjustment mechanisms. Because rate adjustment mechanisms are common in the industry, the financial community is fully aware of the extent of their use by utilities. In fact, rate adjustment mechanisms have become more common in the industry, not less. In other words, the Company's risk is not further reduced in each year its rate structures remain in operation.

Q. What are your conclusions regarding the Company's capital expenditure requirements, its need to maintain access to capital, and the regulatory environment on its risk profile?

A. The Company's capital expenditure program is significant and will require ready access to cash flows and external capital, making regulatory support critical to DEU's ability to finance and earn a reasonable return on its planned utility investments. DEU's regulatory mechanisms support its ability to recover costs in a timely manner and render it comparable in risk to its peers. Therefore, there is no reduction in DEU's risk, or its ROE, on account of its regulatory mechanisms.

The regulatory environment is one of the most important issues considered by both debt and equity investors in assessing the risks and prospects of utility companies. From the perspective of investors, the authorized return should enable the Company to generate the cash flow needed to meet its near-term financial obligations, make the capital investments needed to maintain and expand its system, and maintain sufficient levels of liquidity to fund unexpected events. This financial liquidity must be derived not only from internally generated funds, but also by efficient access to external capital. Because utilities are capital intensive enterprises, it is essential that the ROE authorized in this proceeding enable DEU to continue to invest the capital necessary to meet its obligation to serve in a variety of market environments, as well as maintain confidence in Utah's regulatory environment among credit rating agencies and investors.

V. CAPITAL MARKET ENVIRONMENT

Q. Do economic conditions influence the required cost of capital and required ROE?

A. Yes. The required cost of capital, including the ROE, is a function of prevailing and expected economic and capital market conditions. All analytical models used to estimate the required ROE are influenced by current and expected capital market conditions, albeit in different ways. Because the models are each based on simplifying assumptions that may not hold true under specific market circumstances, it is important to assess the reasonableness of any financial model's results in the context of current and expected market data.

As discussed below, there have been dramatic shifts in the capital markets brought about by the global COVID-19 pandemic that disrupted the economic and financial markets shortly after the Commission's order in DEU's last rate case. In particular, volatility for both utility stocks and the broader market increased, indicating higher risk for equity investors. In addition, the Federal Reserve has begun tightening its monetary policies, pushing up interest rates. Further, credit spreads between utility and Treasury bonds have widened, and inflation is at the highest levels in the last 40 years. All these factors indicate higher capital costs going forward.

Q. Please summarize the changes in capital market conditions since early 2020.

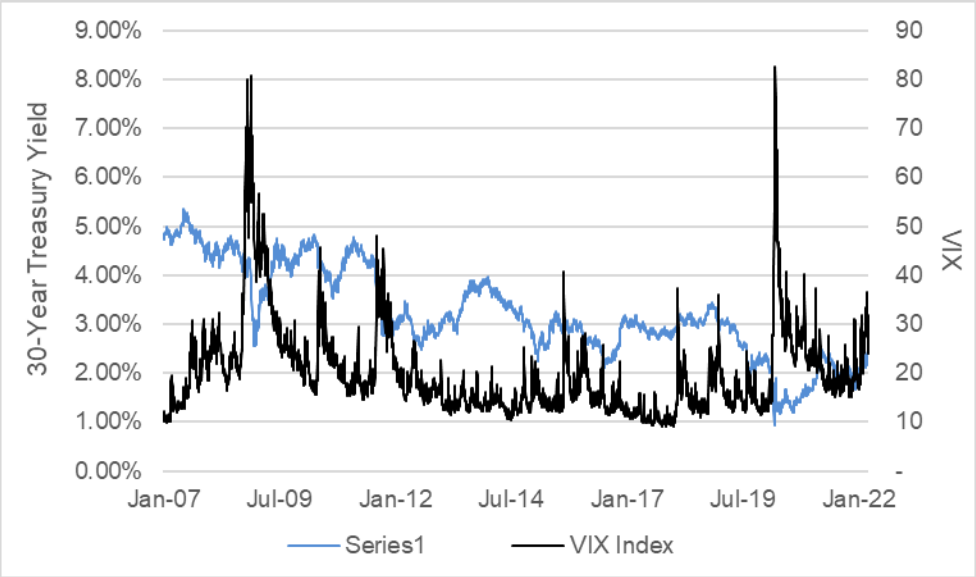
A. When the Commission issued its Report and Order in DEU's last rate case on February 25, 2020, the COVID-19 pandemic was beginning to spread in the United States. Two-and-a-half weeks after the Report and Order, the U.S. government declared a nationwide emergency and states began shutting down to prevent the spread of

COVID-19. The speed and severity of the increase in market risk and the loss in equity market value after the onset of the COVID-19 pandemic cut across all market sectors, including utilities. From February 25 to March 23, 2020, the S&P 500 Index lost 28.50 percent in value and the utility sector lost approximately 34 percent of its value.[54] At the same time, the Chicago Board Options Exchange ("CBOE") Volatility Index ("VIX"), a measure of expected market volatility, nearly tripled (from 27.85 on February 25, 2020 to 82.69 on March 16, 2020).[55]

Treasury bond yields declined rapidly as investors sought the relative safety of government bonds as the stock market became extremely volatile and the Federal Reserve reduced the Federal Funds rate to a target range of 0 percent to 0.25 percent. As shown in Figure 15 below, increases in market volatility tend to be associated with declines in Treasury yields. That relationship makes intuitive sense; as investors see increasing risk, their objectives may shift to capital preservation (that is, avoiding a capital loss). A means of doing so is to allocate capital to the relative safety of Treasury securities in a "flight to safety." Because Treasury yields are inversely related to Treasury bond prices, as investors bid up the prices of bonds, they bid down the yields. In those instances, the decline in yields does not reflect a reduction in required returns, it reflects an increase in risk aversion and, therefore, an increase in required equity returns as investors require higher returns to compensate them for bearing additional market risk.

[54] Source: Yahoo! Finance. Utility sector measured by the XLU and Dow Jones Utility Average.
[55] Source: Yahoo! Finance.

Figure 15: 30-Year Treasury Yields vs. VIX[56]



Although the extraordinary federal government and central bank actions to support the U.S. economy stabilized the capital markets, volatility (and, therefore, risk) remains above levels experienced during the Company's last rate case.

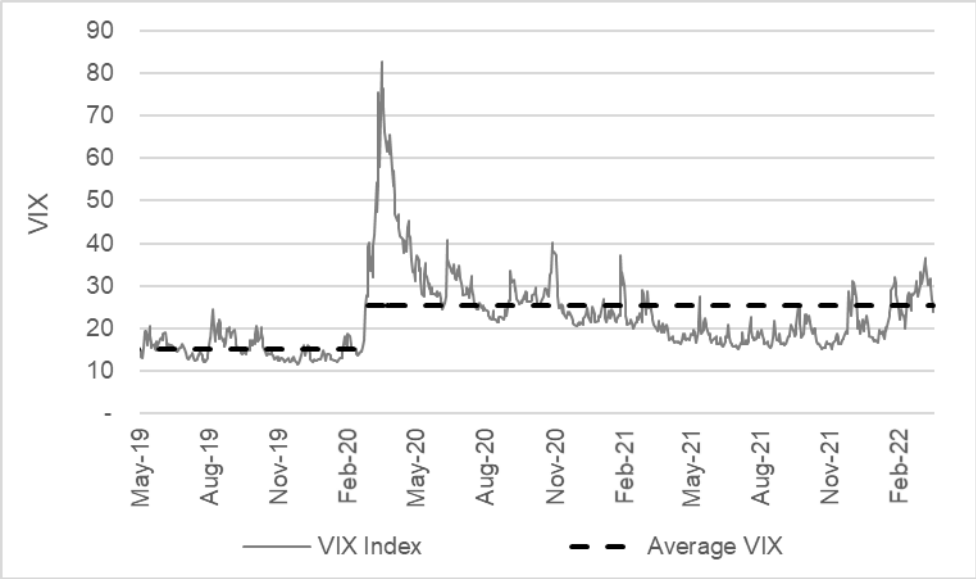
Q. Has volatility remained elevated relative to historical levels in recent months?

A. Yes. A visible and widely reported measure of expected market volatility is the VIX.[57] Because volatility is a measure of risk, increases in the VIX, or in its volatility, are a broad indicator of expected increases in market risk. From February 26, 2020 to March 18, 2022, the VIX averaged 25.29, or approximately 67 percent higher than its average during DEU's last rate case (15.17).[58] In other words, since the Commission's order in DEU's last rate case, market volatility has been approximately 67 percent

[56] Source: Yahoo! Finance.
[57] Source: www.cboe.com/vix.
[58] Source: Yahoo! Finance.

928 higher on average than it was during the pendency of the rate case. As Figure 16
929 below also shows, market volatility has been increasing since November 2021, spurred
930 by inflation worries and the recent conflict in Ukraine.

931 **Figure 16: VIX Index (2019-2022)[59]**



932

933 A further measure of market uncertainty is the volatility of the VIX itself. That
934 is, we can look to the expected volatility of volatility, as measured by the VVIX Index
935 ("VVIX"), which is a traded index of the expected volatility of the VIX. Between
936 January 2007 and March 2022, the VVIX has averaged approximately 93.33. As
937 Figure 17 below shows, the average VVIX in 2020, 2021, and so far in 2022 has been
938 significantly higher than in previous years. Further, since the Commission's order in
939 DEU's last rate case, the VVIX has been 32 percent higher than it was between 2007
940 and March 25, 2020.

[59] Source: Yahoo! Finance.

Figure 17: Annual Average VVIX (2007-2022)[60]

Calendar Year	Average VVIX
2007	87.68
2008	81.85
2009	79.78
2010	88.36
2011	92.94
2012	94.84
2013	80.52
2014	83.01
2015	94.82
2016	92.80
2017	90.01
2018	102.26
2019	91.03
2020	118.36
2021	115.32
2022	126.39
Average 1/1/2007 – 3/25/2020	89.68
Average 3/26/2020 – 3/18/2022	117.97

Q. Is market volatility expected to remain elevated in the near-term?

A. Yes. CBOE's "Term Structure of Volatility" observes the market's expectation of future market volatility through use of the S&P 500 Index's implied volatility term structure.[61] As shown in Figure 18 below, implied volatility of the VIX is expected

[60] Source: Yahoo! Finance, data through March 18, 2022.

[61] Source: www.cboe.com/trading-tools/strategy-planning-tools/term-structure-data.

to remain approximately 40.50 percent above long-term historical volatility[62] on average until at least January 2023.

Figure 18: CBOE Term Structure of Volatility[63]

Date	Projected VIX
April 2022	23.77
May 2022	25.49
June 2022	26.53
July 2022	27.15
August 2022	27.81
September 2022	28.30
October 2022	28.46
November 2022	28.63
December 2022	29.16
January 2023	28.98

In short, although volatility declined from its March 2020 highs as the federal government and central bank implemented fiscal and monetary policies to stabilize the U.S. economy, market volatility remains – and is expected to remain – above levels observed during DEU's last rate case.

Q. Have natural gas utility stocks recovered to levels experienced in February 2020?

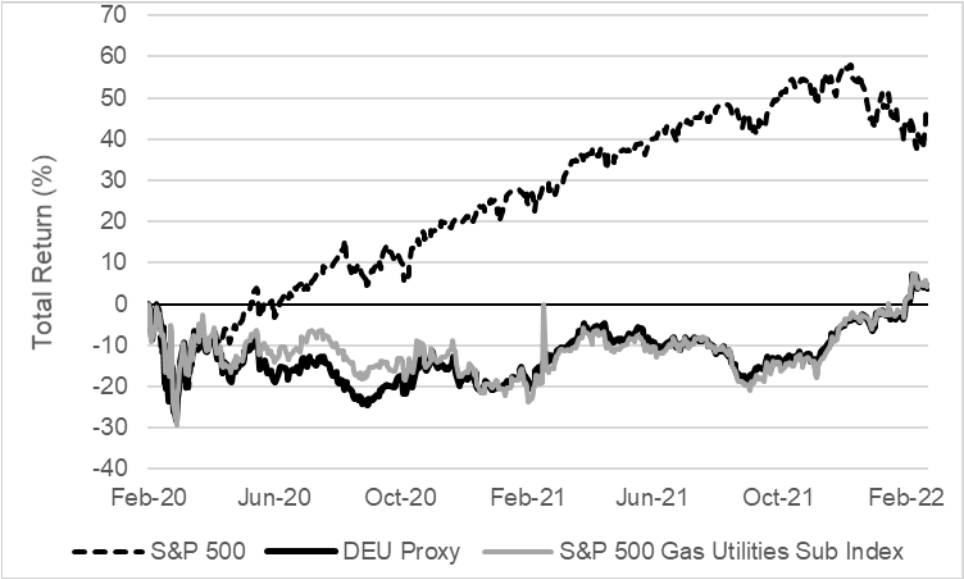
A. As shown in Figure 19 below, total returns for natural gas utility stocks (as measured by the Proxy Group and the S&P 500 Gas Utilities Sub Index) were negative throughout 2020 and 2021, and did not reach positive territory until February 2022.

[62] The long-term average VIX is 19.52, which is similar to the long-term standard deviation of annual return on the S&P 500 Index.

[63] Source: http://www.cboe.com/trading-tools/strategy-planning-tools/term-structure-data, as of March 18, 2022.

Additionally, returns for natural gas utility stocks significantly underperformed the S&P 500 over the last two years.

Figure 19: Total Return of the S&P 500 Index and Natural Gas Utilities[64]



Q. Are there additional measures that indicate the Cost of Equity has increased for utilities?

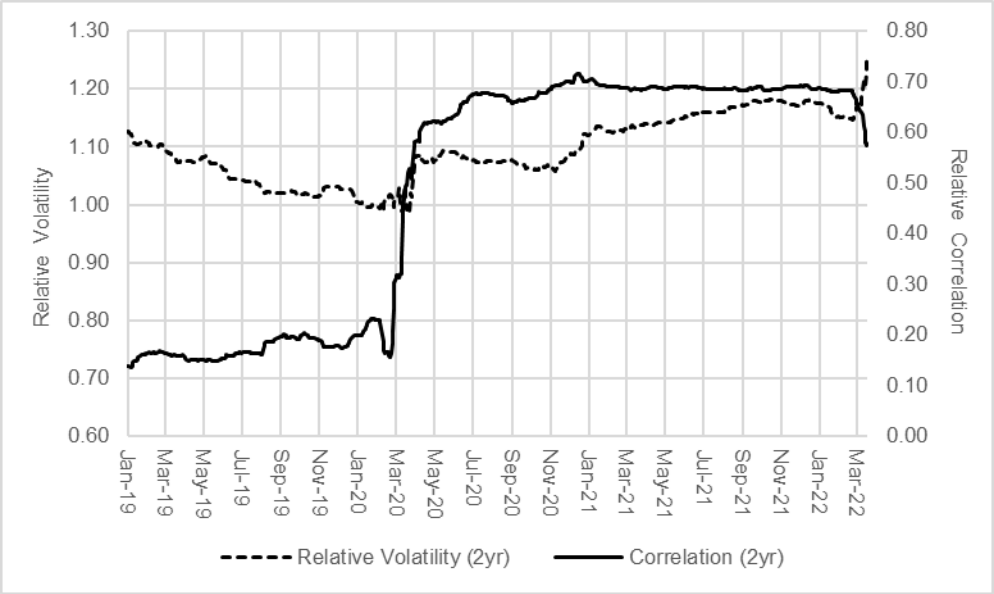
A. Yes. As explained in Section III, the Beta coefficient is a measure of a company's systematic risk relative to the overall market. The Beta coefficient is function of two parameters: (1) relative volatility (the standard deviation of the subject company's returns relative to the standard deviation of the market return); and (2) the correlation between the subject company's returns and the market return.[65] Under the CAPM, higher Beta coefficients indicate an increase in the Cost of Equity, all else equal. As Figure 20 below demonstrates, both the relative correlation and relative volatility

[64] Source: S&P Capital IQ for the period February 25, 2020 – March 18, 2022; proxy group calculated as an Index.

[65] *See* Equation [5].

971 between the proxy group and the S&P 500 Index increased substantially since
972 February 2020. Notably, relative volatility (left axis) has been 1.0 or higher since at
973 least January 2019, indicating the proxy group's higher volatility relative to the S&P
974 500 Index.

975 **Figure 20: Components of Proxy Group Beta Coefficients[66]**



976 This increase in correlation between returns for the proxy group and those for
977 the S&P 500 is not surprising. As Morningstar explained, during volatile markets
978 there often is little distinction in returns across assets or portfolios. That is,
979 "correlations go to 1."[67] When that happens, utility stocks lose their defensive quality.
980 Not surprisingly, the increase in correlation and relative volatility combine to produce
981 higher Beta coefficients. As shown in Figure 21, below, the average *Value Line* and

[66] Source: S&P Capital IQ. Weekly returns calculated over 24 months.

[67] Morningstar, *Correlations Going to 1: Amid Market Collapse, U.S. Stock Fund Factors Show Little Differentiation*, March 6, 2020.

Bloomberg 10-year Beta coefficients for the proxy group increased by approximately 1.5x and 1.1x, respectively, between February 2020 and February 2022. In other words, investors have not viewed the utility sector as a "safe-haven" during the capital market conditions associated with the COVID-19 pandemic. Even though bond yields declined, the Cost of Equity has increased.

Figure 21: Average *Value Line* and Bloomberg Proxy Group Beta Coefficients[68]

Date	February 2020	February 2022
Value Line Average (5-yr)	0.583	0.850
Bloomberg Average (10-yr)	0.712	0.791

Q. Does your recommendation also account for the current interest rate environment?

A. Yes, it does. As explained earlier, the historically low levels of interest rates observed in 2020 and 2021 were driven in part by investors seeking the relative safety of bonds during volatile markets, combined with extraordinary market support as the Federal Reserve intentionally kept interest rates low and injected $4.6 trillion dollars into the market through security purchases.[69]

However, as the U.S. economy improved in 2021, and inflation and expectations for tighter monetary policy increased, prevailing interest rates have moved higher.[70] As shown in Figure 22 below, the 30-year Treasury bond yield has

[68] Sources: *Value Line* and Bloomberg Professional Service as of February 28, 2020 and February 28, 2022.

[69] Source: Federal Reserve Schedule H.4.1 Securities Held Outright between February 25, 2020 and March 18, 2022.

[70] *See, e.g., Blue Chip Financial Forecasts*, Vol. 41, No. 3, March 1, 2022, at 1.

increased more than 60 basis points, from 1.80 percent on February 25, 2020 when the Commission issued its order in DEU's last rate case, to 2.42 percent as of March 18, 2022.

Figure 22: 30-Year Treasury Bond Spot Yield (2020-2022)[71]

Because the Cost of Equity is forward-looking, the salient issue is whether investors see the likelihood of increased interest rates during the period in which the rates set in this proceeding will be in effect. With respect to long-term interest rates, the 50 economists surveyed by *Blue Chip Financial Forecasts* ("*Blue Chip*") expect the 30-year Treasury yield to increase from the 30-day average of 2.20 percent as of February 28, 2022[72] to 3.40 percent on average over the five-year period 2023-2027.[73] Given the Federal Reserve's indication that it will increase interest rates as

[71] Source: Yahoo! Finance.

[72] Source: Bloomberg Professional Service; DEU Exhibit 2.05.

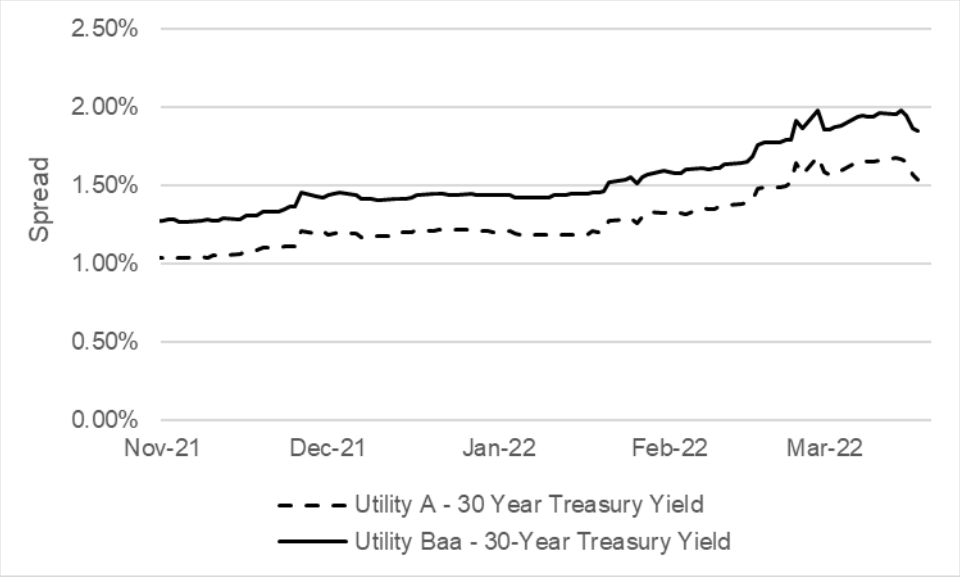
[73] *See Blue Chip Financial Forecasts*, Vol. 39 No. 12 at 14 (December 1, 2021).

aggressively as needed to mitigate inflation,[74] it is reasonable to give more weight to projected interest rates.

Q. What has been the change in investors' views of the relative riskiness of utility bonds compared to Treasury bonds?

A. The difference in utility bond yields and Treasury bond yields is an indication of investors' views of the relative risk of each security. As credit spreads widen, it indicates an increase in utility bond credit risk relative to safer government bonds. As shown in Figure 23, credit spreads between utility bond yields and the 30-year Treasury bond yield have widened since the Federal Reserve's November 3, 2021 meeting when it announced it would begin tapering its asset purchases.

Figure 23: Spread in Utility Bond Yields and the 30-Year Treasury Yield[75]



[74] *See, e.g.,* Jerome H. Powell's speech at the 38th Annual Economic Policy Conference, National Association for Business Economists (March 21, 2022). https://www.federalreserve.gov/newsevents/speech/powell20220321a.htm

[75] Source: Bloomberg Professional Service.

Q. How have inflation rates changed since the Commission's Report and Order in DEU's last rate case?

A. Several government measures of inflation indicate that inflation has increased significantly since February 2020, as shown in Figure 24 below. In fact, current annual inflation rates are at their highest levels *in 40 years*.

Figure 24: Year-over-Year Inflation Rates (February 2020 to February 2022)[76]

	February 2020	February 2022
Consumer Price Index	2.3%	7.9%
Producer Price Index	1.1%	10.4%
Personal Consumption Expenditures Price Index	1.9%	6.4%

Q. How does higher inflation affect a utility's cost of capital?

A. Higher inflation has several implications for utilities and their cost of capital. First, interest rates and debt costs are sensitive to inflation, as inflation erodes the purchasing power of the future interest payments an investor expects to receive over the duration of the bond; bonds with longer durations (such as 30-year securities) are more sensitive to inflation risk than shorter duration bonds. As a result, if investors expect increased levels of inflation, they will require higher yields to compensate for the increased risk of inflation, which means utility debt costs will increase.

Second, inflation affects a utility's operating expenses as expenses rise above levels that are included in the revenue requirement being recovered by rates.

[76] Sources: U.S. Bureau of Labor Statistics; Federal Reserve Bank of St. Louis, FRED Database.

Therefore, rising inflation adversely affects utilities' financial profile, putting pressure on credit metrics.

Q. Are there reasons to believe that high inflation may not be transitory as previously thought?

A. Yes. While supply and demand disruptions brought about by the COVID-19 pandemic and the recovery of the U.S. economy have contributed to inflation, there are reasons why high inflation may prove to be less transitory in nature than previously thought. For example, shelter (*i.e.*, rents and mortgages) makes up the largest share of the CPI (approximately 32.9 percent),[77] and is less subject to short-term disruptions than other components of the CPI. Moreover, there are few substitutes for shelter and consumers have few options to reduce shelter costs in the short-term.

Q. In its Report and Order in DEU's last rate case, the Commission noted that the Federal Reserve's cessation of injecting capital into the market was a "credit negative" for DEU, potentially warranting an increase in the authorized ROE.[78] Is that finding relevant in this proceeding?

A. Yes, it is. As noted earlier, to support the economy and financial markets after the onset of the COVID-19 pandemic, the Federal Reserve reduced the target Federal Funds rate to 0 to 0.25 percent and increased its purchases of securities, ultimately injecting nearly $5 trillion of capital into the market. After its November 2021 meeting, the Federal Open Market Committee ("FOMC") of the Federal Reserve

[77] Source: U.S. Bureau of Labor Statistics https://www.bls.gov/cpi/tables/relative-importance/2021.htm
[78] Docket No. 19-057-02, Report and Order at 6 (February 25, 2020).

Board of Governors announced it would begin tapering its asset purchases. Citing the highly uncertain implications of the Ukraine conflict for the U.S. economy, the FOMC raised the target Federal Funds rate by 25 basis points at its March 2022 meeting and announced that it expects to begin reducing its holdings of Treasury securities in the near future.[79] The minutes of the March 2022 meeting indicated that FOMC participants "agreed that elevated inflation and tight labor market conditions warranted commencement of balance sheet runoff at coming meeting, with a faster pace of decline in securities holdings than over the 2017-2019 period."[80] Market data indicates that investors are expecting the FOMC to raise the Federal Funds target rate by 300 basis points over the next year, including 50-basis point increases at each of the next two FOMC meetings.[81] The implication of both higher Federal Funds rates and reductions in the Federal Reserve's security holdings is higher interest rates.

Q. What conclusions do you draw from your review of the current capital market environment and its implications on the Company's Cost of Equity?

A. Over the last two years, the economic and financial market environment has operated under heightened uncertainty associated with the COVID-19 pandemic. The recent conflict in Ukraine has added to the uncertainty and volatility in the market. Observable market information makes clear that utility investors face greater risks, and therefore, require higher returns. While short-term interest rates currently remain

[79] Federal Reserve press release, March 16, 2022.

[80] Federal Reserve Board of Governors, Minutes of the Federal Open Market Committee, March 15-16, 2022, at 4.

[81] CME Group "FedWatch Tool, accessed April 6, 2022.

low by historical comparison, investors are increasingly faced with inflationary pressures and the Federal Reserve is unwinding its pandemic response measures. Long-term interest rates have increased substantially since the historic lows of 2020 and are expected to continue to increase. All of these factors indicate an increase in the Cost of Equity.

VI. CAPITAL STRUCTURE AND COST OF DEBT

Q. What is the Company's requested capital structure?

A. As described by Company witness Jordan Stephenson, the Company requests a 2023 test year capital structure consisting of 53.21 percent common equity and 46.79 percent long-term debt. The requested capital structure reflects an increase in financial leverage from its current capital structure of 55.00 percent common equity and 45.00 percent long-term debt.

Q. How does the capital structure affect the Cost of Capital?

A. A company's total risk consists of business risk and financial risk. Business risk includes operating, market, regulatory, and competitive uncertainties, while financial risk is the incremental risk to investors associated with additional leverage, or levels of debt. Therefore, the capital structure indicates a company's financial risk, which reflects the risk that a company may not have adequate cash flows to meet its financial obligations. As the percentage of debt in the capital structure increases, so do the fixed obligations for the repayment of that debt and the risk of financial distress.[82] In

[82] *See,* Roger A. Morin, Ph.D., New Regulatory Finance, Public Utility Reports, Inc. at 45-46 (2006).

essence, even if two firms face the same business risks, a company with meaningfully higher levels of debt in its capital structure is riskier, which increases its costs of both debt and equity. As the Commission has recognized, the capital structure affects the subject company's overall level of risk, and the ROE and capital structure "cannot be considered in isolation from each other."[83] Consequently, the Commission should consider the effects of the Company's higher financial leverage in its requested capital structure in determining the authorized ROE.

Q. Please summarize your analysis of the proxy companies' capital structures.

A. In general, it is important to assess the capital structure relative to industry practice and investor requirements. That is, the capital structure should be reasonably consistent with industry practice and enable the subject company to maintain its operations and its financial integrity, thereby maintaining access to capital at competitive rates under a variety of economic and financial market conditions.

To assess whether DEU's requested capital structure is consistent with industry practice, I calculated the average equity and long-term debt ratio for each of the proxy group operating companies over the years 2018 to 2020 (*see* DEU Exhibit 2.08). The mean and median equity ratio of the proxy group is 57.46 percent and 59.37 percent, respectively, within a range of 48.65 percent to 61.78 percent.[84] The Company's requested equity ratio of 53.21 percent is within the proxy group range, but falls below the average and median equity ratio. From that perspective, DEU's

[83] Docket No. 20-035-04, Redacted Order, at 16.

[84] Source: S&P Capital IQ.

requested capital structure is comparable to, albeit slightly more leveraged (and therefore slightly riskier) than the proxy group on average.

Q. What is the basis for using average capital components rather than a point-in-time measurement?

A. Measuring the capital components at a particular point in time can skew the capital structure by the specific circumstances of a particular period. For example, a company may issue debt to fund an acquisition or to ensure liquidity during constrained capital market environments, which may not reflect the company's overall long-term capital structure objectives. Therefore, it is appropriate to normalize the capital components over a period of time.

Q. What is your conclusion regarding the Company's requested capital structure?

A. The requested common equity ratio of 53.21 percent is consistent with the equity ratios that fund the regulated natural gas operations of the proxy group companies. As such, I conclude that a capital structure including 53.21 percent common equity and 46.79 percent long-term debt is reasonable and should be approved.

Q. What Cost of Debt does the Company request in this proceeding?

A. As discussed in the pre-filed Direct Testimony of Jordan Stephenson, the Company requests a cost of long-term debt of 4.00 percent.

Q. Please explain your analysis assessing the Company's requested cost of debt.

A. To assess the reasonableness of DEU's requested cost of debt, I reviewed the yield on equivalent utility debt at the time of issuance. As shown in Exhibit DEU 2.09, I compared the yield of each of DEU's individual debt issuances to the A-rated and

BBB-rated utility bond yield curves at the time of issuances. The comparable cost of debt based on the Bloomberg Fair Value Curve for A-rated and BBB-rated utility bonds ranges from 3.83 percent to 4.19 percent. Because DEU's requested cost of debt is within the range of utility debt yields of the same term issued during the same period, I conclude the Company's requested cost of debt is reasonable.

Q. Have you assessed whether the Company's projected yield of 4.25 percent for a $250 million 30-year bond anticipated to be issued on August 1, 2022 is reasonable?

A. Yes, I reviewed current and projected bond yields to assess the reasonableness of the Company's projected yield on its anticipated bond issuance. With respect to current yields, as of March 18, 2022, the spot yields on Moody's A-rated and Baa-rated utility bond indexes were 3.95 percent and 4.35 percent, respectively. I am not aware of any forecasts of utility bond yields; however, *Blue Chip* forecasts corporate bond yields. The spread between corporate bond yields and utility bond yields historically has been very small on average,[85] rendering corporate bond yields a reasonable proxy for utility bond yields. As of March 1, 2022, *Blue Chip* projects corporate bond yields for Aaa- and Baa-rated debt of 3.7 percent and 4.4 percent, respectively, in the third quarter of 2022.[86] The Company's projected debt yield of 4.25 percent is within the range of current and projected utility bond yields and is therefore reasonable.

[85] Source: Bloomberg Professional Service. Since 1992, the average spread between A-rated corporate and utility bonds was -3 basis points and +4 basis points for Baa-rated bonds. The correlation between corporate and utility bond yields was approximately 99.8 percent for both A-rated and Baa-rated bonds, meaning they move in a nearly 1-to-1 pattern.

[86] *Blue Chip Financial Forecasts*, Vol. 41, No. 3, at 2 (March 1, 2022).

VII. CONCLUSIONS

Q. What is your conclusion regarding the ROE, capital structure, and cost of debt for DEU?

A. As discussed throughout my testimony, it is important to consider both quantitative and qualitative information arriving at an appropriate ROE determination. Based on my review of the results from three commonly used analytical approaches, I conclude an ROE in the range of 9.60 percent to 10.75 percent represents the range of equity investors' required ROE for investment in a natural gas utility like DEU. Within that range, I conclude that an ROE of 10.30 percent is reasonable and appropriate in this proceeding. That conclusion considers DEU's capital expenditure requirements, the regulatory environment in which it operates, the current volatile capital market environment, and the increase in financial leverage associated with the Company's requested capital structure.

As to the capital structure and cost of debt, a capital structure including 53.21 percent common equity and 46.79 percent long-term debt is consistent with the capital structures in place at proxy companies. The requested cost of debt is within the range of benchmarks of similarly rated utility debt. Therefore, I conclude the capital structure and cost of debt are reasonable and should be approved.

Q. Does this conclude your Direct Testimony?

A. Yes, it does.

Commonwealth of Massachusetts)

) ss.

County of Worcester)

I, Jennifer E. Nelson, being first duly sworn on oath, state that the answers in the foregoing written testimony are true and correct to the best of my knowledge, information, and belief. The exhibits attached to the testimony were prepared by me or under my direction and supervision, and they are true and correct to the best of my knowledge, information, and belief. Any exhibits not prepared by me or under my direction and supervision are true and correct copies of the documents they purport to be.

Jennifer E. Nelson

SUBSCRIBED AND SWORN TO this 2nd day of May, 2022.

Notary Public

ANDREW S. NELSON
Notary Public
Commonwealth of Massachusetts
My Commission Expires
April 21, 2028