Exhibit No.: _____
Issue: Return on Equity
Witness: John J. Reed
Type of Exhibit: Direct Testimony
Sponsoring Party: The Empire District Gas Company
Case No.: GR-2021-0320
Date Testimony Prepared: August 2021

Before the Public Service Commission
of the State of Missouri

Direct Testimony

of

John J. Reed

on behalf of

The Empire District Gas Company

August 2021

TABLE OF CONTENTS
FOR THE DIRECT TESTIMONY OF JOHN J. REED
THE EMPIRE DISTRICT GAS COMPANY
BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION
CASE NO. GR-2021-0320

SUBJECT **PAGE**

DIRECT TESTIMONY OF JOHN J. REED
THE EMPIRE DISTRICT GAS COMPANY
BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION
CASE NO. GR-2021-0320

I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name and business address.

A. My name is John J. Reed. I am Chairman and Chief Executive Officer ("CEO") of Concentric Energy Advisors, Inc. ("Concentric") and CE Capital Advisors, Inc. My business address is 293 Boston Post Road West, Suite 500, Marlborough, Massachusetts 01752.

Q. On whose behalf are you submitting this Direct Testimony?

A. I am submitting this Direct Testimony before the Missouri Public Service Commission ("Commission") on behalf of The Empire District Gas Company ("EDG" or the "Company"), an indirect, wholly-owned subsidiary of Algonquin Power & Utilities Corp. ("APUC").

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

A. I have more than 40 years of experience in the energy industry and have worked as an executive in, and consultant and economist to, the energy industry. Over the past 32 years, I have directed the energy consulting services of Concentric, Navigant Consulting, and Reed Consulting Group. I have served as Vice Chairman and Co-CEO of the nation's largest publicly-traded consulting firm and as Chief Economist for the nation's largest gas utility. I have provided regulatory policy and regulatory economics support to more than 100 energy and utility clients and have provided expert testimony on regulatory, economic, and financial matters on more than 200 occasions before the Federal Energy Regulatory

Commission ("FERC"), state utility regulatory agencies, Canadian regulatory agencies, various state and federal courts, and before arbitration panels in the United States and Canada. My background and list of prior testimony is presented in more detail in **Schedule JJR-1**.

Q. Please describe Concentric.

A. Concentric provides financial and economic advisory services to many and various energy and utility clients across North America. Our regulatory, economic, and market analysis services include utility ratemaking and regulatory advisory services; energy market assessments; market entry and exit analysis; corporate and business unit strategy development; demand forecasting; resource planning; and energy contract negotiations. Our financial advisory activities include buy- and sell-side merger, acquisition, and divestiture assignments; due diligence and valuation assignments; project and corporate finance services; and transaction support services. In addition, we provide litigation support services on a wide range of financial and economic issues on behalf of clients throughout North America.

Q. Please describe CE Capital Advisors, Inc.

A. CE Capital Advisors, Inc. is a fully-licensed FINRA-member securities and financial advisory firm providing services to corporate mergers and acquisitions, investment banking, the valuation of securities, and capital market advisory services to the energy industry.

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 a recommendation regarding EDG's return on equity ("ROE" or "cost of equity") for its gas utility operations

and to assess the reasonableness of its proposed capital structure to be used for ratemaking purposes, as discussed in the Direct Testimony of Company witness Todd Mooney. My analyses and recommendations are supported by the data presented in **Schedules JJR-2** through **JJR-11**, which were prepared by me or under my supervision.

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

A. In developing my ROE recommendation, I applied the Constant Growth and Multi-Stage forms of the Discounted Cash Flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), the Bond Yield Plus Risk Premium ("Risk Premium") approach, and an Expected Earnings analysis. In addition to these analyses, my recommendation also considers the following business and financial risks: (1) the small size of EDG's utility operations in Missouri relative to the proxy group companies; and (2) the regulatory risks for the Company's gas utility business relative to the proxy group companies. Although I did not make any specific adjustments to my ROE estimates for business and financial risk, I considered these factors in aggregate when determining where EDG's ROE should fall within the range of analytical results. Finally, I compared the Company's proposed consolidated capital structure, which is composed of 52.44 percent common equity and 47.56 percent long-term debt, with the capital structures of the utility operating company subsidiaries of the proxy group companies.

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

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

cost of equity. Section VI explains my selection of a proxy group of gas utilities with business and financial risks similar to those of EDG. Section VII describes my analyses and the analytical basis for the recommendation of the appropriate ROE for EDG. Section VIII provides a discussion of specific business and financial risks that have a direct bearing on the ROE to be authorized for the Company in this case. Section IX discusses EDG's consolidated capital structure as compared with the capital structures of the utility operating company subsidiaries of the proxy group companies. Section X presents my conclusions and recommendations.

III. SUMMARY OF ANALYSES AND CONCLUSIONS

Q. Please summarize the key factors considered in your analyses and upon which you base your recommended ROE.

A. My analyses and recommendations considered the following:

- the United States ("U.S.") Supreme Court's *Hope* and *Bluefield* decisions,[1] which established the standards for determining a fair and reasonable authorized return on equity, including consistency of the authorized return with other businesses having similar risk, adequacy of the return to ensure access to capital and support credit quality, and the necessity for the end result to lead to just and reasonable rates;
- the effect of current and prospective capital market conditions on the ROE estimation models and on investors' return requirements; and
- EDG's business risks relative to the proxy group companies and the implications of those risks in arriving at the appropriate ROE.

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

Q. Please explain how you considered those factors.

A. I have relied on several analytical approaches to estimate EDG's cost of equity based on a proxy group of publicly-traded companies. As shown in Figure 1 (also see **Schedule JJR-2**), those ROE estimation models produce a wide range of results.

Figure 1: Summary of Analytical Results[2]

	Mean Low	Mean	Mean High
DCF Analyses – 90-day Average Stock Price			
Constant Growth DCF	8.50%	10.08%	12.24%
Multi-Stage DCF	9.27%	9.70%	10.36%
Risk Premium Analyses			
	Current Risk-Free Rate (2.30%)	**Q4 2021 – Q4 2022 Projected Risk-Free Rate (2.64%)**	**2023-2027 Projected Risk-Free Rate (3.50%)**
CAPM – Value Line Beta	12.31%	12.36%	12.46%
CAPM – Bloomberg Beta	12.03%	12.08%	12.21%
Bond Yield + Risk Premium	9.50%	9.64%	10.00%
Expected Earnings Analysis			
	Mean	**Median**	
	9.01%	8.02%	

My conclusion as to where, within that range of results, EDG's cost of equity falls is based on the Company's business and financial risk relative to the proxy group. Although the companies in my proxy group are generally comparable to EDG, the Company faces higher risk than the proxy group companies in several important ways (i.e., due to its relatively smaller size and regulatory risk). In order for EDG to compete for capital on

[2] The table presents the DCF results based on 90-day average stock prices. **Schedules JJR-4** and **JJR-5** also present results based on 30-day and 180-day average stock prices, which are similar to the 90-day results.

reasonable terms, those additional risk factors should be reflected in the Company's authorized ROE.

Q. Please summarize the ROE estimation models that you considered to establish the range of ROEs for Empire.

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

Although I have concerns about the results produced by the DCF model under current market conditions, my ROE recommendation considers the range of results produced by the DCF models as well as the other estimation models discussed above. I also consider company-specific risk factors and current and prospective capital market conditions.

Q. In addition to the traditional models used to estimate the cost of equity, have you also considered other relevant benchmarks?

A. Yes. In addition to the results of the traditional ROE estimation models, I have also considered the average allowed ROE of 9.58 percent for natural gas distribution utilities from June 2020 through May 2021 as an important benchmark representing investors' return expectations for comparable risk companies. The Commission frequently

establishes the range of reasonableness for regulated utilities by reference to the average authorized ROE over the previous 12 months plus/minus 100 basis points.[3]

Q. What is your conclusion regarding the appropriate authorized ROE for EDG in this proceeding?

A. A reasonable range of ROE estimates for EDG is from 9.50 percent to 10.40 percent. Within that range, I believe that an ROE of 10.00 percent is appropriate. The required ROE should be a forward-looking estimate; therefore, the analyses supporting my recommendation rely on forward-looking inputs and assumptions (e.g., projected growth rates in the DCF model, forecasted risk-free rate and Market Risk Premium in the CAPM analysis, projected ROEs in the Expected Earnings analysis, etc.) and take into consideration capital market conditions, including the higher than normal volatility that has characterized equity markets since February 2020, the steepening yield curve and the risk that inflation levels exceed current Federal Reserve targets, and the effect of the low interest rate environment on utility stock valuations and dividend yields.

IV. REGULATORY GUIDELINES

Q. Please describe the principles that guide the establishment of the cost of capital for a regulated utility.

A. The U.S. Supreme Court's precedent-setting *Hope* and *Bluefield* cases established the standards for determining the fairness or reasonableness of a utility's authorized ROE. Among the standards established by the Court in those cases are: (1) consistency with other businesses having similar or comparable risks; (2) adequacy of the return to support credit

[3] *See*, for example, Missouri Public Service Commission, File No. ER-2019-0374, Amended Report and Order, issued July 23, 2020, at para. 47.

quality and access to capital; and (3) the principle that the specific means of arriving at a fair return are not important, only that the end result leads to just and reasonable rates.[4]

Q. Has the Commission provided similar guidance in establishing the appropriate return on common equity?

A. Yes. The Commission follows the precedents of the *Hope* and *Bluefield* cases and acknowledges that utility investors are entitled to a fair and reasonable return. In a 2015 Order, the Commission stated:

> The standard for rates is "just and reasonable," a standard founded on constitutional provisions, as the United States Supreme Court has explained. But the Commission must also consider the customers. Balancing the interests of investor and consumer is not reducible to a single formula, and making pragmatic adjustments is part of the Commission's duty. Thus, the law requires a just and reasonable end, but does not specify a means. The Commission is charged with approving rate schedules that are as "just and reasonable" to consumers as they are to the utility.[5]

Based on those standards, the authorized ROE should provide EDG with the opportunity to earn a fair and reasonable return and should enable efficient access to external capital under a variety of market conditions.

In addition, the Missouri Court of Appeals provided the following guidance:

> The cases also recognize that the fixing of rates is a matter largely of prophecy and because of this commissions, in carrying out their functions, necessarily deal in what are called 'zones of reasonableness', the result of which is that they have some latitude in exercising this most difficult function.[6]

---

[4] Bluefield, 262 U.S. at 692-93; Hope, 320 U.S. at 603.
[5] In the Matter of Kansas City Power & Light Company's Request for Authority to Implement a General Rate Increase for Electric Service, File No. ER-2014-0370, Report and Order (Sep. 15, 2015), at 11.
[6] The consolidated cases, In the Matters of the Laclede Gas Company's Request to Increase Its Revenues for Gas Service, File No. GR-2017-0215, and In the Matter of the Laclede Gas Company d/b/a Missouri Gas Energy's Request to Increase Its Revenues for Gas Service, File No. GR-2017-0216, Amended Report and Order (March 7, 2018), at 34, citing State ex rel. Laclede Gas Co. v. Public Service Commission, 535 S.W.2d 561, 570 -571 (Mo. App. 1976).

Q. Why is it important for a utility to be allowed the opportunity to earn a return that is adequate to attract equity capital at reasonable terms?

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

Q. What are your conclusions regarding regulatory guidelines?

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

The financial community carefully monitors the current and expected financial condition of utility companies and the regulatory framework in which they operate. In that respect, the regulatory framework is one of the most important factors in both debt and equity investors' assessments of risk. The Commission's order in this proceeding, therefore, should establish rates that provide EDG with the opportunity to earn an ROE that is: (1) adequate to attract capital at reasonable terms; (2) sufficient to ensure its financial integrity; and (3) commensurate with returns on investments in enterprises with similar risk. To the extent the Commission grants EDG is authorized the opportunity to

earn its market-based cost of capital, the proper balance is achieved between customers' and shareholders' interests.

V. ECONOMIC AND CAPITAL MARKET CONDITIONS

Q. Why is it important to analyze capital market conditions?

A. The ROE estimation models rely on market data that are either specific to the proxy group, in the case of the DCF model, or the expectations of market risk, in the case of the CAPM. The results of the ROE estimation models can be affected by prevailing market conditions at the time the analysis is performed. While the ROE that is established in a rate proceeding is intended to be forward-looking, current and projected market data, specifically stock prices, dividends, growth rates and interest rates are used in the ROE estimation models to estimate the required return for the subject company. It is important to consider whether the assumptions relied on in the current market or the projected data are sustainable over the period that the recommended ROE would be in effect. If investors do not expect current market conditions to be sustained in the future, it is possible that the ROE estimation models will not provide an accurate estimate of investors' required return during that rate period.

Q. What are the key factors affecting the cost of equity for regulated utilities in the current and prospective capital markets?

A. The cost of equity for regulated utility companies is being affected by several key factors in the current and prospective capital markets, including: (1) ongoing uncertainty and volatility in equity markets; (2) the steepening yield curve and potential inflation risk; (3) high valuations and low dividend yields of utility stocks relative to historical levels; and (4) the fact that utilities have not been a safe-haven for investors during this economic

downturn. In this section, I discuss each of these factors and how they affect the models used to estimate the cost of equity for regulated utilities.

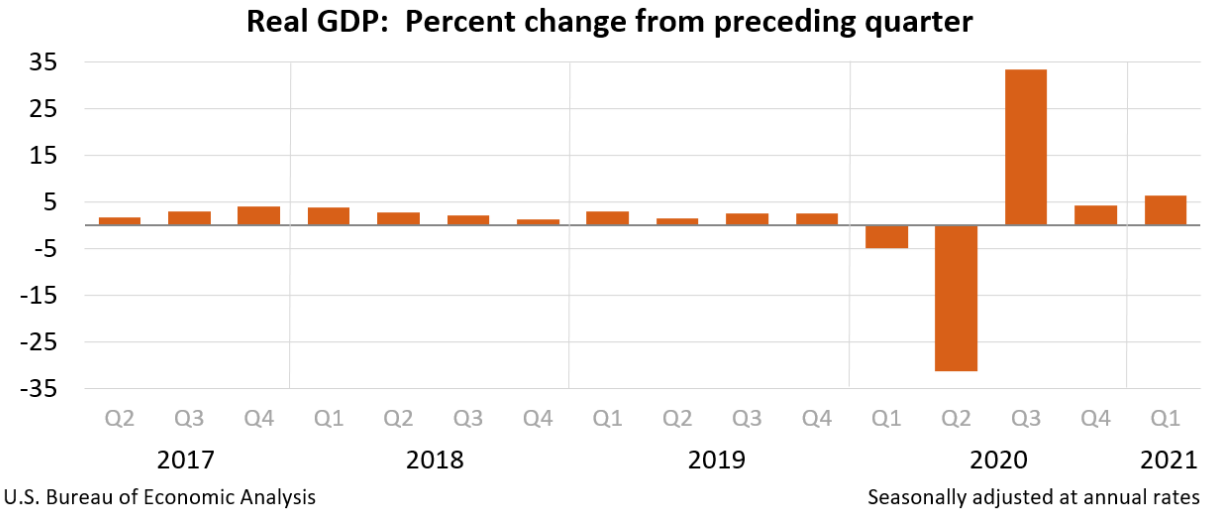
A. Ongoing Uncertainty and Volatility in Capital Markets

Q. Please discuss economic and capital market conditions.

A. Capital market conditions were unsettled in 2020 due to the economic effects of the COVID-19 pandemic. Measures taken to contain COVID-19 and the associated impacts on business and consumer behavior forced the U.S. economy into a sharp recession. As shown in Figure 2, according to the Bureau of Economic Analysis, real gross domestic product ("GDP") decreased at an annual rate of 5.0 percent in the first quarter of 2020 and at a startling annual rate of 31.4 percent in the second quarter before rebounding in the third quarter at an annual rate of 33.4 percent and in the fourth quarter at an annual rate of 4.3 percent. The "third" estimate for the first quarter of 2021 shows GDP expanded at an annual rate of 6.4 percent.[7]

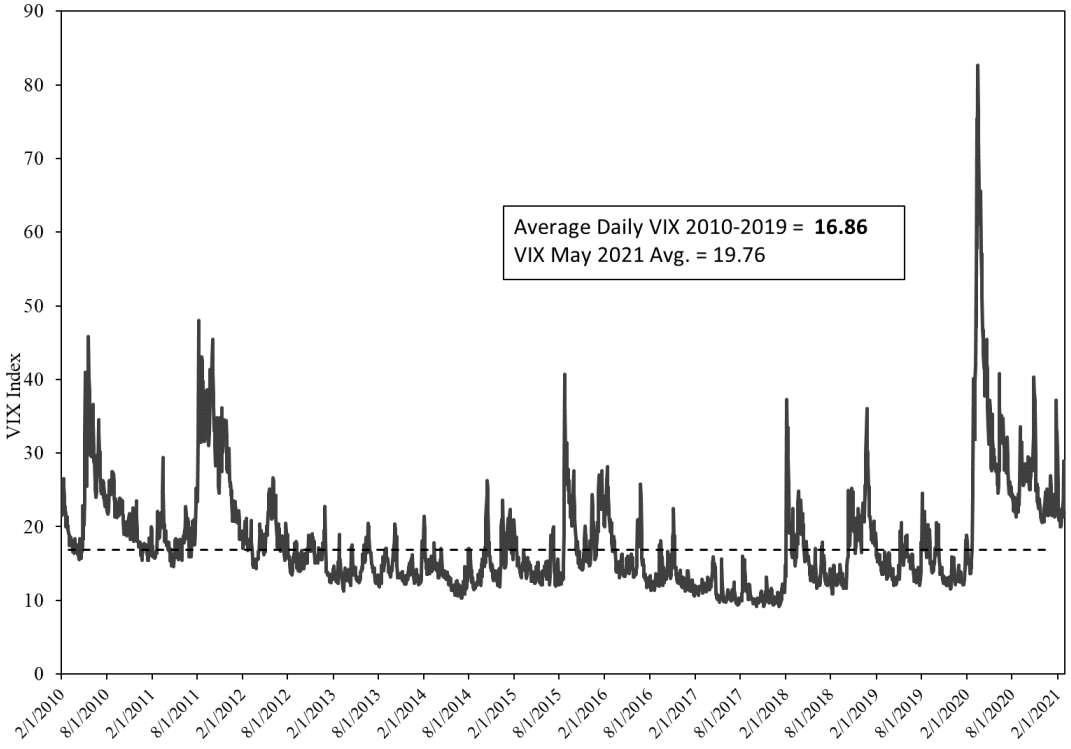
[7] Gross Domestic Product (Third Estimate), GDP by Industry, and Corporate Profits (Revised), 1st Quarter 2021 | U.S. Bureau of Economic Analysis (BEA)

Figure 2: U.S. GDP Growth – 2016-2021



As a result of concerns about weak economic growth, capital market volatility increased to levels not seen since the Great Recession of 2008/2009 (during which time EDG filed its last rate case). The Chicago Board Options Exchange ("CBOE") Volatility Index ("VIX") measures investors' expectations of volatility in the S&P 500 over the next 30 days. As shown in Figure 3, the VIX reached 82.69 on March 16, 2020 in response to the pandemic. The VIX last traded above 80 in November 2008 during the financial crisis and Great Recession of 2008/09. This indicator shows that COVID-19 caused an increase in the level of uncertainty and volatility in the market even greater than during the Great Recession of 2008/2009. As a point of comparison, in May 2021, the VIX averaged 19.76, or 17.2 percent higher than the long-term average of 16.86 from 2010-2019. This indicates that equity markets remain unsettled, with volatility levels well above the historical mean.

Figure 3: CBOE VIX – January 2010 – May 2021[8]



Longer term, there are structural risks to both economic growth and equity markets. Among these is the level of government debt amassed by the U.S. and other Organization for Economic Cooperation and Development ("OECD") countries. The most recent comparison data for the 37 OECD countries at the end of 2019 show U.S. government debt stood at 135 percent of GDP, exceeded only by Portugal, Italy and Greece in this measure.[9] Federal stimulus spending in 2020 and 2021 will only expand this balance. Recent data from the St. Louis Federal Reserve Bank indicates that government debt grew by over 21 percent between the 4th quarter of 2019 and the 1st quarter of 2021.[10] The Federal Reserve

[8] Source: Bloomberg Professional.
[9] https://data.oecd.org/gga/general-government-debt.htm
[10] https://fred.stlouisfed.org/series/GFDEBTN

recently confirmed its intention to increase its holdings of Treasury securities by at least $80 billion per month and agency mortgage-backed securities by another $40 billion per month "until substantial further progress has been made toward the Committee's maximum employment and price stability goals."[11] While supportive in the near-term, increasing debt creates concerns among investors for increased inflation and tax rates in the future that could serve as a drag on the economy.

Q. Has increased volatility in equity markets been reflected in the market data used to estimate the cost of equity?

A. Yes. Utility company stocks have traded more in-line with the broader market since February 2020 when the COVID-19 pandemic became a concern in financial markets. This higher correlation is reflected in the Beta coefficients, which are the measure of risk in the CAPM and which have increased substantially between January 2020 and May 2021 for the companies in my proxy group. Figure 4 presents the average Value Line and Bloomberg Beta coefficients for my proxy group companies over this period. These higher Beta coefficients, which have contributed to a significant increase in the CAPM results for regulated utilities, indicate that investors have not viewed the Utilities sector as a safe-haven during this economic downturn.

[11] https://www.federalreserve.gov/monetarypolicy/files/monetary20210428a1.pdf

Figure 4: Beta Coefficients for Proxy Group

	January 2020	May 2021
Value Line Beta	0.650	0.879
Bloomberg Beta	0.695	0.854

Q. What steps did the Federal Reserve and the U.S. Congress take to stabilize financial markets and support the economy in response to COVID-19?

A. In response to the economic effects of COVID-19, the Federal Reserve decreased the federal funds rate twice in March 2020, resulting in a target range of 0.00 percent to 0.25 percent, and also announced plans to increase its holdings of both Treasury and mortgage-backed securities. In addition, on March 23, 2020, the Federal Reserve began expansive programs to support credit to large employers, including the Primary Market Corporate Credit Facility ("PMCCF") to provide liquidity for new issuances of corporate bonds, and the Secondary Market Corporate Credit Facility ("SMCCF") to provide liquidity for outstanding corporate debt issuances. Further, the Federal Reserve supported the flow of credit to consumers and businesses through the Term Asset-Backed Securities Loan Facility ("TALF").[12]

In addition to the Federal Reserve's response, the U.S. Congress also passed fiscal stimulus programs. On March 27, 2020, the Coronavirus Aid, Relief, and Economic Security Act was signed into law, providing a large fiscal stimulus package aimed at

[12] Federal Reserve Board Press Release, "Federal Reserve announces extensive new measures to support the economy," March 23, 2020.

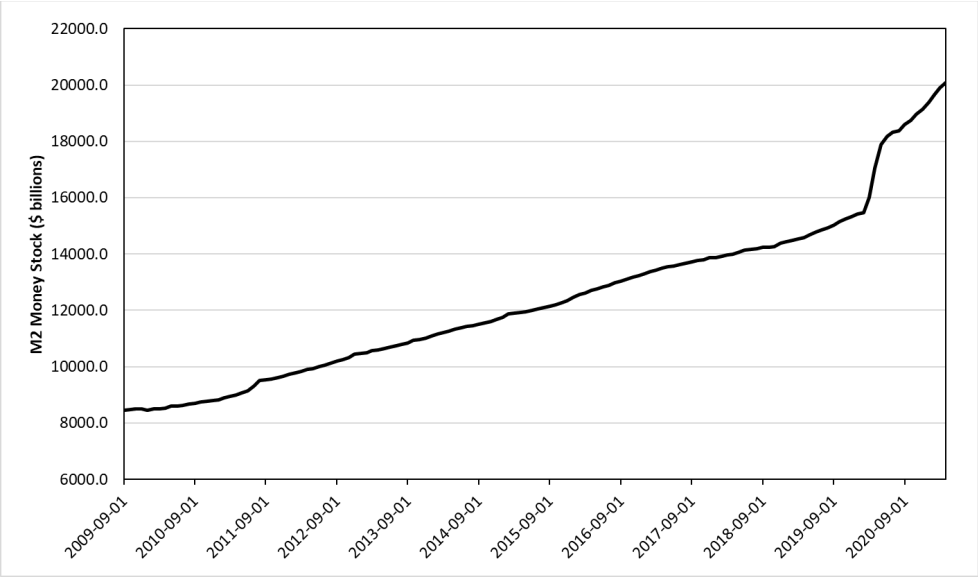
mitigating the economic effects of the coronavirus. Further, in March 2021, the U.S. Congress approved additional fiscal stimulus of $1.9 trillion in response to the ongoing economic effects of COVID-19. While these expansive monetary and fiscal programs have provided for greater price stability, as shown in Figure 3, the VIX remains well above long-term historical levels. The extraordinary measures taken by the Federal Reserve and U.S. Congress to support the economy and stabilize financial markets have thus far been successful, but in doing so have driven investors from very low yielding bonds into equities, creating upward pressure on valuations and downward pressure on yields for dividend paying companies such as utilities. Moreover, additional fiscal stimulus is likely to increase inflationary pressure, and the bond market may be at risk of a sharp upward spike in interest rates if inflation is higher than currently anticipated by investors.

Q. How have the Federal Reserve's programs affected the economy and financial markets?

A. These programs allow the Federal Reserve to purchase government bonds and corporate bonds from banks. The banks then receive cash from the Federal Reserve, which results in an expansion of the money supply. This increase in the money supply keeps short-term interest rates low and increases the ability of banks to lend to consumers and businesses. Investors in longer term bonds also respond, which affects the entire duration of the bond yield curve, from very near-term rates all the way out to 30-year yields. Continued access to capital is particularly important in current market conditions because it allows companies to offset the negative effects of COVID-19 on business operations. As shown in Figure 5, the programs enacted by the Federal Reserve have resulted in an unprecedented

expansion of the money supply as measured by M2[13] in recent months. That expansion has been much greater than the increase following the Federal Reserve's response to the Great Recession of 2008/2009. This again demonstrates the level of intervention that has been necessary to provide some stability to capital markets.

Figure 5: M2 Money Stock – September 2009 – May 2021[14]



Q. How has the current economic environment affected the credit ratings for utilities?

A. According to a recent report by S&P Global, credit ratings for North American utilities "weakened sharply in 2020." According to S&P, "[t]he percentage of North American regulated utilities with a negative outlook or on CreditWatch with negative implications surged from 18% in 2019 to 36% in 2020." The report also indicated "that the number of downgrades exceeded the number of upgrades by a wide margin in 2020 for the first time

[13] M2 is defined by the Federal Reserve as follows: M2 includes a broader set of financial assets held principally by households. M2 consists of M1 plus: (1) savings deposits (which include money market deposit accounts, or MMDAs); (2) small-denomination time deposits (time deposits in amounts of less than $100,000); and (3) balances in retail money market mutual funds (MMMFs).

[14] Board of Governors of the Federal Reserve System (US), M2 Money Stock [M2], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/M2SL, June 4, 2021.

since 2010." On the causes of the weakening credit profiles, S&P stated: "The main causes of weakening credit quality reflected environment, social, and governance (ESG) risks, regulatory issues, and companies' practice of strategically managing financial measures close to their downgrade threshold with little or no cushion", and the novel coronavirus pandemic "was not the culprit for weaker credit quality" the report states.[15] While the views of rating agencies represent an important consideration, they are not the only factor that equity investors consider. The important distinction is that credit rating agencies are primarily focused on the ability of a utility to pay its debts, while equity analysts and institutional investors are more concerned with profitability and value creation.

Q. What are your conclusions regarding the effects of the current market environment on the cost of equity for EDG?

A. The risks to equity investors are currently elevated, even in comparison to the conditions that existed during the 2009 timeframe when EDG last filed a rate case. Given the uncertainty and volatility that have characterized capital markets since February 2020, and the pressures cited by S&P on utility credit quality, it is reasonable that equity investors would require a higher ROE to compensate them for the additional risk associated with owning common stock.

[15] https://www.spglobal.com/platts/en/market-insights/latest-news/natural-gas/012121-utility-sectors-credit-ratings-weakened-sharply-in-2020-sampp-global-ratings

B. The Steepening Yield Curve and Inflation Risk

Q. The Federal Reserve generally has pursued an accommodative monetary policy since the Great Recession of 2008/2009. Has the Federal Reserve recently signaled a continuation of its accommodative monetary policy?

A. Yes. In a press release on April 28, 2021, Federal Reserve Chairman Jerome Powell stated that, "[o]ur guidance for interest rates and asset purchases ties the path of the federal funds rate and the size of the balance sheet to our employment and inflation goals. This outcome-based guidance will ensure that the stance of monetary policy remains highly accommodative as the recovery progresses."[16] The Federal Reserve also indicated that it would keep the federal funds rate near zero and continue to maintain its sizeable asset purchases of both Treasuries and mortgage-backed securities until substantial further progress was made toward its dual goals of maximum employment and price stability, noting that "[t]he economy is a long way from our goals, and it is likely to take some time for substantial further progress to be achieved."[17]

Q. What effect, if any, will the Federal Reserve's accommodative monetary policy have on long-term interest rates over the near term?

A. Although the Federal Reserve's current accommodative monetary policy will keep short-term interest rates low, long-term interest rates can increase even though monetary policy remains accommodative. That is exactly what has happened since August 2020, when yields on government and corporate bonds started rising.

---

[16] FOMC Press Conference, April 28, 2021; https://www.federalreserve.gov/monetarypolicy/fomc.htm.
[17] *Ibid.*

Q. In general, what conclusions can be drawn from the relationship between short-term and long-term interest rates?

A. The yield curve—which illustrates the difference between long-term and short-term interest rates—is a leading economic indicator of phases of the business cycle. A flat (or inverted) yield curve means that long-term interest rates are similar to (or lower than) short-term interest rates. Such a yield curve shape usually precedes a recession. An upward-sloping yield curve means that long-term interest rates are higher than short-term interest rates. A steepening yield curve indicates that the economy is entering a period of economic expansion following a recession.[18] The change in yield curve shape over time can be illustrated as a single data series: the interest rate term spread. The term spread is the difference between long-term and short-term rates.

Q. Have you reviewed the yield curve to determine investors' expectations regarding the economy over the near-term?

A. Yes. I calculated the difference between the yield on the 10-year Treasury bond and the 2-year Treasury bond from January 2016 to May 2021. I selected the 10-year Treasury bond yield to represent long-term interest rates and the 2-year Treasury bond to represent short-term interest rates. As shown in Figure 6, the yield curve has been steepening since June 2020 and increased to approximately 158 basis points on March 31, 2021, which is the highest level in more than five years. While the yield curve has flattened slightly since March 31, 2021, it remains elevated relative to historical levels. The steepening of the yield curve indicates that investors expect economic growth and inflation to increase in the

[18] "What is a yield curve", Fidelity.com. https://www.fidelity.com/learning-center/investment-products/fixed-income-bonds/bond-yield-curve.

near-term. As a result, investors have been rotating out of long-term government bonds to avoid being locked into low interest rates for the long-term. The steeper yield curve signals that higher yields are required by investors in long-term government bonds.

Figure 6: 10-year Treasury Bond Yield Minus 2-year Treasury Bond Yield – January 2016 – May 2021[19]

Q. Have investment firms commented on the steepening of the yield curve?

A. Yes. Several investment firms have noted that the yield curve is expected to continue to steepen, which is an indicator that the economy is entering the early expansion phase of the business cycle. For example, Morgan Stanley indicated that they expect a "V-shaped" economic recovery and therefore advised investors to underweight government bonds and overweight equities.[20] Similarly, an article in Bloomberg News discussed Goldman Sachs' views:

[19] Federal Reserve Bank of St. Louis, 10-Year Treasury Constant Maturity Minus 2-Year Treasury Constant Maturity [T10Y2Y], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/T10Y2Y, March 31, 2021.

[20] Ossinger, Joanna. "Morgan Stanley Says Go Risk-On and 'Trust the Recovery' in 2021." *Bloomberg.com*, 15 Nov. 2020, www.bloomberg.com/news/articles/2020-11-16/morgan-stanley-says-go-risk-on-and-trust-the-recovery-in-2021.

> As the economic recovery consolidates next year, we expect to see more differentiation across the curve, with policymakers committing to keeping front-end rates low, but higher expectations for real growth and inflation driving long-end rates higher," Goldman strategists including Zach Pandl wrote in the report, released Tuesday.
>
> This should be especially true in the U.S. due to the Federal Reserve's new average inflation targeting framework, which commits the central bank to holding off on rate hikes until inflation has reached its target and is on track to overshoot it.[21]

More recently, a different article in Bloomberg News summarized the following comments by BTG Pactual Asset Management regarding increasing interest rates:

> We're talking about a fair amount of stimulus -- both fiscal and monetary -- going forward," BTG Pactual Asset Management's John Fath said, referring to the $1.9 trillion pandemic-relief bill and prospects for more, along with the Federal Reserve's pledge to stay accommodative. "We potentially could grow a lot faster and inflation could come into the horizon a lot quicker," which begets higher rates.[22]

Citigroup also projected that the yield on the 10-year Treasury bond is expected to increase in 2021, which prompted Citigroup's recommendation to overweight equities and favor cyclical sectors over more defensive sectors such as utilities.[23]

Q. Have equity analysts specifically commented on the performance of the utility sector over the near-term?

A. Yes. In a recent article, Barron's conducted its Big Money poll of 152 professional investors regarding the outlook for the next twelve months. The majority of respondents

---

[21] McCormick, Liz. "Goldman Goes All-In for Steeper U.S. Yield Curves as 2021 Theme." *Bloomberg.com*, 10 Nov. 2020, www.bloomberg.com/news/articles/2020-11-10/goldman-goes-all-in-for-steeper-u-s-yield-curves-as-2021-theme.

[22] Spratt, Stephen, et al. "Treasury Yields Leap Past Key Level to 1.64%, Highest in a Year." Bloomberg.com, Bloomberg, 12 Mar. 2021, www.bloomberg.com/news/articles/2021-03-12/treasury-yields-surge-to-test-key-level-in-sudden-selling-bout.

[23] Keown, Callum. "10-Year Treasury Yields Will Rise Into 2021, Citi Says. This 'Aggressive' Equity Strategy Can Outperform." *Barrons.com*, 16 Nov. 2020, www.barrons.com/articles/10-year-treasury-yields-will-rise-into-2021-citi-says-this-aggressive-equity-strategy-can-outperform-51605543920.

projected the yield on the 10-year Treasury Bond to be between 2.00 percent and 2.50 percent at the end of the next twelve months, which is an increase from the current 30-day average 10-year Treasury Bond yield as of May 31, 2021 of 1.62 percent.[24] Furthermore, the utility sector was selected as the sector that will perform the worst over the next twelve months.[25] Therefore, the professional investors surveyed by Barron's are projecting that utilities will underperform the broader market in 2021.

Similarly, Fidelity recently recommended underweighting the utility sector and ranked the utility sector last in its relative strength rankings, which measure each sectors' performance relative to the broader market.[26]

Q. How has the utility sector performed historically during periods where the yield curve is steepening, and the economy is in the early stage of the business cycle?

A. Fidelity Investments recently noted that the utility sector has historically been one of the worst performing sectors during the early phase of the business cycle, with a geometric average return of -10.5 percent.[27] This conclusion is further supported by studies conducted by both Goldman Sachs and Deutsche Bank that examined the sensitivity of share prices in different industries to changes in interest rates over the past five years. Both Goldman Sachs and Deutsche Bank found that utilities had one of the strongest negative relationships with bond yields (i.e., increases in bond yields resulted in the decline of utility

[24] Jasinski, Nicholas. This Bull Market Is Far From Over, Pros Say. Where They're Investing Now. Barron's, 26 Apr. 2021, www.barrons.com/articles/stocks-have-more-room-to-rise-says-barrons-big-money-poll-51619222301?mod=past_editions.
[25] *Ibid*.
[26] Fidelity, "Q2 2021 sector scorecard: The financials and energy sectors may be areas to watch as inflation returns," May 5, 2021.
[27] Fidelity Investments, "The Business Cycle Approach to Equity Sector Investing," 2020.

share prices).[28] This is important because if the utility sector underperforms over the near-term, then the DCF model, which relies on historical averages of share prices, is likely to understate the cost of equity for EDG over the period that the rates established in this proceeding will be in effect.

Q. What is the interest rate outlook?

A. While yields on government and corporate bonds have already risen by approximately 100 basis points from near historic lows in July and August 2020, investors continue to expect upward pressure on interest rates over the next several years. Yields on 30-year Treasury bonds are forecast to increase from the current 30-day average of 2.30 percent for the period ending May 31, 2021, to 3.50 percent over the period from 2023-2027, according to Blue Chip Financial Forecasts.[29]

Q. Is inflation risk becoming more of a concern for investors?

A. Yes, I believe it is. Given the economic stimulus that has been provided to support the economy in response to the COVID-19 pandemic in the form of both monetary policy from the Federal Reserve and fiscal policy from the U.S. Congress, there is an increased likelihood of upward pressure on inflation over the next several years. Illustrating this risk, S&P recently noted that the recent pace of economic growth "raises renewed questions about the risk of higher inflation," indicating that "reports have sounded alarms with increases noted in everything from labor costs, amid a shortage of qualified workers, to

[28] Lee, Justina. "Wall Street Is Rethinking the Treasury Threat to Big Tech Stocks." Bloomberg.com, 11 Mar. 2021, www.bloomberg.com/news/articles/2021-03-11/wall-street-is-rethinking-the-treasury-threat-to-big-tech-stocks.
[29] Blue Chip Financial Forecasts, Issue 40, Vol. 6, June 1, 2021, at 14.

higher costs for commodities and materials including metals, corn, and gasoline."[30] A recent article in the Economist noted the following:

> Core consumer prices in America rose by 0.9% month-on-month in April, the highest jump since 1982, practically guaranteeing that the annual rate will exceed 3% in the near future. Some economists sense the first stirrings of an outbreak of sustained high inflation, like that which afflicted many countries in the 1970s.[31]

S&P Global Market Intelligence observed that inflation "is running hot as a variety of factors — pent-up demand and supply shortages, among others — have pressured prices for many goods, including used cars and trucks, apparel and electronics products."[32] S&P Global Market Intelligence goes on to note that, while these pressures will wane as the economy reopens and consumer spending rotates from goods to services, inflation is likely to remain elevated, indicating:

> The rotation into services means inflation will likely drop somewhat in the months to come, economists say. But the same pressures driving prices up will not disappear entirely, such that price rises through 2021 are likely to stay above the Fed's 2% target level, a key metric for determining when the central bank will wrap up its pandemic-era economic support.
>
> "We're approaching peak inflation, yes, but the bigger question is not whether core [CPI] inflation will stay at 4.5% but whether it will drop back to 2% or below," Paul Ashworth, chief North America economist at Capital Economics, said in an email. "With wage growth accelerating, cyclically-sensitive price inflation on the rise — housing and food away from home — and inflation expectations rising, I don't believe this is largely transitory."[33]

---

[30] S&P Global Ratings, "Will Rising Inflation Threaten North American Investor-Owned Regulated Utilities' Credit Quality?" July 20, 2021.
[31] The Economist, "When does transitory inflation become sustained? Some lessons from the 1970s," May 29, 2021.
[32] S&P Global Market Intelligence, "US Likely Hit Peak Inflation as Consumers Switch from Buying Goods to Services," July 21, 2021.
[33] S&P Global Market Intelligence, "US Likely Hit Peak Inflation as Consumers Switch from Buying Goods to Services," July 21, 2021.

S&P specifically identified the risk that even a transitory increase in inflation poses to regulated investor-owned utilities, stating:

> The most recent data released during mid-June indicated that the CPI rose 5.4% in June from the prior year, which could make it more difficult for a utility to offset these costs on a timely basis through traditional rate increases. While our economists expect the jump in inflation to be largely transitory, they recently noted that the risk that U.S. inflation will stay higher and last longer than our earlier forecasts could force the fed to move on interest rates earlier than planned, potentially fueling market volatility and widening spreads on debt. Although inflation is not a new challenge for utilities, it had taken a backseat to other more pressing problems the sector faces, such as dealing with the energy transition, record debt burdens, and the potential for more rigorous environmental regulation. Now, recent headlines remind us that utilities tend to face pressure to raise rates during periods of cost inflation and that regulatory lag can constrain their financial performance.[34]

Q. What is your conclusion with regard to current and prospective interest rates?

A. Interest rates on government and corporate bonds have risen substantially from near all-time low levels in July and August 2020. The steepening yield curve indicates that investors believe the economy is in the early stages of an economic recovery and suggests that yields on longer-term Treasury bonds will continue to increase as the recovery progresses and as the market recognizes the potential risk of higher inflation. While government bond yields are low relative to historical levels, it is important to view current Treasury bond yields in the context of conditions in the economy and capital markets. The low interest rate environment over the past year has been directly attributable to steps the Federal Reserve has taken to contain the economic effects of COVID-19, including reducing the federal funds rates and taking additional measures to support the U.S.

[34] S&P Global Ratings, "Will Rising Inflation Threaten North American Investor-Owned Regulated Utilities' Credit Quality?" July 20, 2021.

economy and provide liquidity and stability in financial markets. These are short-term events that have little to do with the longer-term trend in bond yields or equity costs. Further, Treasury bond yields are only one of many factors that equity investors consider in determining their return requirements.

C. Utilities Have Not Been a Safe-Haven for Investors

Q. Utilities traditionally have been a safe haven for investors during periods of market volatility. Has this been true during the recent period of volatility?

A. No, it has not. Gas utilities have not been a safe-haven for investors during the COVID-19 pandemic. Charles Schwab recently rated the Utilities sector as "Underperform," noting:

> The Utilities sector has tended to perform relatively better when concerns about slowing economic growth resurface, and to underperform when those worries fade. That's partly because of the sector's traditional defensive nature and steady revenues—people need water, gas and electric services during all phases of the business cycle. Meanwhile, the low interest rates that typically come with a weak economy provide cheap funding for the large capital expenditures required in this industry.
>
> However, valuations have been driven up in recent years as investors have reached for yield in this new era of low interest rates; this may decrease the sector's traditional defensive characteristics. And while interest rates are expected to remain generally low, they could edge higher as the economy continues to expand. On the flip side, there is the potential for a renewed decline in the economy to push rates even lower, or there could be significant government funding to Utilities as part of clean-energy initiatives that would benefit the sector's profit outlook.[35]

Q. How did the S&P Utilities sector perform in 2020 relative to the S&P 500?

A. The S&P Utilities sector was one of the worst performing market sectors in 2020, declining by 7.49 percent from the mid-February peak as compared to a 12.57 percent increase for

[35] Charles Schwab, Utilities Sector Rating: Underperform, March 18, 2021.

the S&P 500.[36] The only market sectors that underperformed utilities in 2020 were real estate (down 8.30 percent) and energy (down 26.31 percent). As of December 31, 2020, seven of the other eight market sectors were above their mid-February 2020 levels, led by technology (up 28.09 percent), consumer discretionary (up 22.92 percent), and materials (up 22.26 percent).

Q. What contributed to the relative underperformance of the utilities sector?

A. The relative underperformance of the utilities sector was partly attributable to reduced demand as non-essential businesses in many parts of the country were forced to close for a period in March through May 2020 and began to re-open slowly in June and July. While utility demand is typically inelastic, the gas utilities have been, and may continue to be, affected by COVID-19. For example, Value Line recently noted that: "we're not out of the woods yet as far as the coronavirus is concerned. Notably, new variants of the virus have been detected in certain parts of the nation. And, if infection rates return to alarming levels, there might be pressure on customer demand and a rise in bad-debt expense plus other operating costs."[37] Value Line notes that many gas utilities are seeking regulatory relief to offset these effects. While their dividend yields remain attractive to income-oriented investors, there is heightened risk that lower demand and increasing operating expenses (e.g., bad debt) will cause gas utilities, especially those without revenue decoupling mechanisms, to be unable to earn their authorized return for several quarters until demand returns to pre-COVID-19 levels.

[36] Comparison from February 19, 2020 through December 31, 2020.
[37] Value Line, Natural Gas Utility Industry Report, May 28, 2021.

Q. What conclusions do you draw from your analysis of capital market conditions?

A. The important conclusions regarding capital market conditions are:

- The assumptions used in the ROE estimation models have been affected by recent, historically atypical market conditions. Therefore, it is important to consider the results of multiple methodologies to inform the determination of the appropriate cost of equity for EDG in this proceeding.
- While short-term interest rates remain low in order to ensure the economic recovery is sustainable following the COVID-19 pandemic, investors are increasingly concerned that the underlying inflation rate will exceed the Federal Reserve's target. As such, long-term interest rates have increased substantially since August 2020 and the yield curve is steeper than at any time in the last five years. This supports the use of both current and forecast bond yields in the CAPM and Risk Premium models.
- As interest rates increase, high utility valuations are expected to decline as utilities underperform the broader market. For that reason, the results of the DCF model tend to understate the forward-looking cost of equity because the dividend yield is calculated using historical average stock prices which do not fully reflect investors' expectation for higher inflation and higher bond yields. Therefore, it is important to also consider the results of alternative models such as the CAPM, Risk Premium, and Expected Earnings approaches.

VI. PROXY GROUP SELECTION

Q. Why have you used a group of proxy companies to estimate the cost of equity for EDG?

A. In this proceeding, I am estimating the cost of equity for EDG, a rate regulated subsidiary of Liberty Utilities, Co ("LUCo"). Since the ROE is a market-based concept, and given the fact that EDG's operations do not make up the entirety of a publicly-traded entity, it is necessary to establish a group of companies that is both publicly traded and comparable to EDG in certain fundamental business and financial respects to serve as its "proxy" for purposes of estimating the cost of equity.

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

Q. Please provide a brief profile of Empire.

A. EDG is a wholly owned subsidiary of The Empire District Electric Company, which in turn is owned by Liberty Utilities (Central) Co., which is in turn an indirect, wholly-owned subsidiary of APUC. EDG provides natural gas distribution services to approximately 43,000 retail customers in central and northwestern Missouri.[38] EDG's senior unsecured

[38] S&P Global Market Intelligence; Empire District Gas Company 2019 Gas Annual Report to the Missouri Public Service Commission, at 7b-1.

debt is not directly rated by any of the major credit rating agencies. However, Moody's includes EDG's operations in its Baa1 (Outlook: Stable) rating for Empire District Electric Company ("EDE"). Additionally, EDG's indirect parent, Liberty Utilities (Central) Co., has senior unsecured debt that is currently rated BBB (Outlook: Stable) by S&P.[39]

Q. How did you select the companies included in your proxy group?

A. I began with the group of 10 domestic U.S. utilities that Value Line classifies as Gas Utilities, and I simultaneously applied the following screening criteria to select a group of companies that:

- Pay quarterly cash dividends that have not been reduced in the last three years because+ companies that do not pay dividends cannot be analyzed using the DCF model;
- Have investment grade long-term issuer ratings from S&P and/or Moody's;
- Are covered by at least two utility industry analysts;
- Have positive long-term earnings growth forecasts from at least two sources;
- Derive more than 70 percent of total operating income from regulated utility operations;
- Derive more than 60 percent of regulated operating income from gas utility operations; and
- Are not engaged in mergers or other transformative transactions during the analytical period (180 days).

Q. Did you include APUC in your analysis?

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

[39] Source: S&P Global Market Intelligence.

Q. What is the composition of your proxy group?

A. The screening criteria discussed above result in a proxy group consisting of the companies shown in Figure 7:

Figure 7: Proxy Group

Company	Ticker
Atmos Energy Company	ATO
NiSource, Inc.	NI
Northwest Natural Gas Company	NWN
ONE Gas, Inc.	OGS
South Jersey Industries, Inc.	SJI
Southwest Gas Corporation	SWX
Spire, Inc.	SR

Schedule JJR-3 provides the results of my proxy group screening analysis. As shown in that Direct Schedule, each of the companies in my proxy group has an investment grade credit rating, which indicates that the company has similar financial risk characteristics as EDG. In addition, the proxy group companies derive the vast majority of their operating income (i.e., approximately 96 percent on average) from regulated utility operations, making them comparable to EDG on that risk factor.

VII. COST OF EQUITY ESTIMATION

Q. Please briefly discuss the ROE in the context of the regulated rate of return ("ROR").

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

Q. How is the required ROE determined?

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

Q. What methods did you use to estimate EDG's cost of equity?

A. I considered the results of two forms of the DCF model, the CAPM analysis, the Risk Premium methodology, and an Expected Earnings analysis. I believe that a reasonable ROE estimate considers alternative methodologies, observable market data, and the reasonableness of their individual and collective results.

Q. Why is it important to use more than one analytical approach?

A. It is important to use more than one analytical approach because the cost of equity is not directly observable, and, therefore, it must be estimated based on both quantitative and qualitative information. When estimating the cost of equity, analysts and investors are inclined to gather and evaluate as much relevant data as can be reasonably analyzed. A number of models have been developed to estimate the cost of equity. Analysts and academics understand that ROE models are tools to be used in the ROE estimation process, and that strict adherence to any single approach, or the results of any single approach, can lead to flawed or irrelevant conclusions. Consistent with the *Hope* finding, it is the

analytical result, not the methodology, which is controlling in arriving at ROE determinations.

A. Constant Growth DCF Model

Q. Please describe the DCF approach.

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

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

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

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

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

Q. What assumptions are required for the Constant Growth DCF model?

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

Q. What market data did you use to calculate the dividend yield in your Constant Growth DCF model?

A. The dividend yield in my Constant Growth DCF model is based on the proxy companies' current annual dividend and average closing stock prices over the 30-, 90-, and 180-trading days ended May 31, 2021. In my summary tables, I have presented the DCF results using 90-day average stock prices as representative of the investor-required return.

Q. Did you make any adjustments to the dividend yield to account for periodic growth in dividends?

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

Q. Why is it important to select appropriate measures of long-term growth in applying the DCF model?

A. In its Constant Growth form, the DCF model (i.e., Equation [2]) assumes a single long-term growth rate in perpetuity. In order to reduce the long-term growth rate to a single measure, one must assume that the dividend payout ratio remains constant and that Earnings Per Share ("EPS"), dividends per share, and book value per share all grow at the same constant rate. Over the long run, dividend growth can only be sustained by earnings growth. Earnings growth rates tend to be least influenced by capital allocation decisions

that companies may make in response to near-term changes in the business environment. Since such decisions may directly affect near-term dividend payout ratios, estimates of earnings growth are more indicative of long-term investor expectations than are dividend or book value growth estimates.

Q. What sources of long-term growth rates did you rely on in your Constant Growth DCF model?

A. My Constant Growth DCF model incorporates three sources of long-term growth rates: (1) consensus long-term earnings growth estimates from Zacks Investment Research; (2) consensus long-term earnings growth estimates from Thomson First Call (provided by Yahoo! Finance); and (3) long-term earnings growth estimates from Value Line.

Q. Are you aware that the Commission has previously determined that it is not appropriate to use EPS growth rates in the Constant Growth DCF model that exceed projected nominal GDP growth?

A. Yes. I am aware of the Commission's July 2020 Order for Empire District Electric Company ("EDE"), in which the Commission indicated that "utility growth rates are generally consistent with the GDP growth rate," and that "[i]t is unlikely that utilities will grow at a higher rate than the overall economy, because it runs counter to basic economic principles that companies will grow at a rate consistent with the long-term overall growth rate of the economy over the long-term."[40] Nevertheless, I hope the evidence I provide here, and in particular the analysis of actual dividend and earnings growth to GDP, sheds

[40] Missouri Public Service Commission, File No. ER-2019-0374, Tariff No. YE-2020-029, Amended Report and Order, Issue date July 23, 2020, at para, 33 and 34.

additional light on this topic for the Commission's consideration and leads the Commission to reconsider its earlier position.

Academics have rigorously studied whether the use of analyst earnings growth rates in the Constant Growth DCF model appropriately reflects investor assumptions embedded in equity share valuations. Harris and a host of other renowned academics found that analysts' consensus earnings forecasts are indeed reflected in stock prices using a Constant Growth DCF model and investors rely on those forecasts in making their investment decisions.[41]

The theoretical construct that equity earnings are limited by future growth in GDP may hold for aggregate corporate earnings in a closed economy with constant P/E ratios, constant dividend payout ratios, and where a company's growth exactly matches that of the economy,[42] but these are not realistic assumptions for an individual firm. In reality, these factors are in constant motion. Academic theorists do not prescribe limiting growth in the DCF model to estimates of nominal GDP growth over the long-term and applying this assumption in a multi-stage model (which I have done, as discussed below) is highly conservative.

To illustrate this point, I have evaluated the actual earnings and dividend per share growth (to the extent data was available through Value Line) of the proxy companies used in my analysis compared to GDP growth. These results are shown in Figure 8.

[41] Robert S. Harris, Using Analysts' Growth Forecasts to Estimate Shareholders Required Rates of Return, Financial Management, Spring 1986.
[42] See MSCI Barra Research Bulletin, Is There a Link Between GDP Growth and Equity Returns? (May 2010).

Figure 8: Long-Term Growth Rate Analysis

	[1] Avg. EPS Growth Historical 2005 -2019	[2] Avg. DPS Growth Historical 2005 -2019	[3] CAGR GDP Growth 2005 -2019	[4] Nominal GDP Growth Forecast
Empire Gas Proxy Group	3.91%	4.01%	3.62%	5.49%

[1] Value Line, average compound annual growth rate in EPS of each company the proxy group
[2] Value Line, average compound annual growth rate in DPS of each company the proxy group
[3] Bureau of Economic Analysis, Table 1.1.5. Gross Domestic Product, Accessed on July 7, 2021
[4] See Exhibit JJR-4 Multi-Stage DCF

As shown above, the earnings per share ("EPS") and dividends per share ("DPS") of utilities can, and do, exceed GDP growth for sustained periods. Specifically, for the EDG proxy group, historical EPS has exceeded historical GDP growth by 29 basis points from 2005-2019 and historical DPS has exceeded historical GDP growth by 39 basis points over the same period.[43] My conclusion is that it is not unreasonable to rely on analyst EPS growth projections, as I and other experts commonly do, just because they exceed GDP growth.

No company, or investor, would be satisfied with growth that simply tracks the broader economy. Investors would shift capital to more attractive investments. Companies are constantly searching for new avenues of growth and have levers such as capital resource allocation to achieve growth greater than GDP. There is no reason to expect that an individual corporation competing for capital as a going concern will limit earnings or dividend growth to GDP. In my opinion, limiting growth in the DCF model to long-term GDP is an unfounded constraint. I therefore present both Constant Growth DCF results

[43] 2020 Value Line data was excluded from this analysis because several of the companies had very low EPS in 2020 due to the effects of COVID-19 on their sales and revenues.

reflecting analysts' earnings growth rates and Multi-Stage DCF results reflecting both earnings growth rates and an estimate of GDP growth to provide a balanced estimate of returns predicted by the DCF model.

B. Multi-Stage DCF Model

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

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

Q. Is the Multi-Stage DCF a commonly used method to estimate the cost of equity?

A. Yes, the Multi-Stage DCF model is a commonly-used method among investors and regulators. However, it is important to consider whether any model used to estimate the ROE is producing reliable results at a given point in time. This can be accomplished by comparing the individual and collective results of the various models used to estimate the cost of equity, and by evaluating whether the inputs and assumptions of the models are being affected by conditions in capital markets or the economy.

Q. What are the benefits of using a Multi-Stage model?

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

Q. Please generally describe the structure of your Multi-Stage DCF model.

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

Q. Please summarize the EPS growth rates used in your Multi-Stage DCF model.

A. As shown in **Schedules JJR-5.1** through **5.3**, I began with the current annualized dividend as of May 31, 2021 for each proxy group company. In the first stage of the model, the current annualized dividend is escalated based on the average of the three-to five-year earnings growth estimates reported by Zacks, Thomson First Call, and Value Line. For the third stage, I relied on long-term projected growth in Gross Domestic Product ("GDP"). The second stage growth rate is a transition from the first stage growth rate to the long-term growth rate on a geometric average basis.

Q. How did you calculate the long-term GDP growth rate?

A. As shown in **Schedule JJR-5.4**, the long-term growth rate of 5.49 percent is based on real GDP growth of 3.14 percent from 1929 through 2020[44] and a projected inflation rate of 2.28 percent. The projected inflation rate is based on three measures: (1) the average long-

[44] U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Tables, Table 1.1.1, May 31, 2021.

term projected growth rate in the Consumer Price Index ("CPI") of 2.20 percent;[45] (2) the compound annual growth rate of the CPI for all urban consumers for 2031-2050 of 2.27 percent as projected by the Energy Information Administration ("EIA"); and (3) the compound annual growth rate of the GDP chain-type price index for 2031-2050 of 2.37 percent, also reported by the EIA.[46]

Q. Do the assumptions used in the Multi-Stage DCF model address the effect of low dividend yields on the DCF results?

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

C. Discounted Cash Flow Results

Q. Please summarize the results of your DCF analyses.

A. The results of my Constant Growth and Multi-Stage DCF analyses using 90-day average stock prices are summarized in Figure 9 (also see **Schedules JJR-4** and **JJR-5.1** through **5.3**).

[45] Blue Chip Financial Forecasts, Vol. 40, No. 6, June 1, 2021, at 14.
[46] U.S. Energy Information Administration, Annual Energy Outlook 2021, Table 20, Macroeconomic Indicators.

Figure 9: Summary of DCF Results[47]

	Mean Low	Mean	Mean High
Constant Growth DCF	8.50%	10.08%	12.24%
Multi-Stage DCF	9.27%	9.70%	10.36%

As shown in Figure 9, the Constant Growth DCF analysis using the 90-day average dividend yield produces a range of results from 8.50 percent to 12.24 percent. The Multi-Stage DCF analysis using the 90-day average dividend yield produces a range of results from 9.27 percent to 10.36 percent.

Q. How did you calculate the range of results for the Constant Growth and Multi-Stage DCF Models?

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

Q. Are DCF models widely used to estimate the ROE for regulated utilities?

A. Yes. DCF models are widely used in regulatory proceedings and have sound theoretical bases, although neither the DCF model nor any other model can be applied without considerable judgment in the selection of data and the interpretation of results. As discussed in Section V of my Direct Testimony, the currently high valuations and low dividend yields for utility companies and the expectation that those high valuations and

[47] DCF results in the table are based on 90-day average stock prices. **Schedules JJR-4** and **JJR-5.1** through **5.3** also present results based on 30-day and 180-day average stock prices which are similar to the 90-day results.

low dividend yields are not sustainable are creating concerns among analysts and regulators that the DCF model is understating the cost of equity at this time.

Q. How have other utility regulators responded to the historically low dividend and bond yields and the corresponding effect on the DCF model?

A. The reliability of the DCF model has been subject to increasing scrutiny over the past decade. A combination of unsustainably low interest rates, coupled with unsustainably high utility stock prices and reduced near-term earnings growth, affect all three inputs to the DCF model. In this environment where the fundamental assumptions of the model are flawed, the DCF model results cannot be expected to provide realistic estimates of the forward-looking required return.

FERC issued Opinion No. 569-A in May 2020, in which FERC determined that it would place equal weight on the results of the DCF, CAPM and Risk Premium analysis to establish the return for electric transmission companies, which represented a significant departure from FERC's historical exclusive reliance on the DCF model. In reaching this decision, FERC explained that it continued to have concerns with the results of the DCF model. Specifically, FERC stated:

> We disagree with CAPs' contention that the record does not support our finding of model risk as justifying no longer relying solely on the DCF model. Model risk includes the broad conceptual issue of models being imperfect and not always working well in all situations. It also entails errors of specific model inputs, such as the error discussed with respect to the Portland General Electric inputs, discussed in paragraph 145 below. We continue to find that ROE determinations should consider multiple models, both to capture the variety of models used by investors and to mitigate model risk. With respect to the former, we reiterate our findings from

> Opinion No. 569 in support of the finding that use of multiple models reduces model risk.[48]

Q. Have state regulatory commissions also responded to the effect of market conditions on the results of the DCF model?

A. Yes. For example, the Pennsylvania Public Utility Commission ("PPUC") in a 2012 decision on a rate case for PPL Electric Utilities, recognized that then-current market conditions were causing the DCF model to produce results that were much lower than other models such as the CAPM and Bond Yield Plus Risk Premium. While noting that the PPUC had traditionally relied primarily on the DCF method to estimate the cost of equity for regulated utilities, the PPUC's Order nevertheless explained:

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

The PPUC ultimately concluded:

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

In a 2016 case before the Illinois Commerce Commission ("ICC"), the ICC Staff relied on a DCF analysis that resulted in average returns for their proxy groups of 7.24 percent to 7.51 percent. The company demonstrated that these results were uncharacteristically too low, by comparing the results of Staff's models to recently

[48] FERC Opinion No. 569-A, issued May 21, 2020, at para. 43.
[49] Pennsylvania Public Utility Commission, PPL Electric Utilities, R-2012-2290597, meeting held December 5, 2012, at 80.
[50] *Id.*, at 81.

authorized ROEs for regulated utilities and the return on the S&P 500.[51] The ICC agreed with the Company that ICC Staff's proposed ROE of 8.04 percent was anomalous and recognized that a return that is not competitive will deter investment in Illinois. In setting the return, the ICC recognized that it was necessary to consider other factors beyond the outputs of the financial models, particularly whether the return is sufficient to attract capital, maintain financial integrity, and commensurate with returns for companies of comparable risk, while balancing the interests of customers and shareholders.[52]

As demonstrated by these examples, there are instances where regulators have found the DCF model has been understating the investor-required return for regulated utilities. Based on the data presented herein, that is currently the case as well.

Q. What are your conclusions about the results of the DCF models?

A. As discussed previously, one primary assumption of the DCF models is a constant P/E ratio. That assumption is heavily influenced by the market price of utility stocks. To the extent that utility valuations are high and may not be sustainable, it is important to consider the results of the DCF models with caution.

D. CAPM Analysis

Q. Please briefly describe the Capital Asset Pricing Model.

A. The CAPM is a risk premium approach that estimates the cost of equity for a given security as a function of a risk-free return plus a risk premium to compensate investors for the non-diversifiable or "systematic" risk of that security. Systematic risk is the risk inherent in the

[51] State of Illinois Commerce Commission, Docket No. 16-0093, Illinois-American Water Company Initial Brief, August 31, 2016, at 10.
[52] State of Illinois Commerce Commission Decision, Docket No. 16-0093, Illinois-American Water Company, 2016 WL 7325212 (2016), at 55.

entire market or market segment. This form of risk cannot be diversified away using a portfolio of assets. Non-systematic risk is the risk of a specific company that can be mitigated through portfolio optimization.

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

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

Where:

K_e = the required market ROE;

β = Beta coefficient of an individual security;

r_f = the risk-free ROR; and

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

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

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

The variance of the market return (i.e., Variance (r_m)) is a measure of the uncertainty of the general market. The covariance between the return on a specific security and the general market (i.e., Covariance (r_e, r_m)) reflects the extent to which the return on

that security will respond to a given change in the general market return. Thus, Beta represents the risk of the security relative to the general market.

Q. What risk-free rate did you use in your CAPM analysis?

A. As shown in **Schedule JJR-6.2**, I relied on three sources for my estimate of the risk-free rate: (1) the current 30-day average yield on 30-year U.S. Treasury bonds (i.e., 2.30 percent);[53] (2) the projected 30-year U.S. Treasury bond yield for Q4 2021 through Q4 2022 (i.e., 2.64 percent);[54] and (3) the projected 30-year U.S. Treasury bond yield for 2023 through 2027 (i.e., 3.50 percent).[55]

Q. What Beta coefficients did you use in your CAPM analysis?

A. As shown in **Schedule JJR-6.2**, I used the average Beta coefficients for the proxy group companies as reported by Value Line and Bloomberg. Value Line's calculation is based on five years of weekly returns relative to the New York Stock Exchange Composite Index. Bloomberg's calculation is based on five years of weekly returns relative to the S&P 500 Index. As discussed in Section V, Beta coefficients for gas utilities have increased substantially since January 2020, as utilities have traded more like the broader market. It is important to emphasize that Betas are calculated over a five-year period, so this is not a short-term market phenomenon and certainly not in the context of determining an appropriate cost and range of equity returns for a utility in such conditions. In summary, the substantial increase in Beta coefficients for the proxy group companies represents a

[53] Bloomberg Professional, as of May 31, 2021.
[54] Blue Chip Financial Forecasts, Vol. 40, No. 6, June 1, 2021, at 2.
[55] Blue Chip Financial Forecasts, Vol. 40, No. 6, June 1, 2021, at 14.

significant departure from how investors have typically viewed gas utilities relative to the broader market and is not just COVID related.

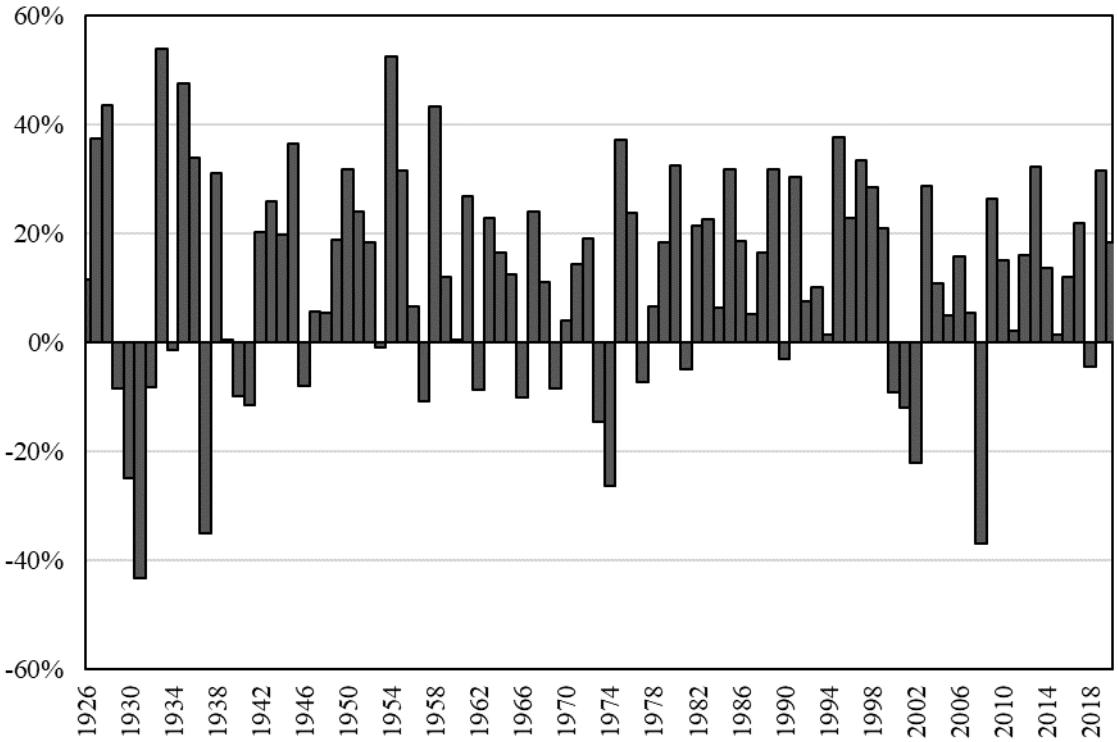
Q. How did you estimate the Market Risk Premium in the CAPM?

A. I estimated the Market Risk Premium based on the expected total return on the S&P 500 Index less the 30-year Treasury bond yield. The expected total return on the S&P 500 Index is calculated using the Constant Growth DCF model for the companies in the S&P 500 Index. As shown in **Schedule JJR-6.1**, based on an estimated dividend yield of 1.46 percent and a long-term earnings growth rate of 12.15 percent, the estimated required market return for the S&P 500 Index is 13.70 percent. The implied Market Risk Premiums over the current and projected yields on the 30-year U.S. Treasury bond range from 10.20 percent to 11.40 percent.

Q. How does the current expected market return of 13.70 percent compare to observed historical market returns?

A. Given the range of annual equity returns that have been observed over the past century (shown in Figure 10), a current expected return of 13.70 percent is not unreasonable. In 48 out of the past 95 years (or 51 percent of observations), the realized equity return was at least 13.70 percent.

Figure 10: Realized U.S. Equity Market Returns (1926-2020) [56]



Q. What are the results of your CAPM analysis?

A. As shown in Figure 11 (see also **Schedule JJR-6.2**), my CAPM analysis produces a range of returns from 12.03 percent to 12.46 percent, depending on the risk-free rate, with an average CAPM estimate of 12.24 percent.

[56] Depicts total annual returns on large company stocks, as reported in the 2020 Duff and Phelps SBBI Yearbook.

Figure 11: Forward-Looking CAPM Results

	Value Line Betas	Bloomberg Betas
Current Risk-free Rate (2.30%)	12.31%	12.03%
2021-2022 Projected Risk-free Rate (2.64%)	12.36%	12.08%
2023-2027 Projected Risk-free Rate (3.50%)	12.46%	12.21%
Mean Result	12.38%	12.11%

E. Bond Yield Plus Risk Premium Analysis

Q. Please describe the Bond Yield Plus Risk Premium approach you employed.

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

Q. Are there other considerations that should be addressed in conducting this analysis?

A. Yes. Both academic literature and market evidence indicate that the equity risk premium (as used in this approach) is inversely related to the level of interest rates. That is, as interest rates increase (decrease), the equity risk premium decreases (increases). Consequently, the analysis should: (1) reflect the inverse relationship between interest rates and the equity risk premium; and (2) be based on current and expected market conditions. Such an analysis can be developed based on a regression of the risk premium as a function of U.S.

Treasury bond yields. If we let authorized ROEs for gas distribution utility companies serve as the measure of required equity returns and define the yield on the long-term U.S. Treasury bond as the relevant measure of interest rates, the risk premium is simply the difference between those two points.[57]

Q. What did your Bond Yield Plus Risk Premium analysis reveal?

A. As shown in Figure 12, from 1992 through May 2021, there was a strong negative relationship between risk premia and interest rates. To estimate that relationship, I conducted a regression analysis using the following equation:

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

Where:

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

a = intercept term

b = slope term

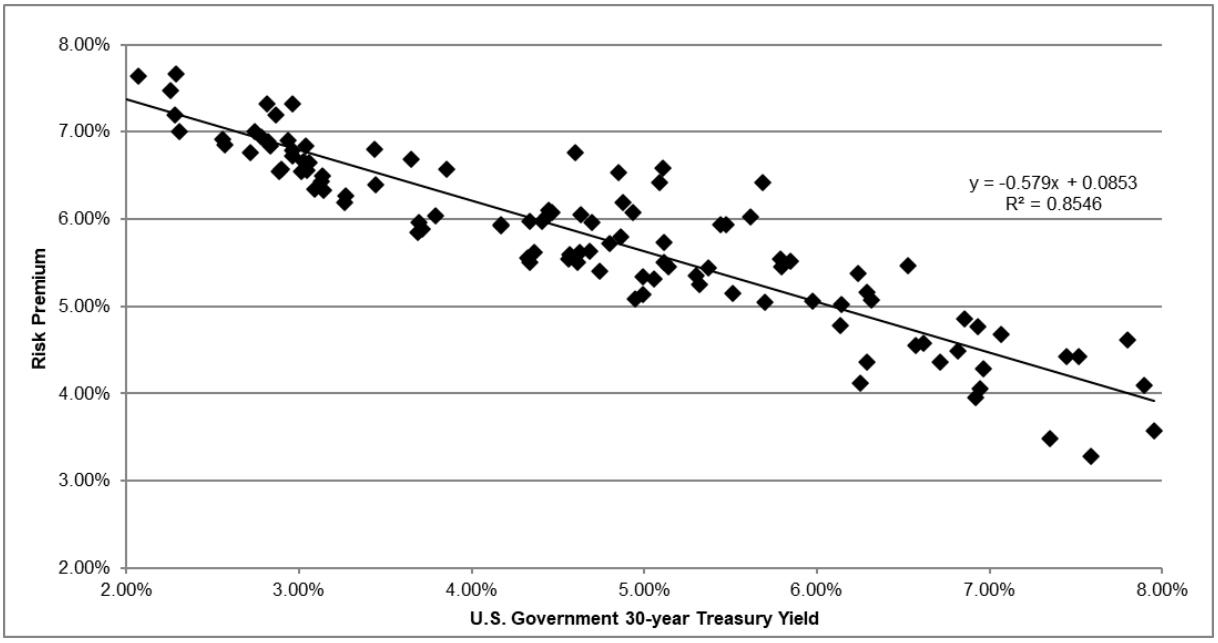
T = 30-year U.S. Treasury bond yield

Data regarding allowed ROEs were derived from 673 gas distribution utility rate case decisions from 1992 through May 2021 as reported by Regulatory Research

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

Associates. This equation's coefficients were statistically significant at the 99.0 percent confidence interval.

Figure 12: Risk Premium Results



As shown in **Schedule JJR-7**, based on the 30-day average of the 30-year U.S. Treasury bond yield as of May 31, 2021 (i.e., 2.30 percent), the risk premium would be 7.20 percent, resulting in an estimated ROE of 9.50 percent. Based on the near-term (2021-2022) projections of the 30-year U.S. Treasury bond yield (i.e., 2.64 percent), the risk premium would be 7.00 percent, resulting in an estimated ROE of 9.64 percent. Based on longer-term (2023-2027) projections of the 30-year U.S. Treasury bond yield (i.e., 3.50 percent), the risk premium would be 6.50 percent, resulting in an estimated ROE of 10.00 percent.

Q. How do the results of the Bond Yield Risk Premium analysis inform your recommended ROE for EDG?

A. The results of the Bond Yield Risk Premium analysis support my view that the mean results of the Constant Growth DCF model is understating investors' return requirements under

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

F. Expected Earnings Analysis

Q. Have you conducted any other analysis to estimate the cost of equity for EDG?

A. Yes. I have also conducted an Expected Earnings analysis to estimate the cost of equity for EDG based on the projected ROEs for the proxy group companies.

Q. What is an Expected Earnings Analysis?

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

Q. How did you develop the Expected Earnings Approach?

A. I relied primarily on the projected ROE for each of the proxy companies as reported by Value Line for the period from 2024-2026. I then adjusted those projected ROEs to account for the fact that the ROEs reported by Value Line are calculated on the basis of common shares outstanding at the end of the period, as opposed to average shares outstanding over the entire period. As shown in **Schedule JJR-8**, the Expected Earnings analysis results in a mean ROE estimate of 9.01 percent and a median ROE estimate of 8.02 percent.

VIII. BUSINESS RISKS

Q. Do the mean DCF, CAPM, Risk Premium and Expected Earnings results for the proxy group provide an appropriate estimate of the cost of equity for EDG?

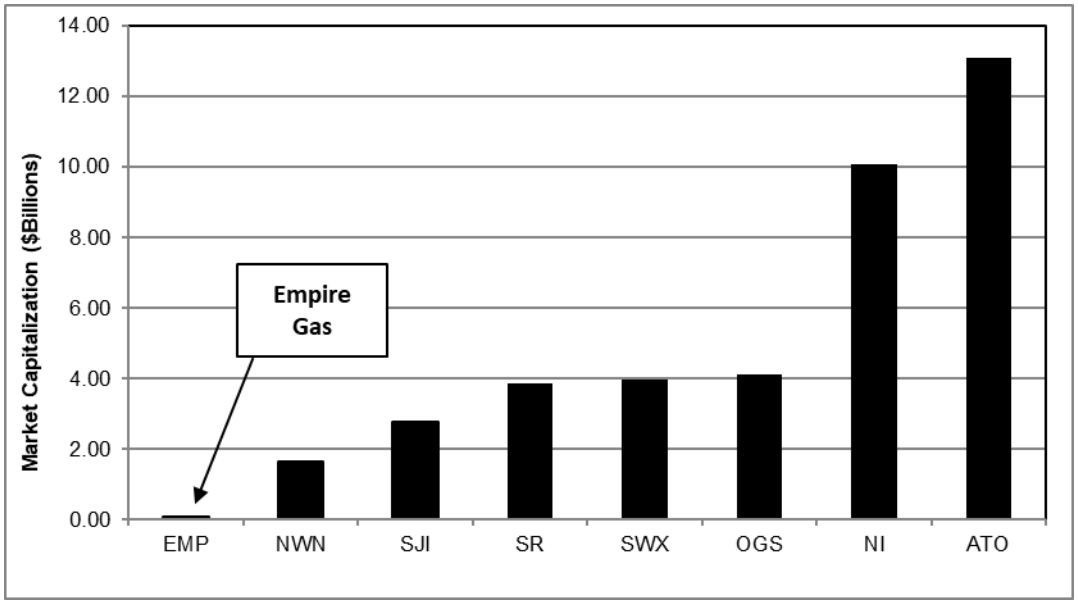
A. No. These results provide only a range of the appropriate estimate of EDG's cost of equity. Several additional factors must be considered when determining where the Company's cost of equity falls within the range of results. These risk factors, discussed below, should be considered with respect to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

A. Small Size Risk

Q. How does the Company's small size affect its risk profile and cost of equity?

A. The small size of EDG relative to the proxy group companies is an important risk factor in determining the Company's cost of equity. Academic literature recognizes that smaller companies tend to be rewarded with higher total returns than larger companies, even after the relative illiquidity of smaller company stock is taken into account. Figure 13 (see also **Schedule JJR-9**) shows EDG's implied market capitalization relative to the proxy group companies. As shown in that Figure, EDG's implied market capitalization is $0.07 billion, compared with the proxy group median market capitalization of $3.97 billion.

Figure 13: Market Capitalization of EDG vs. Proxy Group



EDG's small size relative to the proxy group companies means that the Company's earnings and cash flows may be disproportionately affected by the loss of large customers, or weaker than expected demand for utility service due to general macroeconomic conditions in the service territory, or gas price volatility. Similarly, capital expenditures for non-revenue producing investments such as system maintenance and replacements will put proportionately greater pressure on customer costs. Taken together, these risks affect the return required by investors for smaller companies. While I recognize that, as a wholly-owned, indirect subsidiary of LUCo, EDG may have some buffer from such external shocks, on a stand-alone basis the Company is relatively small as compared to the proxy group companies used for the ROE analysis. This small size magnifies the effect of other business and financial risks on EDG.

Q. Do credit rating agencies consider small size as a distinguishing risk factor?

A. Yes. Moody's, for example, considers the size and diversity of utility operations to be a distinguishing factor that makes some utilities riskier than others. In discussing its rating methodology for regulated electric and gas utilities, Moody's states:

> We also consider the diversity of utility operations (e.g., regulated electric, gas, water, steam) when there are material operations in more than one area. Economic diversity is typically a function of the population, size and breadth of the territory and the businesses that drive its GDP and employment. For the size of the territory, we typically consider the number of customers and the volumes of generation and/or throughput. For breadth, we consider the number of sizeable metropolitan areas served, the economic diversity and vitality in those metropolitan areas, and any concentration in a particular area or industry.[58]

EDG's service territory is characterized by the small size and lack of geographic and economic diversity that Moody's describes as an increased risk factor for regulated utilities.

Q. Have any credit rating agencies commented on EDG's small size?

A. Yes. Moody's, for example, notes in its rating of EDE (which, in Moody's assessment, includes EDG's operations) that, "[o]ur assessment of Empire also incorporates the utility's small size and limited geographic diversity on a stand-alone basis, which is offset to some degree by its position as a segment of the larger Liberty Utilities Company, (Liberty, not rated), a wholly-owned subsidiary of Algonquin Power & Utilities Corp. (Algonquin, not rated)."[59] EDG represents only a small portion of EDE's operations. Therefore, if EDE is small on a stand-alone basis in Moody's assessment, EDG bears even greater risk due to its smaller size.

---

[58] Moody's Investors Service, "Rating Methodology: Regulated Electric and Gas Utilities," December 23, 2013, at 19.
[59] Moody's Investors Service, Empire District Electric Company (The), Credit Opinion, January 15, 2021, at 1.

Q. What is your conclusion regarding how EDG's small size affects the Company's cost of equity?

A. My conclusion is that EDG is significantly smaller than the proxy group companies. While I have not made a specific adjustment to reflect the Company's small size, the risk associated with small size indicates that EDG's authorized ROE should be higher than the mean results for the proxy group.

B. Regulatory Risk Assessment

Q. Have you performed an analysis of the level of regulatory protection that the proxy group companies receive as compared to EDG?

A. Yes. I have conducted an analysis of the regulatory protections that are in place for EDG compared with those for the operating utility companies held by the proxy group companies. The results of my analysis are presented in **Schedule JJR-10**. Specifically, I examined the following factors that affect the business risk of EDG and the proxy group companies: (1) test year convention; (2) rate base convention; (3) revenue decoupling; and (4) capital cost recovery.

As shown in **Schedule JJR-10**, 52 percent of the operating companies (i.e., 13 out of 25) in the proxy group provide service in jurisdictions that allow the use of a fully or partially forecast test year. By contrast, EDG's rates are set based on a historical test year, adjusted for known and measurable changes. Like Empire, 60 percent of the operating companies in the proxy group (i.e., 15 out of 25) use year-end rate base, which provides more timely cost recovery of capital investments, while 40 percent use average rate base. Further, 84 percent of the operating utilities held by the proxy group (i.e., 21 out of 25) have revenue decoupling mechanisms or weather normalization adjustment clauses that allow them to break the link between customer usage and revenues. EDG does not have a

revenue decoupling mechanism for its gas utility operations in Missouri (although the Company is requesting a weather normalization rider in this case), and the Commission rejected the proposed adoption of revenue decoupling in a 2019 rate case involving the Company's affiliate, EDE. Approximately 76 percent of the operating utilities held by the proxy group companies (i.e., 19 out of 25) have capital cost tracking mechanisms that allow them to recover capital investments between rate cases, whereas EDG does not have such cost tracking mechanisms. Finally, 44 percent of the operating companies in the proxy group (i.e., 11 out of 25) are allowed to include construction work in progress ("CWIP") in rate base between rate cases, whereas Missouri law prohibits the Commission from including CWIP in rate base.

Q. Based on these analyses, what is your conclusion regarding the level of regulatory risk for EDG relative to that of the proxy group companies?

A. My conclusion is that EDG has higher regulatory risk than the proxy group companies in terms of cost recovery and regulatory lag. EDG's gas utility business has higher regulatory risk than the proxy group due to the use of a historical test year, which contributes to regulatory lag. In addition, EDG does not have protection against volumetric risk through revenue decoupling or weather normalization mechanisms (although the Company is requesting a weather normalization rider in this case) and is not allowed to recover certain capital costs through a tracking mechanism. For these reasons, my conclusion is that EDG has higher regulatory risk than the proxy group, which supports an authorized ROE above the proxy group mean.

IX. CAPITAL STRUCTURE

Q. What is EDG's proposed capital structure?

A. As discussed in the Direct Testimony of Mr. Mooney, EDG is proposing to establish a rate-making consolidated capital structure comprised of 52.44 percent common equity and 47.56 percent long-term debt based on its capital structure for the pro forma test year ending September 30, 2021, which has been adjusted for known and measurable changes.

Q. What is the relationship between the authorized equity ratio and the authorized ROE?

A. There is a direct relationship between the authorized capital structure and the authorized ROE. In particular, the authorized equity ratio is a major indicator of financial risk for a regulated utility such as EDG. To the extent the authorized equity ratio is reduced from 52.44 percent, a corresponding increase is necessary in the authorized ROE to compensate investors for the greater financial risk associated with a lower equity ratio.

Q. How does EDG's pro forma capital structure compare to LUCo's capital structure?

A. As described in more detail in Mr. Mooney's Direct Testimony, EDG's pro forma capital structure is aligned with LUCo's capital structure after making adjustments to LUCo's capital structure that are similar to those applied by the Office of Public Counsel (and that the Commission appears to have adopted) in Case No. ER-2019-0374. Specifically, as shown in Mr. Mooney's Direct Testimony Schedules, the pro forma capital structure for EDG is 52.44 percent common equity and 47.56 percent long-term debt, while LUCO's adjusted capital structure is comprised of 52.45 percent total equity and 47.55 percent long-term debt. The pro forma, unadjusted capital structure for LUCo is 61.67 percent common equity, 38.05 percent long-term debt, and 0.28 percent redeemable non-controlling interest.

Q. If there were a temporary divergence in the capital structure for APUC and/or LUCO, what effect should that have on the regulatory capital structure for EDG?

A. If there were a temporary divergence in the capital structure for APUC and/or LUCo caused by, for example, a large acquisition, and as long as APUC and LUCo intend to re-establish equity levels to pre-acquisition levels at some point in the near future, the Commission should continue to use EDG's pro forma capital structure to set rates if it reasonably compares to the capitalization of the proxy group companies. This is consistent with the position taken by Staff of the Kansas Corporation Commission ("KCC") in a 2019 rate case filing in Kansas by the Company's affiliate, EDE. There, KCC Staff witness Adam Gatewood noted that APUC and LUCo issued debt to fund the acquisition of EDE. Although this initially lowered APUC's and LUCo's equity ratios, Mr. Gatewood observed that in the following years, APUC raised its equity ratio back to the pre-acquisition level. Based on this rationale, Mr. Gatewood recommended that the KCC adopt EDE's proposed capitalization since the 51 percent equity ratio was very near that of the entities that provide capital to EDE, as well as comparable to those of financially-sound, investment grade electric utilities.[60]

Q. Have you analyzed the capital structures of the proxy group companies?

A. Yes. I calculated the mean proportions of common equity and long-term debt over the most recent two years for each of the proxy group companies at the utility operating company level. My analysis of the proxy group's utility operating company capital

[60] Kansas Corporation Commission, Docket No. 19-EPDE-223-RTS, *In the Matter of the Application of The Empire District Electric Company for Approval to Make Certain Changes in its Charges for Electric Service*, Direct Testimony of Adam H. Gatewood, filed May 13, 2019, at 19-21.

structures is provided in **Schedule JJR-11**. As shown in that Schedule, the equity ratios for the proxy group averaged 54.45 percent in 2020, and 55.34 percent in 2019. The average equity ratios for the proxy group ranged from 47.4462 percent to 60.0730 percent in 2020, not including the effect of off-balance sheet transactions that may be imputed as debt and may affect the investment community's perception of a company's leverage. EDG's proposed equity ratio of 52.44 percent is well within the range of equity ratios for the proxy group and is below the average for the proxy group companies in the last two years.

Q. What is your conclusion regarding EDG's proposed capital structure?

A. The proposed equity ratio for EDG is within the range established by the proxy group and only slightly above the average for the operating utilities held by the proxy group companies. As such, my conclusion is that the Company's proposed consolidated capital structure is reasonable and appropriate for ratemaking purposes.

X. CONCLUSIONS AND RECOMMENDATION

Q. What is your conclusion regarding a fair ROE for EDG's natural gas utility operations in Missouri?

A. Based on the various quantitative analyses summarized in Figure 14 and the qualitative analyses presented in my Direct Testimony, a reasonable range of ROE results for EDG is from 9.50 percent to 10.40 percent. That range takes into consideration the results of the Constant Growth and Multi-Stage DCF analysis, Risk Premium analysis, and Expected Earnings analysis. As discussed throughout my Direct Testimony, the required ROE should be a forward-looking estimate; therefore, the analyses supporting my recommendation rely on forward-looking inputs and assumptions (e.g., projected earnings growth rates in the DCF model, forecasted Treasury yields in the Risk Premium analysis etc.) and take into

consideration capital market conditions, including the effect of the current low interest rate environment on utility stock valuations and dividend yields, the volatility that has characterized financial markets since February 2020, and the uncertainty associated with global economic events. Considering the regulatory, business, and financial risks of EDG compared to the proxy group companies, and the current conditions in capital markets that are causing the DCF models to understate the cost of equity, an ROE of 10.00 percent is just and reasonable.

Figure 14: Summary of Analytical Results

	Mean Low	Mean	Mean High
DCF Analyses – 90-day Average Stock Price			
Constant Growth DCF	8.50%	10.08%	12.24%
Multi-Stage DCF	9.27%	9.70%	10.36%
Risk Premium Analyses			
	Current Risk-Free Rate (2.30%)	**Q4 2021 – Q4 2022 Projected Risk-Free Rate (2.64%)**	**2023-2027 Projected Risk-Free Rate (3.50%)**
CAPM – Value Line Beta	12.31%	12.36%	12.46%
CAPM – Bloomberg Beta	12.03%	12.08%	12.21%
Bond Yield + Risk Premium	9.50%	9.64%	10.00%
Expected Earnings Analysis			
	Mean	**Median**	
	9.01%	8.02%	

Q. What is your conclusion with respect to EDG's proposed capital structure?

A. My conclusion is that EDG's proposed consolidated capital structure consisting of 52.44 percent common equity and 47.56 percent long-term debt is within the range for the

operating utilities held by the proxy group companies and therefore is reasonable and is the most economical for purposes of determining a fair and reasonable allowed rate of return

Q. Does this conclude your Direct Testimony?

A. Yes.

VERIFICATION

I, John J. Reed, under penalty of perjury, on this 23rd day of August, 2021, declare that the foregoing is true and correct to the best of my knowledge and belief.

/s/ John J. Reed