BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

IN THE MATTER OF THE APPLICATION OF OKLAHOMA GAS AND ELECTRIC COMPANY FOR AN ORDER OF THE COMMISSION AUTHORIZING APPLICANT TO MODIFY ITS RATES, CHARGES, AND TARIFFS FOR RETAIL ELECTRIC SERVICE IN OKLAHOMA	PUD 2023-000087

RESPONSIVE TESTIMONY OF J. RANDALL WOOLRIDGE, PH.D.
ON BEHALF OF
GENTNER F. DRUMMOND, OKLAHOMA ATTORNEY GENERAL

Gentner F. Drummond, the Attorney General of Oklahoma, on behalf of the utility customers of this State, hereby submits the Responsive Testimony of J. Randall Woolridge in the proceeding referenced above. The Attorney General urges close consideration of the testimony.

Respectfully submitted,

GENTNER F. DRUMMOND
ATTORNEY GENERAL OF OKLAHOMA

A. CHASE SNODGRASS, OBA #33275
Deputy Attorney General
K. CHRISTINE CHEVIS, OBA #33483
Assistant Attorney General
ASHLEY N. YOUNGBLOOD, OBA #35784
Assistant Attorney General

UTILITY REGULATION UNIT
OKLAHOMA ATTORNEY GENERAL
313 NE 21st Street
Oklahoma City, Oklahoma 73105
Telephone: (405) 521-3921
Facsimile: (405) 522-0608
chase.snodgrass@oag.ok.gov
christine.chevis@oag.ok.gov
ashley.youngblood@oag.ok.gov

CERTIFICATE OF SERVICE

On this 26th day of April 2024, a true and correct copy of the *Responsive Testimony of J. Randall Woolridge, Ph.D., on Behalf of Gentner F. Drummond, Oklahoma Attorney General* was sent via electronic mail to the following interested parties:

Mark Argenbright
Director, Public Utility Division
OKLAHOMA CORP. COMM'N
Jim Thorpe Building
2101 N. Lincoln. Blvd.
Oklahoma City, OK 73105
pudenergy@occ.ok.gov

Natasha Scott
Michael L. Velez
Michael Ryan
Justin Cullen
E.J. Thomas
OKLAHOMA CORP. COMM'N
Jim Thorpe Building
2101 N. Lincoln. Blvd.
Oklahoma City, OK 73105
natasha.scott@occ.ok.gov
michael.velez@occ.ok.gov
michael.ryan@occ.ok.gov
justin.cullen@occ.ok.gov
ej.thomas@occ.ok.gov

William L. Humes
OKLA. GAS & ELEC. CO.
P.O. Box 321, MC 1208
Oklahoma City, OK 73101
humeswl@oge.com
reginfor@oge.com

Deborah R. Thompson
Kenneth A. Tillotson
THOMPSON TILLOTSON PLLC
P.O. Box 54632
Oklahoma City, OK 73154
deborah@ttfirm.com
kenneth@ttfirm.com

J. David Jacobson
JACOBSON & LAASCH
212 East Second Street
Edmond, OK 73034
jdj8788@aol.com

Thomas P. Schroedter
HALL, ESTILL, HARDWICK, GABLE,
GOLDEN & NELSON, P.C.
521 East 2nd Street, Suite 1200
Tulsa, OK 74120
tschroedter@hallestill.com

Jack G. Clark, Jr.
CLARK, WOOD & PATTEN, P.C.
3545 N.W. 58th St., Ste. 400
Oklahoma City, OK 74112
cclark@cswp-law.com

J. Eric Turner
Adam J. Singer
DERRYBERRY & NAIFEH, LLP
4800 N. Lincoln Blvd.
Oklahoma City, OK 73105
etruner@derryberrylaw.com
asinger@derryberrylaw.com

Rick D. Chamberlain
Attorney for WALMART INC.
P.O. Box 21866
Oklahoma City, OK 73156
rick@chamberlainlawoffices.com

Paul D. Trimble
TRIBMLE LAW GROUP, PLLC
5510 N. Francis Avenue
Oklahoma City, OK 73118
ptrimble@trimblelawgroup.com

Leslie R. Newton, Maj, USAF
FEDERAL EXECUTIVE AGENCIES
139 Barnes Dr., Ste. 1
Tyndall AFB, FL 32403-5317
leslie.newton.l@us.af.mil

A. CHASE SNODGRASS
Deputy Attorney General

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RESPONSIVE TESTIMONY

OF

J. RANDALL WOOLRIDGE, PH.D

ON BEHALF OF

GENTNER F. DRUMMOND,

OKLAHOMA ATTORNEY GENERAL

April 26, 2024

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I. Introduction

Q. PLEASE STATE YOUR FULL NAME, ADDRESS, AND OCCUPATION.

A. My name is J. Randall Woolridge, and my business address is 120 Haymaker Circle, State College, PA 16801. I am a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed University Fellow in Business Administration at the University Park Campus of the Pennsylvania State University. I am also the Director of the Smeal College Trading Room and President of the Nittany Lion Fund, LLC. I provide a summary of my educational background, research, and related business experience in Appendix A.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. The Attorney General of the State of Oklahoma has asked me to provide an opinion as to the overall fair rate of return or cost of capital for the regulated electric utility service of the Oklahoma Gas & Electric Company ("OGE" or the "Company") and to evaluate OGE's rate of return testimony in this proceeding.[1]

Q. How is your testimony organized?

A. The following outlines my testimony:

- First, I summarize my cost of capital recommendation for the Company and review the primary areas of contention on the Company's position.
- Second, I provide an assessment of capital costs in today's capital markets.
- Third, I discuss the selection of proxy groups for estimating the cost of equity capital for the Company.
- Fourth, I discuss the Company's recommended capital structure and debt cost rates.

[1] In my testimony, I use the terms 'rate of return' and 'cost of capital' interchangeably. This is because the required rate of return of investors on a company's capital is the cost of capital.

- Fifth, I provide an overview of the concept of the cost of equity capital, and then estimate the equity cost rate for the Company.
- Finally, I critique the Company's rate of return analysis and testimony.

II. Summary of Recommendations

A. Overview

Q. WHAT COMPRISES A UTILITY'S "RATE OF RETURN"?

A. A company's overall rate of return has three main components:

1. Capital structure (i.e., ratios of short-term debt, long-term debt, preferred stock and common equity);
2. Cost rates for short-term debt, long-term debt, and preferred stock; and
3. Common equity cost, otherwise known as Return on Equity (ROE).

Q. WHAT IS A UTILITY'S ROE INTENDED TO REFLECT?

A. Return on equity ("ROE") is the allowed rate of profit for a regulated company. In a competitive market, a variety of factors determine a company's profit level, including the state of the economy, the degree of competition a company faces, the ease of entry into its markets, the existence of substitute or complementary products/services, the company's cost structure, the impact of technological changes, and the supply and demand for its services and/or products. For a regulated monopoly, the regulator determines the level of profit available to the public utility. The United States Supreme Court established the guiding principles for determining an appropriate level of profitability for regulated public

utilities in two cases: (1) *Hope*[2] and (2) *Bluefield*.[3] In those cases, the Court recognized that the fair rate of return on equity should be:

1. Comparable to returns investors expect to earn on other investments of similar risk;
2. Sufficient to assure confidence in the company's financial integrity; and
3. Adequate to maintain and support the company's credit and to attract capital.

Accordingly, finding the appropriate ROE for a regulated utility requires determining the market-based cost of capital. The market-based cost of capital for a regulated firm represents the return investors could expect from other investments, while assuming no more and no less risk. The purpose of the economic models and formulas in cost of capital testimony, such as my testimony's Discounted Cash Flow ("DCF") Model and the Capital Asset Pricing Model ("CAPM"), is to use market data of firms with similar risk to estimate the rate of return on equity investors require for this specific risk-class of firms, in order to set an appropriate ROE for a regulated firm.

B. Summary of Positions

Q. PLEASE REVIEW YOUR PROPOSED RECOMMENDATIONS REGARDING THE APPROPRIATE RATE OF RETURN FOR THE COMPANY.

A. I provide OGE's proposed capital structure and debt and equity cost rates in Table 1 below. The Company is proposing a capital structure consisting of 53.50% common equity and 46.50% long-term debt. This capital structure is OGE's actual capital structure as of September 30, 2023. The Company has proposed a long-term debt cost rate of 4.85%. The Company's witness, Ms. Ann Bulkley, has recommended a common equity cost rate of

[2] Fed. Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591 (1944).
[3] Bluefield Water Works and Improvement Co. v. Pub. Serv. Comm'n of W. Va., 262 U.S. 679 (1923).

10.50% for the Company. As shown in Table 1, the Company has proposed an overall rate of return of 7.87%.

Table 1
OGE's Rate of Return Recommendation

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	46.50%	4.85%	2.26%
Common Equity	53.50%	10.50%	5.62%
Total	100.00%		7.87%

I provide my proposed cost of capital for OGE in Table 2 below. The Company's proposed capital structure includes a much higher common equity ratio (53.50%) than the average of the two proxy groups. When this is the case, you can adjust either the common equity ratio or the return on equity downwards to account for the high common equity ratio with lower financial risk proposed by the Company. In this case, I elect to reduce the common equity ratio to 50.0%. This is more in line, but still significantly higher, than the average of the two groups. I applied the DCF Model and the CAPM to two proxy groups: (1) my group of publicly-held electric utility companies ("Electric Proxy Group"); and (2) the group developed by Ms. Bulkley ("Bulkley Proxy Group"). My analysis indicates a common equity cost rate in the range of 8.95% to 10.05% for OGE in this case. Given that (1) I rely primarily on the DCF model and the results for the Electric Proxy Group; and (2) OGE's investment risk is below the average of the two groups, I believe that the appropriate ROE range for the Company is in the 9.25%–9.75% range. I recommend a ROE of 9.50% for OGE. Given this ROE, as well as my proposed capital structure and senior capital cost rates for OGE, I recommend an overall fair rate of return or cost of capital of 7.18% for OGE. This recommendation is summarized in Table 2 and Exhibit JRW-1.

Table 2
AG's Rate of Return Recommendation

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	50.00%	4.85%	2.43%
Common Equity	50.00%	9.50%	4.75%
Total	100.00%		7.18%

C. Primary Rate of Return Issues in this Case

Q. PLEASE DESCRIBE THE PRIMARY RATE OF RETURN ISSUES IN THIS CASE.

A. The primary rate of return issues in this case are the appropriate capital structure and ROE for OGE. These overarching issues are summarized below:

1. **OGE's Assessment of Capital Market Conditions**: Ms. Bulkley's analyses, ROE results, and recommendations are based on assumptions of higher interest rates and capital costs. However, despite the increase in inflation and interest rates over the past two years, there are several factors suggesting the equity cost rates for utilities have not risen significantly. To support this contention, I show that (1) despite the higher inflation over the past two years, long-term inflation expectations are about 2.40%; (2) the yield curve is currently inverted—suggesting that investors expect yields to decline and that a recession in the next year is very likely, which would put downward pressure on interest rates; and (3) while authorized ROEs for utilities hit all-time lows in 2020 and 2021, these ROEs did not decline nearly as much as interest rates during those years. Hence, now that interest rates have increased, authorized ROEs have not increased at the same magnitude as interest rates.

2. **The Investment Risk of OGE is Below the Average of the Electric and Bulkley Proxy Groups**: The Standard & Poor's (S&P) and Moody's issuer credit ratings

for OGE are A- and A3, while the average S&P and Moody's issuer credit ratings for the two proxy groups are BBB+ and Baa2. In other words, OGE's S&P issuer credit rating is one-notch (A- vs. BBB+) above the average of the two groups and OGE's Moody's issuer credit rating is two-notches (A3 vs. Baa2) above the average of the two groups. Hence, OGE's investment risk is below the average of the two proxy groups.

3. **OGE's Proposed Capital Structure Includes an Inflated Common Equity Ratio with Lower Financial Risk than the Two Proxy Groups and OGE's Parent, OGE Energy**: The Company's proposed capital structure includes a much higher common equity ratio (53.50%) than the average of the two proxy groups as well as OGE's parent, OGE Energy. When this is the case, you can either adjust the common equity ratio or the return on equity downwards to account for the high common equity ratio with lower financial risk proposed by the Company. In this case, I elect to reduce the common equity ratio to 50.0%. This adjusted capitalization is more in line, but still significantly higher than, the average of the two groups.

4. **DCF Equity Cost Rate**: Ms. Bulkley and I both employ the traditional constant-growth DCF model. Ms. Bulkley has overstated her reported DCF results primarily because she relies exclusively on the overly optimistic and upwardly-biased earnings per share ("EPS") growth-rate forecasts of Wall Street analysts and *Value Line*. On the other hand, by developing the DCF growth rate I used in my analysis, I reviewed thirteen growth rate measures, including historical and projected growth rate measures, and evaluated growth in dividends, book value, and earnings per

share to determine my DCF growth rate.

5. **CAPM Approach**: The CAPM approach requires an estimate of the risk-free interest rate, the beta, and the market or equity risk premium. There are two primary issues with Ms. Bulkley' CAPM analyses: (1) she has used a non-traditional CAPM approach, the empirical CAPM ("ECAPM"), as an equity-cost-rate approach; and (2) most significantly, her market-risk premium of 7.78%. The market risk premium of 7.78% is larger than what is indicated by historic stock and bond return data or what is found in the published studies and surveys of the market risk premium. I will demonstrate that the 7.78% market risk premium is based on unrealistic assumptions of future economic and earnings growth and stock returns. To compute her market risk premium, Ms. Bulkley applied the DCF model to the S&P 500 and employed analysts' three-to-five-year earnings per share ("EPS") growth-rate projections as a growth rate to compute an expected market return and market risk premium. The EPS growth-rate projection of 10.78% used for the S&P 500 and the resulting expected market return (12.56%) and market risk premium (7.78%) include unrealistic assumptions regarding future economic and earnings growth and stock returns.

Additionally, there are three commonly used procedures for estimating a market risk premium—historic returns, surveys, and expected return models. I used a market risk premium of 5.25%, which factors in all three approaches—historic returns, surveys, and expected return models—to estimate a market premium and employs the results of many studies of the market risk premium. The 5.25% figure reflects the market risk premiums as determined by recent academic studies from

leading finance scholars, as employed by leading investment banks and management consulting firms, and as found in surveys of companies, financial forecasters, financial analysts, and corporate CFOs.

6. **Alternative Risk Premium Model**: Ms. Bulkley also estimates an equity cost rate using an alternative risk premium model, calling it the Bond Yield Risk Premium approach. Ms. Bulkley computes this risk premium using a regression of the historical relationship between the yields on long-term Treasury bonds and authorized ROEs for electric utility companies. Ms. Bulkley computes the estimated ROE as the projected risk-free rate plus the risk premium. I discuss several issues with Ms. Bulkley's approach in more depth later, but its primary problems include:

   a. This particular risk premium approach is a gauge of *commission* behavior rather than *investor* behavior;

   b. This methodology produces an inflated measure of the risk premium because this approach uses historical authorized ROEs and Treasury yields, and the resulting risk premium is applied to projected Treasury yields;

   c. The stocks of electric utilities have been selling above book value for the last decade, hence, the authorized ROEs of state utility commissions are above the equity cost rates; and

   d. The ROE derived from this approach is dependent on the authorized ROEs from state utility commissions. As discussed later in this testimony, Werner and Jarvis (2022), demonstrated that authorized ROEs over the past four decades have not declined in line with capital costs and therefore prior

authorized ROEs have overstated the actual cost of equity capital significantly.

7. **Other Issues**: Ms. Bulkley discusses several other factors behind recommending a 10.50% ROE for the Company. These include the Company's wildfire risk, capital expenditures, regulatory risk, and flotation costs. The Company's wildfire risk, capital expenditures and regulatory risk are factors considered in the credit rating process, and as noted above, OGE's S&P and Moody's issuer credit ratings are one-notch (A- vs. BBB+ for S&P) and two-notches (A3 vs. Baa2 for Moody's) above the average of the two groups. Hence, OGE's investment risk is below the average of the two proxy groups despite the three factors noted by Ms. Bulkley. Finally, there is no need for a flotation cost adjustment since Ms. Bulkley has not shown that OGE has paid any flotation costs. Consequently, there is no justification for giving OGE higher revenues in the form of a higher ROE to cover expenses that OGE has not paid.

III. Capital Market Conditions and Authorized ROEs

A. Capital Market Conditions

Q. PLEASE REVIEW RECENT TRENDS IN UTILITY CAPITAL COST INDICATORS.

A. Exhibit JRW-2-1 shows a history of the yields on A-rated public utility bonds. These yields gradually declined in the past 15 years from 7.5% to the 3.0% range. They bottomed out in the 3.0% range in 2020 and 2021 due to the economic fallout from the COVID-19 pandemic. Then they increased generally alongside interest rates over the last year, peaking at almost 6.0%, and are now in the 5.75% range.

Exhibit JRW-2-2 shows the average dividend yield for electric utilities. These yields declined over the past 13 years, bottoming out at 3.1% in 2019. They increased to 3.6% in 2020, declined to 3.4% in 2022, but increased again in 2023 to the 3.80% range.

Finally, Exhibit JRW-2-3 shows the average earned ROEs and market-to-book ratios for publicly held electric utilities. The average earned ROE has been in the 9.0% to 10.2% range over the past five years. The average market-to-book ratio increased over the past decade. They peaked at 2.0X in 2019 and declined to the 1.75X range in 2020–2022 time frame and declined to 1.50X in 2023.

Q. PLEASE REVIEW INTEREST RATE MOVEMENTS IN RECENT YEARS.

A. Figure 1, below, shows 30-year U.S. Treasury yields over the 13 years between 2010 and 2024. These yields were in the 3.0% range at the end of 2018. Then they declined to the 2.25% range in 2019, due primarily to slow economic growth and low inflation. In 2020, with the advent of the COVID-19 pandemic in February of that year, 30-year U.S. Treasury yields declined to record-low levels, decreasing about 100 basis points to the 1.25% range. They began their recovery in the summer of 2020 and increased to about 2.50% in the first quarter of 2021. They subsequently fell to below 2.0% in the fourth quarter of 2021 but increased significantly in 2022 and 2023 to over 5.0%. These yields declined to the 4.25% range in early 2024 but have since increased to 4.75%.

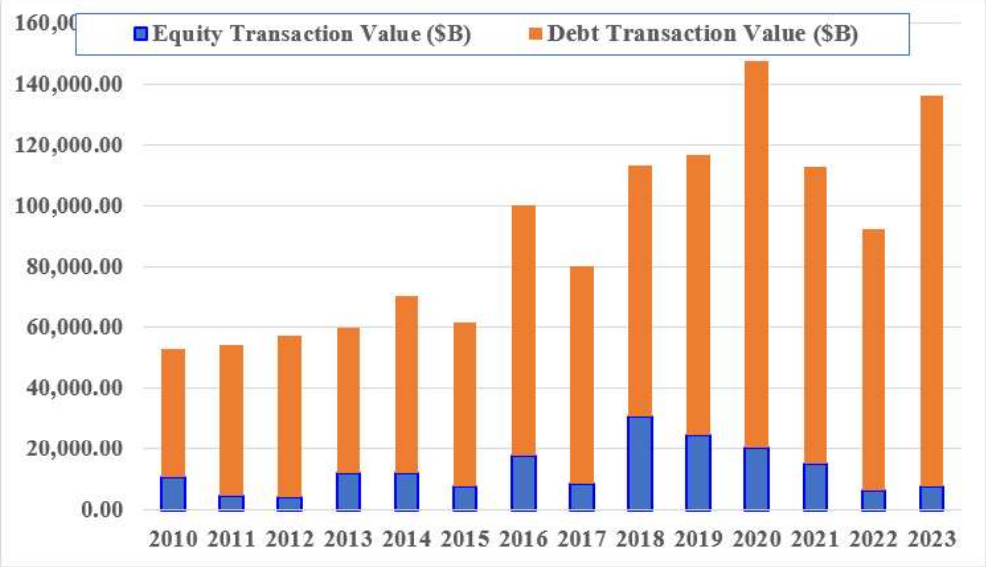
Figure 1
30-Year U.S. Treasury Yields

Data source: https://fred.stlouisfed.org/series/DGS30

Q. DID UTILITIES TAKE ADVANTAGE OF THE LOWER BOND YIELDS TO RAISE CAPITAL?

A. Yes. Figure 2, below, shows the annual amounts of debt and equity capital raised by public utility companies over the 13 years between 2010 and 2023. Electric utility and gas distribution companies took advantage of the low interest rate and capital cost environment of recent years and raised record amounts of capital in the markets. In fact, in four of the five years between 2018–2022, public utilities annually raised over $100 billion in combined debt and equity capital. The total dropped to $92 billion in 2022 but increased to $135 billion in 2023.

Figure 2
Debt and Equity Capital Raised by Public Utilities
2010–2023



Data Source: S&P Global Market Intelligence, S&P Cap IQ, 2024.

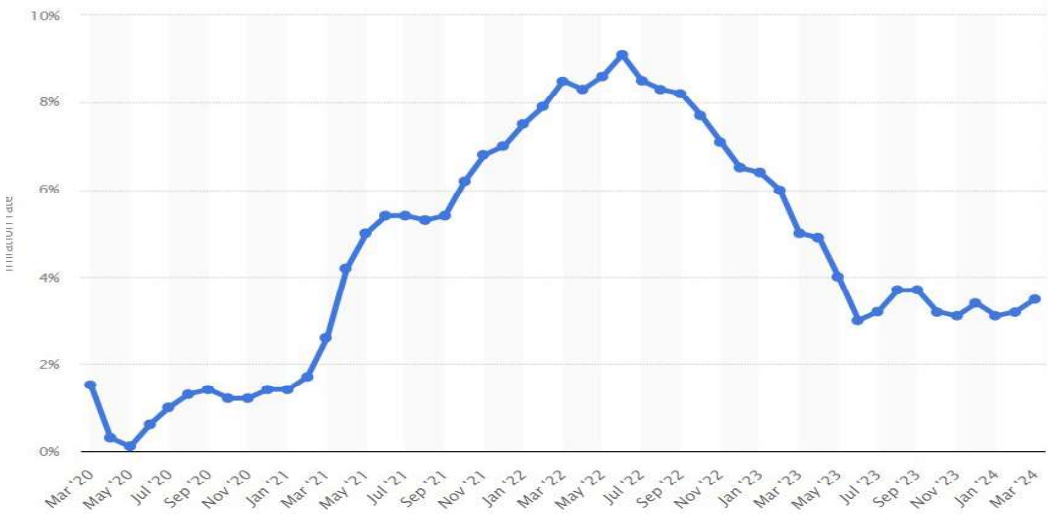
Q. PLEASE DISCUSS THE INCREASE IN INTEREST RATES SINCE THE BEGINNING OF 2022.

A. Several factors led to higher interest rates in 2022, 2023, and 2024. Coming out of the pandemic, real GDP growth increased 5.95% in 2021, 2.06% in 2022, and 3.25% in 2023, compared to a decline of -3.4% in 2020. This recovery led to greater business activity, higher levels of business and consumer spending, and record increases in housing prices. Unemployment, which was 6.7% in 2020, declined to 3.5% in 2024. The recovery in the economy puts upward pressure on interest rates by increasing the demand for capital.

In addition, as reported extensively in the financial press, inflation picked up significantly in 2022, putting still more pressure on interest rates. Reported year-over-year inflation was as high as 9.20% in 2022. Year-over-year inflation has declined on a monthly basis since October of 2022 and was 3.20% as of January 2024. However, this rate did increase in March of 2024 to 3.75%. The high rate of inflation reported in the past two years primarily

reflects three factors: (1) the recovering economy, as discussed above; (2) the production shutdowns during the pandemic leading to supply chain shortages as the global economy recovered; and (3) the war in Ukraine, which has caused higher energy and gasoline prices worldwide.

Figure 3
Year-Over-Year Inflation Rates
2020–2024



Source: https://www.statista.com/statistics/273418/unadjusted-monthly-inflation-rate-in-the-us/

In response to the higher inflation, the Federal Reserve increased the discount rate by 25 basis points in March of 2022; 50 basis points in May 2022; 75 basis points in each of the months June, July, September, and November of 2022; 50 basis points in the following month of December 2022; and 25 basis points in each of the months of February, March, May, and July of 2023.[4] However, the Federal Reserve's actions on the discount rate directly affect only short-term rates. Long-term rates are more a function of expected economic growth rates and expected inflation rates. One conundrum is that whereas the

[4] A basis point is equal to one one-hundredth of a percent.

government has been reporting annual year-over-year inflation rates as high as 9.10% in the past two years, the 30-year Treasury yield is still only about 4.50%.

Investors' inflation expectations can be seen by looking at the difference between yields on ordinary U.S. Treasuries and the yields on inflation-protected U.S. Treasuries, known as TIPS. Figure 4 shows the expected inflation rate over the next five, ten, and thirty years based on this difference in yields. One can see a significant increase in 2022, but it has fallen off and is now at an expected inflation rate of 2.40% over the next five, ten, and thirty years. Ultimately, the expected long-term inflation rate is around 2.40%.

Figure 4
5-Year, 10-Year, and 30-Year Breakeven Inflation Rates

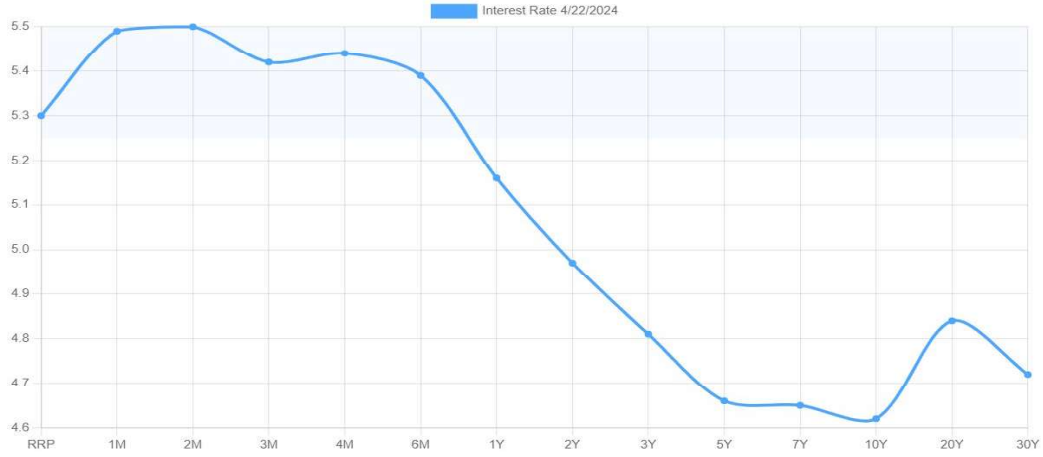
Date source: https://fred.stlouisfed.org/.

Q. DO YOU BELIEVE THAT INTEREST RATES WILL CONTINUE TO INCREASE IN 2024?

A. No. As discussed above, the current inflationary environment pushed up interest rates over the past year. Also noted above, the Federal Reserve responded with a series of discount rate increases, with the intention of slowing the economy and cooling down inflation, which would lower interest rates. Figure 5 below shows the yield curve, which plots the yield-to-maturity and time-to-maturity for Treasury securities. The yield curve is usually upward sloping because investors require higher returns to commit capital for longer periods of time. Currently, the yield curve is said to be "inverted," which means that the

yields on shorter-term maturity securities are higher than the yields on longer-term securities. This means that investors do not expect interest rates to remain where they are and expect that they should decline.

Figure 5
The Yield Curve
The Yield-to-Maturity and Time-to-Maturity for Treasury Securities



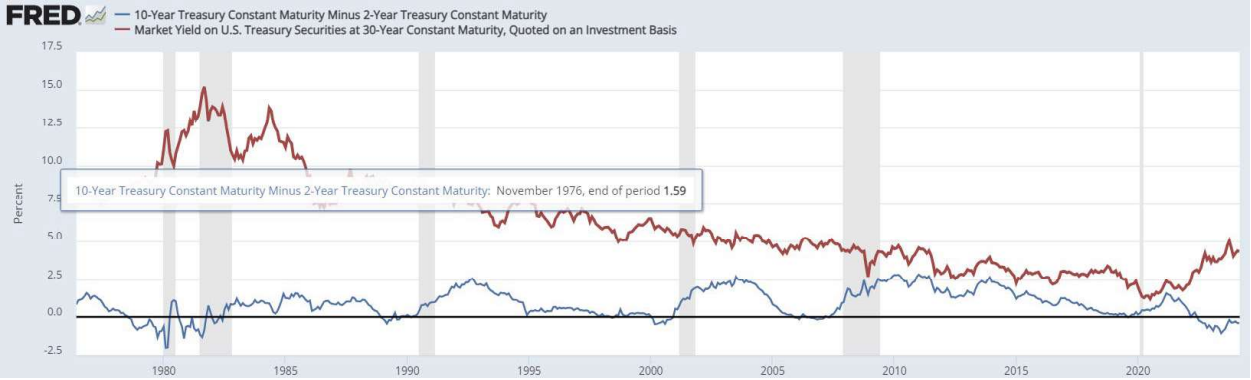
Source: https://www.ustreasuryyieldcurve.com/ - 4-22-24.

Meanwhile, the financial press focused on another aspect of an inverted yield curve. An inverted yield curve is also an indicator of a pending recession, which would put downward pressure on interest rates. An inverted yield curve is usually indicated when the 2-year Treasury yield is above the 10-year Treasury yield.

Figure 6, below, graphs two lines. First, the 10-year Treasury yield minus the 2-year Treasury yield, represented by the blue line. Second, the 30-year Treasury yield, indicated by the red line. Figure 6 also depicts shaded areas, which are economic recessions defined as two-straight quarters with negative GDP growth. Figure 6 makes it clear that every time the yield curve inverted (2-year > 10-year) in the last 50 years, a recession followed. It is similarly evident that interest rates, as indicated by the 30-year Treasury yield in Figure 6,

decline during recessions. Since the yield curve is currently inverted, based on historical patterns, a recession and lower interest rates are likely to follow.

Figure 6
Treasury 10-Year Minus 2-Year Yields
And the 30-Year Treasury Yield



Source: https://fred.stlouisfed.org/series/T10Y2Y

Q. PLEASE SUMMARIZE YOUR ASSESSMENT OF THE CURRENT CAPITAL MARKET SITUATION.

A. The U.S. economy, as measured by nominal GDP, declined nearly twenty percent in the first half of 2020 with the onset of COVID-19, then rebounded significantly in 2021 and continued the rebound in 2022 and 2023. This rebound has seen big increases in consumer and business spending, lower unemployment, and higher housing prices. Consequently, the rebounding economy has put pressure on prices. The post-COVID-19 supply chain issues and the higher energy prices brought on by the Russia-Ukraine conflict have further exacerbated economic pressures.

Despite these economic pressures, utilities took advantage of the low interest rates during 2020 and 2021 to raise record amounts of capital. The big economic issue is reported year-over-year inflation. While the year-over-year inflation rate has been higher in the short-term, the yields on TIPS suggest that longer-term inflation expectations are still about

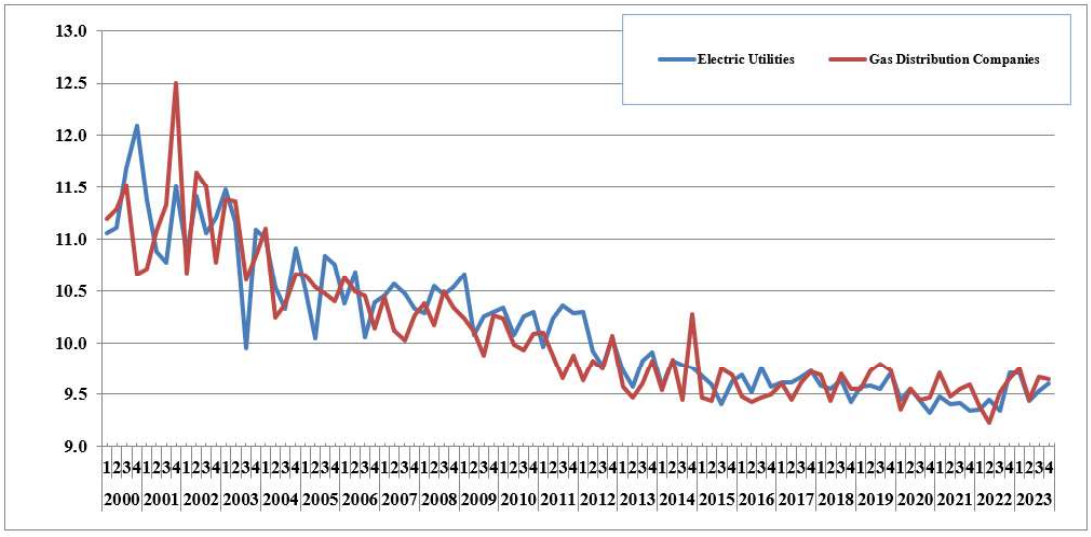
2.40%. Additionally, as I detailed above, an inverted yield curve suggests recession is likely and will lead to lower interest rates.

B. Authorized ROEs

Q. PLEASE DISCUSS THE TREND IN AUTHORIZED ROES FOR ELECTRIC AND GAS COMPANIES.

A. In Figure 7 I graphed quarterly authorized ROEs for electric and gas companies from 2000 to 2023. As interest rates have come down over the years, authorized ROEs for electric utility and gas distribution companies have also declined, but at a slower rate to reflect a low-capital-cost environment. In 2020 and 2021, authorized ROEs for utilities hit an all-time low. The average annual authorized ROEs for electric utilities and gas distribution companies are shown in Table 3 below.

Figure 7
Authorized ROEs for Electric Utilities and Gas Distribution Companies
2000–2023



Data Source: S&P Global Market Intelligence, S&P Cap IQ, 2024.

Table 3
Average Annual Authorized ROEs for Electric Utilities
and Gas Distribution Companies
2010–2023

	Electric	Gas		Electric	Gas
2010	**10.37**	**10.15**	**2017**	**9.74**	**9.72**
2011	**10.29**	**9.92**	**2018**	**9.65**	**9.59**
2012	**10.17**	**9.94**	**2019**	**9.66**	**9.72**
2013	**10.03**	**9.68**	**2020**	**9.44**	**9.47**
2014	**9.91**	**9.78**	**2021**	**9.38**	**9.56**
2015	**9.78**	**9.60**	**2022**	**9.54**	**9.53**
2016	**9.77**	**9.54**	**2023**	**9.60**	**9.64**

Data Source: S&P Global Market Intelligence, RRA Regulatory Focus, 2024.

Q. DID THE HIGHER INTEREST RATES IN 2022 AND 2023 MEAN AUTHORIZED ROES INCREASED SIGNIFICANTLY?

A. No; not necessarily. As noted previously, authorized ROEs for utilities reached record low levels in 2020 and 2021 due to record low interest rates and capital costs. However, utility ROEs did not decline to the same extent as interest rates did over these two years. To illustrate this point, Table 4, below, shows the average annual 30-year Treasury yields and authorized ROEs for electric utility companies. A key observation from Table 4 is that authorized ROEs for electric distribution companies, despite hitting record lows in 2020–2021, did not decline nearly as much as interest rates. The daily 30-year Treasury yield averaged 2.85% in 2018 and 2019, versus 1.81% in 2020 and 2021, a decrease of 104 basis points. However, the authorized ROE for electric utility companies averaged 9.63% in 2018 and 2019 and declined to an average of 9.41% in 2020 and 2021, a decline of only

22 basis points. In 2022, the average daily 30-year Treasury yield increased to 3.11%, an increase of 105 basis points relative to the 2021 average of 2.06%. However, the authorized ROEs for electric utility companies only increased by 16 basis points to 9.54%. Likewise, the average daily 30-year Treasury yield increased by 92 basis points to 4.03% in 2023, while authorized ROEs for electric utility companies only increased by 6 basis points to 9.60%.

Table 4
Average Annual 30-Year Treasury Yields and Authorized ROEs
for Electric Utility Companies
2018–2023

	2018-19 Average	2020-21 Average	2020-21 Avg. Minus 2018-19 Avg.	2022 Average	2022 Avg. Minus 2021 Avg.	2023 Average	2023 Avg. Minus 2022 Avg.
30-Year Treasury Yield	2.85%	1.81%	-1.04%	3.11%	1.05%	4.03%	0.92%
Average Electric ROE	9.63%	9.41%	-0.22%	9.54%	0.16%	9.60%	0.06%

Q. PLEASE DISCUSS THE TREND IN AUTHORIZED ROES FOR ELECTRIC AND GAS UTILITY COMPANIES IN OKLAHOMA.

A. Table 5, below, shows the authorized ROEs for electric utilities and gas distribution companies in Oklahoma from 2010–2024. These authorized ROEs have generally been in the 9.30%–9.50% range over the past seven years. In OGE's last rate case, Cause No. PUD 202100164, the Company received a ROE of 9.50%.

Q. DO YOU BELIEVE THAT YOUR ROE RECOMMENDATIONS MEETS *HOPE* AND *BLUEFIELD* STANDARDS?

A. Yes. According to the *Hope* and *Bluefield* decisions, returns on capital should be comparable to returns investors expect to earn on other investments of similar risk, sufficient to assure confidence in the company's financial integrity, and adequate to

maintain and support the company's credit and to attract capital.[5] As Exhibit JRW-2-3, shows, electric utilities companies in recent years have earned ROEs in the range of 8.0%–10.0%. With earned ROEs in the range of 8.0%–10.0%, electric utilities like those in the proxy groups have strong investment-grade credit ratings, sell stocks well over book value, and raise abundant amounts of capital. While my recommendation is slightly below the average authorized ROE for electric utility companies, it reflects the relatively low levels of capital costs in the current market. Therefore, I believe that my ROE recommendation meets the criteria *Hope* and *Bluefield* established.

Table 5
Oklahoma Authorized ROEs
2010–2024

	Parent		Rate Case	Increase Authorized				
Company	Compan	Docket	Service Type	Date	Decision	$ Inc.	ROE	CE Ratio
Public Service Co. of OK	AEP	Ca-PUD201000050	Electric	1/5/2011	Settled	30.3	10.15	45.84
Oklahoma Gas and Electric	OGE	Ca-PUD201100087	Electric	7/9/2012	Settled	4.3	10.20	NA
Oklahoma Natural Gas Co	OGS	Ca-PUD201200029	Natural Gas	7/19/2012	Settled	9.5	NA	NA
CenterPoint Energy	CNP	Ca-PUD201400070	Natural Gas	7/3/2014	Settled	0.3	NA	50.00
Oklahoma Natural Gas Co	OGS	Ca-PUD201400069	Natural Gas	8/5/2014	Settled	13.7	NA	NA
Public Service Co. of OK	AEP	Ca-PUD201300217	Electric	4/14/2015	Settled	(4.8)	NA	NA
CenterPoint Energy	CNP	Ca-PUD201500118	Natural Gas	11/4/2015	Fully Litigated	0.9	NA	49.86
Oklahoma Natural Gas Co	OGS	Ca PUD201500213	Natural Gas	1/6/2016	Settled	30.0	9.50	60.50
CenterPoint Energy	CNP	Ca-PUD201600094	Natural Gas	7/19/2016	Settled	0.0	NA	NA
Public Service Co. of OK	AEP	Ca-PUD201500208	Electric	11/10/2016	Fully Litigated	14.5	9.50	44.00
Oklahoma Gas and Electric	OGE	Ca-PUD201500273	Electric	3/20/2017	Fully Litigated	8.8	9.50	53.31
Oklahoma Natural Gas Co	OGS	Ca-PUD201700079	Natural Gas	8/9/2017	Settled	0.0	NA	NA
CenterPoint Energy	CNP	Ca-PUD201700078	Natural Gas	10/19/2017	Fully Litigated	2.2	NA	NA
Public Service Co. of OK	AEP	Ca-PUD201700151	Electric	1/31/2018	Fully Litigated	75.5	9.30	48.51
Oklahoma Gas and Electric	OGE	Ca-PUD201700496	Electric	6/19/2018	Settled	(64.0)	NA	NA
CenterPoint Energy	CNP	Ca-PUD201800029	Natural Gas	10/4/2018	Fully Litigated	5.4	NA	NA
Oklahoma Natural Gas Co	OGS	Ca-PUD201800028	Natural Gas	1/8/2019	Settled	(5.9)	NA	NA
Public Service Co. of OK	AEP	Ca-PUD201800097	Electric	3/14/2019	Settled	46.0	9.40	NA
Oklahoma Natural Gas Co	OGS	Ca-PUD201900018	Natural Gas	8/20/2019	Settled	(28.2)	NA	NA
CenterPoint Energy	CNP	Ca-PUD201900019	Natural Gas	8/29/2019	Fully Litigated	1.9	NA	NA
Oklahoma Gas and Electric	OGE	Ca-PUD201800140	Electric	9/19/2019	Settled	0.0	NA	NA
Oklahoma Natural Gas Co	OGS	Ca-PUD202000022	Natural Gas	7/8/2020	Settled	9.7	NA	NA
CenterPoint Energy	CNP	Ca-PUD202000028	Natural Gas	7/14/2020	Settled	(2.5)	NA	NA
CenterPoint Energy	CNP	Ca-PUD202100054	Natural Gas	8/19/2021	Settled	(0.9)	NA	NA
Oklahoma Natural Gas Co	OGS	Ca-PUD202100063	Natural Gas	11/30/2021	Settled	15.3	9.40	58.55
Public Service Co. of OK	AEP	Ca-PUD202100055	Electric	12/28/2021	Settled	153.4	9.40	NA
Oklahoma Gas and Electric	OGE	Ca-PUD202100164	Electric	9/8/2022	Settled	30.0	9.50	53.37
Summit Utilities Inc.	JPM	Ca-PUD202200022	Natural Gas	11/10/2022	Settled	0.0	NA	NA
Oklahoma Natural Gas Co	OGS	Ca-PUD202200023	Natural Gas	11/29/2022	Settled	19.6	NA	NA
Empire District Electric Co.	AQN	Ca-PUD202100163	Electric	12/29/2022	Settled	5.1	9.30	NA
Public Service Co. of OK	AEP	Ca-PUD2022-000093	Electric	11/3/2023	Settled	131.2	9.30	52.00
Oklahoma Natural Gas Co	OGS	Ca-PUD2023-000012	Natural Gas	7/11/2023	Settled	26.3	NA	NA

Data Sources: S&P Global Market Intelligence, RRA *Regulatory Focus*, 2024.

[5] *Hope*, 320 U.S. 59; *Bluefield*, 262 U.S. 679.

Q. WITH RESPECT TO THIS DISCUSSION, PLEASE DISCUSS THE *WALL STREET JOURNAL* ARTICLE ON UTILITIES' AUTHORIZED ROES IN THE CURRENT ENVIRONMENT.

A. A *Wall Street Journal* article from October 2022, entitled "Utilities Have a High-Wire Act Ahead", discusses the issue utilities are facing today to meet the needs of its primary stakeholders—customers and investors.[6] The article highlights the utility rate issue in the context of a recent study on rate of return regulation. Werner and Jarvis evaluated the authorized ROEs in 3,500 electric and gas rate case decisions in the U.S. from 1980–2021. They then compared the allowed rates of return on equity to a number of capital cost benchmarks (e.g., government and corporate bonds, CAPM equity cost rate estimates, and U.K. authorized ROEs) and focused on three questions: (1) To what extent are utilities being allowed to earn excess returns on equity by their regulators? (2) How has this return on equity affected utilities' capital investment decisions? and (3) What impact has this had on the costs paid by consumers?[7]

The authors reported the following empirical results:

1. The real (inflation-adjusted) return regulators allowed equity investors to earn has been pretty steady over the last 40 years, while the many different cost of capital measures have been declining;
2. The gap between the authorized ROEs and the benchmarks suggest that regulators have been approving ROEs that are from 0.50% to 5.50% above the cost of equity

[6] Jinjoo Lee, *Utilities Have a High-Wire Act Ahead*, Wall St. J., CI (Oct. 9, 2022).
[7] Karl Dunkle Werner & Stephen Jarvis, *Rate of Return Regulation Revisited, Working Papers*, Energy Inst., Univ. of Calif. at Berkeley (2022).

benchmarks;

3. One potential explanation is that utilities have become riskier; however, the authors found that utility credit ratings, on average, have not changed much over the past 40 years;
4. An extra 1.0% of allowed return on equity causes a utility's capital rate base to expand by an extra 5% on average, which supports the Averch-Johnson effect that utilities have an incentive to overinvest in capital projects if they are earning an outsized return on those investments;[8]
5. Both the return on equity requested by utilities and the return granted by regulators respond more quickly to rises in market measures of capital cost than to declines, and the time adjustment for decreases is twice as long as for increases.
6. Authorized ROEs tend to be approved at round numbers (1.0, 0.5, 0.25), with 10.0% being the most common authorized ROE;
7. Overall, based on the gap between the allowed and the benchmark ROEs, consumers may be paying $2–20 billion more per year than if authorized ROEs had fallen in line with other capital market indicators; and
8. The authors' results are similar to those found in a previous study conducted by Rode and Fischback in 2019.[9]

In summary, these results indicate that over the past four decades authorized ROEs have not declined in line with capital costs and therefore past authorized ROEs have overstated

[8] *Glossary: Averch-Johnson Effect (AJ Effect)*, Body of Knowledge on Infrastructure Regulation, https://regulationbodyofknowledge.org/glossary/a/averch-johnson-effect-aj-effect/ (last visited Apr. 25, 2024).

[9] David C. Rode & Paul S. Fischbeck, *Regulated Equity Returns: A Puzzle*, Energy Pol'y (Oct. 2019).

the actual cost of equity capital. Hence, the Oklahoma Corporation Commission ("Commission") should not be concerned that my recommended ROE of 9.50% is below other authorized ROEs; further, my recommended ROE is consistent with and supported by the observations made in the Werner and Jarvis study.

IV. Proxy Group Selection

Q. PLEASE DESCRIBE YOUR APPROACH TO DEVELOPING A FAIR RATE OF RETURN RECOMMENDATION FOR THE COMPANY.

A. To develop a fair rate of return recommendation for the Company, I evaluated the return requirements of investors on the common stock of a proxy group of publicly held electric utility companies ("Electric Proxy Group"). I also employed the group developed by Ms. Bulkley ("Bulkley Proxy Group").

Q. PLEASE DESCRIBE YOUR PROXY GROUP OF ELECTRIC COMPANIES.

A. The selection criteria for my Electric Proxy Group include the following:

1. Receives at least 50% of revenues from regulated electric operations as reported in its SEC Form 10-K Report;
2. *Value Line Investment Survey* lists it as a U.S.-based electric utility;
3. Holds an investment-grade corporate credit and bond rating;
4. Paid a cash dividend in the past six months, with no cuts or omissions;
5. Is not involved in an acquisition of another utility, and not the target of an acquisition; and
6. Its analysts' long-term EPS growth rate forecasts are available from Yahoo, S&P Cap IQ, and/or Zacks.

The Electric Proxy Group includes 25 companies. Exhibit JRW-3-1 provides summary of financial statistics for the proxy group, showing mean operating revenues and net plant among members of the Electric Proxy Group of $10.43 billion and $40.09 billion, respectively. The group on average receives 84% of its revenues from regulated electric operations; has a BBB+ bond rating from S&P and a Baa2 rating from Moody's; has a current average common equity ratio of 41.7%; and an average earned return on common equity of 9.20%.

Q. PLEASE DESCRIBE THE BULKLEY PROXY GROUP.

A. Ms. Bulkley's group includes 16 electric utilities. Panel B of Exhibit JRW-3-1 provides summary financial statistics for the Bulkley Proxy Group, showing mean operating revenues and net plant of $10.27 billion and $41.69 billion, respectively. The group on average receives 85% of its revenues from regulated electric operations; has a BBB+ bond rating from S&P's and a Baa2 rating from Moody's; has an average common equity ratio of 41.4%; and has an earned return on common equity of 9.43%.

Q. HOW DOES THE INVESTMENT RISK OF THE COMPANY COMPARE TO THAT OF YOUR PROXY GROUPS?

A. I believe bond ratings provide a good assessment of a company's investment risk. The Standard & Poor's (S&P) and Moody's issuer credit ratings for OGE are A- and A3, respectively, while the average S&P and Moody's issuer credit ratings for the two proxy groups are BBB+ and Baa2. Hence, OGE's S&P issuer credit rating is one notch (A- versus BBB+) above the average of the two groups and OGE's Moody's issuer credit rating is two-notches (A3 versus Baa2) above the average of the two groups. Hence, OGE's investment risk is below the average of the two proxy groups.

Q. PLEASE DISCUSS THE RISK ANALYSIS YOU PERFORMED IN EXHIBIT JRW-3-2.

A. In Exhibit JRW-3-2 I assessed the riskiness of the two proxy groups using five different accepted risk measures. These measures include Beta, Financial Strength, Safety, Earnings Predictability, and Stock Price Stability. These risk measures suggest that the two proxy groups are similar in risk. As seen in Exhibit JRW-3-2, the comparisons of the risk measures for the Electric and Bulkley Proxy Groups include Beta (0.92 versus 0.91), Financial Strength (A versus A) Safety (2.0 versus 2.1), Earnings Predictability (89 versus 92), and Stock Price Stability (88 versus 88). On balance, these measures suggest that these two proxy groups are low risk relative to the overall stock market and are similar in risk to each other.

V. Capital Structure Ratios and Debt Cost Rates

Q. WHAT ARE OGE'S RECOMMENDED CAPITAL STRUCTURE AND SENIOR CAPITAL COST RATES FOR RATEMAKING PURPOSES?

A. Panel A of Exhibit JRW-4-1 provides OGE's proposed capital structure and debt cost rates. The Company has proposed a capital structure of 53.50% common equity and 46.50% long-term debt. The Company has proposed a long-term debt cost rate of 4.85%.

Q. PLEASE DISCUSS THE CAPITAL STRUCTURES OF THE COMPANIES IN THE PROXY GROUPS.

A. Exhibit JRW-3-1 provides the average common equity ratios for the companies in the two proxy groups. As of December 31, 2023, the average common equity ratios for the Electric and Bulkley Proxy Groups were 41.7% and 41.4%, respectively. As such, the average common equity ratio for the proxy group companies includes a much lower common equity

ratio and higher financial risk than OGE's proposed structure. That means OGE's proposed capital structure includes more common equity and less financial risk than the proxy-group companies.

Q. IS IT APPROPRIATE TO USE THE COMMON EQUITY RATIOS OF THE PARENT HOLDING COMPANIES OR SUBSIDIARY OPERATING UTILITIES FOR COMPARISON PURPOSES WITH OGE' S PROPOSED CAPITALIZATION?

A. It is more appropriate to use the common equity ratios of the utility holding companies because the *holding companies* are publicly traded, and their stocks are used in the cost-of-equity capital studies including the DCF and the CAPM analyses. The equities of the *operating utilities* are not publicly traded, and hence their stocks cannot be used to compute the cost of equity capital for OGE.

Q. IS IT APPROPRIATE TO INCLUDE SHORT-TERM DEBT IN THE CAPITALIZATION WHEN COMPARING THE COMMON EQUITY RATIOS OF THE HOLDING COMPANIES WITH OGE'S PROPOSED CAPITALIZATION?

A. Yes. Short-term debt, like long-term debt, has a higher claim on the assets and earnings of the company and requires timely payment of interest and repayment of principal. Thus, by comparing the common equity ratios of the holding companies in the proxy groups with OGE's recommendation, it is appropriate to include short-term debt when computing the holding company common equity ratios. Additionally, the financial risk of a company is based on total debt, which includes both short-term and long-term debt.

Q. PLEASE REVIEW YOUR CAPITAL STRUCTURE STUDY OF OGE AND ITS PARENT, OGE ENERGY.

A. Panel B of Exhibit JRW-4-1 provides the average quarterly capital structure ratios, both with and without short-term debt, for OGE and OGE Energy. The data used in the study is provided in Exhibit JRW-4-2. The study indicates that, over the past three years, OGE has maintained a capital structure consistent with a 53.50% common equity ratio. However, OGE Energy's average common equity ratios of 46.3% (with short-term debt) and 50.6% (without short-term debt), is below OGE's recommendation. Hence, like the two proxy groups, OGE's parent corporation maintains a much lower common equity ratio than the Company.

Q. PLEASE DISCUSS THE ISSUE OF PUBLIC UTILITY HOLDING COMPANIES SUCH AS OGE ENERGY USING DEBT TO FINANCE THE EQUITY IN SUBSIDIARIES SUCH AS OGE.

A. Moody's published an article on the use of low-cost debt financing by public utility holding companies to increase their earned ROEs. Specifically, the holding companies (e.g., OGE Energy) use low-cost debt to purchase equity in their subsidiaries. The summary observations included the following about how these holding companies use "leverage" and how an increase in leverage at the parent holding company can "hurt the credit profiles of its regulated subsidiaries":

> U.S. utilities use leverage at the holding-company level to invest in other businesses, make acquisitions and earn higher returns on

> equity. In some cases, an increase in leverage at the parent can hurt the credit profiles of its regulated subsidiaries.[10]

This financial strategy has traditionally been known as "double leverage." Noting that "double leverage" results in a consolidated debt-to-capitalization ratio that is higher at the parent than at the subsidiary because of the additional debt at the parent, Moody's defined double leverage as follows:

> Double leverage is a financial strategy whereby the parent raises debt but downstreams the proceeds to its operating subsidiary, likely in the form of an equity investment. Therefore, the subsidiary's operations are financed by debt raised at the subsidiary level and by debt financed at the holding-company level. In this way, the subsidiary's equity is leveraged twice, once with the subsidiary debt and once with the holding-company debt. In a simple operating-company/holding-company structure, this practice results in a consolidated debt-to-capitalization ratio that is higher at the parent than at the subsidiary because of the additional debt at the parent.[11]

Moody's goes on to discuss the potential risk "down the road" for utilities using this financing corporate strategy, if regulators were to ascribe the debt at the parent level to the subsidiaries or adjust the authorized return on capital:

> **"Double leverage" drives returns for some utilities but could pose risks down the road.** The use of double leverage, a long-standing practice whereby a holding company takes on debt and downstreams the proceeds to an operating subsidiary as equity, could pose risks down the road if regulators were to ascribe the debt at the parent level to the subsidiaries or adjust the authorized return on capital.[12]

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[10] *High Leverage at the Parent Often Hurts the Whole Family*, Moody's Investors' Service 1 (May 11, 2015).
[11] *Id.* at 5.
[12] *Id.* at 1 (emphasis added).

Q. PLEASE DISCUSS THE SIGNIFICANCE OF THE AMOUNT OF EQUITY THAT IS INCLUDED IN A UTILITY'S CAPITAL STRUCTURE.

A. A utility's decision as to the amount of equity capital it will incorporate into its capital structure involves fundamental trade-offs relating to the amount of financial risk the firm carries, the return on equity that investors will require, and the overall revenue requirements its customers are required to bear through the rates they pay.

Q. PLEASE DISCUSS A UTILITY'S DECISION TO USE DEBT VERSUS EQUITY TO MEET ITS CAPITAL NEEDS.

A. Utilities satisfy their capital needs through a mix of equity and debt. Because equity capital is more expensive than debt, the issuance of debt enables a utility to raise more capital for a given commitment of dollars than it could raise with just equity. Debt is, therefore, a means of "leveraging" capital dollars. However, as the amount of debt in the capital structure increases, its financial risk increases and the risk of the utility, as perceived by equity investors also increases. It is significant in this case that the converse is also true. As the amount of debt in the capital structure decreases, the financial risk decreases. The required return on equity capital is a function of the amount of overall risk that investors perceive, including financial risk in the form of debt.

Q. WHY IS THIS RELATIONSHIP IMPORTANT TO THE UTILITY'S CUSTOMERS?

A. Just as there is a direct correlation between the utility's authorized return on equity and the utility's revenue requirements (the higher the return, the greater the revenue requirement), there is a direct correlation between the amount of equity in the capital structure and the revenue requirements the customers are called on to bear. Again, equity capital is more

expensive than debt. Not only does equity command a higher cost rate, but it also adds more to the income tax burden that ratepayers are required to pay through rates. As the equity ratio increases, the utility's revenue requirements increase, and the rates paid by customers increase. If the proportion of equity is too high, rates will be higher than they need to be. For this reason, the utility's management should pursue a capital acquisition strategy that results in the proper balance in the capital structure to minimize the overall cost of capital.

Q. HOW HAVE UTILITIES TYPICALLY STRUCK THIS BALANCE?

A. Due to regulation and the essential nature of its output, a regulated utility is exposed to less business risk than other companies that are not regulated. This means that a regulated electric distribution company can reasonably carry relatively more debt in its capital structure than most unregulated companies. Thus, a utility should take appropriate advantage of its lower business risk to employ cheaper debt capital at a level that will benefit its customers through lower revenue requirements. Typically, equity ratios for electric utilities range from 40% to 50%.

Q. WHAT SHOULD THE COMMISSION DO IN THIS RATEMAKING PROCEEDING TO PROTECT CONSUMERS GIVEN THAT OGE HAS PROPOSED AN EQUITY RATIO OF 53.50%, WHICH IS HIGHER THAN THE PROXY GROUPS' 41.7% AND 41.4%, AND THAT OF ITS PARENT COMPANY, OGE ENERGY?

A. When a regulated utility's actual capital structure contains a high equity ratio, the options are: (1) to impute a more reasonable capital structure and reflect the imputed capital structure in revenue requirements; or (2) to recognize the downward impact that an

unusually high equity ratio will have on the financial risk of a utility and authorize a lower common equity cost rate than that for the proxy group used to determine the cost of equity.

Q. PLEASE COMMENT ON MS. BULKLEY'S CAPITAL STRUCTURE STUDY FOUND IN EXHIBIT AEB-15.

A. Ms. Bulkley claims to support the Company's proposed capital structure in a study she performed in Exhibit AEB-15. She reports that the operating subsidiary companies owned by her proxy utilities have a mean common equity ratio of 52.82%, which is similar to the capitalization proposed by the Company. The error is that the operating subsidiary companies are not the proxy utility companies in her proxy group. The proxy utilities are the parent holding companies that own the operating companies. Exhibit. JRW-3 shows that the average common equity ratios for the parent holding companies in the two proxy groups as of December 31, 2023, were 41.7% for the Electric Proxy Group and 41.4% for the Bulkley Proxy Group. Hence, Ms. Bulkley's study does not support the Company's proposed capital structures, since she did not use the actual proxy companies in her own proxy group for her study.

Q. HOW DO YOU PLAN TO ACCOUNT FOR THE HIGH COMMON EQUITY RATIO?

A. I adopt a capital structure with a common equity ratio of 50.00%. While I adjust the Company's proposed capital structure, the resulting common equity ratio is still higher than the average of the two proxy groups and OGE's parent, OGE Energy. I also adopt the Company's proposed senior capital cost rate of 4.85%.

VI. The Cost of Common Equity Capital

A. Overview

Q. WHY MUST AN OVERALL COST OF CAPITAL OR FAIR RATE OF RETURN BE ESTABLISHED FOR A PUBLIC UTILITY?

A. In a competitive industry, the return on a firm's common equity capital is determined through the competitive market for its goods and services. Due to the capital requirements needed to provide utility services and the economic benefit to society from avoiding duplication of these services and the construction of utility-infrastructure facilities, most public utilities are monopolies.

Because of the lack of competition and the essential nature of their services, it is not appropriate to permit monopoly utilities to set their own prices. Thus, regulation seeks to establish prices that are fair to consumers and, at the same time, sufficient to meet the operating and capital costs of the utility (i.e., provide an adequate return on capital to attract investors).

Q. PLEASE PROVIDE AN OVERVIEW OF THE COST OF CAPITAL IN THE CONTEXT OF THE THEORY OF THE FIRM.

A. The total cost of operating a business includes the cost of capital. The cost of common equity capital is the expected return on a firm's common stock that the marginal investor would deem sufficient to compensate for risk and the time value of money. In equilibrium, the expected and required rates of return on a company's common stock are equal.

Normative economic models of a company or firm, developed under very restrictive assumptions, provide insight into the relationship between a firm's performance or profitability, capital costs, and the value of the firm. Under the economist's ideal model of

perfect competition, where entry and exit are costless, there are many entities competing in the marketplace with no entity having the power to dictate the market or market prices, products are undifferentiated, and there are increasing marginal costs of production, firms produce up to the point where price equals marginal cost. Over time, a long-run equilibrium is established where the price of the firm equals average cost, including the firm's capital costs. In equilibrium, total revenues equal total costs, and because capital costs represent investors' required return on the firm's capital, actual returns equal required returns, and the market value must equal the book value of the firm's securities.

In a competitive market, firms can achieve competitive advantage due to product-market imperfections. Most notably, companies can gain competitive advantage through product differentiation (i.e., adding real or perceived value to products) and by achieving economies of scale (e.g., decreasing marginal costs of production). Competitive advantage allows firms to price products above average cost and thereby earn accounting profits greater than those required to cover capital costs. When profits exceed those required by investors, or when a firm earns a return on equity in excess of its cost of equity, investors respond by valuing the firm's equity in excess of its book value.

James M. McTaggart, founder of the international management consulting firm Marakon Associates, described this essential relationship between the return on equity, the cost of equity, and the market-to-book ratio in the following manner:

> Fundamentally, the value of a company is determined by the cash flow it generates over time for its owners, and the minimum acceptable rate of return required by capital investors. This "cost of equity capital" is used to discount the expected equity cash flow, converting it to a present value. The cash flow is, in turn, produced by the interaction of a company's return on equity and the annual rate of equity growth. High return on equity (ROE) companies in low-growth markets, such as Kellogg, are prodigious generators of

> cash flow, while low ROE companies in high-growth markets, such as Texas Instruments, barely generate enough cash flow to finance growth.
>
> . . . .
>
> A company's ROE over time, relative to its cost of equity, also determines whether it is worth more or less than its book value. If its ROE is consistently greater than the cost of equity capital (the investor's minimum acceptable return), the business is economically profitable and its market value will exceed book value. If, however, the business earns an ROE consistently less than its cost of equity, it is economically unprofitable and its market value will be less than book value.[13]

As such, the relationship between a firm's return on equity, cost of equity, and market-to-book ratio is relatively straightforward. A firm that earns a return on equity above its cost of equity will see its common stock sell at a price above its book value. Conversely, a firm that earns a return on equity below its cost of equity will see its common stock sell at a price below its book value.

Q. PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE RELATIONSHIP BETWEEN ROE AND MARKET-TO-BOOK RATIOS.

A. This relationship is discussed in a classic Harvard Business School case study entitled "Note on Value Drivers." There, the author describes the relationship very succinctly:

[13] James M. McTaggart, *The Ultimate Poison Pill: Closing the Value Gap*, *Commentary* 3 (Spring 1986).

> For a given industry, more profitable firms—those able to generate higher returns per dollar of equity—should have higher market-to-book ratios. Conversely, firms which are unable to generate returns in excess of their cost of equity [(K)] should sell for less than book value. [14]

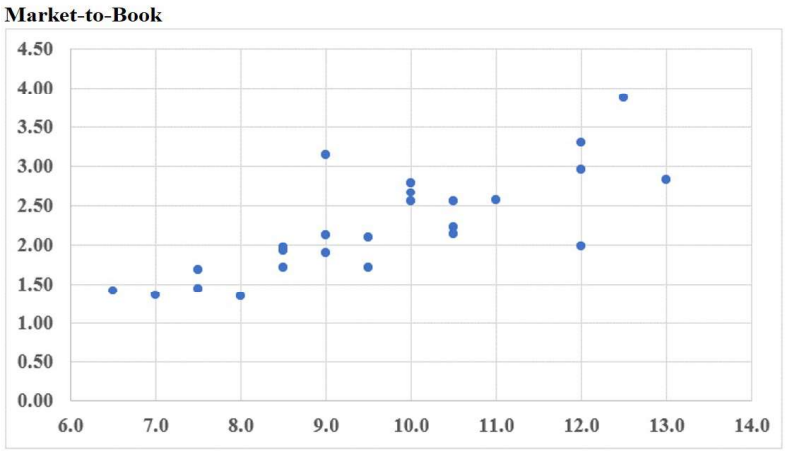
Profitability	*Value*
If ROE > K	*then Market/Book > 1*
If ROE = K	*then Market/Book =1*
If ROE < K	*then Market/Book< 1*

To assess the relationship by industry, as suggested above, I performed a regression study between estimated ROE and market-to-book ratios of the Electric Proxy Group companies. The results are presented in Figure 8 below. The average R-square is 0.58.15. This demonstrates the strong positive relationship between ROEs and market-to-book ratios for public utilities. Given that the market-to-book ratios have been above 1.0 for several years, this also demonstrates that utilities have been earning ROEs above the cost of equity capital for many years.

[14] Benjamin C. Esty, *Note on Value Drivers*, Harvard Bus. Sch. Background Note 297–082, at 2 (April 1997).

[15] R-square measures the percent of variation in one variable (e.g., market-to-book ratios) explained by another variable (e.g., expected ROE). R-squares vary between 0 and 1.0, with values closer to 1.0 indicating a higher relationship between two variables.

Figure 8
The Relationship Between Expected ROE and Market-to-Book Ratios
Electric Proxy Group



Source: *Value Line Investment Survey*, 2022.

Q. WHAT FACTORS DETERMINE INVESTORS' EXPECTED OR REQUIRED RATE OF RETURN ON EQUITY?

A. The expected or required rate of return on common stock is a function of market-wide as well as company-specific factors. The most important market factor is the time value of money, as indicated by the level of interest rates in the economy. Common-stock investor requirements generally increase and decrease with like changes in interest rates. The perceived risk of a firm is the predominant factor that influences investor return requirements on a company-specific basis. A firm's investment risk is often separated into business risk and financial risk. Business risk encompasses all factors that affect a firm's operating revenues and expenses. Financial risk results from incurring fixed obligations in the form of debt in financing its assets.

Q. HOW DOES THE INVESTMENT RISK OF UTILITIES COMPARE WITH THAT OF OTHER INDUSTRIES?

A. Due to the essential nature of their service as well as their regulated status, public utilities are exposed to less business risk than other, non-regulated businesses. The relatively low level of business risk allows public utilities to meet much of their capital requirements through borrowing in the financial markets, thereby incurring greater than average financial risk. Ultimately, the overall investment risk of public utilities is below most other industries.

Table 6, below, provides an assessment of investment risk for 92 industries as measured by beta, which, according to modern capital market theory, is the only relevant measure of investment risk. These betas come from the *Value Line Investment Survey*, which shows that the investment risk of utilities is low compared to other industries.[16] The average betas for electric, gas, and water utility companies are 0.90, 0.88, and 0.82, respectively.[17] Thus, the cost of equity for utilities is the lowest of all industries in the U.S., based on modern capital market theory.

[16] As I discuss in more detail below, a stock whose price movement is greater than that of the market, such as a technology stock, is riskier than the market and has a beta greater than 1.0. A stock with below-average price movement, such as that of a regulated public utility, is less risky than the market and has a beta less than 1.0.

[17] The beta for the *Value Line* electric utilities is the simple average of *Value Line*'s Electric East (0.90), Central (0.88), and West (0.91) group betas.

Table 6
Industry Average Betas*
Value Line* Investment Survey Betas*

13-Jan-24

Rank	Industry	Beta	Rank	Industry	Beta	Rank	Industry	Beta
1	Hotel/Gaming	1.52	33	Bank	1.18	65	Railroad	1.07
2	Oilfield Svcs/Equip.	1.44	34	Heavy Truck & Equip	1.18	66	IT Services	1.05
3	Apparel	1.41	35	R.E.I.T.	1.18	67	Cable TV	1.05
4	Insurance (Life)	1.40	36	Pipeline MLPs	1.18	68	Thrift	1.04
5	Air Transport	1.39	37	Electrical Equipment	1.17	69	Information Services	1.03
6	Petroleum (Producing)	1.37	38	Med Supp Invasive	1.16	70	Retail Store	1.03
7	Petroleum (Integrated)	1.36	39	Computers/Peripherals	1.16	71	Packaging & Container	1.01
8	Office Equip/Supplies	1.36	40	Entertainment	1.16	72	Human Resources	1.00
9	Advertising	1.36	41	Computer Software	1.16	73	Investment Co.	0.99
10	Shoe	1.33	42	Chemical (Specialty)	1.15	74	Retail Building Supply	0.99
11	Metals & Mining (Div.)	1.33	43	Healthcare Information	1.15	75	Med Supp Non-Invasive	0.99
12	Public/Private Equity	1.33	44	Engineering & Const	1.15	76	Environmental	0.98
13	Homebuilding	1.30	45	Maritime	1.15	77	Educational Services	0.97
14	Building Materials	1.30	46	Automotive	1.15	78	Drug	0.94
15	Auto Parts	1.30	47	Wireless Networking	1.15	79	Telecom. Services	0.92
16	Metal Fabricating	1.28	48	Semiconductor	1.15	80	Electric Utility (West)	0.91
17	Recreation	1.28	49	Medical Services	1.14	81	Beverage	0.91
18	Steel	1.28	50	Diversified Co.	1.14	82	Trucking	0.90
19	Retail (Hardlines)	1.27	51	Chemical (Basic)	1.13	83	Electric Utility (East)	0.90
20	Natural Gas (Div.)	1.27	52	Machinery	1.13	84	Tobacco	0.89
21	Retail (Softlines)	1.26	53	E-Commerce	1.13	85	Electric Util. (Central)	0.88
22	Restaurant	1.25	54	Power	1.13	86	Natural Gas Utility	0.88
23	Furn/Home Furnishings	1.23	55	Electronics	1.12	87	Biotechnology	0.83
24	Retail Automotive	1.22	56	Toiletries/Cosmetics	1.11	88	Household Products	0.82
25	Semiconductor Equip	1.21	57	Industrial Services	1.10	89	Retail/Wholesale Food	0.82
26	Chemical (Diversified)	1.21	58	Publishing	1.09	90	Water Utility	0.82
27	Financial Svcs. (Div.)	1.20	59	Investment Co.(Foreign)	1.09	91	Food Processing	0.77
28	Internet	1.20	60	Entertainment Tech	1.08			
29	Aerospace/Defense	1.20	61	Reinsurance	1.07			
30	Oil/Gas Distribution	1.19	62	Insurance (Prop/Cas.)	1.07			
31	Paper/Forest Products	1.19	63	Telecom. Equipment	1.07			
32	Bank (Midwest)	1.18	64	Precision Instrument	1.07		Mean	1.13

* Industry averages for 92 industries using *Value Line*'s database of 1,700 companies - Updated 1-13-24.

** *Value Line* computes betas using monthly returns regressed against the New York Stock Exchange Index for five years. These betas are then adjusted as follows: *VL* Beta = [{(2/3) * Regressed Beta} + {(1/3) * (1.0)}] to account to tendency for Betas to regress toward average of 1.0. See M. Blume, "On the Assessment of Risk," *Journal of Finance*, March 1971.

Q. WHAT IS THE COST OF COMMON EQUITY CAPITAL?

A. The costs of debt and preferred stock are normally based on historical or book values and can be determined with a great degree of accuracy. The cost of common equity capital, however, cannot be determined precisely and must instead be estimated from market data and informed judgment. The return requirement of the stockholder should be commensurate with the return requirement on investments in other enterprises having comparable risks.

According to valuation principles, the present value of an asset equals the discounted value of its expected future cash flows. Investors discount these expected cash flows at their required rate of return that, as noted above, reflects the time value of money and the perceived riskiness of the expected future cash flows. As such, the cost of common equity

is the rate at which investors discount expected cash flows associated with common stock ownership.

Q. HOW CAN THE EXPECTED OR REQUIRED RATE OF RETURN ON COMMON EQUITY CAPITAL BE DETERMINED?

A. Models have been developed to ascertain the cost of common-equity capital for a firm. Each model, however, has been developed using restrictive economic assumptions. Consequently, judgment is required in selecting appropriate financial valuation models to estimate a firm's cost of common-equity capital, in determining the data inputs for these models, and in interpreting the models' results. All of these decisions must take into consideration the firm involved as well as current conditions in the economy and the financial markets.

Q. HOW DID YOU ESTIMATE THE COST OF EQUITY CAPITAL FOR THE COMPANY?

A. Primarily, I relied on the DCF's model to estimate the cost-of-equity capital. Because of the investment-valuation process and the relative stability of the utility business, the DCF model provides the best measure of equity-cost rates for public utilities. I also performed an analysis using the CAPM; however, I give these results less weight because I believe that risk-premium studies, of which the CAPM is one form, provide a less reliable indication of equity-cost rates for public utilities.

Q. PLEASE EXPLAIN WHY YOU BELIEVE THAT THE CAPM PROVIDES A LESS RELIABLE INDICATOR OF EQUITY COST RATES?

A. I believe that the CAPM provides a less reliable measure of a utility's equity-cost rate because it requires an estimate of the market-risk premium. As discussed below, there is

wide variation in estimates of the market-risk premium found in studies by academics and investment firms as well as in surveys of market professionals.

B. Discounted Cash Flow (DCF) Approach

Q. PLEASE DESCRIBE THE THEORY BEHIND THE TRADITIONAL DCF MODEL.

A. According to the DCF model, the current stock price is equal to the discounted value of all future dividends that investors expect to receive from investment in the firm. As such, stockholders' returns ultimately result from current as well as future dividends. As owners of a corporation, common stockholders are entitled to a pro rata share of the firm's earnings. The DCF model presumes that earnings that are not paid out in the form of dividends but are reinvested in the firm to provide for future growth in earnings and dividends. The rate at which investors discount future dividends, which reflects the timing and riskiness of the expected cash flows, is interpreted as the market's expected or required return on the common stock. Therefore, this discount rate represents the cost of common equity. Algebraically, the DCF model can be expressed as,

$$P = \frac{D_1}{(1+k)^1} + \frac{D_2}{(1+k)^2} + \cdots + \frac{D_n}{(1+k)^n}$$

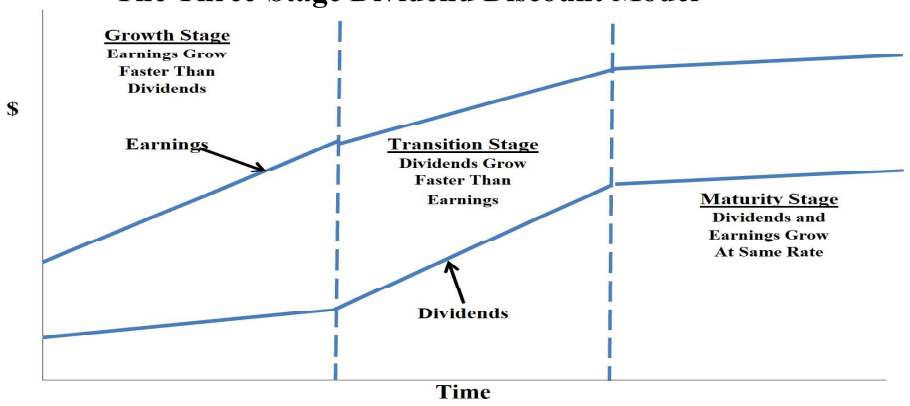
where P is the current stock price, D_1, D_2, D_n are the dividends (respectively) in year 1, 2, and in the future years n, and k is the cost of common equity.

Q. IS THE DCF MODEL CONSISTENT WITH VALUATION TECHNIQUES EMPLOYED BY INVESTMENT FIRMS?

A. Yes. Virtually all investment firms use some form of the DCF model as a valuation technique. One common application for investment firms is called the three-stage DCF or dividend discount model ("DDM"). The stages in a three-stage DCF model are shown in

Figure 9. This model presumes that a company's dividend payout progresses initially through a growth stage, then proceeds through a transition stage, and finally assumes a maturity (or steady-state) stage. The dividend-payment stage of a firm depends on the profitability of its internal investments, which, in turn, is largely a function of the life cycle of the product or service.

Figure 9
The Three-Stage Dividend Discount Model



1. **Growth stage**: Characterized by rapidly expanding sales, high profit margins, and an abnormally high growth rate in earnings per share. Because of highly profitable expected investment opportunities, the payout ratio is low. Competitors are attracted by the unusually high earnings, leading to a decline in the growth rate.
2. **Transition stage**: In later years, increased competition reduces profit margins and earnings growth slows. With fewer new investment opportunities, the company begins to pay out a larger percentage of earnings.
3. **Maturity (steady-state) stage**: Eventually, the company reaches a position where its new investment opportunities offer, on average, only slightly more attractive ROEs. At that time, its earnings growth rate, payout ratio, and ROE stabilize for

the remainder of its life. As I will explain below, the constant-growth DCF model is appropriate when a firm is in the maturity stage of the life cycle.

In using the 3-stage model to estimate a firm's cost-of-equity capital, dividends are projected into the future using the different growth rates in the alternative stages, and then the equity-cost rate is the discount rate that equates the present value of the future dividends to the current stock price.

Q. PLEASE BRIEFLY EXPLAIN THE CONCEPT OF "PRESENT VALUE."

A. Present value is the concept that an amount of money today is worth more than that same amount in the future. In other words, money received in the future is not worth as much as an equal amount received today. Present value tells an investor how much he or she would need in today's dollars to earn a specific amount in the future.

Q. HOW DO YOU ESTIMATE STOCKHOLDERS'S EXPECTED OR REQUIRED RATE OF RETURN USING THE DCF MODEL?

A. Under certain assumptions, including a constant and infinite expected growth rate, and constant dividend/earnings and price/earnings ratios, the DCF model can be simplified to the following,

$$P = \frac{D_1}{k - g}$$

Here, P is the current stock price, D_1 represents the expected dividend over the coming year, k is investor's required return on equity, and g is the expected growth rate of dividends. This is known as the constant-growth version of the DCF model. To use the constant-growth DCF model to estimate a firm's cost of equity, one solves for k in the above expression to obtain the following,

$$k = \frac{D_1}{P} + g$$

Q. IN YOUR OPINION, IS THE CONSTANT-GROWTH DCF MODEL APPROPRIATE FOR PUBLIC UTILITIES?

A. Yes. The economics of the public utility business indicate that the industry is in the steady-state or constant-growth stage of a three-stage DCF. The economics include the relative stability of the utility business, the maturity of the demand for public utility services, and the regulated status of public utilities, especially the fact that their returns on investment are effectively set through the ratemaking process. The DCF valuation procedure for companies in this stage is the constant-growth DCF. In the constant-growth version of the DCF model, the current dividend payment and stock price are directly observable. However, the primary problem and controversy in applying the DCF model to estimate equity-cost rates entails estimating investors' expected dividend growth rate.

Q. WHAT FACTORS SHOULD ONE CONSIDER WHEN APPLYING THE DCF METHODOLOGY?

A. One should be sensitive to several factors when using the DCF model to estimate a firm's cost of equity capital. In general, one must recognize the assumptions, under which the DCF model was developed, in estimating its components (e.g., the dividend yield and the expected growth rate). The dividend yield can be measured precisely at any point in time; however, it tends to vary somewhat over time. Estimation of expected growth is considerably more difficult. One must consider recent firm performance, in conjunction with current economic developments and other information available to investors, to accurately estimate investors' expectations.

Q. WHAT DIVIDEND YIELDS HAVE YOU REVIEWED?

A. I calculated the dividend yields for the companies in the proxy groups using the current annual dividend and the 30-day, 90-day, and 180-day average stock prices. These dividend yields are provided in Panels A and B of Exhibit JRW-5-2, in which I show the mean and median dividend yields using 30-day, 90-day, and 180-day average stock prices. For the Electric Proxy Group, the average of the mean and median dividend yields is 4.20%, which I will use as the dividend yield for the Electric Proxy Group.[18] For the Bulkley Proxy Group, the average of the mean and median dividend yields is 4.30%, which I will use as the dividend yield for the Bulkley Proxy Group.

Q. PLEASE DISCUSS THE APPROPRIATE ADJUSTMENT TO THE SPOT DIVIDEND YIELD.

A. According to the traditional DCF model, the dividend yield term relates the dividend paid over the coming period to the current stock price. As indicated by Professor Myron Gordon, who is commonly associated with the development of the DCF model for popular use, this is obtained by: (1) multiplying the expected dividend over the coming quarter by 4, and (2) dividing this dividend by the current stock price to determine the appropriate dividend yield for a firm that pays dividends on a quarterly basis.[19]

In applying the DCF model, some analysts adjust the current dividend for growth over the coming year as opposed to the coming quarter. This can be complicated because firms tend to announce changes in dividends at different times during the year. As such, the dividend

[18] For the dividend yields and ROEs, I round to the nearest .05%.
[19] Direct Testimony of Myron J. Gordon & Lawrence I. Gould, *Petition for Modification of Prescribed Rate of Return*, Docket No. 79-05, at 62 (Fed. Commc'n Comm'n (April 1980).

yield computed based on presumed growth over the coming quarter as opposed to the coming year can be quite different. Consequently, it is common for analysts to adjust the dividend yield by some fraction of the long-term expected growth rate.

Q. GIVEN THIS DISCUSSION, WHAT ADJUSTMENT FACTOR DO YOU USE FOR YOUR DIVIDEND YIELD?

A. I adjust the dividend yield by one-half (1/2) of the expected growth to reflect growth over the coming year. The DCF equity-cost rate ("*K*") is computed as:

$$K = \left[\left(\frac{D}{P}\right) \times (1 + 0.5g)\right] + g$$

Q. PLEASE DISCUSS THE GROWTH RATE COMPONENT OF THE DCF MODEL.

A. There is debate as to the proper methodology to employ when estimating the growth component of the DCF model. By definition this component is investors' expectations of the long-term dividend growth rate. Presumably, investors use some combination of historical and/or projected growth rates for earnings and dividends per share and for internal or book-value growth to assess long-term potential.

Q. WHAT GROWTH DATA HAVE YOU REVIEWED FOR THE PROXY GROUPS?

A. I have analyzed several measures of growth for companies in the proxy groups. I reviewed *Value Line*'s historical and projected growth-rate estimates for earnings per share ("EPS"), dividends per share ("DPS"), and book value per share ("BVPS"). Additionally, I utilized the average EPS growth-rate forecasts of Wall Street analysts as provided by Yahoo, Zacks, and S&P Cap IQ. These services solicit five-year earnings growth-rate projections from securities analysts and compile and publish the means and medians of these forecasts. Finally, I assessed prospective growth as measured by prospective earnings retention rates and earned returns on common equity.

Q. PLEASE DISCUSS HISTORICAL GROWTH IN EARNINGS AND DIVIDENDS, AS WELL AS INTERNAL GROWTH.

A. Historical growth rates for EPS, DPS, and BVPS are readily available to investors and are presumably an important ingredient in forming expectations concerning future growth. However, one must use historical growth numbers as measures of investors' expectations with caution. In some cases, past growth may not reflect future growth potential. Also, employing a single growth-rate number (e.g., for five or ten years) is unlikely to accurately measure investors' expectations, due to the sensitivity of a single growth-rate figure to fluctuations in individual firm performance as well as overall economic fluctuations (e.g., business cycles). Thus, one must appraise the context in which the growth rate is being employed. According to the conventional DCF model, the expected return on a security is equal to the sum of the dividend yield and the expected long-term growth in dividends. Therefore, to best estimate the cost of common-equity capital using the conventional DCF model, one must look to long-term growth rate expectations.

Q. PLEASE DEFINE AND EXPLAIN THE RELEVANCE OF INTERNAL GROWTH.

A. A company's internal (or "organic") growth occurs when a business expands its own operations rather than relying on takeovers and mergers. It can come about through various means, for example, increasing existing production capacity through investment in new capital and technology, or development and launch of new products.

Internally generated growth is a function of the percentage of earnings retained within the firm (i.e., the earnings retention rate) and the rate of return earned on those earnings (i.e., the return on equity). The internal growth rate is computed as the retention rate times the return on equity. Internal growth is significant in determining long-run earnings and,

therefore, dividends. Investors recognize the importance of internally generated growth and pay premiums for stocks of companies that retain earnings and earn high returns on internal investments.

Q. PLEASE DISCUSS THE SERVICES THAT PROVIDE ANALYSTS' EPS FORECASTS.

A. Analysts' EPS forecasts for companies are collected and published by several different investment information services, including Institutional Brokers Estimate System ("I/B/E/S"), Bloomberg, FactSet, S&P Cap IQ, Zacks, First Call, and Reuters, among others. Thomson Reuters publishes analysts' EPS forecasts under different product names, including I/B/E/S, First Call, and Reuters. Bloomberg, FactSet, S&P Cap IQ, and Zacks each publish their own set of analysts' EPS forecasts for companies. These services do not reveal the analysts who are solicited for forecasts nor the identities of the analysts who provide the EPS forecasts that are used in the compilations published by the services.

I/B/E/S, Bloomberg, FactSet, S&P Cap IQ, and First Call are fee-based services. These services usually provide detailed reports and other data in addition to analysts' EPS forecasts.

In contrast, Thomson Reuters and Zacks provide limited EPS forecast data free-of-charge on the Internet. Yahoo[20] finance lists Thomson Reuters as the source of its summary EPS forecasts. Zacks[21] publishes its summary forecasts on its website. Zacks estimates are also available on other websites, such as MSN.money.[22]

[20] Yahoo Finance, http://finance.yahoo.com (last visited Apr. 25, 2024).
[21] Zacks, www.zacks.com (last visited Apr. 25, 2024).
[22] msn, http://money.msn.com (last visited Apr. 25, 2024).

Q. ARE YOU RELYING EXCLUSIVELY ON THE EPS FORECASTS OF WALL STREET ANALYSTS IN ARRIVING AT A DCF GROWTH RATE FOR THE PROXY GROUP?

A. No. There are several issues with using the EPS growth rate forecasts of Wall Street analysts as DCF growth rates. First, the appropriate growth rate in the DCF model is the dividend growth rate, not the earnings growth rate. Nonetheless, over the very long term, dividend and earnings will have to grow at a similar growth rate. Therefore, consideration must be given to other indicators of growth, including prospective dividend growth, internal growth, as well as projected earnings growth.

Second, a study by Lacina, Lee, and Xu (2011) has shown that analysts' three-to-five year EPS growth-rate forecasts are not more accurate at forecasting future earnings than naïve random walk forecasts of future earnings.[23] Employing data over a twenty-year period, these authors demonstrate that using the most recent year's actual EPS figure to forecast EPS in the next 3-5 years proved to be just as accurate as using the EPS estimates from analysts' three-to-five year EPS growth-rate forecasts. In the authors' opinion, the results indicate that analysts' long-term earnings growth-rate forecasts should be used with caution as inputs for valuation and cost-of-capital purposes.

Finally, and most significantly, it is well known that the long-term EPS growth-rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased, as

[23] M. Lacina, B. Lee & Z. Xu, *Advances in Business and Management Forecasting*, 77–101 (Kenneth D. Lawrence, Ronald K. Klimberg eds., 8th ed. 2011) (According to random walk theory in this context, annual changes in earnings are normally distributed and are independent of each other. Therefore, the theory presumes the past movement or trend of earnings cannot be used to predict its future earnings.).

evidenced in a number of academic studies over the years.[24] Hence, using these growth rates as a DCF growth rate will provide an overstated equity cost rate. On this issue, a study by Easton and Sommers (2007) found that optimism in analysts' growth rate forecasts leads to an upward bias in estimates of the cost of equity capital of almost 3.0 percentage points.[25]

Q. ARE ANALYSTS' PROJECTED EPS GROWTH RATES FOR ELECTRIC UTILITIES LIKEWISE OVERLY OPTIMISTIC AND UPWARDLY BIASED?

A. Yes. I completed a study of the accuracy of analysts' EPS growth rates for electric utilities and gas distribution companies over the 1985 to 2022 period. In the study, I used the utilities listed in the electric utilities and gas distribution companies covered by *Value Line*. I collected the three-to-five-year projected EPS growth rate from I/B/E/S for each utility and compared that growth rate to the utility's actual subsequent three-to-five-year EPS growth rate. As shown in Figure 10, below, the mean forecasted EPS growth rate, depicted by the red line, is consistently greater than the achieved actual EPS growth rate over the time period, with the exception of short periods. Over the entire period, the mean forecasted EPS growth rate is over 200 basis points above the actual EPS growth rate. As such, the projected EPS growth rates for electric utilities are overly optimistic and upwardly based.

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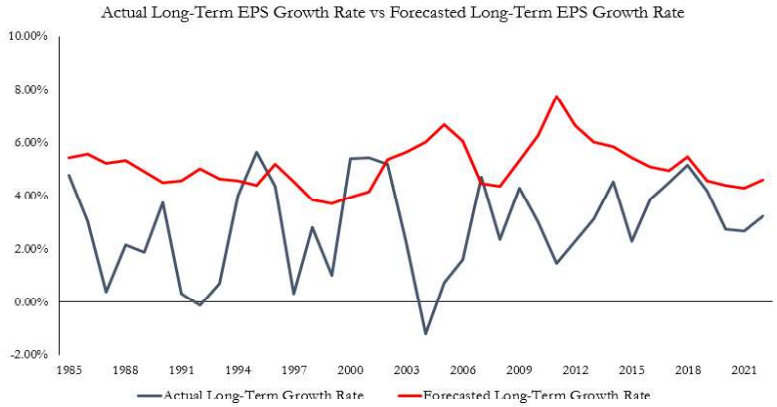
[24] *See* R.D. Harris, *The Accuracy, Bias, and Efficiency of Analysts' Long Run Earnings Growth Forecasts*, J. of Bus. Fin. & Acct., 725–55 (June/July 1999); P. DeChow, A. Hutton, & R. Sloan, *The Relation Between Analysts' Forecasts of Long-Term Earnings Growth and Stock Price Performance Following Equity Offerings*, Contemporary Acct. Rsch. (2000); L.K. Chan, J. Karceski, & J. Lakonishok, *The Level and Persistence of Growth Rates*, J. of Fin., 643−684, (2003); Lacina, Lee, & Xu, *supra* note 23, at 77–101; Marc H. Goedhart, Rishi Raj, & Abhishek Saxena, *Equity Analysts, Still Too Bullish*, *McKinsey on Finance*, 14–17, (Spring 2010).

[25] Peter D. Easton & Gregory A. Sommers, *Effect of Analysts' Optimism on Estimates of the Expected Rate of Return Implied by Earnings Forecasts*, 45 J. Acct. Res. 983, at 983–1015 (2007).

Figure 10
Mean Forecasted vs. Actual Long-Term EPS Growth Rates
Electric Utilities and Gas Distribution Companies
1985–2022



Data Source: S&P Global Market Intelligence, Capital IQ, I/B/E/S, 2023.

Q. ARE THE PROJECTED EPS GROWTH RATES OF *VALUE LINE* ALSO OVERLY OPTIMISTIC AND UPWARDLY BIASED?

A. Yes. A study by Szakmary, Conover, and Lancaster (2008) evaluated the accuracy of *Value Line*'s three-to-five-year EPS growth rate forecasts using companies in the Dow Jones Industrial Average over a thirty-year period and found these forecasted EPS growth rates to be significantly higher than the EPS growth rates that the same companies subsequently achieved.[26]

Szakmary, Conover, and Lancaster ("SCL") studied the predicted versus the projected stock returns, sales, profit margins, and earnings per share made by *Value Line* over the 1969 to 2001 period. *Value Line* projects variables from a three-year base period (e.g., 2012 to 2014) to a future three-year projected period (e.g., 2016 to 2018). SCL then used the 65 stocks that were included in the Dow Jones Indexes (30 Industrials, 20 Transports and 15

[26] A. Szakmary, C. Conover, & C. Lancaster, *An Examination of* Value Line*'s Long-Term Projections*, J. Banking & Fin., 820–33 (May 2008).

Utilities). SCL found that the projected annual stock returns for the Dow Jones stocks were "incredibly overoptimistic" and of no predictive value. The mean annual stock return of 20% for the Dow Jones stocks' *Value Line*'s forecasts was nearly double the realized annual stock return.

The authors also found that *Value Line*'s forecasts of earnings per share and profit margins were "strikingly overoptimistic." *Value Line*'s forecasts of annual sales were higher than achieved levels, but not statistically significant. SCL concluded that the overly optimistic projected annual stock returns were attributable to *Value Line*'s upwardly biased forecasts of earnings per share and profit margins.

Q. IS IT YOUR OPINION THAT STOCK PRICES REFLECT THE UPWARD BIAS IN THE EPS GROWTH RATE FORECASTS?

A. Yes; I believe that investors are well aware of the bias in analysts' EPS growth-rate forecasts, and therefore stock prices reflect the upward bias.

Q. HOW DOES THAT AFFECT THE USE OF THESE FORECASTS IN A DCF EQUITY COST RATE STUDY?

A. According to the DCF model, the equity cost rate is a function of the dividend yield and expected growth rate. Because I believe that investors are aware of the upward bias in analysts' long-term EPS growth-rate forecasts, stock prices reflect the bias. But the DCF growth rate needs to be adjusted downward from the analysts' projected EPS growth rates to reflect the upward bias in the DCF model.

Q. PLEASE DISCUSS THE HISTORICAL GROWTH OF THE COMPANIES IN THE PROXY GROUPS, AS PROVIDED BY *VALUE LINE*.

A. Exhibit. JRW-5-3 provides the 5- and 10-year historical growth rates for EPS, DPS, and BVPS for the companies in the two proxy groups, as published in the *Value Line Investment Survey*. The median historical growth measures for EPS, DPS, and BVPS for the Electric Proxy Group, as provided in Panel A, range from 3.5% to 5.0%, with an average of the medians of 4.2%. For the Bulkley Proxy Group, as shown in Panel B of Exhibit JRW-5-3, the historical growth measures in EPS, DPS, and BVPS, as measured by the medians, range from 4.0% to 5.0%, with an average of the medians of 4.5%.

Q. PLEASE SUMMARIZE *VALUE LINE*'S PROJECTED GROWTH RATES FOR THE COMPANIES IN THE PROXY GROUPS.

A. *Value Line*'s projections of EPS, DPS, and BVPS growth for the companies in the proxy groups are shown in Exhibit JRW-5-4. As stated above, due to the presence of outliers, the medians are used in the analysis. For the Electric Proxy Group, as shown in Panel A of Exhibit JRW-5-4, the medians range from 3.5% to 6.0%, with an average of the medians of 4.8%. The range of the medians for the Bulkley Proxy Group, shown in Panel B of Exhibit JRW-5-4, is from 3.8% to 6.0%, with an average of the medians of 4.9%.

Additionally, Exhibit JRW-5-4, provides the prospective sustainable growth rates for the companies in the two proxy groups as measured by *Value Line*'s average projected retention rate and return on shareholders' equity. As previously noted, sustainable growth is a significant and a primary driver of long-run earnings growth. For both the Electric Proxy and Bulkley Proxy Groups, the median prospective sustainable growth rates are 4.0% and 3.7%, respectively.

Q. PLEASE ASSESS GROWTH FOR THE PROXY GROUPS AS MEASURED BY ANALYSTS' FORECASTS OF EXPECTED THREE-TO-FIVE YEAR EPS GROWTH.

A. Yahoo, Zacks, and S&P Cap IQ collect, summarize, and publish Wall Street analysts' three-to-five year EPS growth-rate forecasts for the companies in the proxy groups. These forecasts are shown for the companies in the proxy groups in Exhibit JRW-5-5. I have reported both the mean and median growth rates for the groups. Since there is considerable overlap in analyst coverage between the three services, and not all of the companies have forecasts from the different services, I have averaged the expected five-year EPS growth rates from the three services for each company to arrive at an expected EPS growth rate for each company. The mean/median of analysts' projected EPS growth rates for the Electric and Bulkley Proxy Groups are 5.9%/6.0% and 6.5%/6.2%, respectively.[27]

Q. PLEASE SUMMARIZE YOUR ANALYSIS OF THE HISTORICAL AND PROSPECTIVE GROWTH OF THE PROXY GROUPS.

A. Exhibit. JRW-5-6 shows the summary DCF growth rate indicators for the proxy groups. The historical growth rate indicators for my Electric Proxy Group imply a baseline growth rate of 4.2%. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 4.8%, and *Value Line*'s projected sustainable growth rate is 4.0%. The projected EPS growth rates of Wall Street analysts for the Electric Proxy Group are 5.9% and 6.0% (average = 5.95%) as measured by the mean and median growth rates. The overall range for the projected growth-rate indicators, while ignoring historical growth, is 4.0% to 5.95%

[27] Given variation in the measures of central tendency of analysts' projected EPS growth rates proxy groups, I have considered both the means and medians figures in the growth rate analysis.

and the average of the three projected growth rates is 4.90% (4.0%, 4.8%, 5.95%). While primarily giving weight to the projected growth rates of Wall Street analysts and *Value Line*, but recognizing the upward bias nature of these forecasts, I believe that the appropriate projected growth rate is the range of 4.90% to 5.95%. I use the midpoint of this range, 5.45%, as my DCF growth rate for the Electric Proxy group. This growth rate figure is in the upper end of the range of historic and projected growth rates for the Electric Proxy Group.

For the Bulkley Proxy Group, the historical growth rate indicators suggest a growth rate of 4.5%. The average of the projected EPS, DPS, and BVPS growth rates from *Value Line* is 4.9%, and *Value Line*'s projected sustainable growth rate is 3.7%. The projected EPS growth rates of Wall Street analysts are 6.2% and 6.5% (for an average of 6.35%) as measured by the mean and median growth rates. The overall range for the projected growth-rate indicators, while ignoring historical growth, is 3.7% to 6.35% and the average of the three projected growth rates is 4.95% (3.7%, 4.9%, 6.35%). Again, while primarily giving weight to the projected EPS growth rate of Wall Street analysts, but recognizing the upward bias nature of these forecasts, I believe that the appropriate DCF growth rate range is 4.95% to 6.35%. I use the midpoint of this range, 5.65%, as my DCF growth rate for the Bulkley Proxy Group. Similar to the Electric Proxy Group, this growth rate figure is in the upper end of the range of historic and projected growth rates for the Bulkley Proxy Group.

Q. BASED ON THE ABOVE ANALYSIS, WHAT ARE YOUR INDICATED COMMON EQUITY COST RATES FROM THE DCF MODEL FOR THE PROXY GROUPS?

A. My DCF-derived equity cost rates for the groups are summarized in Exhibit JRW-5-1 and in Table 7.[28]

Table 7
DCF-Derived Equity Cost Rate/ROE

	Dividend Yield	1 + ½ Growth Adjustment	DCF Growth Rate	Equity Cost Rate
Electric Proxy Group	**4.20%**	**1.02725**	**5.45%**	**9.75%**
Bulkley Proxy Group	**4.30%**	**1.02825**	**5.65%**	**10.05%**

The result for the Electric Proxy Group is the 4.20% dividend yield, times the one and one-half growth adjustment of 1.02725, plus the DCF growth rate of 5.45%, which results in an equity cost rate of 9.75%. The result for the Bulkley Proxy Group is 9.30%, which includes a dividend yield of 4.30%, an adjustment factor of 1.02825, and a DCF growth rate of 5.65%.

C. Capital Asset Pricing Model

Q. PLEASE DISCUSS THE CAPITAL ASSET PRICING MODEL ("CAPM").

A. The CAPM is a risk premium approach to gauging a firm's cost of equity capital. According to the risk premium approach, the cost of equity is the sum of the interest rate on a risk-free bond (Rf) and a risk premium (RP), as in the following:

[28] ROE numbers are rounded to the nearest 0.05%.

$$k = R_f + RP$$

The yield on long-term U.S. Treasury securities is normally used as Rf. Risk premiums are measured in different ways. The CAPM is a theory of the risk and expected returns of common stocks. In the CAPM, two types of risk are associated with a stock: firm-specific risk or unsystematic risk, and market or systematic risk, which is measured by a firm's beta. The only risk that investors receive a return for bearing is systematic risk.

According to the CAPM, the expected return on a company's stock, which is also the equity cost rate (K), is equal to:

$$K = (R_f) + \beta \times [E(R_m) - (R_f)]$$

Where:

- *K* represents the estimated rate of return on the stock;
- $E(R_m)$ represents the expected return on the overall stock market (with "market" frequently referring to the S&P 500);
- (R_f) represents the risk-free rate of interest;
- $[E(R_m) - (R_f)]$ represents the expected equity or market risk premium, in other words the excess return that an investor expects to receive above the risk-free rate for investing in risky stocks; and
- *Beta* (β) is a measure of the systematic risk of an asset.

To estimate the required return or cost of equity using the CAPM requires three inputs: the risk-free rate of interest (R_f), the beta (β), and the expected equity or market risk premium $[E(R_m) - (R_f)]$. R_f is the easiest of the inputs to measure, as it is represented by the yield on long-term U.S. Treasury bonds. Beta (β), the measure of systematic risk, is more difficult to measure because there are different opinions about what adjustments, if any, should be

made to historical betas due to their tendency to regress to 1.0 over time. And finally, an even more difficult input to measure is the expected equity or market risk premium *[$E(R_m)$ - (R_f)]*. I discuss each of these inputs below.

Q. PLEASE DISCUSS EXHIBIT JRW-6.

A. Exhibit JRW-6-1 through JRW-6-7 provides the summary results for my CAPM study. JRW-6-1 shows the results, and the following Exhibits contain the supporting data.

Q. PLEASE DISCUSS THE RISK-FREE INTEREST RATE.

A. The yield on long-term U.S. Treasury bonds has usually been viewed as the risk-free rate of interest in the CAPM. The yield on long-term U.S. Treasury bonds, in turn, is the yield on U.S. Treasury bonds with 30-year maturities.

Q. WHAT RISK-FREE INTEREST RATE ARE YOU USING IN YOUR CAPM?

A. As shown in Exhibit JRW-6-2, the yield on 30-year U.S. Treasury bonds was in the 1.3% to 5.00% range over the 2010–2023 period. The current 30-year Treasury yield is in the top end of this range. Kroll, a division of the investment firm Duff & Phelps, recommends using a normalized risk-free interest rate.[29] At present, Kroll recommends a normalized risk-free interest rate of 3.50% or, if the spot 20-year Treasury yield is above 3.50%, Kroll recommends using the spot 20-year Treasury yield. However, Kroll also noted these yields are currently distorted, stating, "[w]e are aware of lack of liquidity issues in the U.S. Treasury market for the 20-year maturity, which is causing some distortion in the 20-year

[29] *Cost of Capital Resource Center*, Kroll (Mar. 31, 2024) [hereinafter "Kroll Cost of Capital Resource Center"], https://www.kroll.com/en/insights/publications/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates.

yield relative to that observed for 10- and 30-year maturities."[30] The illiquidity and resulting yield distortion has also been highlighted in the financial press.[31] As shown in Figure 5 on page 23 of my testimony the yield curve is currently inverted with a yield "hump" at the 20-year mark. Given the recent range of yields, and recognizing the "hump," I am using 4.75% as the risk-free rate, or R_f, in my CAPM.

Q. DOES THE 4.75% RISK-FREE INTEREST RATE TAKE INTO CONSIDERATION FORECASTS OF HIGHER INTEREST RATES?

A. No, it does not. The 4.75% risk-free interest rate takes into account the range of interest rates in the past and effectively synchronizes the risk-free rate with the market risk premium. The risk-free rate and the market risk premium are interrelated in that the market risk premium is developed in relation to the risk-free rate. As discussed below, my market risk premium is based on the results of many studies and surveys that have been published over time.

Q. PLEASE DISCUSS BETAS IN THE CAPM.

A. Beta (β) is a measure of the systematic risk of a stock. The market, usually taken to be the S&P 500, has a beta of 1.0. The beta of a stock with the same price movement as the market also has a beta of 1.0. A stock whose price movement is greater than that of the market, such as a technology stock, is riskier than the market and has a beta greater than 1.0. A stock with below average price movement, such as that of a regulated public utility, is less

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[30] Duff & Phelps, *Impact of High Inflation and Market Volatility on Cost of Capital Assumptions – October 2022 Update* (Oct. 2022) https://www.kroll.com/-/media/cost-of-capital/impact-high-inflation-market-volatility-coc-assumptions-2022.pdf.
[31] *See, e.g.*, Duguid & Smith, *The Market is Just Dead - Investors Steer Clear of 20-Year Treasuries*, Financial Times (Jul. 22, 2022).

risky than the market and has a beta less than 1.0. Estimating a stock's beta involves running a linear regression of a stock's return on the market return.

As shown in Exhibit JRW-6-3, the slope of the regression line is the stock's beta. A steeper line indicates that the stock is more sensitive to the return on the overall market. This means that the stock has a higher beta and greater-than-average market risk. A less steep line indicates a lower beta and less market risk. Several online investment information services, such as Yahoo and Reuters, provide estimates of stock betas. Usually these services report different betas for the same stock. The differences are usually due to: (1) the time over which beta is measured; and (2) any adjustments that are made to reflect the fact that betas tend to regress to 1.0 over time.

Q. PLEASE DISCUSS THE 2020 CHANGE IN BETAS.

A. I traditionally use the betas as provided in the *Value Line Investment Survey*. As discussed above, the betas for utilities recently increased significantly as a result of the volatility of utility stocks during the stock market meltdown associated with the novel coronavirus in March 2020. Utility betas as measured by *Value Line* have been in the 0.55 to 0.70 range for the past 10 years. But utility stocks were much more volatile relative to the market in March and April of 2020, and this resulted in an increase of above 0.30 to the average utility beta.

Value Line defines their computation of beta as:

> Beta - A relative measure of the historical sensitivity of a stock's price to overall fluctuations in the New York Stock Exchange Composite Index. A Beta of 1.50 indicates a stock tends to rise (or fall) 50% more than the New York Stock Exchange Composite Index. The ''Beta coefficient'' is derived from a regression analysis of the relationship between weekly percent-age changes in the price of a stock and weekly percentage changes in the NYSE Index over a period of five years. In the case of shorter price histories, a smaller

> time period is used, but two years is the minimum. The Betas are adjusted for their long-term tendency to converge toward 1.00. *Value Line* then adjusts these Betas to account for their long-term tendency to converge toward 1.00. [32]

However, there are several issues with *Value Line* betas:

1. Value Line betas are computed using weekly returns, which impacted the volatility of utility stocks during March 2020 by using weekly and not monthly returns. Yahoo Finance uses five years of monthly returns to compute betas, and Yahoo Finance's betas for utilities are lower than *Value Line*'s.
2. *Value Line* betas are computed using the New York Stock Exchange Index as the market. While about 3,000 stocks trade on the NYSE, most technology stocks are traded on the NASDAQ or over-the-counter market and not the NYSE. Technology stocks, which make up about 25% of the S&P 500, tend to be more volatile. If they were traded on the NYSE, they would increase the volatility of the measure of the market and thereby lower utility betas.
3. Major vendors of CAPM betas such as Merrill Lynch, *Value Line*, and Bloomberg publish adjusted betas. The so-called Blume adjustment cited by *Value Line* adjusts betas calculated using historical returns data to reflect the tendency of stock betas to regress toward 1.0 over time, which means that the betas of typical low beta stocks tend to increase toward 1.0, and the betas of typical high beta stocks tend to decrease toward 1.0.33.

The Blume adjustment procedure is:

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[32] *Glossary*, Value Line, https://www.valueline.com/investment-education/glossary/b (last visited Apr. 25, 2024).
[33] M. Blume, *On the Assessment of Risk*, J. of Fin. (Mar. 1971).

Regressed Beta = .67 * (Observed Beta) + 0.33

For example, suppose a company has an observed past beta of 0.50. The regressed, or Blume-adjusted, beta would be:

Regressed Beta = .67 * (0.50) + 0.33 = 0.67

Blume offered two reasons for betas to regress toward 1.0. First, he suggested it may be a by-product of management's efforts to keep the level of firm's systematic risk close to that of the market. He also speculated that it results from management's efforts to diversify through investment projects.

Q. GIVEN THIS DISCUSSION, WHAT BETAS ARE YOU USING IN YOUR CAPM?

A. In the past, I used *Value Line* betas exclusively. However, given the discussion above, I am also using betas published by S&P Capital IQ. S&P Capital IQ computes betas over a five-year period using monthly returns and the S&P 500 as the market return. S&P Capital IQ does not use the Blume adjustment, but I have included that adjustment in my analysis. As shown in Exhibit JRW-6-3, I averaged the *Value Line* betas and my adjusted S&P Capital IQ for the proxy groups. The median betas for the Electric and Bulkley Proxy Groups are 0.80 and 0.80.

Q. PLEASE DISCUSS THE MARKET RISK PREMIUM.

A. The market risk premium is equal to the expected return on the stock market (e.g., the expected return on the S&P 500, $E(R_m)$ minus the risk-free rate of interest (R_f)). The market risk premium is the difference in the expected total return between investing in equities and investing in "safe" fixed-income assets, such as long-term government bonds. However, while the market risk premium is easy to define conceptually, it is difficult to measure because it requires an estimate of the expected return on the market— $E(R_m)$.

There are different ways to measure $E(R_m)$, and studies have resulted in significantly different magnitudes for $E(R_m)$. As Merton Miller, the 1990 Nobel Prize winner in economics, indicated, $E(R_m)$ is very difficult to measure and is one of the great mysteries in finance.[34]

Q. PLEASE DISCUSS THE ALTERNATIVE APPROACHES TO ESTIMATING THE MARKET RISK PREMIUM.

A. Exhibit JRW-6-4 highlights the primary approaches to, and issues in, estimating the expected market risk premium. The traditional way to measure the market risk premium was to use the difference between historical average stock and bond returns. In this case, historical stock and bond returns, also called *ex post* returns, were used as the measures of the market's expected return (also known as the *ex ante* or forward-looking expected return). This type of historical evaluation of stock and bond returns is often called the "Ibbotson approach" after Professor Roger Ibbotson, who popularized this method of using historical financial market returns as measures of expected returns. However, this historical evaluation of returns can be a problem because: (1) *ex post* returns are not the same as *ex ante* expectations; (2) market risk premiums can change over time, increasing when investors become more risk-averse and decreasing when investors become less risk-averse; and (3) market conditions can change such that *ex post* historical returns are poor estimates of *ex ante* expectations.

Numerous academic studies have criticized the use of historical returns as market expectations, which I will address in more detail later. The general theme of these studies

[34] Merton Miller, *The History of Finance: An Eyewitness Account*, J. Applied Corp. Fin., 3 (2000).

is that the large equity risk premium discovered in historical stock and bond returns cannot be justified by the fundamental data. These studies, which fall under the category "*ex ante* models and market data," compute *ex ante* expected returns using market data to arrive at an expected equity risk premium. These studies have also been called "puzzle research" after the famous study by Mehra and Prescott in which the authors first questioned the magnitude of historical equity risk premiums relative to fundamentals.[35]

In addition, there are numerous surveys from financial professionals regarding the market risk premium, as well as several published surveys of academics on the equity risk premium. For example, Duke University has published a CFO Survey on a quarterly basis for over 10 years.[36] Questions regarding expected stock and bond returns are also included in the Federal Reserve Bank of Philadelphia's annual survey of financial forecasters, which is published as the Survey of Professional Forecasters.[37] The bank has continued the publication of the survey of professional economists for almost 50 years. In addition, Pablo Fernandez conducts annual surveys of financial analysts and companies regarding the equity risk premiums used in their investment and financial decision making.[38]

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[35] Rajnish Mehra & Edward C. Prescott, *The Equity Premium: A Puzzle*, *J. MONETARY ECON.* 145 (1985).
[36] *See The CFO Survey*, Duke Univ., https://www.richmondfed.org/cfosurvey.
[37] *Survey of Professional Forecasters*, Fed. Rsrv. Reserve Bank of Phila. (Feb. 10, 2023), https://www.philadelphiafed.org/-/media/frbp/assets/surveys-and-data/survey-of-professional-forecasters/2023/spfq123.pdf (The Survey of Professional Forecasters was formerly conducted by the American Statistical Association (ASA) and the National Bureau of Economic Research (NBER) and was known as the ASA/NBER survey. The survey, which began in 1968, is conducted each quarter. The Federal Reserve Bank of Philadelphia, in cooperation with the NBER, assumed responsibility for the survey in June 1990.).
[38] Pablo Fernandez, Teresa Garcia, & Pablo Acín, *Survey: Market Risk Premium and Risk-Free Rate Used for 80 Countries in 2023, IESE Business School Working Paper* (April 4, 2023).

Q. PLEASE HIGHLIGHT THE RESULTS OF THE ACADEMIC AND PROFESSIONAL STUDIES OF THE MARKET RISK PREMIUM.

A. Derrig and Orr, Fernandez, and Song completed the most comprehensive reviews of the research on the market risk premium.[39] Derrig and Orr's study evaluated the various approaches to estimating market risk premiums, discussed the issues with the alternative approaches, and summarized the findings of the published research on the market risk premium. Fernandez examined four alternative measures of the market risk premium—historical, expected, required, and implied. He also reviewed the major studies of the market risk premium and presented the summary market risk premium results. Meanwhile, Song provided an annotated bibliography and highlighted the alternative approaches to estimating the market risk premium.

Exhibit JRW-6-5 provides a summary of the results of the market risk premium studies that I reviewed for this case. These include the results of: (1) the various studies of the historical risk premium, (2) *ex ante* market risk premium studies, (3) market risk premium surveys of CFOs, financial forecasters, analysts, companies, and academics, and (4) the building blocks approach to the market risk premium. The exhibit includes reported results from over 30 studies, and the median market risk premium of these studies is 4.68%.

[39] *See* Richard Derrig & Elisha Orr, *Equity Risk Premium: Expectations Great and Small (Version 3.0)*, (Aug. 28, 2003) (https://www.casact.org/sites/default/files/database /forum_04wforum_04wf001.pdf); Pablo Fernandez, *Equity Premium: Historical, Expected, Required, and Implied, IESE Business School Working Paper* (2007); Zhiyi Song, *The Equity Risk Premium: An Annotated Bibliography*, CFA Inst. Rsch & Pol'y Ctr. (2007).

Q. PLEASE HIGHLIGHT THE RESULTS OF THE MORE RECENT RISK PREMIUM STUDIES AND SURVEYS.

A. The studies cited in Exhibit JRW-6-5 include every market risk premium study and survey I could identify that was published over the past 20 years and that provided a market risk premium estimate. Many of these studies were published prior to the financial crisis that began in 2008. Furthermore, some of these studies were published in the early 2000s at the market peak. It should be noted that many of these studies used data over long periods of time, as long as 50 years, and consequently, were not estimating a market risk premium as of a specific point in time (e.g., the year 2001). To assess the effect of the earlier studies on the market risk premium, I reconstructed the survey results from Exhibit JRW-6-5 on Exhibit JRW-6-6; however, I eliminated all studies dated before January 2, 2010. The median market risk premium estimate for this subset of studies is 5.23%.

Q. PLEASE SUMMARIZE THE MARKET RISK PREMIUM STUDIES AND SURVEYS.

A. As noted above, there are three approaches to estimating the market risk premium—historic stock and bond returns, *ex ante* or expected returns models, and surveys. The studies in Exhibit JRW-6-6 can be summarized in the following manners:

1. **Historic Stock and Bond Returns**: Historical stock and bond returns suggest a market risk premium in the 4.40% to 6.64% range, depending on whether one uses arithmetic or geometric mean returns.
2. ***Ex Ante* Models**: Market risk-premium studies that use expected or *ex ante* return models indicate a market risk premium in the range of 2.61% to 6.00%.

3. **Surveys**: Market risk premiums developed from surveys of analysts, companies, financial professionals, and academics are lower, with a range from 3.40% to 5.70%.

4. **Building Block**: The mean reported market risk premiums reported in studies using the building blocks approach range from 3.00% to 5.21%.

Q. PLEASE HIGHLIGHT THE *EX ANTE* MARKET RISK PREMIUM STUDIES AND SURVEYS THAT YOU BELIEVE ARE MOST TIMELY AND RELEVANT.

A. I will highlight several studies/surveys.

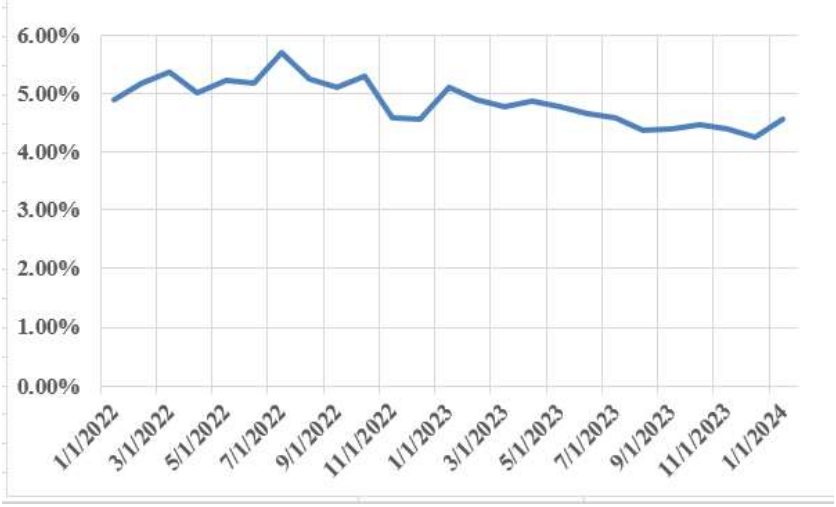
First, Pablo Fernandez conducts annual surveys of financial analysts and companies regarding the equity risk premiums used in their investment and financial decision-making.[40] His survey results are included in Exhibits JRW-6-5 and JRW-6-6. The results of his 2024 survey of academics, financial analysts, and companies, which included 4,000 responses, indicated a mean market risk premium employed by U.S. analysts and companies of 5.5%.[41] His estimated market risk premium for the U.S. has been in the 5.00% to 5.70% range in recent years.

Second, Professor Aswath Damodaran of New York University, a leading expert on valuation and the market risk premium, provides a monthly updated market risk premium based on projected S&P 500 EPS and stock-price level and long-term interest rates. His estimated market risk premium has been in the range of 4.0% to 6.0% since 2010. As shown

[40] Pablo Fernandez, Teresa Garcia, & Pablo Acín, *Survey: Market Risk Premium and Risk-Free Rate Used for 80 Countries in 2024, IESE Business School Working Paper* (March 2024).
[41] *Id.* at 3.

in Figure 11 as of April 1, 2024, Damodaran's estimate of the equity risk premium was 4.13%.[42]

Figure 11
Damodaran Implied Market Risk Premium



Source: http://pages.stern.nyu.edu/~adamodar/.

Next, as explained previously, Kroll provides recommendations for the normalized risk-free interest rate and market risk premiums to be used in calculating the cost-of-capital data. Its recommendations over the 2008 to 2023 period are shown in Exhibit JRW-6-7 and are also depicted graphically in Figure 12 below. Over the past decade, Kroll's recommended normalized risk-free interest rates have been in the 2.50% to 4.50% range and market risk premiums have been in the 5.0% to 6.0% range. In early 2020, in the wake of the emergence of COVID-19, Kroll decreased its recommended normalized risk-free interest rate from 3.0% to 2.50% and increased its market risk premium from 5.00% to 6.00%. Subsequently, on December 9, 2020, Kroll reduced its recommended market risk

[42] Aswath Damodaran, *Damodaran Online*, N.Y. Univ., http://pages.stern.nyu.edu/~adamodar/ (last visited Apr. 25, 2024). (On August 12, 2023, Professor Damodaran appeared on CNBC to discuss the equity risk premium. *See* CNBC Television, *Equity Risk Premium is Core to Understanding Long-Term Market Returns, says NYU Aswath Damodaran*, YouTube https://www.youtube.com/watch?v=VPkQ7_3Sf1E (last visited Apr. 25, 2024)).

premium to 5.50% and on October 18, 2022, Kroll increased its market risk premium to 6.00%. Most recently, on June 8, 2023, Kroll again reduced its market risk premium to 5.50%.[43] This recommendation was reaffirmed on February 8, 2024.[44]

Figure 12
Kroll
Normalized Risk-Free Rate and Market Risk Premium Recommendations
2007–2023

Source:https://www.kroll.com/en/insights/publications/cost-of-capital/recommended-us-equity-risk-premium-and-corresponding-risk-free-rates.

Fourth, Dr. David Kelly, the Chief Global Strategist at *J.P. Morgan Asset Management*, is one of the best-known market strategists on Wall Street. His annual publication and their monthly updates, the *JP Morgan Guide to the Markets*, is a must-read guide for stockbrokers and financial professionals. In presenting their annual expectations for the markets, JP Morgan provides details about inputs and assumptions of expected market

[43] Kroll Cost of Capital Resource Center, *supra* note 29.
[44] *Kroll Cost of Capital Recommendations and Potential Upcoming Changes*, Kroll (Feb. 8, 2024) https://www.kroll.com/-/media/kroll-images/pdfs/cost-of-capital-recommendations-upcoming-changes-feb-2024.pdf.

returns. In his 2023 update, JP Morgan details their 2023 expected long-term stock market return of 7.90%, bond yield of 3.50%, and resulting market risk premium of 4.40%.[45] Finally, KPMG, the international accounting firm, regularly publishes an update to their market risk premium to be used in their valuation practice. KPMG's market risk premium is shown in Figure 13, which was as high as 6.75% in 2020, and was lowered to as low as 5.00% on September 30, 2021. KPMG increased its market risk premium to 6.00% on June 30, 2022, but lowered it to 5.75% on December 31, 2022, to 5.50% on March 31, 2023, to 5.25% on June 30, 2023, and to 5.00% on September 30, 2023.[46]

Figure 13
KPMG
Market Risk Premium Recommendations
2020–2023

https://indialogue.io/clients/reports/public/5d9da61986db2894649a7ef2/5d9da63386db2894649a7ef5

[45] JP Morgan, *2023 Long-Term Capital Market Assumptions*, 70 (2023). (Provided in Dr. Woolridge's work papers.

[46] *KPMG Corporate Finance & Valuations NL Recommends A MRP of 5.0% as per March 31, 2024*, KMPG (Mar. 31, 2024) https://indialogue.io/clients/reports/public/5d9da61986db2894649a7ef2/5d9da63386db2894649a7ef5.

Q. GIVEN THESE RESULTS, WHAT MARKET RISK PREMIUM ARE YOU USING IN YOUR CAPM?

A. The studies in Exhibit JRW-6-6 and, more importantly, the more timely and relevant studies cited in the previous section, suggest that the appropriate market risk premium in the U.S. is in the 4.0% to 6.0% range. In the last year, as interest rates have increased, estimates of the market risk premium have declined. I give most weight to the market risk-premium estimates of Kroll, KPMG, JP Morgan, Damodaran, and the Fernandez and Duke-CFO surveys. Given the recent estimates, I believe a market risk premium in the 5.00%–5.50% range is appropriate. I use the midpoint of this range, 5.25%, as the market risk premium in my CAPM study.

Q. WHAT EQUITY COST RATE IS INDICATED BY YOUR CAPM ANALYSIS?

A. The results of my CAPM study for the proxy group are summarized in Exhibit JRW-6-1 and in Table 8.[47]

Table 8
CAPM-derived Equity Cost Rate/ROE
$K = (R_f) + \beta * [E(R_m) - (R_f)]$

	Risk-Free Rate	Beta	Market Risk Premium	Equity Cost Rate
Electric Proxy Group	**4.75%**	**0.80**	**5.25%**	**8.95%**
Bulkley Proxy Group	**4.75%**	**0.81**	**5.25%**	**9.00%**

For the Electric Proxy Group, the risk-free rate of 4.75% plus the product of the beta of 0.80 times the equity risk premium of 5.25% results in an 8.95% equity cost rate. For the

[47] ROE numbers are rounded to nearest 0.05%.

Bulkley Proxy Group, the risk-free rate of 4.75% plus the product of the beta of 0.81 times the equity risk premium of 5.25% results in a 9.00% equity cost rate.

D. Equity Cost Rate Summary

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR EQUITY COST RATE STUDIES.

A. Table 9 provides my DCF and CAPM analyses for the proxy groups.

Table 9
ROEs Derived from DCF and CAPM Models

	DCF	CAPM
Electric Proxy Group	**9.75%**	**8.95%**
Bulkley Proxy Group	**10.05%**	**9.00%**

Q. GIVEN THESE RESULTS, WHAT IS YOUR ESTIMATED EQUITY COST RATE FOR THE GROUPS?

A. My analysis indicates a common equity cost rate in the range of 8.95% to 10.05% for the Company. Given that (1) I rely primarily on the DCF model and the results for the Electric Proxy Group; and (2) OGE's investment risk is below the average of the two groups, I believe that the appropriate ROE range for the Company is in the 9.25%–9.75% range. Therefore, I recommend a ROE of 9.50% for OGE.

Q. PLEASE INDICATE WHY AN EQUITY COST RATE OF 9.50% IS APPROPRIATE FOR THE COMPANY.

A. There are several reasons that support an equity cost rate of 9.50% as appropriate and fair for OGE:

1. I employed a capital structure that includes a higher common equity ratio and lower financial risk than the average of the proxy groups and of the Company's parent,

OGE Energy.

2. As Table 6 on page 43 of my testimony shows, the electric utility industry is among the lowest risk industries in the U.S. as measured by beta. As such, according to CAPM, the cost of equity capital for this industry is among the lowest in the U.S.

3. As noted above, the S&P and Moody's issuer credit ratings for OGE are A- and A3, while the average S&P and Moody's issuer credit ratings for the two proxy groups are BBB+ and Baa2. Hence, OGE's S&P issuer credit rating is one-notch (A- vs. BBB+) above the average of the two groups and OGE's Moody's issuer credit rating is two-notches (A3 vs. Baa2) above the average of the two groups. Therefore, OGE's investment risk is below the average of the two proxy groups.

4. On an annual basis, the average authorized ROEs for electric utility companies have been an average of 9.38% in 2021; 9.54% in 2022; and 9.60% in 2023, according to S&P Cap IQ - Regulatory Research Associates.[48] As I discussed above, authorized ROEs have lagged behind capital market cost rates. This observation is supported by the Werner and Jarvis (2022) study which evaluated over 3,500 authorized ROEs over the past four decades authorized ROEs and concluded that authorized ROEs did not decline in line with capital costs and therefore past authorized ROEs have overstated the actual cost of equity capital. Accordingly, I believe my recommended ROE reflects the current capital market environment.

[48] S&P Global Market Intelligence, *RRA Regulatory Focus* (2024).

Q. DO YOU BELIEVE THAT YOUR 9.50% ROE RECOMMENDATION MEETS THE HOPE AND BLUEFIELD STANDARDS?

A. Yes. According to the *Hope* and *Bluefield* decisions, returns on capital should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital.

As Exhibit JRW-2-3, shows, electric utility companies have been earning within the 8.0% to 10.0% range in recent years. While my recommendation is below the average authorized ROEs for electric utility companies, it reflects the downward trend in authorized and earned ROEs of utilities.

VII. Critique of OGE's Rate of Return Testimony

Q. PLEASE SUMMARIZE THE COMPANY'S COST OF CAPITAL RECOMMENDATION.

A. The Company proposes a capital structure consisting of 53.50% common equity and 46.50% long-term debt.[49] This capital structure is OGE's actual capital structure as of September 30, 2023. In this case, the Company proposed a long-term debt cost rate of 4.85%. The Company's witness, Ms. Ann Bulkley, recommended a common equity cost rate of 10.50% for the Company.[50] These recommendations are summarized in Exhibit JRW-7-1.

[49] Direct Testimony of Ann Bulkley on behalf of Oklahoma Gas & Electric Company 67:13–14 (Dec. 29, 2023) [hereinafter "Bulkley Direct"].
[50] Bulkley Direct 8:18–19.

Q. PLEASE REVIEW MS. BULKLEY'S EQUITY COST RATE APPROACHES AND RESULTS.

A. Ms. Bulkley developed a proxy group of electric utility companies and employs DCF, risk premium, and CAPM models. Ms. Bulkley' equity-cost-rate estimates for the Company are summarized in Exhibit JRW-7-2. Based on these figures, she concluded that the appropriate equity-cost rate is 10.50% for the Company.

Q. WHAT ARE THE AREAS OF DISAGREEMENT IN ESTIMATING THE RATE OF RETURN OR COST OF CAPITAL IN THIS PROCEEDING?

A. As discussed previously, the primary issues related to the Company's rate of return include the following: (1) capital market conditions; (2) the capital structure; (3) DCF Approach; (4) CAPM Approach; (5) the alternative risk premium model; and (6) other factors, most notably: (a) the Company's wildfire risk; (b) the Company's capital expenditures; (c) Regulatory risk; and (d) flotation costs.

The Company's wildfire risk, capital expenditures and regulatory risk are factors considered in the credit rating process. However, as noted above, OGE's S&P and Moody's issuer credit ratings are one-notch (S&P: A- vs. BBB+) and two-notches (Moody's: A3 vs. Baa2) above the average of the two groups. Hence, OGE's investment risk is below the average of the two proxy groups, despite these three factors as noted by Ms. Bulkley.

Finally, there is no need for a flotation cost adjustment since Ms. Bulkley has not shown that OGE paid any flotation costs. There is no justification to give OGE higher revenues in the form of a higher ROE to cover expenses that OGE has not paid.

The capital market conditions (1), capital structure (2), and other factors (6) were previously discussed. I address the remaining items below.

A. DCF Approach

Q. PLEASE SUMMARIZE MS. BULKLEY'S DCF ESTIMATES.

A. Ms. Bulkley developed an equity cost rate by applying the traditional constant growth DCF model to her proxy group.[51] Ms. Bulkley's DCF results are summarized in Exhibit JRW-7-2. In the traditional DCF approach, the equity cost rate is the sum of the dividend yield and expected growth. Ms. Bulkley uses three dividend yield measures (30, 90, and 180 days) in her DCF models. For her DCF growth rate, Ms. Bulkley relied on the forecasted EPS growth rates of Zacks, Yahoo Finance, and *Value Line*. Ms. Bulkley's mean DCF ROE is 10.21%.

Q. WHAT ARE THE ERRORS IN MS. BULKLEY'S DCF ANALYSES?

A. Ms. Bulkley overstated her reported DCF results primarily because she relies exclusively on the overly optimistic and upwardly biased earnings per share ("EPS") growth-rate forecasts of Wall Street analysts and *Value Line*.

1. Exclusive Reliance on Analysts' EPS Growth-Rate Forecasts

Q. PLEASE REVIEW MS. BULKLEY'S DCF GROWTH RATE.

A. In her constant-growth DCF model, Ms. Bulkley's DCF growth rate is the average of the projected EPS growth-rate forecasts of Wall Street analysts as compiled by Yahoo Finance, Zack's, and *Value Line*.

[51] Bulkley Direct 32–38, Exhibit AEB-4.

Q. WHAT IS THE EFFECT OF MS. BULKLEY'S EXCLUSIVE RELIANCE ON THE PROJECTED GROWTH RATES OF WALL STREET ANALYSTS AND *VALUE LINE*?

A. Ms. Bulkley's exclusive reliance on the projected growth rates published by Wall Street analysts and *Value Line* inflates her estimates of growth rates. It seems highly unlikely that investors today would rely exclusively on the EPS growth-rate forecasts of Wall Street analysts and *Value Line* and ignore other growth-rate measures to arrive at their expected growth rates for equity investments.

As previously stated, the appropriate growth rate in the DCF model is the dividend growth rate rather than the earnings growth rate. Therefore, consideration must be given to other indicators of growth, including historical prospective dividend growth, internal growth, as well as projected earnings growth. Due to the known inaccuracy of analysts' long-term-earnings growth-rate forecasts, the weight given to analysts' projected EPS growth rates should be limited.

Finally, not only are those forecasts inaccurate, but they also are overly optimistic and upwardly biased. I provided a discussion of this issue on pages 50 to 55 of this testimony and report on a study I conducted in Figure 10, found on page 55 of my testimony. Using the electric utilities and gas distribution companies covered by *Value Line*, this study demonstrates that *Value Line*'s mean forecasted EPS growth rates are consistently greater than the achieved actual EPS growth rates over the 1985–2022 period. Over the entire period, the mean forecasted EPS growth rate is over 200 basis points above the actual EPS growth rate. Consequently, the projected EPS growth rates for utilities are overly optimistic and upwardly based. Hence, exclusively using these growth rates as a measure of the DCF

growth rate produces an overstated equity-cost rate. I also highlighted a study by Szakmary, Conover, and Lancaster (2008) who evaluated the accuracy of *Value Line*'s three-to-five-year EPS growth rate forecasts using companies in the Dow Jones Industrial Average over a thirty-year period and found these forecasted EPS growth rates to be significantly higher than the EPS growth rates that these companies subsequently achieved.[52]

Q. HAVE CHANGES IN REGULATIONS REGARDING WALL STREET ANALYSTS AND THEIR RESEARCH IMPACTED THE UPWARD BIAS IN THEIR PROJECTED EPS GROWTH RATES?

A. No. Numerous studies I discussed previously in my testimony demonstrate the upward bias has continued despite changes in regulations and reporting requirements over the past two decades. This observation is supported further by a 2010 McKinsey study entitled "Equity Analysts: Still Too Bullish", which involved a study of the accuracy of analysts' long-term EPS growth rate forecasts. The authors conclude that, after a decade of stricter regulation, analysts' long-term earnings forecasts continue to be excessively optimistic. They made the following observation:

> Alas, a recently completed update of our work only reinforces this view—despite a series of rules and regulations, dating to the last decade, that were intended to improve the quality of the analysts' long-term earnings forecasts, restore investor confidence in them, and prevent conflicts of interest. For executives, many of whom go to great lengths to satisfy Wall Street's expectations in their financial reporting and long-term strategic moves, this is a cautionary tale worth remembering. This pattern confirms our earlier findings that analysts typically lag behind events in revising their forecasts to reflect new economic conditions. When economic growth accelerates, the size of the forecast error declines; when economic growth slows, it increases. So as economic growth cycles up and down, the actual earnings S&P 500 companies report occasionally coincide with the analysts' forecasts, as they did, for example, in 1988, from 1994 to 1997,

[52] Szakmary, Conover, & Lancaster, *supra* note 26, at 820–33.

> and from 2003 to 2006. *Moreover, analysts have been persistently overoptimistic for the past 25 years, with estimates ranging from 10 to 12 percent a year, compared with actual earnings growth of 6 percent. Over this time frame, actual earnings growth surpassed forecasts in only two instances, both during the earnings recovery following a recession. On average, analysts' forecasts have been almost 100 percent too high.* [53]

This is the same observation made in a Bloomberg Businessweek article.[54] The author concluded: "**The bottom line:** Despite reforms intended to improve Wall Street research, stock analysts seem to be promoting an overly rosy view of profit prospects."[55]

Ms. Bulkley's growth rate analysis fails to recognize or adjust for these flaws inherent to the forecasts that she uses.

B. CAPM Approach

Q. PLEASE DISCUSS MS. BULKLEY'S CAPM ANALYSIS.

A. Ms. Bulkley developed an equity cost rate by applying the CAPM model to her proxy group.[56] Ms. Bulkley's CAPM/ECAPM results are summarized in Exhibit JRW-7-2. Ms. Bulkley calculates an equity cost rate by using not only the traditional CAPM, but also the so-called Empirical CAPM ("ECAPM") model for her proxy group. The ECAPM is a variant of the traditional CAPM. The CAPM/ECAPM approach requires an estimate of the risk-free interest rate, beta, and the equity risk premium. Ms. Bulkley uses: (1) current (4.77%), near-term projected (4.48%), and long-term projected (4.10%) 30-year Treasury yields; (2) betas from *Value Line*; and (3) a market risk premium of 7.78%. Based on these

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[53] Goedhart, Raj, & Saxena, *supra* note 24, at 14–17 (emphasis added).
[54] Roben Farzad, *For Analysts, Things Are Always Looking Up*, Bloomberg Businessweek (Jun. 10, 2010), https://www.bloomberg.com/news/articles/2010-06-10/for-analysts-things-are-always-looking-up.
[55] *Id.*
[56] Bulkley Direct 38–43, Exhibits AEB-5–AEB-7.

figures, Ms. Bulkley finds CAPM/ECAPM equity cost rates ranging from 10.32% to 11.88%.

Q. WHAT ARE THE ERRORS IN MS. BULKLEY'S CAPM ANALYSIS?

A. The primary errors with Ms. Bulkley's CAPM/ECAPM analyses are: (1) the use of the ECAPM version of the CAPM and (2) the expected market risk premium of 7.78%.

1. ECAPM Approach

Q. PLEASE EXPLAIN ISSUES YOU IDENTIFIED WITH MS. BULKLEY'S USE OF THE ECAPM?

A. ECAPM, as popularized by rate of return consultant Dr. Roger Morin, attempts to model the well-known finding of tests of the CAPM that have indicated the Security Market Line (SML) is not as steep as predicted by CAPM. Accordingly, ECAPM is an alternative version of the CAPM. However, the ECAPM has not been theoretically or empirically validated in refereed journals. The ECAPM provides for weights that are used to adjust the risk-free rate and market risk premium in applying ECAPM. Ms. Bulkley uses 0.25 and 0.75 factors to boost the equity risk premium measure but provides no empirical justification for those figures.

In addition to the lack of any theoretical or empirical validation of ECAPM, there are two errors in Ms. Bulkley's version of ECAPM: (1) I am not aware of any tests of the CAPM that use adjusted betas such as those used by Ms. Bulkley; and (2) adjusted betas, which I previously discussed, already address the empirical issues with CAPM. Specifically, the beta adjustment increases the beta and resulting expected return for low beta (beta<1.0) stocks, and also decreases the beta and resulting expected return for high beta (beta>1.0) stocks.

2. Overstated Market Risk Premium

Q. PLEASE ASSESS MS. BULKLEY'S MARKET RISK PREMIUM DERIVED FROM APPLYING THE DCF MODEL TO THE S&P 500 USING *VALUE LINE* EPS GROWTH RATES.

A. The most blatant error in Ms. Bulkley's CAPM/ECAPM analysis is the magnitude of the market (or equity) risk premium—which is then used to produce very high CAPM ROE results, up to 11.88%. Ms. Bulkley developed an expected market risk premium by: (1) applying the DCF model to the S&P 500 to get an expected market return; and (2) subtracting the risk-free rate of interest.

As shown in Exhibit AEB-7 and Table 10, Ms. Bulkley's estimated market return of 12.56% for the S&P 500 equals the sum of the dividend yield of 1.69% and expected EPS growth rate of 10.78%. The expected EPS growth rate is the average of the expected EPS growth rates from S&P. The primary error in this approach is Ms. Bulkley's expected S&P 500 DCF growth rate. As previously discussed, the expected EPS growth rates of Wall Street analysts are upwardly biased. Furthermore, the projected growth rate is inconsistent with actual economic and earnings growth rates in the U.S.

Table 10
Bulkley CAPM Market Risk Premium

Dividend Yield	1.69%
+ Expected EPS Growth	10.78%
= Expected Market Return	12.56%
+ Risk-Free Rate	4.77%
= Market Risk Premium	7.78%

Q. PLEASE PROVIDE ADDITIONAL INSIGHTS INTO THE EXPECTED STOCK MARKET RETURN OF 12.56%.

A. Simply put, the assumption of a 12.56% expected stock market return is excessive and

unrealistic. The compounded annual return in the U.S. stock market is about 10% (9.80% according to Damodaran between 1928–2023).[57] Ms. Bulkley's CAPM results assume that the return on the U.S. stock market will be more than 20% higher in the future than it has been in the past. Her inflated expected stock market return, and the resulting market risk premium and equity cost rate, results from computing the expected stock market return as the sum of the adjusted dividend yield plus the expected EPS growth rate of 10.78%.

Q. IS MS. BULKLEY'S EXPECTED STOCK MARKET RETURN OF 12.56% REFLECTIVE OF THE STOCK MARKET RETURNS THAT INVESTMENT FIRMS TELL INVESTORS TO EXPECT?

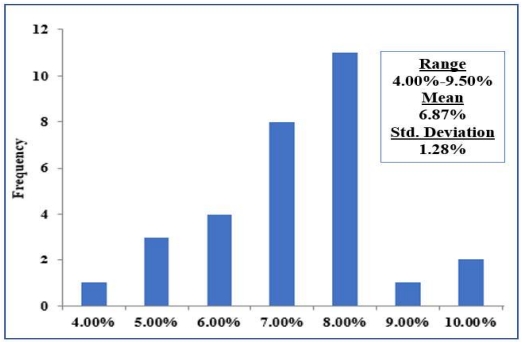
A. No. Many investment firms provide investors with their estimates of the annual stock returns that they should expect in the future. Most publish these expected returns in documents entitled "Capital Market Assumptions" and are available online at their websites. If you search the Internet for "Capital Market Assumptions," you get a long list of investment firms and their base case expected annual return assumptions for stocks, bonds, and other financial assets. In my research, I found thirty investment firms that published their capital market assumptions. They are listed in Exhibit JRW-8, and include many of the largest, best-known investment firms, including J.P. Morgan, BlackRock, BNY Mellon, Fidelity Investments, Northern Trust, Vanguard Group, and State Street. Combined, these thirty firms manage more than $50 trillion in assets.

Figure 14, below, provides a histogram of the expected returns listed in Exhibit JRW-8. The average duration of the long-term forecasts is 10 years. The range of the forecasted

[57] *Damodaran Online*, *supra* note 43.

U.S. annual large cap equity returns is 4.00% to 9.50%. The mean and standard deviation of these expected returns are 6.87% and 1.28%.

Figure 14
Histogram of Investment Firm Expected Large Cap Equity Annual Returns
2023



Date Source: Exhibit JRW-8.

Q. WHAT ARE YOUR OBSERVATIONS ON THE STOCK MARKET RETURNS THAT INVESTMENT FIRMS TELL INVESTORS TO EXPECT?

A. I have three comments. First, these returns are below the historical average compounded annual stock market return of 9.80% cited above. Second, the standard deviation of 1.28% is very low, which indicates that the expected returns provided by these firms are quite similar, especially compared to historical stock market returns. Finally, these expected returns indicate that Ms. Bulkley's average expected stock market return of 12.56%, which she calculates using three alternative models through *Value Line* and Bloomberg's expected return data, is more than double the average return of 6.87% that investment firms tell investors they should expect.

Q. WHY DO YOU THINK THE STOCK MARKET RETURNS THAT INVESTMENT FIRMS TELL INVESTORS TO EXPECT ARE LOWER THAN HISTORICAL STOCK RETURNS?

A. The biggest factor is that the valuation of the overall stock market is high relative to historical standards. When stock prices are high, investors must pay higher prices to buy in, which lowers their future expected returns. Figure 15 provides Schiller's Cyclically Adjusted Price Earnings ratio ("CAPE") over the last 100+ years. Stocks prices have remained above the mean historical CAPE level of 17.02% since 2009, with a current level of 27.78%. In other words, the higher valuation of the stock market leads to lower expected returns.

Figure 15
Schiller S&P 500 CAPE Ratio
2023

The Schiller S&P 500 CAPE ratio is based on average inflation-adjusted earnings from the previous 10 years. Data Source: https://www.multpl.com/shiller-pe.

Q. HOW DO ISSUES WITH ANALYSTS' EPS GROWTH RATE FORECASTS IMPACT MS. BULKLEY'S CAPM?

A. The key point is that Ms. Bulkley's CAPM market risk premium methodology is based entirely on the concept that analyst projections of companies' three-to-five-year EPS growth rates reflect investors' expected long-term EPS growth for those companies.

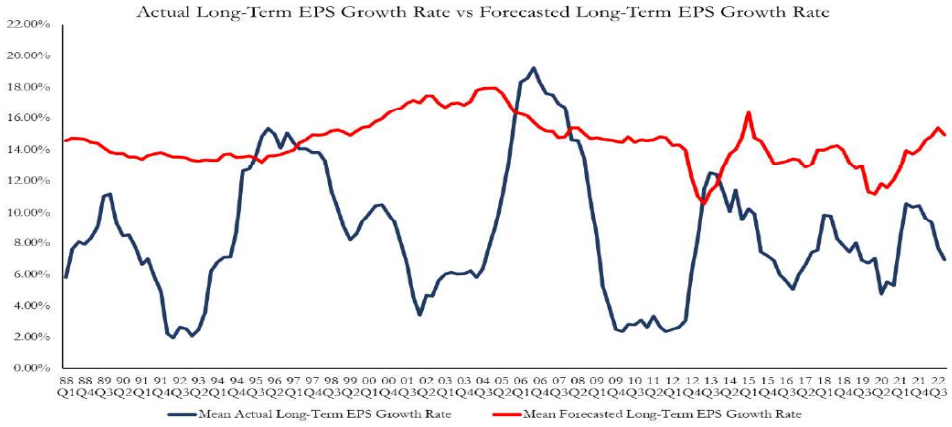
However, this assumption is highly unrealistic given the published research on these projections. As previously noted, numerous studies have shown that the long-term EPS growth rate forecasts of Wall Street securities analysts are overly optimistic and upwardly biased.[58] Moreover, as I referenced above, the Lacina, Lee, and Xu study showed that analysts' forecasts of EPS growth over the next three-to-five years are no more accurate than their forecasts of the next single year's EPS growth (and the single year forecasts are notoriously inaccurate). The overly optimistic inaccuracy of analysts' growth rate forecasts leads to an upward bias in equity cost estimates of about 300 basis points.[59]

I also completed studies on the accuracy of analysts' projected EPS growth rates. In Figure 10 on page 55 of my testimony, I demonstrated that the EPS growth rate forecasts of Wall Street analysts are upwardly biased for electric utilities and gas distribution companies. In Figure 16, below, I provide the results of a study I performed using all companies followed by I/B/E/S who have three-to-five-year EPS growth rate forecasts over the 1985 to 2022 period. In this study, for each company with a three-to-five-year forecast, I compared the average three-to-five-year average EPS growth rate forecasts to the actual EPS growth rates achieved over the three-to-five-year time frame. Figure 16 depicts the mean of the projected EPS growth rates is the red line and the mean of the actual EPS growth rates is the blue line. Over the thirty-five years of the study, the mean projected three-to-five-year EPS growth rate was 12.50%, while the average, actual-achieved three-to-five-year EPS growth rate was 6.50%. This study demonstrates that the projected three-to-five-year EPS

[58] *See* Harris, *supra* note 24, at 725–55; DeChow, Hutton, & Sloan, *supra* note 24; Chan, Karceski, & Lakonishok, *supra* note 24, at 643−84; Lacina, Lee, & Xu, *supra* note 23, at 77–101.
[59] Easton & Sommers, *supra* note 25, at 983–1015.

growth rate forecasts are upwardly biased and overly optimistic. Thus, by comparing Figures 10 and 16, it is evident that the degree of upward bias for all companies is much larger than it is for electric and gas utility companies.

Figure 16
Mean Forecasted vs. Actual Long-Term EPS Growth Rates
All Companies Covered by I/B/E/S
1985–2022



Data Source: I/B/E/S, 2023.

Q. IS MS. BULKLEY'S MARKET RISK PREMIUM OF 7.78% REFLECTIVE OF THE MARKET RISK PREMIUMS FOUND IN PUBLISHED STUDIES AND SURVEYS?

A. No. Ms. Bulkley's figure well exceeds market risk premiums: (1) found in studies of the market risk premium by leading academic scholars, (2) produced by analyses of historic stock and bond returns, and (3) found in surveys of financial professionals. Exhibit JRW-6-6 provides the results of over 30 market risk premium studies from the past 15 years. Historic stock and bond returns suggest a market risk premium in the 4.40%–6.64% range, depending on whether one uses arithmetic or geometric mean returns. Many studies have used expected return (also called *ex ante*) models, and their market risk premiums results vary from as low as 3.32% to as high as 6.0%. Finally, the market risk premiums developed from surveys of analysts, companies, financial professionals, and academics potentially

suggest even lower market risk premiums, in a range from 3.15% to 5.70%. In conclusion, there is no support in historic return data, surveys, academic studies, or reports for investment firms for a market risk premium as high as the 7.78% used by Ms. Bulkley.

Q. IS THERE OTHER EVIDENCE TO INDICATE THAT MS. BULKLEY'S MARKET RISK PREMIUM, WHICH SHE DEVELOPED USING ANALYSTS' PROJECTED EPS GROWTH RATES, IS EXCESSIVE?

A. Yes. A long-term EPS growth rate of 10.78% is inconsistent with both historic and projected economic and earnings growth in the U.S. for several reasons: (1) long-term EPS and economic growth represent about one-half of Ms. Bulkley's projected EPS growth rate of 10.78%; (2) long-term EPS and GDP growth are directly linked; and (3) more recent trends in GDP growth, as well as projections of GDP growth, suggest slower economic and earnings growth in the near future during the period when the rates from this case will be effective.

1. **<u>Long-Term Historic EPS and GDP Growth Have Been in the 6%–7% Range</u>**: In Exhibits JRW-9-1 through JRW-9-6, I performed a study of the growth in nominal GDP, S&P 500 stock price appreciation, and S&P 500 EPS and DPS growth since 1960. The results are provided in Exhibit JRW-9-1, and a summary is shown in Table 11 below.

Table 11
GDP, S&P 500 Stock Price, EPS, and DPS Growth
1960–Present

Nominal GDP	**6.45%**
S&P 500 Stock Price	**7.25%**
S&P 500 EPS	**7.00%**
S&P 500 DPS	**5.81%**
Average	**6.63%**

The results demonstrate that the historical long-run growth rates for GDP, S&P EPS, and S&P DPS are in the 6% to 7% range. By comparison, Ms. Bulkley's long-run growth rate projection of 10.78% is, at best, overstated. This estimate suggests that companies in the U.S. would be expected to: (1) increase their growth rate of EPS by almost 100% in the future; and (2) maintain that growth indefinitely in an economy that is expected to grow at about one-third of Ms. Bulkley's projected growth rates.

2. **There is a Direct Link Between Long-Term EPS and GDP Growth**: The results in Exhibit JRW-9-1 and Table 11 show that, historically, there has been a close link between long-term EPS and GDP growth rates. Brad Cornell of the California Institute of Technology published a study on GDP growth, earnings growth, and equity returns. Cornell found that long-term EPS growth in the U.S. is directly related to GDP growth, with GDP growth providing an upward limit on EPS growth. Furthermore, the study showed that long-term stock returns are determined by long-term earnings growth. Cornell concluded with the following observations:

> The long-run performance of equity investments is fundamentally linked to growth in earnings. Earnings growth, in turn, depends on growth in real GDP. This article demonstrates that both theoretical research and empirical research in development economics suggest relatively strict limits on future growth. In particular, real GDP growth in

> excess of 3 percent in the long run is highly unlikely in the developed world. In light of ongoing dilution in earnings per share, this finding implies that investors should anticipate real returns on U.S. common stocks to average no more than about 4–5 percent in real terms.[60]

Annual growth rates in nominal GDP are shown in Exhibit JRW-9-2. Nominal GDP growth was in the four percent range over the past decade until the COVID-19 pandemic hit in 2020. Nominal GDP fell by 2.2% in 2020 before rebounding and growing by over 10.0% in 2021 and in 2022. The components of nominal GDP growth are real GDP growth and inflation. Exhibit JRW-9-3 shows the annual real GDP growth rate between 1961 and 2022. Real GDP growth has gradually declined from the 5.0% to 6.0% range in the 1960s to the 2.0% to 3.0% range during the 2015–2019 period. Real GDP fell by 3.5% in 2020, but rebounded and grew by 5.7% in 2021, 2.1% in 2022, and 2.50% in 2023.

The second component of nominal GDP growth is inflation. Exhibit JRW-9-4 illustrates inflation as measured by the annual growth rate in the Consumer Price Index ("CPI") from 1961 to 2022. The large increase in prices from the late 1960s to the early 1980s is readily evident. Equally evident is the rapid decline in inflation during the 1980s as inflation dropped from above ten percent to about four percent. Since that time, inflation has gradually declined and was in the 2.0% range or below from 2015 to 2020. Prices increased in 2021 and 2022 with the rebounding economy and increased by 4.7% in 2021 and 8.0% in 2022. Year-over-year inflation in 2022 jumped to 40-year highs in 2022 due, in part, to supply chain

[60] Bradford Cornell, *Economic Growth and Equity Investing*, Fin. Analysts J. 63 (Jan.–Feb. 2010).

issues and the Russia-Ukraine conflict but dropped to 3.2% in 2023. However, as noted above, longer-term inflation is expected to be in the 2.0%–3.0% range.

The graphs in Exhibit JRW-9-2 through JRW-9-4, provide clear evidence of the decline, in recent decades, in nominal GDP as well as its components, real GDP, and inflation. To gauge the magnitude of the decline in nominal GDP growth, Table 12 provides the compounded GDP growth rates for 10-, 20-, 30-, 40- and 50-years. Whereas the 50-year compounded GDP growth rate is 6.16%, subsequent 10-year intervals reflect a significant decline in nominal GDP growth. These figures strongly suggest that nominal GDP growth in recent decades slowed and that a figure in the range of 4.0% to 5.0% is more appropriate today for the U.S. economy.

Table 12
Historical Nominal GDP Growth Rates

10-Year Average	**4.59%**
20-Year Average	**4.32%**
30-Year Average	**4.65%**
40-Year Average	**5.21%**
50-Year Average	**6.16%**

3. **<u>Long-Term GDP Projections also Indicate Slower GDP Growth in the Future</u>**:

A lower range is also consistent with long-term GDP forecasts. There are several forecasts of annual GDP growth that are available from economists and government agencies. These are listed in Panel B of Exhibit JRW-9-5.

The mean 10-year nominal GDP growth forecast, as of February 2024, by economists in the recent Survey of Financial Forecasters is 4.24%.[61] The Energy

[61] *First Quarter 2024 Survey of Professional Forecasters*, Fed. Res. Bank of Phila. (Feb. 9, 2024) https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/spf-q1-2024.

Information Administration ("EIA"), in its projections used in preparing Annual Energy Outlook, forecasts long-term GDP growth of 4.3% for the period 2023 to 2053.[62] The Congressional Budget Office ("CBO"), in its forecasts for the period 2023 to 2053, projects a nominal GDP growth rate of 3.8%.[63] Finally, the Social Security Administration ("SSA"), in its Annual OASDI Report, provides a projection of nominal GDP from 2023 to 2100.[64] SSA's projected growth GDP growth rate over this period is 4.1%. The average projected GDP growth rate for these four forecasts is 4.15%.

In short, the trends and projections suggest a long-term GDP growth rate in the 4.0% to 4.5% range. Thus, Ms. Bulkley's average projected EPS growth rate of 10.78% is more than double the projected GDP growth.

Q. OVER THE MEDIUM TO LONG RUN, IS S&P 500 EPS GROWTH LIKELY TO OUTPACE GDP GROWTH?

A. No. Figure 17, below, shows the average annual growth rates for GDP and the S&P 500 EPS since 1960. The one apparent difference between the two is that the S&P 500 EPS growth rates are much more volatile than the GDP growth rates, when compared using the relatively short, and somewhat arbitrary, annual conventions used in these data.[65] Volatility

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[62] *Annual Energy Outlook 2023*, Table: Macroeconomic Indicators, U.S. Energy Info. Admin (Mar. 16, 2023) https://www.eia.gov/outlooks/aeo/.

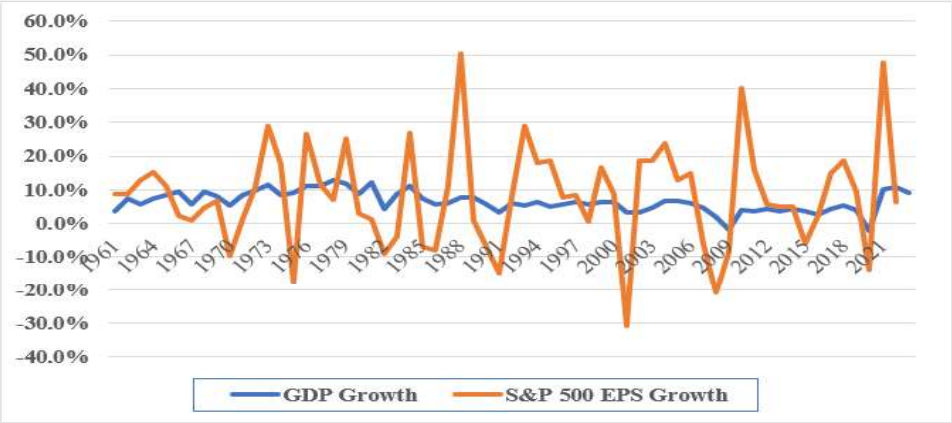
[63] *The 2023 Long-Term Budget Outlook*, Cong. Budget Off. (Jul. 15, 2023) https://www.cbo.gov/publication/59014.

[64] Soc. Sec. Admin., *2023 Annual Report of the Board of Trustees of the Old-Age, Survivors, and Disability Insurance (OASDI) Program*, Table VI.G4 (July 1, 2023) (The 4.1% growth rate is the growth in projected GDP from 2023 to 2100).

[65] Timing conventions such as years and quarters are needed for measurement and benchmarking but are somewhat arbitrary. Economic growth and profit accrual occur on continuous bases. A 2014 study evaluated the timing relationship between corporate profits and nominal GDP growth. The authors found

aside, however, it is clear that over the medium to long run, S&P 500 EPS growth does not significantly outpace GDP growth.

Figure 17
Average Annual Growth Rates
GDP and S&P 500 EPS
1960–2023



Data Sources: GDPA - http://research.stlouisfed.org/fred2/series/GDPA/downloaddata.
S&P EPS - http://pages.stern.nyu.edu/~adamodar/

A more thorough understanding of the relationship between GDP and S&P 500 EPS growth requires consideration of at least three factors, as follows:

1. **Corporate Profits are Constrained by GDP**: In a *Fortune* magazine article, Milton Friedman, the winner of the 1976 Nobel Prize in Economic Sciences, warned investors and others not to expect corporate-profit growth to sustainably exceed GDP growth, stating, "Beware of predictions that earnings can grow faster than the economy for long periods. When earnings are exceptionally high, they don't just keep booming."[66] In that same article, Friedman also noted that profits

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that aggregate accounting earnings growth is a leading indicator of the GDP growth with a quarter-ahead forecast horizon. (*See* Yaniv Konchitchki & Panos N. Patatoukas, *Accounting Earnings and Gross Domestic Product*, 57 J. of Acct. & Econ. 76, at 76–88 (Feb. 2014)).

[66] Shaun Tully, *Corporate Profits Are Soaring. Here's Why It Can't Last*, Fortune (Dec. 7, 2017), http://fortune.com/2017/12/07/corporate-earnings-profit-boom-end/.

must move back down to their traditional share of GDP.[67] In Table 13 I show that the aggregate net income levels for the S&P 500 companies, using 2022 figures, represent 6.11% of nominal GDP.

Table 13
S&P 500 Aggregate Net Income as a Percent of GDP

	2022 Value ($B)
Aggregate Net Income for S&P 500	$1,555.98
2021 Nominal U.S. GDP	25,461.34
Net Income/GDP (%)	6.11%

Data Sources: 2022 Net Income for S&P 500 companies https://www.gurufocus.com/economic_indicators/5749/sp-500-net-income-ttm; 2022 Nominal GDP – https://pages.stern.nyu.edu/~adamodar/.

2. **Short-Term Factors Impact S&P 500 EPS**: The growth rates in the S&P 500 EPS and GDP can diverge on a year-to-year basis due to short-term factors that impact S&P 500 EPS in a more significant way than GDP. As shown above, S&P EPS growth rates are much more volatile than GDP growth rates. The EPS growth for the S&P 500 companies has been influenced by low labor costs and interest rates, commodity prices, the recovery of different sectors such as the energy and financial sectors, and the cut in corporate tax rates. These short-term factors may make it seem that there is a disconnect between the economy and corporate profits.

3. **The Differences Between the S&P 500 EPS and GDP**: In the last two years, as the EPS for the S&P 500 has grown at a faster rate than U.S. nominal GDP, some have pointed to the differences between the S&P 500 and GDP.[68] These differences

[67] *Id.*
[68] *See* Burt White & Jeff Buchbinder, *The S&P and GDP are not the Same Thing*, LPL Fin. (Nov. 4, 2014, 11:31 AM), https://www.businessinsider.com/sp-is-not-gdp-2014-11; Matt Comer, *How Do We Have 18.4% Earnings Growth In A 2.58% GDP Economy*?, Seeking Alpha (Apr. 19, 2018, 1:04 PM),

include: (a) corporate profits are about 2/3 manufacturing driven, while GDP is 2/3 services driven; (b) consumer discretionary spending accounts for a smaller share of S&P 500 profits (15%) than of GDP (23%); (c) corporate profits are more international-trade driven, while exports minus imports tend to drag on GDP; and (d) S&P 500 EPS is affected not just by corporate profits but also by share buybacks on the positive side (i.e.,fewer shares boost EPS), and by share dilution on the negative side (i.e., new shares dilute EPS). While these differences may seem significant, it must be remembered that the Income Approach to measure GDP includes corporate profits (in addition to employee compensation and taxes on production and imports) and therefore effectively accounts for the first three factors.[69]

In conclusion, despite the intertemporal short-term differences between S&P 500 EPS and nominal GDP growth, corporate profits and GDP remain inevitably linked over the long-term.

Q. PLEASE PROVIDE ADDITIONAL EVIDENCE SHOWING THAT MS. BULKLEY'S S&P 500 EPS GROWTH RATE OF 10.78% IS NOT REALISTIC.

A. In addition to my previous discussion, I performed the following analysis of S&P 500 EPS and GDP growth in Table 14 below. Specifically, I started with the 2022 aggregate net income for the S&P 500 companies and 2022 nominal GDP for the U.S. As depicted in

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https://seekingalpha.com/article/4164052-18_4-percent-earnings-growth-2_58-percent-gdp-economy; Shaun Tully, *How on Earth Can Profits Grow at 10% in a 2% Economy*?, Fortune, (July 27, 2017), http://fortune.com/2017/07/27/profits-economic-growth/.

[69] The Income Approach to measuring GDP includes wages, salaries, and supplementary labor income, corporate profits, interest and miscellaneous investment income, farmers' incomes, and income from non-farm unincorporated businesses.

Table 13 above, the aggregate profit for the S&P 500 companies represented 6.11% of nominal GDP in 2022. In Table 14, I also projected the aggregate net income level for the S&P 500 companies and GDP as of the year 2050. For the growth rate for the S&P 500 companies, I used Ms. Bulkley's average projected S&P 500 EPS growth rate of 10.78%. As a growth rate for nominal GDP, I used the average of the long-term projected GDP growth rates from CBO, SFF, SSA, and EIA (3.8%, 4.4%, 4.1%, and 4.3%, respectively), which is 4.15%. The projected 2050 level for the aggregate net income level for the S&P 500 companies using Ms. Bulkley's 10.78% EPS growth rate of 10.78% is $27.35 trillion. Over the same period, GDP is expected to grow to $79.50 trillion. As such, if the aggregate net income for the S&P 500 grows in accordance with the growth rate used by Ms. Bulkley (10.78%), and if nominal GDP grows at rates projected by major government agencies (4.15%), the net income of the S&P 500 companies will represent growth from 6.11% of GDP in 2022 to 34.40% of GDP in 2050. It is unrealistic for the net income of the S&P 500 to become such a large component of GDP.

Table 14
Projected S&P 500 Earnings and Nominal GDP
2022-2050
S&P 500 Aggregate Net Income as a Percent of GDP

	2022 Value ($B)	Growth Rate	No. of Years	2050 Value ($B)
Aggregate Net Income for S&P 500	$1,555.98	10.78%	28	$ 27,347.80
2021 Nominal U.S. GDP	$25,461.34	4.15%	28	$ 79,495.21
Net Income/GDP (%)	6.11%			34.40%

Data Sources: 2022 Net Income for S&P 500 companies
https://www.gurufocus.com/economic_indicators/5749/sp-500-net-income-ttm.
Growth Rate - Ms. Bulkley's average projected S&P 500 EPS growth rate of 10.78%.
Nominal GDP Growth Rate – The average of the long-term projected GDP growth rates from CBO, SFF, SSA, and EIA (3.8%, 4.4%, 4.1%, and 4.3% = 4.15%).

Q. PLEASE PROVIDE A SUMMARY ASSESSMENT OF GDP AND S&P 500 EPS GROWTH RATES.

A. The long-term link between corporate profits and GDP is inevitable. The short-term differences in growth between the two indicate that corporate profits as a share of GDP tend to go far higher after periods where they are depressed, and then drop sharply after they have been hovering at historically high levels. In a famous 1999 Fortune article, Warren Buffet made the following observation:

> You know, someone once told me that New York has more lawyers than people. I think that's the same fellow who thinks profits will become larger than GDP. When you begin to expect the growth of a component factor to forever outpace that of the aggregate, you get into certain mathematical problems. In my opinion, you have to be wildly optimistic to believe that corporate profits as a percent of GDP can, for any sustained period, hold much above 6%.[70]

In sum, Ms. Bulkley's average long-term S&P 500 EPS growth rate of 10.78% is grossly overstated and has little, if any, basis in economic reality. In the end, the question remains whether corporate profits can grow faster than GDP. Jeremy Siegel, the renowned finance

[70] Carol Loomis, *Mr. Buffet on the Stock Market*, Fortune (Nov. 22, 1999), https://money.cnn.com/magazines/fortune/fortune_archive/1999/11/22/269071/.

professor at the Wharton School of the University of Pennsylvania, believes that going forward, earnings per share can grow about half a point faster than nominal GDP, or about five percent, due to the big gains in the technology sector. But Siegel also believes that sustained EPS growth matching analysts' near-term projections is absurd: "The idea of 8% or 10% or 12% growth is ridiculous. It will not happen."[71]

C. Alternative Risk Premium Approach

Q. PLEASE REVIEW MS. BULKLEY ALTERNATIVE RISK PREMIUM MODEL.

A. Ms. Bulkley estimates an equity cost rate using a risk premium model.[72] Using the quarterly authorized ROEs for electric utility companies from Q1 1992 until Q3 2023, Ms. Bulkley develops an equity cost rate by regressing the authorized returns on equity for electric utility companies on the 30-year Treasury Yield. Ms. Bulkley then adds the risk premium established by regressing the authorized returns on equity to each of her three different 30-year Treasury yields: (a) a current yield of 4.47%, (b) a near-term projected yield of 4.48%, and (c) a long-term projected yield of 4.10%. Ms. Bulkley's risk premium results are provided in Exhibit JRW-7-2. Ms. Bulkley reports risk premium equity cost rates ranging from 10.40% to 10.79%.

Q. WHAT ARE THE ERRORS IN MS. BULKLEY'S BOND YIELD PLUS RISK PREMIUM ("BYRP") ANALYSIS?

A. There are several problems with this approach for calculating the risk premium.

1. Ms. Bulkley's risk premium approach is a gauge of commission behavior and not investor behavior. Capital costs are determined in the marketplace through the

[71] Tully, *Corporate Profits Are Soaring*, *supra* note 67.
[72] Bulkley Direct 43–46, Exhibit AEB-8.

financial decisions of investors and are reflected in such fundamental factors as dividend yields, expected growth rates, interest rates, and investors' assessment of the risk and expected return of different investments. Regulatory commissions evaluate capital market data in setting authorized ROEs, but also consider other utility- and rate case-specific information in setting ROEs. As such, Ms. Bulkley's approach and results reflect other factors such as capital structure, credit ratings and other risk measures, service territory, capital expenditures, energy supply issues, rate design, investment and expense trackers, and other factors used by utility commissions in determining an appropriate ROE in addition to capital costs. This may especially be true when the authorized ROE data includes the results of rate cases that are settled and not fully litigated.

2. The methodology produces an inflated measure of the risk premium because it uses historic authorized ROEs and Treasury yields, and the resulting risk premium is applied to projected Treasury Yields. Since Treasury yields are always forecasted to increase, the resulting risk premium would be smaller if done correctly, which would be the result using projected Treasury yields in the analysis rather than historic Treasury yields.

3. Since the stocks of electric utilities have been selling above book value for the last decade, it is obvious that the authorized ROEs of state utility commissions are above the returns that investors require.

4. Finally, the ROE derived from this approach is dependent on the authorized ROEs from state utility commissions. As discussed earlier in this testimony, Werner and Jarvis (2022) demonstrated that authorized ROEs over the past four decades have

not declined in line with capital costs and therefore past authorized ROEs have overstated the actual cost of equity capital.

Q. HOW DOES MS. BULKLEY'S RISK PREMIUM RESULTS COMPARE TO THE CURRENT AUTHORIZED ROES FOR ELECTRIC UTILITY COMPANIES?

A. Ms. Bulkley reports results as high as 10.79% from her risk premium model. As discussed above, the average authorized ROE for electric utility companies in 2023 was 9.60%.

VIII. Summary and Conclusions

Q. PLEASE SUMMARIZE YOUR TESTIMONY ON THE APPROPRIATE COST OF CAPITAL FOR MASSACHUSETTS ELECTRIC AND NANTUCKET ELECTRIC.

A. The Company is proposing a capital structure consisting of 53.50% common equity and 46.50% long-term debt. This capital structure is OGE's actual capital structure as of September 30, 2023. The Company has proposed a long-term debt cost rate of 4.85%. The Company's witness, Ms. Ann Bulkley, recommended a common equity cost rate of 10.50% for the Company. As shown in Table 1, the Company proposed an overall rate of return of 7.87%.

I reviewed the Company's proposed capital structure and overall cost of capital. The Company's proposed capital structure includes a higher common equity ratio (53.48%) than the average of the two proxy groups. When this is the case, you can either adjust the common equity ratio or the return on equity downwards to account for the high common equity ratio with lower financial risk proposed by the Company. In this case, I am electing to reduce the common equity ratio to 50.0%. This is more in line, but still significantly higher, than the average of the two groups. I applied the DCF Model and the CAPM to two proxy groups: (1) my group of publicly-held electric utility companies; and (2) the

group developed by Ms. Bulkley. My analysis indicates a common equity cost rate in the range of 8.95% to 10.05% for OGE in this case. Given that (1) I rely primarily on the DCF model and the results for the Electric Proxy Group; and (2) OGE's investment risk is below the average of the two groups, I believe that the appropriate ROE range for the Company is in the 9.25%–9.75% range. Given this range, I recommend a ROE of 9.50% for OGE. Given this ROE and my proposed capital structure and senior capital cost rates for OGE, I recommend an overall fair rate of return or cost of capital of 7.18% for OGE. This recommendation is summarized in Table 2, found on page 10 of my testimony, and Exhibit JRW-1.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes. However, I reserve the right to supplement my testimony to account for any discovery responses or other supplemental filings the Company has yet to produce.

AFFIDAVIT OF J. RANDALL WOOLRIDGE, PH.D.

COMMONWEALTH OF PENNSYLVANIA)
) **ss**
COUNTY OF CENTRE)

I, Randall J. Woolridge, do hereby swear/affirm that the foregoing testimony is true and correct to the best of my knowledge and belief.

J. Randall Woolridge, Ph. D.

Subscribed and sworn to/affirmed before me this 24th day of April, 2024.

Commonwealth of Pennsylvania - Notary Seal
Courtney L. Moyle, Notary Public
Centre County
My commission expires June 14, 2025
Commission number 1314518
Member, Pennsylvania Association of Notaries

Notary Public

My Commission expires on June 14, 2025.

Appendix A

Educational Background, Research, and Related Business Experience
J. Randall Woolridge

J. Randall Woolridge is a Professor of Finance and the Goldman, Sachs & Co. and Frank P. Smeal Endowed Faculty Fellow in Business Administration in the College of Business Administration of the Pennsylvania State University in University Park, PA. In addition, Professor Woolridge is Director of the Smeal College Trading Room and President and CEO of the Nittany Lion Fund, LLC.

Professor Woolridge received a Bachelor of Arts degree in Economics from the University of North Carolina, a Master of Business Administration degree from the Pennsylvania State University, and a Doctor of Philosophy degree in Business Administration (major area-finance, minor area-statistics) from the University of Iowa. He has taught Finance courses including corporation finance, commercial and investment banking, and investments at the undergraduate, graduate, and executive MBA levels.

Professor Woolridge's research has centered on empirical issues in corporation finance and financial markets. He has published over 35 articles in the best academic and professional journals in the field, including the *Journal of Finance,* the *Journal of Financial Economics,* and the *Harvard Business Review.* His research has been cited extensively in the business press. His work has been featured in the *New York Times*, *Forbes, Fortune, The Economist*, *Barron's*, *Wall Street Journal*, *Business Week*, *Investors' Business Daily*, *USA Today*, and other publications. In addition, Dr. Woolridge has appeared as a guest to discuss the implications of his research on CNN's *Money Line*, CNBC's *Morning Call* and *Business Today*, and Bloomberg's *Morning Call*.

Professor Woolridge's co-authored stock valuation book, *The StreetSmart Guide to Valuing a Stock* (McGraw-Hill, 2003), was released in its second edition. He has also co-authored *Spinoffs and Equity Carve-Outs: Achieving Faster Growth and Better Performance* (Financial Executives Research Foundation, 1999), as well as a textbook entitled *Basic Principles of Finance* (Kendall Hunt, 2011).

Professor Woolridge has also consulted with corporations, financial institutions, and government agencies. In addition, he has directed and participated in university- and company-sponsored professional development programs for executives in 25 countries in North and South America, Europe, Asia, and Africa.

Over the past 35 years Dr. Woolridge has prepared testimony and/or provided consultation services in regulatory rate cases in the rate of return area in following states: Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Hawaii, Indiana, Kansas, Kentucky, Maine, Maryland, Massachusetts, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Washington, D.C. He has also

testified before the Federal Energy Regulatory Commission.

J. Randall Woolridge

Office Address
302 Business Building
The Pennsylvania State University
University Park, PA 16802
814-865-1160

Home Address
120 Haymaker Circle
State College, PA 16801
814-238-9428

Academic Experience

Professor of Finance, the Smeal College of Business Administration, the Pennsylvania State University (July 1, 1990 to the present).

President, Nittany Lion Fund LLC, (January 1, 2005 to the present)
Director, the Smeal College Trading Room (January 1, 2001 to the present)
Goldman, Sachs & Co. and Frank P. Smeal Endowed University Fellow in Business Administration (July 1, 1987 to the present).

Associate Professor of Finance, College of Business Administration, the Pennsylvania State University (July 1, 1984 to June 30, 1990).
Assistant Professor of Finance, College of Business Administration, the Pennsylvania State University (September, 1979 to June 30, 1984).

Education

Doctor of Philosophy in Business Administration, the University of Iowa. Major field: Finance.
Master of Business Administration, the Pennsylvania State University.
Bachelor of Arts, the University of North Carolina. Major field: Economics.

Books

James A. Miles and J. Randall Woolridge, *Spinoffs and Equity Carve-Outs: Achieving Faster Growth and Better Performance* (Financial Executives Research Foundation), 1999
Patrick Cusatis, Gary Gray, and J. Randall Woolridge, *The StreetSmart Guide to Valuing a Stock* (2nd Edition, McGraw-Hill), 2003.
J. Randall Woolridge and Gary Gray, *The New Corporate Finance, Capital Markets, and Valuation: An Introductory Text* (Kendall Hunt, 2003).

Research

Dr. Woolridge has published over 35 articles in the best academic and professional journals in the field, including the *Journal of Finance,* the *Journal of Financial Economics,* and the *Harvard Business Review*.

Exhibit JRW-1

OGE

OGE's Cost of Capital

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	50.00%	4.85%	2.43%
Common Equity	50.00%	9.50%	4.75%
Total	100.00%		7.18%

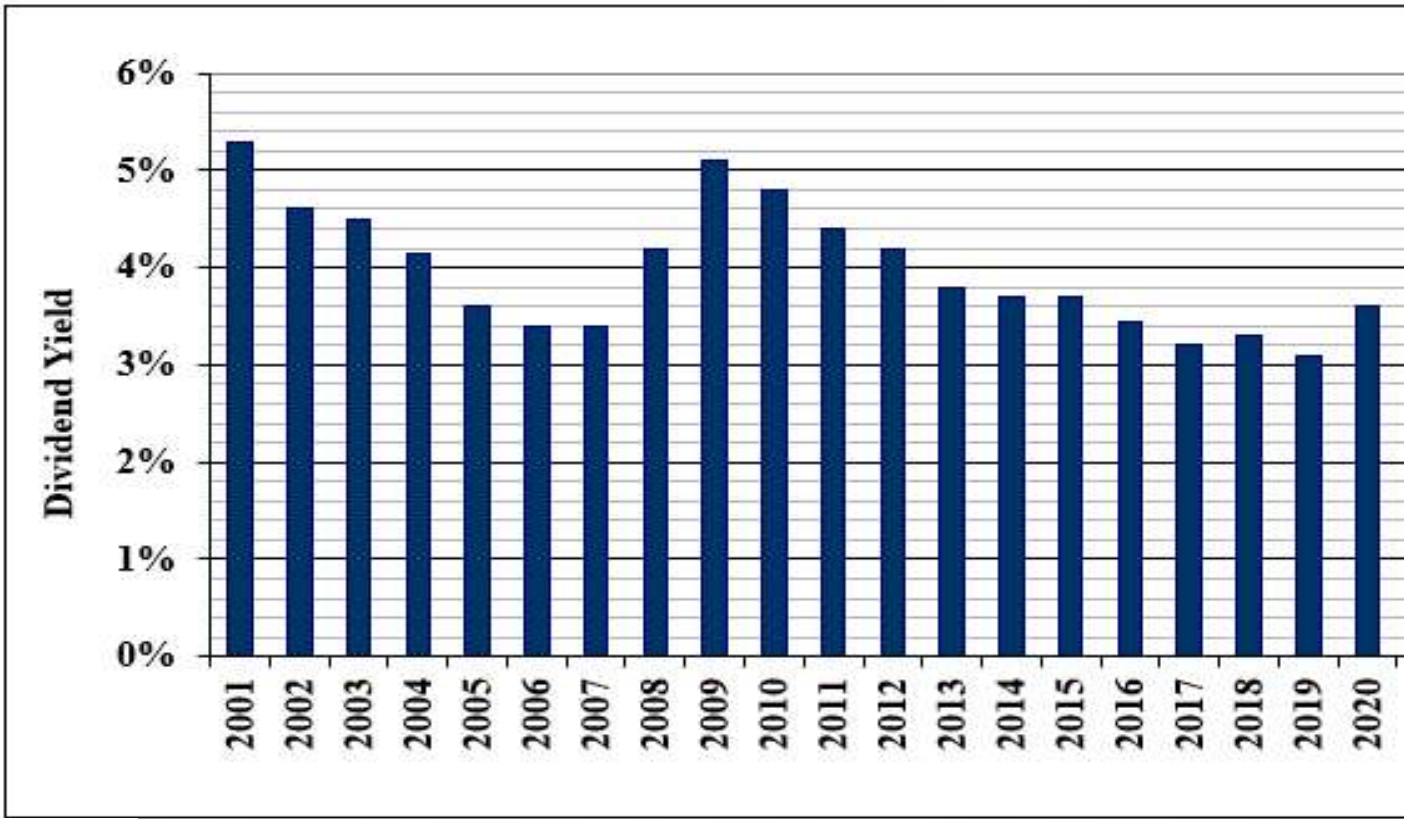
Exhibit JRW-2-1

Long-Term 'A' Rated Public Utility Bonds

Data Source: Mergent Bond Record

Exhibit JRW-2-2

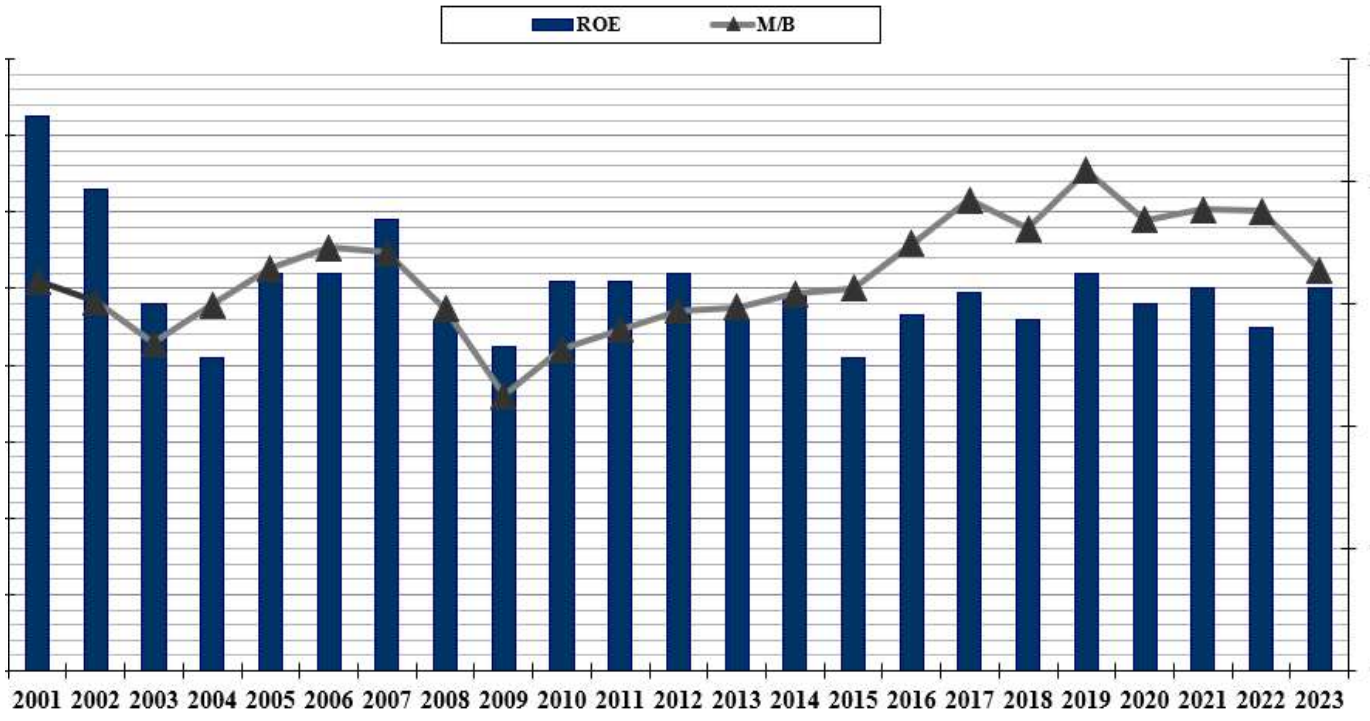
Electric Utility Average Dividend Yield



Data Source: ***Value Line Investment Survey.***

Exhibit JRW-2-3

Electric Utility Average Return on Equity and Market-to-Book Ratios



Data Source: ***Value Line Investment Survey.***

Company		Operating Revenue ($bil)	Percent Elec Reven
ALLETE, Inc. (NYSE-ALE)	ALE	$1.88	66%
Alliant Energy Corporation (NYSE-LNT)	LNT	$4.03	83%
Ameren Corporation (NYSE-AEE)	AEE	$7.27	74%
American Electric Power Co. (NYSE-AEP)	AEP	$18.52	90%
Avista Corporation (NYSE-AVA)	AVA	$1.75	70%
CMS Energy Corporation (NYSE-CMS)	CMS	$7.46	64%
Consolidated Edison, Inc. (NYSE-ED)	ED	$14.66	74%
Duke Energy Corporation (NYSE-DUK)	DUK	$28.60	93%
Edison International (NYSE-EIX)	EIX	$16.34	100%
Entergy Corporation (NYSE-ETR)	ETR	$12.02	97%
Evergy, Inc. (NYSE-EVRG)	EVRG	$5.51	100%
Eversource Energy (NYSE-ES)	ES	$11.91	91%
Exelon Corporation (NDW-EXC)	EXC	$21.73	89%
IDACORP, Inc. (NYSE-IDA)	IDA	$1.76	100%
MGE Energy, Inc. (NYSE-MGEE)	MGEE	$0.67	65%
NextEra Energy, Inc. (NYSE-NEE)	NEE	$28.11	100%
NorthWestern Corporation (NYSE-NWE)	NWE	$1.42	75%
OGE Energy Corp. (NYSE-OGE)	OGE	$2.61	100%
Pinnacle West Capital Corp. (NYSE-PNW)	PNW	$4.70	95%
Portland General Electric Company (NYSE-POR)	POR	$2.92	100%
PPL Corporation (NYSE-PPL)	PPL	$8.31	90%
Public Service Enterprise Group Incorporated (NYSE - PE	PEG	$11.24	63%
Southern Company (NYSE-SO)	SO	$24.30	75%
WEC Energy Group (NYSE-WEC)	WEC	$8.89	73%
Xcel Energy Inc. (NYSE-XEL)	XEL	$14.09	81%
Mean		$10.43	84%
Median		$8.31	89%

Data Source: Company 2023 SEC 10-K filings, S&P Capital IQ; *Value Line Investment Survey*

Exhibit JRW-3-2

OGE

***Value Line* Risk Metrics**

Panel A

Electric Proxy Group

Company	Beta	Strength
ALLETE, Inc. (NYSE-ALE)	0.95	B++
Alliant Energy Corporation (NYSE-LNT)	0.90	B++
Ameren Corporation (NYSE-AEE)	0.90	A
American Electric Power Co. (NYSE-AEP)	0.80	A+
Avista Corporation (NYSE-AVA)	0.95	B+
CMS Energy Corporation (NYSE-CMS)	0.85	A
Consolidated Edison, Inc. (NYSE-ED)	0.80	A+
Duke Energy Corporation (NYSE-DUK)	0.90	A
Edison International (NYSE-EIX)	1.00	B++
Entergy Corporation (NYSE-ETR)	0.95	B++
Evergy, Inc. (NYSE-EVRG)	0.95	B++
Eversource Energy (NYSE-ES)	0.95	A
Exelon Corporation (NDW-EXC)	NMF	B++
IDACORP, Inc. (NYSE-IDA)	0.85	A
MGE Energy, Inc. (NYSE-MGEE)	0.80	B++
NextEra Energy, Inc. (NYSE-NEE)	1.00	A
NorthWestern Corporation (NYSE-NWE)	0.95	B+
OGE Energy Corp. (NYSE-OGE)	1.05	A
Pinnacle West Capital Corp. (NYSE-PNW)	0.95	B++
Portland General Electric Company (NYSE-POR)	0.90	B++
PPL Corporation (NYSE-PPL)	1.10	B++
Public Service Enterprise Group Incorporated (NYSE - PEG)	0.95	A+
Southern Company (NYSE-SO)	0.95	A
WEC Energy Group (NYSE-WEC)	0.85	A+
Xcel Energy Inc. (NYSE-XEL)	0.85	A
Mean	0.92	A

Data Source: *Value Line Investment Survey* , 2024.

Panel B

Bulkley Proxy Group

Company	Beta	Strength
ALLETE, Inc. (NYSE-ALE)	0.95	B++

Exhibit JRW-3-3
Value Line Risk Metrics

Beta

A relative measure of the historical sensitivity of a stock's price to overall fluctuations in the New York Stock Exchange Composite Index. A beta of 1.50 indicates a stock tends to rise (or fall) 50% more than the New York Stock Exchange Composite Index. The ''coefficient'' is derived from a regression analysis of the relationship between weekly percentage changes in the price of a stock and weekly percentage changes in the NYSE Index over a period of five years. In the case of shorter price histories, a smaller time period is used, but two years is the minimum. Betas are adjusted for their long-term tendency to converge toward 1.00.

Financial Strength

A relative measure of the companies reviewed by *Value Line* . The relative ratings range from A++ (strongest) down to C (weakest).

Safety Rank

A measurement of potential risk associated with individual common stocks. The Safety Rank is computed by averaging two other *Value Line* indexes the Price Stability Index and the Financial strength Rating. Safety Ranks range from 1 (Highest) to 5 (Lowest). Conservative investors should try to limit their purchases to equities ranked 1 (Highest) and 2 (Above Average) for Safety. .

Earnings Predictability

A measure of the reliability of an earnings forecast. Earnings Predictability is based upon the stability of year-to-year comparisons, with recent years being weighted more heavily than earlier ones. The most reliable forecasts tend to be those with the highest rating (100); the least reliable, the lowest (5). The earnings stability is derived from the standard deviation of percentage changes in quarterly earnings over an eight-year period. Special adjustments are made for comparisons around zero and from plus to minus.

Stock Price Stability

A measure of the stability of a stock's price. It includes sensitivity to the market (see Beta as well as the stock's inherent volatility. *Value Line's* Stability ratings range from 1 (highest) to 5 (lowest).

Source: *Value Line Investment Analyzer* .

Exhibit JRW-4-1
OGE

Panel A
OGE's Proposed Capital Structure and Senior Capital Cost Rates

Capital Source	Capitalization Ratio	Cost Rate
Long-Term Debt	46.50%	4.85%
Common Equity	53.50%	
Total	100.00%	

Panel B
OGE and OGE Energy Quarterly Capital Structure Ratios
2021-23
Including Short-Term Debt

Capital Source	OGE	OGE Energy
Short-Term Debt	3.10%	8.33%
Long-Term Debt	43.50%	45.39%
Common Equity	53.40%	46.28%
Total Capital	100.00%	100.00%

Excluding Short-Term Debt

Capital Source	OGE	OGE Energy
Long-Term Debt	44.84%	49.41%
Common Equity	55.16%	50.59%
Total Capital	100.00%	100.00%

Data; Page 2 of JRW-4.

Panel C
AG's Proposed Capital Structure and Debt Cost Rate

Capital Source	Capitalization Ratio	Cost Rate
Long-Term Debt	50.00%	4.85%
Common Equity	50.00%	
Total	100.00%	

Exhibit JRW-4-2
OGE Capital Structure

Panel A
OGE's Quarterly Capital Structure Ratios
2020-23 - With and Without Short-Term Debtapital Stru

Capital Source	2021 FQ1	2021 FQ2	2021 FQ3	2021 FQ4	2022 FQ1	2022 FQ2	2022 FQ3	2022
Short-Term Debt	3.58%	0.00%	0.49%	1.16%	3.06%	9.39%	5.56%	5
Long-Term Debt	42.06%	46.71%	46.46%	46.17%	44.85%	38.45%	38.89%	38
Common Equity	54.36%	53.29%	53.05%	52.67%	52.09%	52.15%	55.56%	55
Total Capital	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100

Capital Source	2021 FQ1	2021 FQ2	2021 FQ3	2021 FQ4	2022 FQ1	2022 FQ2	2022 FQ3	2022
Long-Term Debt	43.62%	46.71%	46.69%	46.71%	46.26%	42.44%	41.18%	41.1
Common Equity	56.38%	53.29%	53.31%	53.29%	53.74%	57.56%	58.82%	58.8
Total Capital	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.

Data Source: S&P Cap IQ, 2024

Panel B
OGE Energy's Quarterly Capital Structure Ra
2020-23 - With and Without Short-Term Debtapital Stru

Capital Source	2021 FQ1	2021 FQ2	2021 FQ3	2021 FQ4	2022 FQ1	2022 FQ2	2022 FQ3	2022
Short-Term Debt	15.25%	4.51%	4.41%	5.36%	7.71%	15.44%	11.12%	11
Long-Term Debt	41.71%	52.76%	51.71%	49.95%	47.38%	38.44%	39.47%	39
Common Equity	43.03%	42.73%	43.88%	44.69%	44.91%	46.12%	49.40%	49
Total Capital	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100

Capital Source	2021 FQ1	2021 FQ2	2021 FQ3	2021 FQ4	2022 FQ1	2022 FQ2	2022 FQ3	2022
Long-Term Debt	49.22%	55.25%	54.10%	52.78%	51.34%	45.46%	44.41%	44
Common Equity	50.78%	44.75%	45.90%	47.22%	48.66%	54.54%	55.59%	55
Total Capital	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100

Data Source: S&P Cap IQ, 2024

Exhibit JRW-5-1

OGE
Discounted Cash Flow Analysis

Panel A
Electric Proxy Group

Dividend Yield*	4.20%
Adjustment Factor	1.02725
Adjusted Dividend Yield	4.31%
Growth Rate**	5.45%
Equity Cost Rate	9.75%

* Page 2 of Exhibit JRW-5

** Based on data provided on pages 3, 4, 5, and 6 of Exhibit JRW-5

*** DCF ROE rounded to nearest 0.05%.

Panel B
Bulkley Proxy Group

Dividend Yield*	4.30%
Adjustment Factor	1.02825
Adjusted Dividend Yield	4.42%
Growth Rate**	5.65%
Equity Cost Rate	10.05%

* Page 2 of Exhibit JRW-5

** Based on data provided on pages 3, 4, 5, and 6 of Exhibit JRW-5

*** DCF ROE rounded to nearest 0.05%.

Exhibit JRW-5-2

OGE
Monthly Dividend Yields

Panel A
Electric Proxy Group

Company		Annual Dividend	Divider Yield 30 Day
ALLETE, Inc. (NYSE-ALE)	ALE	$2.82	4.8%
Alliant Energy Corporation (NYSE-LNT)	LNT	$1.92	3.9%
Ameren Corporation (NYSE-AEE)	AEE	$2.68	3.7%
American Electric Power Co. (NYSE-AEP)	AEP	$3.52	4.2%
Avista Corporation (NYSE-AVA)	AVA	$1.90	5.6%
CMS Energy Corporation (NYSE-CMS)	CMS	$2.06	3.5%
Consolidated Edison, Inc. (NYSE-ED)	ED	$3.32	3.7%
Duke Energy Corporation (NYSE-DUK)	DUK	$4.10	4.3%
Edison International (NYSE-EIX)	EIX	$3.12	4.5%
Entergy Corporation (NYSE-ETR)	ETR	$4.52	4.4%
Evergy, Inc. (NYSE-EVRG)	EVRG	$2.57	5.0%
Eversource Energy (NYSE-ES)	ES	$2.86	4.9%
Exelon Corporation (NDW-EXC)	EXC	$1.52	4.1%
IDACORP, Inc. (NYSE-IDA)	IDA	$3.32	3.7%
MGE Energy, Inc. (NYSE-MGEE)	MGEE	$1.71	2.3%
NextEra Energy, Inc. (NYSE-NEE)	NEE	$2.06	3.4%
NorthWestern Corporation (NYSE-NWE)	NWE	$2.60	5.3%
OGE Energy Corp. (NYSE-OGE)	OGE	$1.67	5.0%
Pinnacle West Capital Corp. (NYSE-PNW)	PNW	$3.52	4.9%
Portland General Electric Company (NYSE-POR)	POR	$1.90	4.6%
PPL Corporation (NYSE-PPL)	PPL	$1.03	3.8%
Public Service Enterprise Group Incorporated (NYS	PEG	$2.40	3.7%
Southern Company (NYSE-SO)	SO	$2.80	4.0%
WEC Energy Group (NYSE-WEC)	WEC	$3.34	4.2%
Xcel Energy Inc. (NYSE-XEL)	XEL	$2.08	4.0%
Mean			4.2%
Median			4.2%

Data Sources: S&P Cap IQ., April 10, 2024.

Panel B
Bulkley Proxy Group

Exhibit JRW-5-3

OGE
DCF Equity Cost Growth Rate Measure
***Value Line* Historic Growth Rates**

Panel A
Electric Proxy Group

Company	Past 10 Years	
	Earnings	Dividends
ALLETE, Inc. (NYSE-ALE)	3.0	3.5
Alliant Energy Corporation (NYSE-LNT)	6.0	6.5
Ameren Corporation (NYSE-AEE)	4.0	3.5
American Electric Power Co. (NYSE-AEP)	5.0	5.0
Avista Corporation (NYSE-AVA)	2.5	4.5
CMS Energy Corporation (NYSE-CMS)	6.0	7.0
Consolidated Edison, Inc. (NYSE-ED)	1.5	2.5
Duke Energy Corporation (NYSE-DUK)	3.0	3.0
Edison International (NYSE-EIX)	2.0	7.5
Entergy Corporation (NYSE-ETR)	2.5	2.0
Evergy, Inc. (NYSE-EVRG)		
Eversource Energy (NYSE-ES)	6.0	6.5
Exelon Corporation (NDW-EXC)	-0.5	-3.0
IDACORP, Inc. (NYSE-IDA)	4.0	8.5
MGE Energy, Inc. (NYSE-MGEE)	4.5	4.0
Nextera Energy, Inc. (NYSE-NEE)	8.5	10.5
NorthWestern Corporation (NYSE-NWE)	3.5	5.5
OGE Energy Corp. (NYSE-OGE)	3.0	7.5
Pinnacle West Capital Corp. (NYSE-PNW)	4.5	4.0
Portland General Electric Company (NYSE-POR)	4.0	5.0
PPL Corporation (NYSE-PPL)	-9.0	-1.0
Public Service Enterprise Group Incorporated (NYSE - PEG)	3.0	4.0
Southern Company (NYSE-SO)	3.0	3.5
WEC Energy Group (NYSE-WEC)	6.5	10.0
Xcel Energy Inc. (NYSE-XEL)	5.5	6.0
Mean	3.4	4.8
Median	3.8	4.8

Data Source: *Value Line Investment Survey.*

Average of Median Figures

Panel B

Exhibit JRW-5-4

OGE
DCF Equity Cost Growth Rate Measures
***Value Line* Projected Growth Rates**

Panel A
Electric Proxy Group

Company	*Value Line* Projected Growth Est'd. '21-'23 to '27-'29		
	Earnings	Dividends	Book
ALLETE, Inc. (NYSE-ALE)	6.0	3.5	3.
Alliant Energy Corporation (NYSE-LNT)	6.5	6.0	5.
Ameren Corporation (NYSE-AEE)	6.5	6.5	6.
American Electric Power Co. (NYSE-AEP)	6.5	5.5	6.
Avista Corporation (NYSE-AVA)	6.0	4.5	3.
CMS Energy Corporation (NYSE-CMS)	5.0	4.0	4.
Consolidated Edison, Inc. (NYSE-ED)	6.0	3.5	3.
Duke Energy Corporation (NYSE-DUK)	5.0	2.0	2.
Edison International (NYSE-EIX)	4.5	5.0	2.
Entergy Corporation (NYSE-ETR)	0.5	3.5	4.
Evergy, Inc. (NYSE-EVRG)	7.5	7.0	3.
Eversource Energy (NYSE-ES)	5.5	5.5	3.
Exelon Corporation (NDW-EXC)	NMF	NMF	NM
IDACORP, Inc. (NYSE-IDA)	4.0	6.5	3.
MGE Energy, Inc. (NYSE-MGEE)	6.0	3.5	2.
Nextera Energy, Inc. (NYSE-NEE)	8.5	9.0	9.
NorthWestern Corporation (NYSE-NWE)	3.5	2.0	3.
OGE Energy Corp. (NYSE-OGE)	6.5	3.0	5.
Pinnacle West Capital Corp. (NYSE-PNW)	2.5	2.0	3.
Portland General Electric Company (NYSE-POR)	5.0	5.5	4.
PPL Corporation (NYSE-PPL)	7.5	-0.5	3.
Public Service Enterprise Group Incorporated (NYSE - PEG	4.0	5.0	3.
Southern Company (NYSE-SO)	6.5	3.5	3.
WEC Energy Group (NYSE-WEC)	6.0	7.0	4.
Xcel Energy Inc. (NYSE-XEL)	6.0	6.0	5.
Mean	5.5	4.5	4.
Median	6.0	4.8	3.
Average of Median Figures =		4.8	

* 'Est'd. '21-'23 to '27-'29 is the estimated growth rate from the base period 2021 to 2023 until the future period 202

Panel B

Exhibit JRW-5-5

OGE
DCF Equity Cost Growth Rate Measures
Analysts Projected EPS Growth Rate Estimates

Panel A
Electric Proxy Group

Company		Yahoo	Zacks
ALLETE, Inc. (NYSE-ALE)	ALE	8.1%	8.1%
Alliant Energy Corporation (NYSE-LNT)	LNT	6.6%	6.2%
Ameren Corporation (NYSE-AEE)	AEE	4.8%	5.9%
American Electric Power Co. (NYSE-AEP)	AEP	5.7%	5.1%
Avista Corporation (NYSE-AVA)	AVA	6.2%	NA
CMS Energy Corporation (NYSE-CMS)	CMS	7.8%	7.7%
Consolidated Edison, Inc. (NYSE-ED)	ED	5.7%	2.0%
Duke Energy Corporation (NYSE-DUK)	DUK	6.8%	6.3%
Edison International (NYSE-EIX)	EIX	7.3%	NA
Entergy Corporation (NYSE-ETR)	ETR	6.8%	7.0%
Evergy, Inc. (NYSE-EVRG)	EVRG	2.5%	5.0%
Eversource Energy (NYSE-ES)	ES	3.3%	4.2%
Exelon Corporation (NDW-EXC)	EXC	4.2%	5.7%
IDACORP, Inc. (NYSE-IDA)	IDA	4.4%	NA
MGE Energy, Inc. (NYSE-MGEE)	MGEE	5.4%	NA
Nextera Energy, Inc. (NYSE-NEE)	NEE	7.9%	8.2%
NorthWestern Corporation (NYSE-NWE)	NWE	4.5%	NA
OGE Energy Corp. (NYSE-OGE)	OGE	-12.3%	5.0%
Pinnacle West Capital Corp. (NYSE-PNW)	PNW	6.9%	7.6%
Portland General Electric Company (NYSE-POR)	POR	12.5%	NA
PPL Corporation (NYSE-PPL)	PPL	6.5%	6.5%
Public Service Enterprise Group Incorporated (NYSE - PEG	PEG	5.3%	6.2%
Southern Company (NYSE-SO)	SO	7.3%	4.0%
WEC Energy Group (NYSE-WEC)	WEC	6.0%	5.9%
Xcel Energy Inc. (NYSE-XEL)	XEL	6.4%	6.0%
Mean		5.5%	5.9%
Median		6.2%	6.0%

Data Sources: www.zacks.com, http://quote.yahoo.com, S&P Cap IQ, April 10, 2024.

Panel B
Bulkley Proxy Group

Company		Yahoo	Zacks
ALLETE, Inc. (NYSE-ALE)	ALE	8.1%	8.1%

Exhibit JRW-5-6

OGE
DCF Growth Rate Indicators

Growth Rate Indicator	Electric Proxy Group	Bulkley Proxy Group
Historic *Value Line* Growth in EPS, DPS, and BVPS	4.2%	4.5%
Projected *Value Line* Growth in EPS, DPS, and BVPS	4.8%	4.9%
Sustainable Growth ROE * Retention Rate	4.0%	3.7%
Projected EPS Growth from Yahoo, Zacks, and S&P Cap IQ - Mean/Median	5.9%/6.0%	6.2%/6.5%
DCF Growth Rate	5.45%	5.65%

Exhibit JRW-6

OGE
Capital Asset Pricing Model

Panel A
Electric Proxy Group***

Risk-Free Interest Rate	**4.75%**
Beta*	**0.80**
Ex Ante Market Risk Premium**	**5.25%**
CAPM Cost of Equity	**8.95%**

* See page 3 of Exhibit JRW-8

** See pages 5 and 6 of Exhibit JRW-8

*** CAPM ROE rounded to nearest 0.05%.

Panel B
Bulkley Proxy Group***

Risk-Free Interest Rate	**4.75%**
Beta*	**0.81**
Ex Ante Market Risk Premium**	**5.25%**
CAPM Cost of Equity	**9.00%**

* See page 3 of Exhibit JRW-8

** See pages 5 and 6 of Exhibit JRW-8

*** CAPM ROE rounded to nearest 0.05%.

Exhibit JRW-6-2

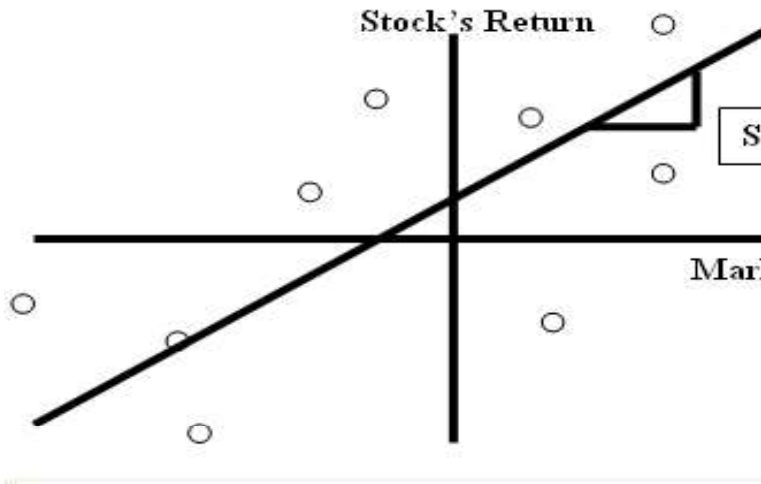
Thirty-Year U.S. Treasury Yields
2010–2023

Source: Federal Reserve Bank of St. Louis, FRED Database.

C

Exhibit JRW-6-3

Calculation of Beta



Panel A

Company	V-Li Bet
ALLETE, Inc. (NYSE-ALE)	0.9
Alliant Energy Corporation (NYSE-LNT)	0.9
Ameren Corporation (NYSE-AEE)	0.9
American Electric Power Co. (NYSE-AEP)	0.8
Avista Corporation (NYSE-AVA)	0.9
CMS Energy Corporation (NYSE-CMS)	0.8
Consolidated Edison, Inc. (NYSE-ED)	0.8
Duke Energy Corporation (NYSE-DUK)	0.9
Edison International (NYSE-EIX)	1.0
Entergy Corporation (NYSE-ETR)	0.9
Evergy, Inc. (NYSE-EVRG)	0.9
Eversource Energy (NYSE-ES)	0.9
Exelon Corporation (NDW-EXC)	NM
IDACORP, Inc. (NYSE-IDA)	0.8
MGE Energy, Inc. (NYSE-MGEE)	0.8
NextEra Energy, Inc. (NYSE-NEE)	1.0
NorthWestern Corporation (NYSE-NWE)	0.9
OGE Energy Corp. (NYSE-OGE)	1.0
Pinnacle West Capital Corp. (NYSE-PNW)	0.9
Portland General Electric Company (NYSE-POR)	0.9
PPL Corporation (NYSE-PPL)	1.1
Public Service Enterprise Group Incorporated (NYSE	0.9
Southern Company (NYSE-SO)	0.9

Exhibit JRW-6-4
Risk Premium Approaches

	Historical Ex Post Returns	Surveys	Expected Return Mode and Market Data
Means of Assessing The Market Risk Premium	Historical Average Stock Minus Bond Returns	Surveys of CFOs, Financial Forecasters, Companies, Analysts on Expected Returns and Market Risk Premiums	Use Market Prices and Market Fundamentals (suc Growth Rates) to Compu Expected Returns and Ma Risk Premiums
Problems/Debated Issues	Time Variation in Required Returns, Measurement and Time Period Issues, and Biases such as Market and Company Survivorship Bias	Questions Regarding Survey Histories, Responses, and Representativeness Surveys may be Subject to Biases, such as Extrapolation	Assumptions Regardin Expectations, Especiall Growth

Source: Adapted from Antti Ilmanen, Expected Returns on Stocks and Bonds," *Journal of Portfolio Management*, (Winter 2003).

Category	Category	Study Authors	Publication Date
Historical Risl	**Historical Risk Premium**		
		Ibbotson	2016
		Damodaran	2023
		Dimson, Marsh, Staunton _Credit Suisse Report	2023
		Bate	2008
		Shiller	2006
		Siegel	2005
		Dimson, Marsh, and Staunton	2006
		Goyal & Welch	2006
		Median	
Ex Ante Mode	**Ex Ante Models (Puzzle Research)**		
		Claus Thomas	2001
		Arnott and Bernstein	2002
		Constantinides	2002
		Cornell	1999
		Easton, Taylor, et al	2002
		Fama French	2002
		Harris & Marston	2001
		McKinsey	2002
		Siegel	2005
		Grabowski	2006
		Maheu & McCurdy	2006
		Bostock	2004
		Bakshi & Chen	2005
		Donaldson, Kamstra, & Kramer	2006
		Campbell	2008
		Best & Byrne	2001
		Fernandez	2007
		DeLong & Magin	2008

Category	Study Authors	Publication Date	Time Peri Of Stud
Historical Risk Premium			
	Ibbotson	2016	1928-201
	Damodaran	2023	1928-202
	Dimson, Marsh, Staunton _Credit Suisse Report	2023	1900-202
	Median		
Ex Ante Models (Puzzle Research)			
	Siegel - Rethink ERP	2011	Projectio
	Kroll (Duff & Phelps)	2023	Projectio
	Mschchowski - VL - 2014	2014	Projectio
	American Appraisal Quarterly ERP	2015	Projectio
	JP Morgan Asset Management	2023	Projectio
	Market Risk Premia - 3-1-24	2023	Projectio
	KPMG	2024	Projectio
	Damodaran 4-1-24	2024	Projectio
	Median		
Surveys			
	New York Fed	2015	Five-Yea
	Survey of Financial Forecasters	2024	10-Year Proj
	Duke - CFO Magazine Survey	2023	10-Year Proj
	Fernandez - Academics, Analysts, and Companies	2024	Long-Ter
	Median		
Building Block			
	Ibbotson and Chen	2015	Projectio
	Chen - Rethink ERP	2010	20-Year Proj
	Ilmanen - Rethink ERP	2010	Projectio
	Grinold, Kroner, Siegel - Rethink ERP	2011	Projectio
	Median		
Mean			
Median			

Exhibit JRW-6-7
CAPM Study
Kroll (Duff & Phelps) and KPMG Equity Risk Premium Estimates

Kroll Recommended U.S. Equity Risk Premium (ERP) and Corresponding Risk-free Rates (R_f); January 2008–Present

Date	Risk-free Rate (R_f)	R_f (%)
Current Guidance:		
June 8, 2023 – UNTIL FURTHER NOTICE*	Normalized 20-year U.S. Treasury yield*	3.50*
October 18, 2022 – June 7, 2023	Normalized 20-year U.S. Treasury yield	3.50
June 16, 2022 – October 17, 2022	Normalized 20-year U.S. Treasury yield	3.50
April 7, 2022 – June 15, 2022	Normalized 20-year U.S. Treasury yield	3.00
December 7, 2020 – April 6, 2022	Normalized 20-year U.S. Treasury yield	2.50
June 30, 2020 – December 6, 2020	Normalized 20-year U.S. Treasury yield	2.50
March 25, 2020 – June 29, 2020	Normalized 20-year U.S. Treasury yield	3.00
December 19, 2019 – March 24, 2020	Normalized 20-year U.S. Treasury yield	3.00
September 30, 2019 – December 18, 2019	Normalized 20-year U.S. Treasury yield	3.00
December 31, 2018 – September 29, 2019	Normalized 20-year U.S. Treasury yield	3.50
September 5, 2017 – December 30, 2018	Normalized 20-year U.S. Treasury yield	3.50
November 15, 2016 – September 4, 2017	Normalized 20-year U.S. Treasury yield	3.50
January 31, 2016 – November 14, 2016	Normalized 20-year U.S. Treasury yield	4.00
December 31, 2015	Normalized 20-year U.S. Treasury yield	4.00
December 31, 2014	Normalized 20-year U.S. Treasury yield	4.00
December 31, 2013	Normalized 20-year U.S. Treasury yield	4.00
February 28, 2013 – January 30, 2016	Normalized 20-year U.S. Treasury yield	4.00
December 31, 2012	Normalized 20-year U.S. Treasury yield	4.00
January 15, 2012 – February 27, 2013	Normalized 20-year U.S. Treasury yield	4.00
December 31, 2011	Normalized 20-year U.S. Treasury yield	4.00
September 30, 2011 – January 14, 2012	Normalized 20-year U.S. Treasury yield	4.00
July 1 2011 – September 29, 2011	Normalized 20-year U.S. Treasury yield	4.00
June 1, 2011 – June 30, 2011	Spot 20-year U.S. Treasury yield	Spot
May 1, 2011 – May 31, 2011	Normalized 20-year U.S. Treasury yield	4.00
December 31, 2010	Spot 20-year U.S. Treasury yield	Spot
December 1, 2010 – April 30, 2011	Spot 20-year U.S. Treasury yield	Spot
June 1, 2010 – November 30, 2010	Normalized 20-year U.S. Treasury yield	4.00
December 31, 2009	Spot 20-year U.S. Treasury yield	Spot
December 1, 2009 – May 31, 2010	Spot 20-year U.S. Treasury yield	Spot
June 1, 2009 – November 30, 2009	Spot 20-year U.S. Treasury yield	Spot
December 31, 2008	Normalized 20-year U.S. Treasury yield	4.50
November 1, 2008 – May 31, 2009	Normalized 20-year U.S. Treasury yield	4.50
October 27, 2008 – October 31, 2008	Spot 20-year U.S. Treasury yield	Spot
January 1, 2008 – October 26, 2008	Spot 20-year U.S. Treasury yield	Spot

*** We recommend using the spot 20-year U.S. Treasury yield as the proxy for the risk-free rate, if the date is higher than our recommended U.S. normalized risk-free rate of 3.5%. This guidance is effecti denominated discount rates as of June 16, 2022 and thereafter.**

"Normalized" in this context means that in months where the risk-free rate is deemed to be abnormally low, a risk-free rate is used.

. Source: https://www.kroll.com/-/media/cost-of-capital/kroll-us-erp-rf-table-2023.pdf

Exhibit JRW-7-1

OGE's Rate of Return Recemmendation

Capital Source	Capitalization Ratio	Cost Rate	Weighted Cost Rate
Long-Term Debt	46.50%	4.85%	2.26%
Common Equity	53.50%	10.50%	5.62%
Total	100.00%		7.87%

Exhibit JRW-7-2

Bulkley ROE Results

Constant Growth DCF

	Minimum Growth Rate	Average Growth Rate	Maximum Growth Rate
Mean Results:			
30-Day Average	9.11%	10.32%	11.42%
90-Day Average	9.04%	10.26%	11.35%
180-Day Average	8.85%	10.06%	11.15%
Average	9.00%	10.21%	11.31%
Median Results:			
30-Day Average	9.48%	10.10%	11.29%
90-Day Average	9.34%	10.04%	11.26%
180-Day Average	9.15%	9.92%	11.05%
Average	9.32%	10.02%	11.20%

CAPM / ECAPM / Bond Yield Risk Premium

	30-Year Treasury Bond Yield		
	Current 30-Day Avg	Near-Term Projected	Longer-Term Projected
CAPM:			
Current *Value Line* Beta	11.66%	11.62%	11.58%
Current Bloomberg Beta	10.89%	10.83%	10.75%
Long-term Avg. *Value Line* Beta	10.50%	10.42%	10.32%
ECAPM:			
Current *Value Line* Beta	11.88%	11.86%	11.82%
Current Bloomberg Beta	11.31%	11.26%	11.20%
Long-term Avg. *Value Line* Beta	11.01%	10.95%	10.88%
Bond Yield Risk Premium:	10.79%	10.62%	10.40%

Exhibit JRW-8

Investment Firms' Expected U.S. Large Cap Equity Market Annual Returns
12/31/2022

Investment Firm	AUM ($ in Bn) 12/31/2022	Duration of Forecast 5-, 10-,20- Year	Expected Return US Large Cap Equi
AQR	$100.00	5-10 Years	5.70%
Allianz	$1,782.64	10 Years	7.50%
Bar's	$468.22	10 Years	7.80%
BlackRock	$8,600.00	10 Years	7.90%
BNY Mellon	$1,800.00	10 Years	6.40%
Callan	$15.42	10 Years	7.25%
Capital Group	$2,300.00	20 Years	7.20%
Citi	$250.00	10 Years	9.50%
Cresset	$30.00	10 Years	7.00%
Fidelity	$3,876.00	20 Years	4.00%
Franklin Templeton	$1,300.00	10 Years	7.90%
Invesco	$1,409.20	10 Years	7.70%
Janney Montgomery	$2.90	10 Years	7.50%
JPMorgan	$2,760.00	10 - 15 Years	7.90%
Mackenzie	$192.20	10 Years	8.20%
Morgan Stanley	$1,300.00	7 Years	4.60%
Morningstar	$253.60	-	7.40%
Neuberger Bergman	$427.00	20 Years	5.79%
Northern Trust	$1,000.00	5 Years	6.00%
Nuveen	$1,100.00	10 Years	6.96%
PGIM	$1,200.00	10 Years	7.76%
PIMCO	$1,740.00	5 Years	6.80%
RBC	$389.00	10 Years	7.85%
RVK	$1.30	20 Years	6.75%
Schroeder	$915.53	10 Years	9.10%
Schwab	$755.00	10 Years	6.10%
State Street	$3,500.00	10 Years	6.60%
T-Rowe Price	$1,275.00	5 Years	4.90%
UBS	$3,960.00	5 Years	4.90%
Vanguard	$7,200.00	10 Years	5.30%
Voya	$321.00	10 Years	6.75%
Average	$50,224.01	10 Years	6.87%

Data Source: Company websites. Source documents provided in work papers.

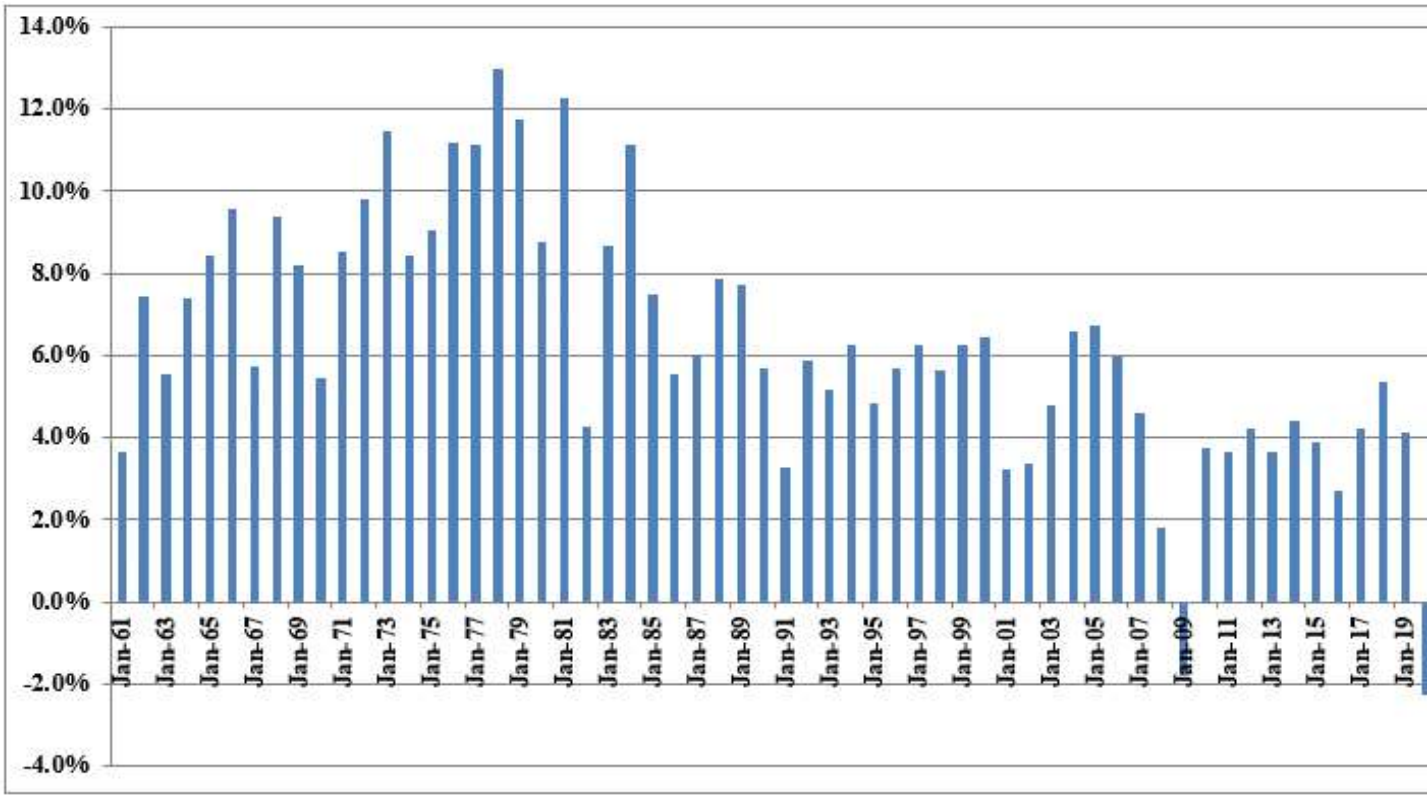
Exhibit JRW-9-1
GDP and S&P 500 Growth Rates

Growth Rates
GDP, S&P 500 Price, EPS, and DPS

	GDP	S&P 500	S&P 500 EPS	
1960	542.38	58.11	3.10	
1961	562.21	71.55	3.37	
1962	603.92	63.10	3.67	
1963	637.45	75.02	4.13	
1964	684.46	84.75	4.76	
1965	742.29	92.43	5.30	
1966	813.41	80.33	5.41	
1967	859.96	96.47	5.46	
1968	940.65	103.86	5.72	
1969	1,017.62	92.06	6.10	
1970	1,073.30	92.15	5.51	
1971	1,164.85	102.09	5.57	
1972	1,279.11	118.05	6.17	
1973	1,425.38	97.55	7.96	
1974	1,545.24	68.56	9.35	
1975	1,684.90	90.19	7.71	
1976	1,873.41	107.46	9.75	
1977	2,081.83	95.10	10.87	
1978	2,351.60	96.11	11.64	
1979	2,627.33	107.94	14.55	
1980	2,857.31	135.76	14.99	
1981	3,207.04	122.55	15.18	
1982	3,343.79	140.64	13.82	
1983	3,634.04	164.93	13.29	
1984	4,037.61	167.24	16.84	
1985	4,338.98	211.28	15.68	
1986	4,579.63	242.17	14.43	
1987	4,855.22	247.08	16.04	
1988	5,236.44	277.72	24.12	
1989	5,641.58	353.40	24.32	
1990	5,963.14	330.22	22.65	
1991	6,158.13	417.09	19.30	
1992	6,520.33	435.71	20.87	
1993	6,858.56	466.45	26.90	
1994	7,287.24	459.27	31.75	
1995	7,639.75	615.93	37.70	
1996	8,073.12	740.74	40.63	

Exhibit JRW-9-2
Annual Nominal GDP Growth Rates

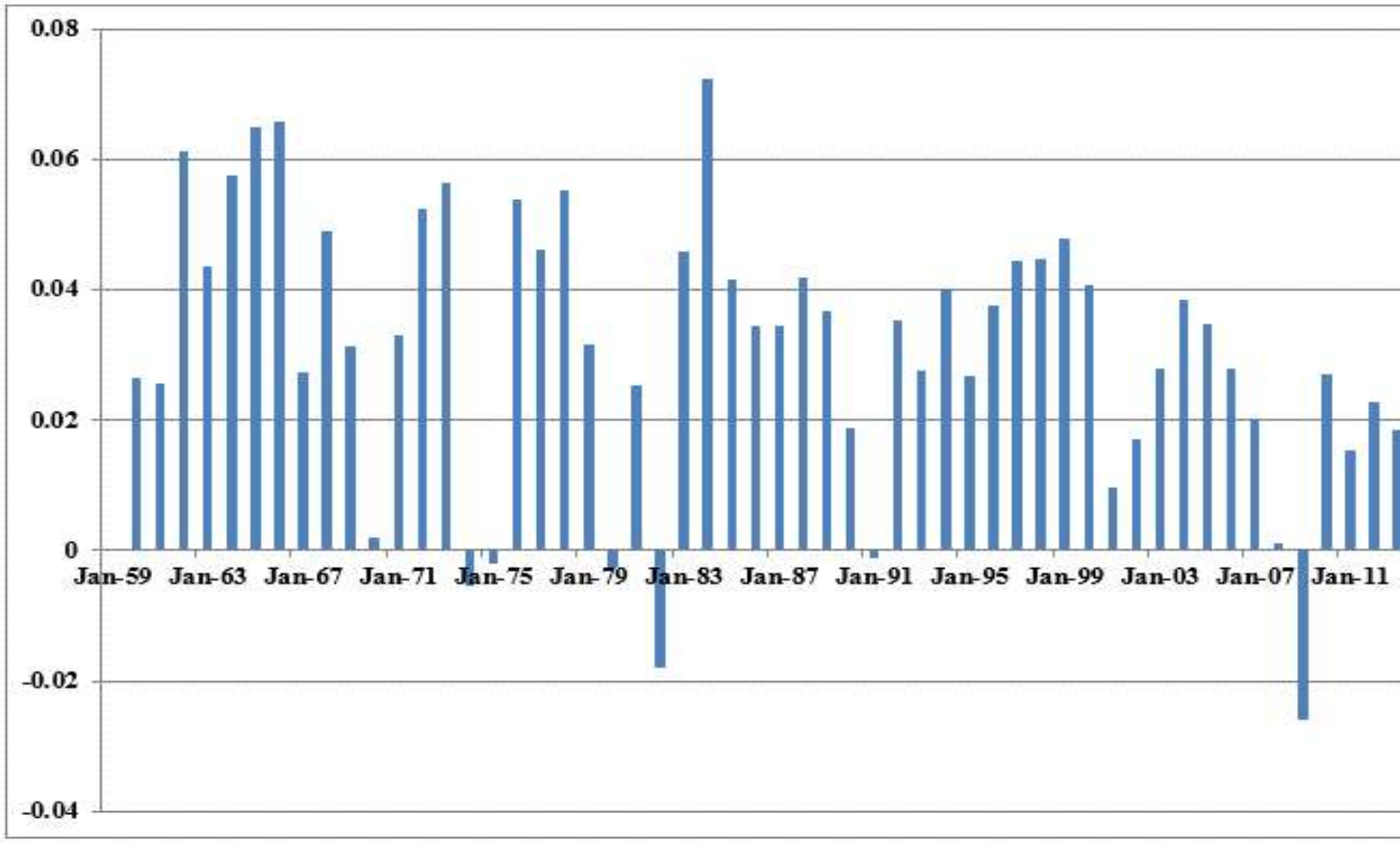
Annual Growth Rates 1961–2022



Data Sources: GDPA -https://fred.stlouisfed.org/series/GDPA

Exhibit JRW-9-3
Real GDP Growth Rates

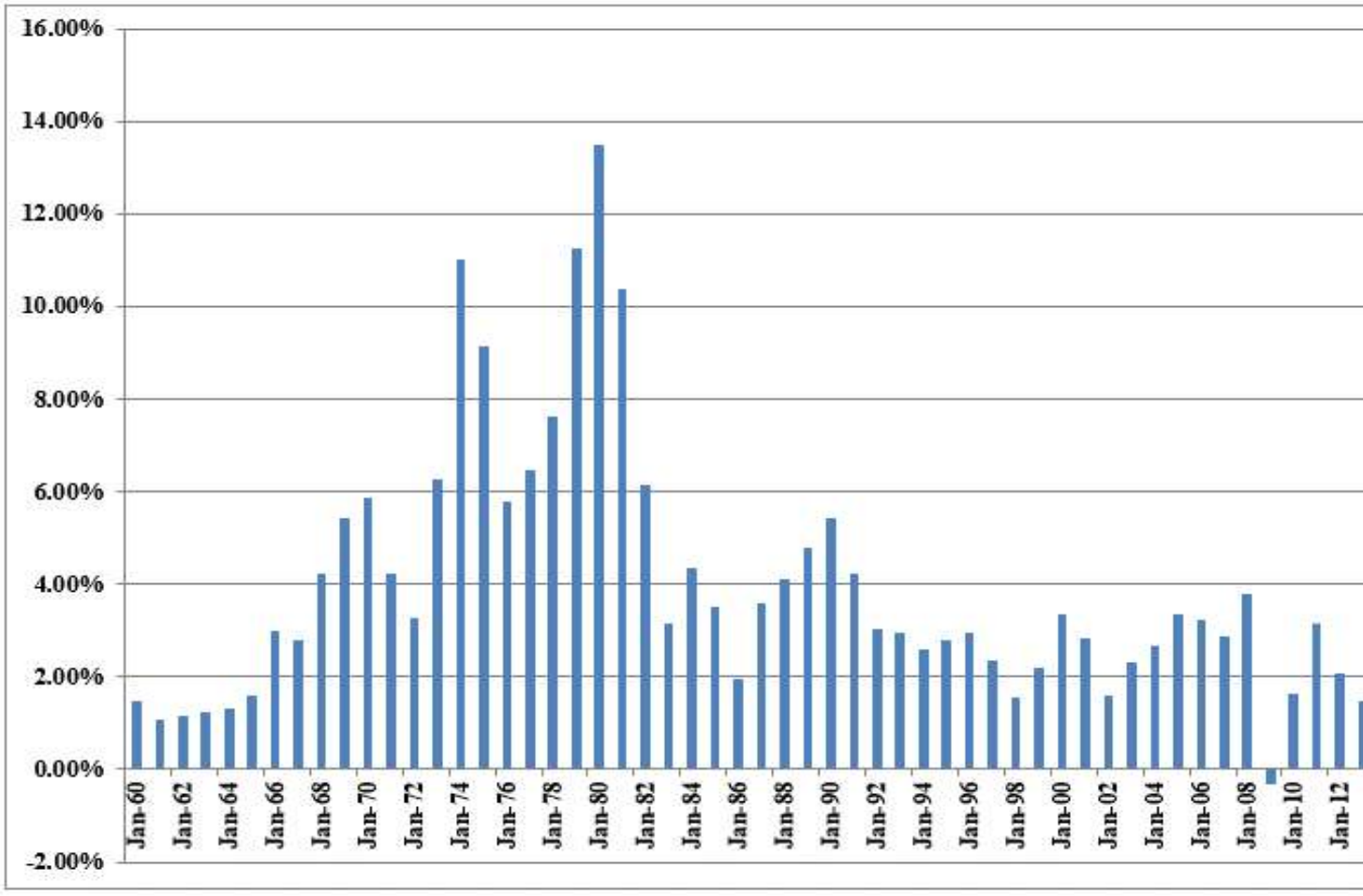
Annual Average Real GDP Growth Rates
1961–2022



Data Sources: GDPC1 - https://fred.stlouisfed.org/series/GDPCA

Exhibit JRW-9-4
Inflation Rates

Annual CPI Inflation Rates
1961–2022



Data Sources: CPIAUCSL - https://fred.stlouisfed.org/series/CPIAUCSL

Exhibit JRW-9-5
Historical and Projected Nominal GDP Growth Rates

Panel A
Historic GDP Growth Rates

10-Year Average	**4.59%**
20-Year Average	**4.32%**
30-Year Average	**4.65%**
40-Year Average	**5.21%**
50-Year Average	**6.16%**

Calculated using GDP data on Page 1 of Exhibit JRW-9

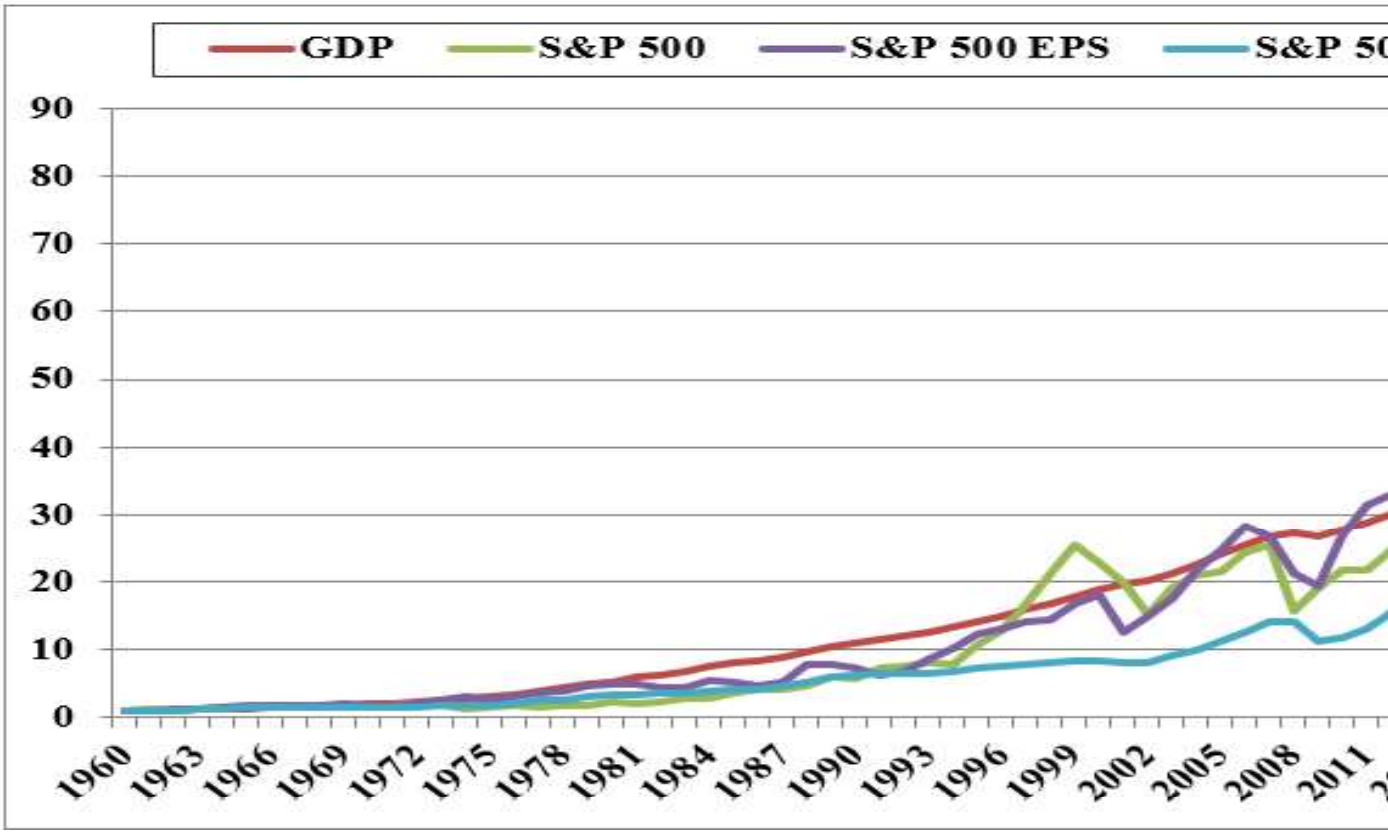
Panel B
Projected GDP Growth Rates

	Time Frame	Projected Nominal GDP Growth Rate
Congressional Budget Office	**2023-2053**	**3.8%**
Survey of Financial Forecasters	**Ten Year**	**4.4%**
Social Security Administration	**2023-2100**	**4.1%**
Energy Information Administration	**2023-2050**	**4.3%**
	Average	**4.15%**

Sources:
Congressional Budget Office,The *2023 Long-Term Budget Outlook* , July 15, 2023.
U.S. Energy Information Administration, *Annual Energy Outlook 2023* , Table: Macroeconomic Indicators,
Social Security Administration, 2023 Annual Report of the Board of Trustees of the Old-Age,
Survivors, and Disability Insurance (OASDI) Program, Table VI.G4,
The 4.1% growth rate is the growth in projected GDP from 26 trillion in 2023 to $582 trillion in 2100.
https://www.philadelphiafed.org/research-and-data/real-time-center/survey-of-professional-forecasters/

Exhibit JRW-9-6
GDP and S&P 500 Growth

Cumulative Long-Term Growth of GDP, S&P 500, S&P 500 EPS, S&P 500 DP



Data Sources: GDPA -http://research.stlouisfed.org/fred2/series/GDPA/downloaddata
S&P 500, EPS and DPS - http://pages.stern.nyu.edu/~adamodar/