

**COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION**

IN THE MATTER OF:

**ELECTRONIC APPLICATION OF DUKE)
ENERGY KENTUCKY, INC. FOR (1) AN)
ADJUSTMENT OF ELECTRIC RATES;)
(2) APPROVAL OF NEW TARIFFS;) CASE NO. 2022-00372
(3) APPROVAL OF ACCOUNTING PRACTICES)
TO ESTABLISH REGULATORY ASSETS AND)
LIABILITIES; AND (4) ALL OTHER)
REQUIRED APPROVALS AND RELIEF)**

**DIRECT TESTIMONY
AND EXHIBITS
OF
RICHARD A. BAUDINO**

**ON BEHALF OF THE
OFFICE OF THE ATTORNEY GENERAL OF THE
COMMONWEALTH OF KENTUCKY**

**J. Kennedy and Associates, Inc.
570 Colonial Park Drive, Suite 305
Roswell, GA 30075**

March 10, 2023

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TABLE OF CONTENTS

I. QUALIFICATIONS AND SUMMARY.....	1
II. ROE GUIDELINES AND REVIEW OF ECONOMIC CONDITIONS	4
III. DETERMINATION OF FAIR RATE OF RETURN.....	13
DCF Model.....	14
Capital Asset Pricing Model.....	19
Recommended ROE and Common Equity Ratio.....	29
IV. RESPONSE TO DUKE KENTUCKY ROE TESTIMONY	33
DCF Analyses.....	34
CAPM Analysis.....	35
Risk Premium Analyses	39
Expected Earnings Analysis	41
Consideration of Specific Risk Factors	42

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DIRECT TESTIMONY OF RICHARD A. BAUDINO

I. QUALIFICATIONS AND SUMMARY

1 **Q. Please state your name and business address.**

2 A. My name is Richard A. Baudino. My business address is J. Kennedy and
3 Associates, Inc. (“Kennedy and Associates”), 570 Colonial Park Drive, Suite 305,
4 Roswell, Georgia 30075.

5 **Q. What is your occupation and by whom are you employed?**

6 A. I am a consultant with Kennedy and Associates.

7 **Q. Please describe your education and professional experience.**

8 A. I received my Master of Arts degree with a major in Economics and a minor in
9 Statistics from New Mexico State University in 1982. I also received my Bachelor
10 of Arts Degree with majors in Economics and English from New Mexico State in
11 1979.

12
13 I began my professional career with the New Mexico Public Service Commission
14 Staff in October 1982 and was employed there as a Utility Economist. During my

1 employment with the Staff, my responsibilities included the analysis of a broad
2 range of issues in the ratemaking field. Areas in which I testified included cost of
3 service, rate of return, rate design, revenue requirements, analysis of
4 sale/leasebacks of generating plants, utility finance issues, and generating plant
5 phase-ins.

6
7 In October 1989, I joined the utility consulting firm of Kennedy and Associates as
8 a Senior Consultant where my duties and responsibilities covered substantially the
9 same areas as those during my tenure with the New Mexico Public Service
10 Commission Staff. I became Manager in July 1992 and was named Director of
11 Consulting in January 1995. Currently, I am a consultant with Kennedy and
12 Associates.

13
14 Exhibit RAB-1 summarizes my expert testimony experience.

15 **Q. On whose behalf are you testifying?**

16 A. I am submitting Direct Testimony on behalf of the Office of the Attorney General
17 of the Commonwealth of Kentucky ("AG").

18 **Q. What is the purpose of your Direct Testimony?**

19 A. The purpose of my Direct Testimony is to address the investor required return on
20 equity ("ROE") for the regulated electric operations of Duke Energy Kentucky, Inc.
21 ("Duke Kentucky" or "Company"). I will also respond to the Direct Testimony and
22 ROE recommendation of Duke Kentucky Witness Joshua C. Nowak.

1 Furthermore, I address the proper ratemaking capital structure for Duke
2 Kentucky. As part of my analysis on this subject, I will address the
3 recommendations of Witnesses Nowak and Christopher Bauer.

4 **Q. Please summarize your conclusions and recommendations.**

5 A. I recommend that the Kentucky Public Service Commission ("Commission")
6 authorize an allowed ROE for Duke Kentucky of 9.55%. My recommendation is
7 based on an ROE range of 9.48% to 9.58%. My recommended range is primarily
8 based on the results of a discounted cash flow ("DCF") analysis applied to a proxy
9 group of 14 regulated vertically integrated electric companies. I also performed
10 Capital Asset Pricing Model ("CAPM") analyses using historical and forecasted
11 risk premiums as well as recommended market risk premiums from other sources.
12 The CAPM estimates included in my analyses support the reasonableness of my
13 recommended 9.55% ROE for Duke Kentucky. My recommendation fully reflects
14 current economic and financial market conditions, which I will describe in more
15 detail in Section II of my Direct Testimony. A 9.55% ROE provides a fair return
16 to investors on a relatively low-risk regulated electric utility investment such as
17 Duke Kentucky.

18 I will also address the Company's requested capital structure, which was
19 supported by Witnesses Bauer and Nowak. The Company requested a common
20 equity ratio of 52.505% for the test period. This request is significantly higher than
21 Duke Kentucky's recent actual historical common equity ratios for the years 2020
22 – 2022 and should be rejected by the Commission. Based on the historical capital
23 structures I reviewed, I recommend that the Commission allow a 50% common

1 equity ratio for ratemaking purposes in this case. The Company's requested short-
2 term debt ratio should be increased, again based on recent historical experience, to
3 6.287%. Together with my recommended ROE of 9.55%, I recommend a weighted
4 cost of capital of 6.986%.

5 In Section IV, I will respond to the testimony and ROE recommendation of
6 Duke Kentucky Witness Nowak. I will demonstrate that his recommended ROE of
7 10.35% for Duke Kentucky significantly overstates the investor required return for
8 regulated electric utilities. Witness Nowak's recommendation is significantly
9 biased upward by CAPM and Expected Earnings ROE analyses that are
10 unreasonably high. Witness Nowak's recommended 10.35% ROE would harm
11 Kentucky ratepayers by contributing to an inflated revenue requirement for the
12 Company. The Commission should reject his recommendation.

13 II. ROE GUIDELINES AND REVIEW OF ECONOMIC CONDITIONS

14 **Q. What are the main guidelines to which you adhere in estimating the cost of**
15 **equity?**

16 **A.** Generally speaking, the estimated cost of equity should be comparable to the
17 returns of other firms with similar risk structures and should be sufficient for the
18 firm to attract capital. These are the basic standards set out by the United States
19 Supreme Court in *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591
20 (1944), and *Bluefield W.W. & Improv. Co. v. Public Service Comm'n*, 262 U.S. 679
21 (1922).

22 From an economist's perspective, the notion of "opportunity cost" plays a
23 vital role in estimating the ROE. One measures the opportunity cost of an

1 investment equal to what one would have obtained in the next best alternative. For
2 example, suppose that an investor decides to purchase the stock of a publicly traded
3 regulated electric utility. That investor will make the decision based on the
4 expectation of dividend payments and perhaps some appreciation in the stock's
5 value over time; however, that investor's opportunity cost is measured by what she
6 or he could have invested in as the next best alternative. That alternative could
7 have been another utility stock, a utility bond, a mutual fund, a money market fund,
8 or any other number of investment vehicles.

9 The key determinant in deciding whether to invest, however, is based on
10 comparative levels of risk. Our hypothetical investor would not invest in a
11 particular regulated electric utility stock if it offered a return lower than other
12 investments of similar risk. The opportunity cost simply would not justify such an
13 investment. Thus, the task for the rate of return analyst is to estimate a return on
14 equity that is equal to that being offered by other risk-comparable firms.

15 **Q. Please provide the Commission an overview of important economic factors**
16 **that affect your estimate of the allowed ROE for Duke Kentucky.**

17 A. The following discussion presents my overview of certain key factors in the
18 economy that are important influences on the current investor required ROE. These
19 factors include the current level of interest rates, current levels of inflation, the
20 effects on unemployment and economic growth, and stock market volatility.

21 **Q. Does the level of interest rates affect the allowed ROE for regulated utilities?**

22 A. Generally, yes. The common stock of regulated utilities tends to be interest rate
23 sensitive. This means that the cost of equity for regulated utilities tends to rise and

1 fall with changes in interest rates. For example, as interest rates rise, the cost of
2 equity will also rise, and vice versa when interest rates fall. This relationship is due
3 in large part to the capital-intensive nature of the electric utility industry, which
4 relies heavily on both debt and equity to finance its regulated investments.

5 **Q. Before you continue, please provide a brief explanation of how the Federal**
6 **Reserve Board (“Fed”) uses interest rates to affect conditions in the financial**
7 **markets.**

8 A. Generally, the Fed uses monetary policy to implement certain economic goals. The
9 Fed explained its monetary policy as follows:

10 Monetary policy in the United States comprises the Federal
11 Reserve’s actions and communications to promote maximum
12 employment, stable prices, and moderate long-term interest rates--
13 the economic goals the Congress has instructed the Federal Reserve
14 to pursue.¹

15 One of the Fed’s primary tools for conducting monetary policy is setting the
16 federal funds rate. The federal funds rate is the interest rate set by the Fed that
17 banks and credit unions charge each other for overnight loans of reserve balances.
18 Traditionally the federal funds rate directly influences short-term interest rates,
19 such as the Treasury bill rate and interest rates on savings and checking accounts.
20 The federal funds rate has a more indirect effect on long-term interest rates, such
21 as the 30-Year Treasury bond and private and corporate long-term debt. Long-term

¹ Monetary Policy (February 22, 2023), <https://www.federalreserve.gov/monetarypolicy.htm>.

1 interest rates are set more by market forces that influence the supply and demand
2 of loanable funds.

3 **Q. Describe the trend in interest rates over the last 10 or so years.**

4 A. Until recently, the overall trend in interest rates in the U.S. and the world economy
5 had been lower and this continued into 2020-2021 as governments and central
6 banks, including the Fed, instituted programs in response to the economic shocks
7 brought about by the COVID-19 pandemic. The trend of lower interest rates was
8 precipitated by the 2007 financial crisis and severe recession that followed in
9 December 2007. In response to this economic crisis, the Fed undertook a series of
10 steps to stabilize the economy, ease credit conditions, and lower unemployment and
11 interest rates. These steps are commonly known as Quantitative Easing (“QE”) and
12 were implemented in three distinct stages: QE1, QE2, and QE3. The Fed’s stated
13 purpose of QE was “to support the liquidity of financial institutions and foster
14 improved conditions in financial markets.”²

15 In 2022, however, the Fed began an aggressive policy of raising short-term
16 interest rates in response to concerns about persistently high inflation in the
17 economy, which began to be a problem in 2021. After the Fed reduced the federal
18 funds rate to nearly 0% through 2021, it was increased several times in 2022 and
19 as of the filing of my Direct Testimony now stands at 4.50% – 4.75%. In its press
20 release issued February 1, 2023, the Fed stated the following:

² *Credit and Liquidity Programs and the Balance Sheet*, Monetary Policy, FED. RESERVE BD., (May 10, 2021). <https://www.federalreserve.gov/monetarypolicy/bst.htm>.

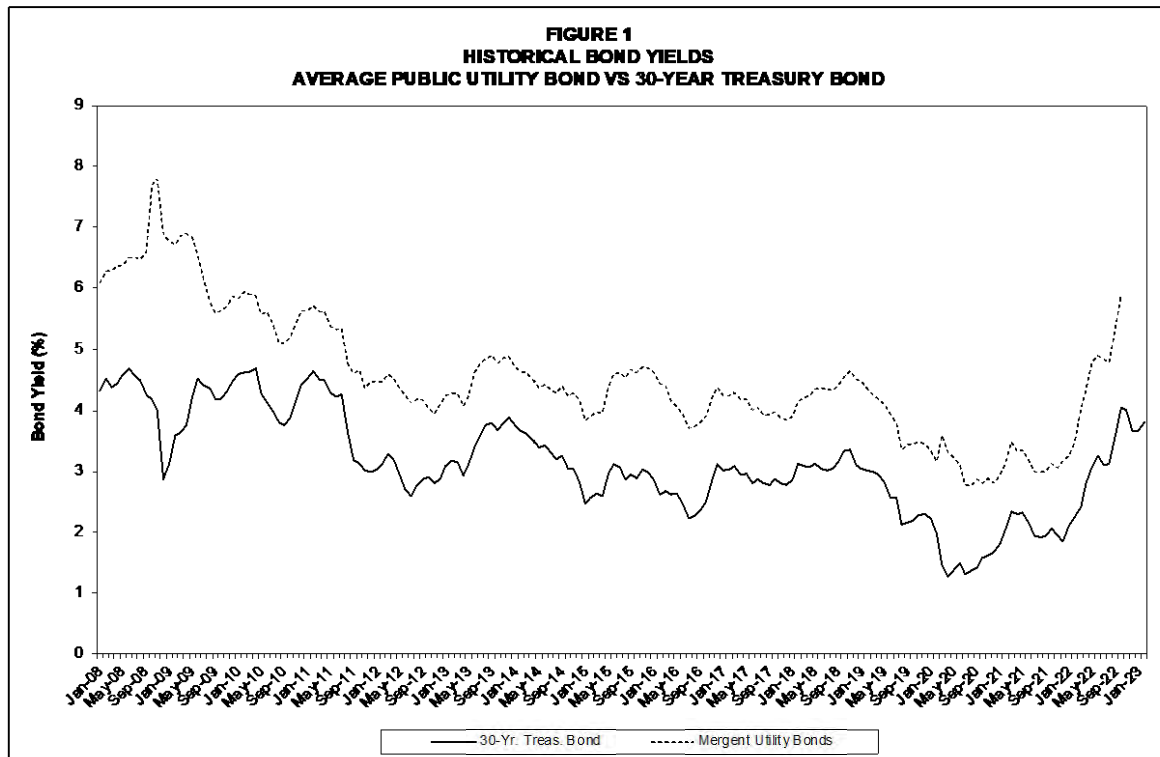
1 Recent indicators point to modest growth in spending and
2 production. Job gains have been robust in recent months, and the
3 unemployment rate has remained low. Inflation has eased somewhat
4 but remains elevated.

5
6 Russia's war against Ukraine is causing tremendous human and
7 economic hardship and is contributing to elevated global
8 uncertainty. The Committee is highly attentive to inflation risks.

9
10 The Committee seeks to achieve maximum employment and
11 inflation at the rate of 2 percent over the longer run. In support of
12 these goals, the Committee decided to raise the target range for the
13 federal funds rate to 4-1/2 to 4-3/4 percent. The Committee
14 anticipates that ongoing increases in the target range will be
15 appropriate in order to attain a stance of monetary policy that is
16 sufficiently restrictive to return inflation to 2 percent over time. In
17 determining the extent of future increases in the target range, the
18 Committee will take into account the cumulative tightening of
19 monetary policy, the lags with which monetary policy affects
20 economic activity and inflation, and economic and financial
21 developments. In addition, the Committee will continue reducing its
22 holdings of Treasury securities and agency debt and agency
23 mortgage-backed securities, as described in its previously
24 announced plans. The Committee is strongly committed to returning
25 inflation to its 2 percent objective.³

26 Figure 1 below presents a graph that tracks the 30-Year Treasury bond yield
27 and the Mergent average utility bond yield. The graph covers the period from
28 January 2008 through February 2023.

³ *Federal Reserve issues FOMC statement*, Press Release, FED. RESERVE BD., (Feb. 1, 2023), <https://www.federalreserve.gov/newsevents/pressreleases/monetary20230201a.htm>.



1 Figure 1 shows the sharp increase in bond yields since the summer of 2021.
 2 The 30-year Treasury Bond yield increased from 2.10% in January 2022 to 3.80%
 3 in February 2023, with the yield touching 4.0% in October and November 2022.
 4 The Mergent Utility Bond yield increased during that same period from 3.25% to
 5 5.32%, an increase of 2.07%, or 207 basis points.

- 6 **Q. What is the most recent measure of inflation that was available to you as you**
 7 **were preparing your direct testimony?**
- 8 **A. Inflation, as measured by the Consumer Price Index (“CPI”), has remained high in**
 9 **2022 and 2023. The Bureau of Labor Statistics reported that the year-over-year**
 10 **rate of inflation as measured by the CPI-Urban statistic was 6.4% for January 2023.**
- 11 **Q. What are the expectations for inflation, interest rates, and other economic**
 12 **indicators going forward?**

1 A. The Federal Reserve Bank of Philadelphia publishes the *Survey of Professional*
2 *Forecasters* (“Survey”), in which a panel of 37 forecasters provide projections for
3 several economic variables, including growth in Gross Domestic Product (“GDP”),
4 inflation, and unemployment, as well as short-term and long-term interest rates.
5 The most recent edition of the Survey, dated February 10, 2023, provided the
6 following forecasts:

- 7 • Consumer Price Index (“CPI”) inflation is expected to average 3.1% for
8 2023, 2.5% for 2024, and 2.4% for 2025. Over the next 10 years, the
9 forecasters expected CPI inflation to average 2.37% per year.
- 10 • 10-Year Treasury bond yield is forecasted to be 3.8% in 2023, 3.5% in
11 2024, and 3.5% in 2025.
- 12 • An unemployment rate of 3.8% for 2023 and 4.2% for 2024.
- 13 • Real growth in GDP of 1.3% in 2023 and 1.4% in 2024.⁴

14 The Fed’s economic projections as of December 14, 2022, showed the
15 following median forecasts:

- 16 • Personal Consumption Expenditures (“PCE”) inflation rate of 3.1% for
17 2023, 2.5% for 2024, and longer run inflation at 2.0%;
- 18 • Unemployment rate of 4.6% for 2023 and 4.6% for 2024, with a longer run
19 unemployment rate of 4.0%; and

⁴ First Quarter Survey of Professional Forecasters, Federal Reserve Bank of Philadelphia (February 10, 2023).

- 1 • Growth in real GDP of 0.5% for 2023, 1.6% for 2024 with a longer run
2 growth rate of 1.8%.⁵

3 **Q. Based on the interest rate data and the forecasts you presented, what are your**
4 **conclusions with respect to general economic conditions at this time?**

5 A. There appears to be a consensus for slow growth in GDP in 2023 - 2024, with the
6 U.S. unemployment rate forecasted to rise to about 4.2% - 4.6% through 2024.
7 Inflation is forecasted to be above 3.0% through 2023, but decline in 2024 and
8 thereafter. The forecasted yield on the 10-Year Treasury Bond for 2023, 3.8%, is
9 expected to decline slightly in 2024.

10 **Q. Please provide the Commission with some additional background information**
11 **regarding market volatility since the beginning of 2022.**

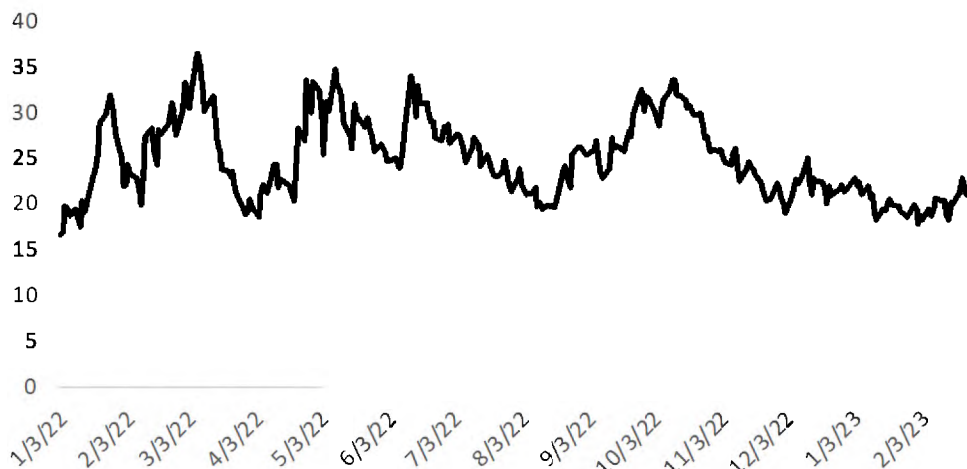
12 A. A widely used measure of market volatility is the Chicago Board Options Exchange
13 (“CBOE”) Volatility Index (“VIX”), also called the “fear index” or “fear gauge.”
14 Basically, the VIX measures the market’s expectations for volatility over the next
15 30-day period. The higher the VIX, the greater the expectation of volatility and
16 market risk. Figure 2 presents the VIX from January 1, 2022 through February 28,
17 2023.⁶

18

⁵ Summary of Economic Projections, Federal Reserve Board (December 14, 2022).

⁶ Historical Data for Cboe VIX Index and Other Volatility Indices, CBOE
https://www.cboe.com/tradable_products/vix/vix_historical_data/.

Figure 2
2022 - 2023 VIX



1

2

Figure 2 shows the significant increase in market volatility during 2022.

3

The VIX was 16.6 on January 3, increased to a year-to-date high of 36.45 on March

4

7, and ended December 30 at 21.67, substantially lower than the 2022 high. The

5

VIX continued to decline slightly in 2023, ending February 28 at 20.7. This

6

compares to the 2021 yearly average VIX of 19.66. Figure 2 also shows significant

7

fluctuation in the VIX during 2022. It appears that market volatility declined since

8

the highs in March 2022 and since the October 11, 2022 high of 33.63.

9

10 **Q. How have utilities fared recently compared to the overall stock market?**

11 A.

2022 saw a significant decline in both the stock market generally and for utilities

12

as well. The Standard and Poor's 500 began the year at 4,778.14 and closed on

13

December 30 at 3,839.50, a decline of 19.6%. The S&P 500 Utilities began the

14

year at 363.55 and closed on December 30 at 358.48, a decline of 1.4%, which is

1 far less of a drop than the S&P 500. From January 2 through February 28, 2023,
2 the S&P 500 rose 3.0%, while the S&P 500 Utilities declined 8.5%.

3 **Q. What are the current credit ratings for Duke Kentucky?**

4 a. Duke Kentucky enjoys strong investment grade credit ratings from Moody's and
5 Standard and Poor's ("S&P"). Duke Kentucky's current long-term rating from
6 Moody's is Baa1, which is at the top of Moody's Baa rating range (Baa1 – Baa3).
7 S&P's credit rating for Duke Kentucky is BBB+, which is at the top of the BBB
8 rating classification (BBB- to BBB+). The credit outlooks from both Moody's and
9 S&P are stable.

10 **III. DETERMINATION OF FAIR RATE OF RETURN**

11 **Q. Please describe the methods you employed in estimating a fair rate of return**
12 **for the regulated electric operations of Duke Kentucky.**

13 A. I employed a DCF analysis using a proxy group of 14 regulated electric utilities.
14 My DCF analysis is my standard constant growth form of the model that employs
15 growth rate forecasts from the following three sources: dividend and earnings
16 growth from Value Line, and consensus earnings growth forecasts from Yahoo!
17 Finance and Zacks. I also employed CAPM analyses using both historical and
18 forward-looking data as well as recommended market risk premiums from other
19 sources. Although I did not rely on the CAPM for my recommended ROE of
20 9.55%, the CAPM provides an alternative approach to estimating the ROE for the
21 Company and the results confirm the reasonableness of my 9.55% ROE
22 recommendation.

1 **DCF Model**2 **Q. Please describe the basic DCF approach.**

3 A. The basic DCF approach is rooted in valuation theory. It is based on the premise
 4 that the value of a financial asset is determined by its ability to generate future net
 5 cash flows. In the case of a common stock, those future cash flows generally take
 6 the form of dividends and appreciation in stock price. The value of the stock to
 7 investors is the discounted present value of future cash flows. The general equation
 8 then is:

$$9 \quad V = \frac{R}{(1+r)} + \frac{R}{(1+r)^2} + \frac{R}{(1+r)^3} + \dots + \frac{R}{(1+r)^n}$$

10 *Where:* $V = \text{asset value}$
 11 $R = \text{yearly cash flows}$
 12 $r = \text{discount rate}$

13 This is no different from determining the value of any asset from an
 14 economic point of view; however, the commonly employed DCF model makes
 15 certain simplifying assumptions. One is that the stream of income from the equity
 16 share is assumed to be perpetual; that is, there is no salvage or residual value at the
 17 end of some maturity date (as is the case with a bond). Another important
 18 assumption is that financial markets are reasonably efficient; that is, they correctly
 19 evaluate the cash flows relative to the appropriate discount rate, thus rendering the
 20 stock price efficient relative to other alternatives. Finally, the model I typically
 21 employ also assumes a constant growth rate in dividends. The fundamental
 22 relationship employed in the DCF method is described by the formula:

$$23 \quad k = D_1/P_0 + g$$

24 *Where:* $D_1 = \text{the next period dividend}$

1 $P_0 = \text{current stock price}$
2 $g = \text{expected growth rate}$
3 $k = \text{investor-required return}$

4 Using this formula, it is apparent that “k” must reflect the investors’
5 expected return. Use of the DCF method to determine an investor-required return
6 is complicated by the need to express investors’ expectations relative to dividends,
7 earnings, and book value over an infinite time horizon. Financial theory suggests
8 that stockholders purchase common stock on the assumption that there will be some
9 change in the rate of dividend payments over time. We assume that the rate of
10 growth in dividends is constant over the assumed time horizon, but the model could
11 easily handle varying growth rates if we knew what they were. Finally, the relevant
12 time frame is prospective rather than retrospective.

13 **Q. Please describe your approach for selecting a proxy group of companies.**

14 A. For purposes of this case, I began with the proxy group of vertically integrated
15 electric utilities that Duke Kentucky Witness Nowak used for his analysis. Witness
16 Nowak described the criteria he used to select companies for his proxy group on
17 page 26 of his Direct Testimony. These screening criteria resulted in a proxy group
18 that is reasonable to use for estimating the ROE for Duke Kentucky. The fourteen-
19 member proxy group for purposes of my ROE analyses is:

- 20 1. ALLETE, Inc.
- 21 2. Alliant Energy Corporation
- 22 3. Ameren Corporation
- 23 4. American Electric Power Company, Inc.
- 24 5. Edison International
- 25 6. Entergy Corporation
- 26 7. Evergy, Inc.
- 27 8. Hawaiian Electric Industries, Inc.
- 28 9. IDACORP, Inc.

- 1 10. NextEra Energy
- 2 11. OGE Energy Corporation
- 3 12. Portland General Electric Company
- 4 13. Southern Company
- 5 14. Xcel Energy Inc.

6 **Q. What was your first step in determining the DCF return on equity for the**
7 **proxy group?**

8 A. I first determined the current dividend yield, D_1/P_0 , from the basic equation. My
9 general practice is to use six months as the most reasonable period over which to
10 estimate the dividend yield. The six-month period I used covered the months from
11 September 2022 through February 2023. I obtained historical prices and dividends
12 from Yahoo! Finance. The annualized dividend divided by the average monthly
13 price represents the average dividend yield for each month in the period.

14 The resulting average dividend yield for the proxy group is 3.56%. These
15 calculations are shown in Exhibit RAB-2.

16 **Q. Earlier in your Direct Testimony, you discussed the volatility currently in the**
17 **stock market. Discuss the monthly dividend yields for the proxy group and**
18 **how you concluded that the six-month average yield is reasonable given this**
19 **volatility.**

20 A. The monthly dividend yields shown on page 3 of Exhibit RAB-2 range from 3.43%
21 in September and December 2022 to 3.78% in October 2022. Given the range of
22 monthly dividend yields, the six-month dividend yield of 3.56% is reasonable for
23 purposes of estimating the current average dividend yield for the proxy group in
24 my DCF analyses.

25 **Q. Having established the average dividend yield, how did you determine the**
26 **investors' expected growth rate for the proxy group?**

1 A. The investors' expected growth rate, in theory, correctly forecasts the constant rate
2 of growth in dividends. The dividend growth rate is a function of earnings growth
3 and the payout ratio, neither of which is known precisely for the future. We refer
4 to a perpetual growth rate since the DCF model has no arbitrary cut-off point. We
5 must estimate the investors' expected growth rate because there is no way to know
6 with absolute certainty what investors expect the growth rate to be in the short term,
7 much less in perpetuity.

8 For my analysis in this proceeding, I used three major sources of analysts'
9 forecasts for growth: Value Line, Zacks, and Yahoo! Finance. This is the method
10 I typically use for estimating growth for my DCF calculations.

11 **Q. Please briefly describe Value Line, Zacks, and Yahoo! Finance.**

12 A. Value Line is a widely used and respected source of investor information that
13 covers approximately 1,700 companies in its Standard Edition and several thousand
14 in its Plus Edition. It is updated quarterly and probably represents the most
15 comprehensive of all investment information services. It provides both historical
16 and forecasted information on a number of important data elements. Value Line
17 neither participates in financial markets as a broker nor works for the utility industry
18 in any capacity of which I am aware.

19 Zacks gathers opinions from a variety of analysts on earnings growth
20 forecasts for numerous firms including regulated electric utilities. The estimates of
21 the analysts responding are combined to produce consensus average estimates of
22 earnings growth. I obtained Zacks' earnings growth forecasts from its web site.
23 Like Zacks, Yahoo! Finance also compiles and reports consensus analysts'

1 forecasts of earnings growth. I also obtained these estimates from Yahoo!
2 Finance's website.

3 **Q. Why did you rely on analysts' forecasts in your analysis?**

4 A. ROE analysis is a forward-looking process. Five-year or ten-year historical growth
5 rates may not accurately represent investor expectations for future dividend and
6 earnings growth. Analysts' forecasts for earnings and dividend growth provide
7 better proxies for the expected growth component in the DCF model than historical
8 growth rates. Analysts' forecasts are also widely available to investors and one can
9 reasonably assume that they influence investor expectations.

10 **Q. Please explain how you used analysts' dividend and earnings growth forecasts**
11 **in your constant growth DCF analysis.**

12 Q. Columns (1) through (4) of Exhibit RAB-3, page 1, show the forecasted dividend
13 and earnings growth rates from Value Line and the earnings growth forecasts from
14 Zacks and Yahoo! Finance for the companies in the proxy group. It is important to
15 include dividend growth forecasts in the DCF model since the model calls for
16 forecasted cash flows and Value Line is the only source of which I am aware that
17 forecasts dividend growth.

18 **Q. Using this information, how did you determine the DCF ROE for the proxy**
19 **group?**

20 A. To estimate the expected dividend yield (D_1), the current dividend yield must be
21 moved forward in time to account for dividend increases over the next twelve
22 months. I estimated the expected dividend yield by multiplying the current
23 dividend yield by one plus one-half the expected growth rate.

1 Exhibit RAB-3, page 2, presents my standard method of calculating
2 dividend yields, growth rates, and ROE for the proxy group. The proxy group DCF
3 ROE section shows the application of each of four growth rates to the current
4 dividend yield of 3.56% to calculate the expected dividend yield. I then added the
5 expected growth rates to the expected dividend yield. My DCF ROE was calculated
6 using two different methods. Method 1 uses the average growth rates for the group
7 shown on page 1 of Exhibit RAB-3 and Method 2 utilizes the median growth rates
8 shown on that page.

9 **Q. What are the results of your constant growth DCF model?**

10 A. For Method 1 (average growth rates), the results range from 8.89% to 10.51%, with
11 the average of these results being 9.48%. For Method 2 (median growth rates), the
12 results range from 9.21% to 9.92%, with the average of these results being 9.58%.⁷

13 **Capital Asset Pricing Model**

14 **Q. Briefly summarize the CAPM approach.**

15 A. The theory underlying the CAPM approach is that investors, through diversified
16 portfolios, may combine assets to minimize the total risk of the portfolio.
17 Diversification allows investors to diversify away all risks specific to a particular
18 company and be left only with market risk that affects all companies. Thus, the
19 CAPM theory identifies two types of risks for a security: company-specific risk and
20 market risk. Company-specific risk includes such events as strikes, management

⁷ Refer to Exhibit RAB-3, page 2, for these results.

1 errors, marketing failures, lawsuits, and other events that are unique to a particular
 2 firm. Market risk includes inflation, business cycles, war, variations in interest
 3 rates, and changes in consumer confidence. Market risk tends to affect all stocks
 4 and cannot be diversified away. The idea behind the CAPM is that diversified
 5 investors are rewarded with returns based on market risk.

6 Within the CAPM framework, the expected return on a security is equal to
 7 the risk-free rate of return plus a risk premium that is proportional to the security's
 8 market, or non-diversifiable risk. Beta is the factor that reflects the inherent market
 9 risk of a security and measures the volatility of a particular security relative to the
 10 overall market for securities. For example, a stock with a beta of 1.0 indicates that
 11 if the market rises by 15%, that stock will also rise by 15%. This stock moves in
 12 tandem with movements in the overall market. Stocks with a beta of 0.5 will only
 13 rise or fall 50% as much as the overall market. With an increase in the market of
 14 15%, this stock will only rise 7.5%. Stocks with betas greater than 1.0 will rise and
 15 fall more than the overall market. Thus, beta is the measure of the relative risk of
 16 individual securities vis-à-vis the market.

17 Based on the foregoing discussion, the equation for determining the return
 18 for a security in the CAPM framework is:

$$19 \quad K = R_f + \beta(MRP)$$

20 *Where:* K = Required Return on equity
 21 R_f = Risk-free rate
 22 MRP = Market risk premium
 23 β = Beta

1 This equation tells us about the risk/return relationship posited by the
2 CAPM. Investors are risk averse and will only accept higher risk if they expect to
3 receive higher returns. These returns can be determined in relation to a stock's beta
4 and the market risk premium ("MRP"). The general level of risk aversion in the
5 economy determines the MRP. If the risk-free rate of return is 3.0% and the
6 required return on the total market is 15%, then the risk premium is 12%. Any
7 stock's risk premium can be determined by multiplying its beta by the MRP. Its
8 total return may then be estimated by adding the risk-free rate to that risk premium.
9 Stocks with betas greater than 1.0 are considered riskier than the overall market and
10 will have higher required returns. Conversely, stocks with betas less than 1.0 will
11 have required returns lower than the market as a whole.

12 **Q. In general, are there concerns regarding the use of the CAPM in estimating**
13 **the ROE?**

14 A. Yes. There is some controversy surrounding the use of the CAPM and its
15 accuracy regarding expected returns. There is substantial evidence that beta is not
16 the primary factor for determining the risk of a security. For example, Value Line's
17 "Safety Rank" is a measure of total risk, not its calculated beta coefficient. Dr.
18 Burton Malkiel, author of *A Random Walk Down Wall Street* noted the following
19 in his best-selling book on investing:

20 Second, as Professor Richard Roll of UCLA has argued, we must
21 keep in mind that it is very difficult (indeed probably impossible) to
22 measure beta with any degree of precision. The S&P 500 Index is
23 not "the market." The Total Stock Market contains many thousands
24 of additional stocks in the United States and thousands more in
25 foreign countries. Moreover, the total market includes bonds, real
26 estate, commodities, and assets of all sorts, including one of the most
27 important assets any of us has - the human capital built up by

1 education, work, and life experience. Depending on exactly how you
2 measure “the market” you can obtain very different beta values.⁸

3 Shannon Pratt and Roger Grabowski, authors of *Cost of Capital*, also stated
4 the following with respect to the CAPM:

5 Even though the capital asset pricing model (CAPM) is the most
6 widely used method of estimating the cost of equity capital, the
7 accuracy and predictive power of beta as the sole measure of risk
8 have increasingly come under attack. As a result, alternative
9 measures of risk have been proposed and tested. That is, despite its
10 wide adoption, academics and practitioners alike have questioned
11 the usefulness of CAPM in accurately estimating the cost of equity
12 capital and the use of beta as a reliable measure of risk.⁹

13 As a practical matter, there is substantial judgment involved in estimating
14 the required market return and MRP. In theory, the CAPM requires an estimate of
15 the return on the total market for investments, including stocks, bonds, real estate,
16 etc. It is nearly impossible for the analyst to estimate such a broad-based return.
17 Often in utility cases, a market return is estimated using the S&P 500. However,
18 as Dr. Malkiel pointed out, this is a limited source of information with respect to
19 estimating the investor’s required return for all investments. In practice, the total
20 market return and MRP estimates face limitations to estimation and, ultimately,
21 their usefulness in quantifying the investor required CAPM ROE.

22 In the final analysis, a considerable amount of judgment must be employed
23 in determining the market return and expected risk premium elements of the CAPM
24 equation. The analyst’s application of judgment can significantly influence the

⁸ Burton G. Malkiel, *A Random Walk Down Wall Street*, 218 (2019 ed. 2019).

⁹ Shannon Pratt & Roger Grabowski, *Cost of Capital*, 269 (5th ed 2014).

1 results obtained from the CAPM. My experience with the CAPM indicates that it
2 is prudent to use a wide variety of data in estimating investor-required returns. Of
3 course, the range of results may also be wide, indicating the challenge in obtaining
4 a reliable estimate from the CAPM.

5 **Q. How did you estimate the market return and MRP of the CAPM?**

6 A. I used three approaches to estimate the MRP portion of the CAPM equation. First,
7 I will present an approach that uses the expected return on the market and is
8 forward-looking. Second, I will present an approach that employs two historical
9 MRPs based on actual stock and bond returns. Third, I will present other published
10 sources that estimate the current investor required MRP.

11 **Q. Please describe your forward-looking approach to estimating the MRP.**

12 A. The first source I used was the Value Line Summary and Index dated February 24,
13 2023. The Value Line Summary and Index provides data with which one may
14 calculate a DCF estimate on the companies that Value Line follows. Value Line
15 presents a median estimated dividend yield for all dividend paying stocks (2.10%)
16 and the median estimated 3–5-year price appreciation potential of all stocks in the
17 Value Line universe (55%). The estimated 3-5-year appreciation estimate
18 translates into an annualized appreciation number of 11.58%. I present Value
19 Line’s projected annual returns on page 1 of Exhibit RAB-4. The DCF ROE result
20 is 13.68%.

21 **Q. Please continue with your MRP analysis.**

1 A. The second source I considered came from Kroll, which compiled a study of
2 historical returns on the stock market in its *Cost of Capital Navigator: U.S. Cost of*
3 *Capital Module* and is part of its Cost of Capital Navigator subscription service.
4 Kroll provides services to clients in 140 countries covering valuation, compliance
5 and regulation, corporate finance and restructuring, and other areas. Kroll now
6 provides the Cost of Capital Navigator service that was formerly provided by Duff
7 and Phelps.

8 Some analysts employ historical data to estimate the MRP of stocks over
9 the risk-free rate. The assumption is that a risk premium calculated over a long
10 period of time is reflective of investor expectations going forward. Exhibit RAB-
11 4, page 2, presents the calculation of the market returns and MRPs using the
12 historical data from Kroll.

13 **Q. Please explain how these historical MRPs are calculated.**

14 A. Exhibit RAB-4, page 2, shows the arithmetic average of yearly historical stock
15 market returns over the historical period from 1926 – 2022. The average annual
16 income return for the 20-year Treasury bond is subtracted from these historical
17 stock returns to obtain the historical MRP of stock returns over long-term Treasury
18 bond income returns. The resulting historical MRP is 7.10%.

19 **Q. Did you add an additional measure of the historical risk premium in this case?**

20 A. Yes. Kroll reported the results of a study by Dr. Roger Ibbotson and Dr. Peng Chen
21 indicating that the historical risk premium of stock returns over long-term
22 government bond returns has been significantly influenced upward by substantial

1 growth in the price/earnings (“P/E”) ratio.¹⁰ Kroll noted that this growth in the P/E
2 ratio for stocks was subtracted out of the historical risk premium to arrive at an
3 adjusted “supply side” historical arithmetic MRP. The most recent “supply side”
4 historical MRP is 6.22%, which I have also included in Exhibit RAB-4, page 2.

5 **Q. Is there additional evidence that the growth in the P/E ratio should be removed**
6 **from the historical risk premium?**

7 A. Yes. William Goetzman and Roger Ibbotson wrote the following regarding the
8 supply-side approach to estimating the equity risk premium:

9 There are several ways in which one might estimate an expected risk
10 premium used for forecasting. One way is to extrapolate historical
11 risk premiums, as did Ibbotson and Sinquefeld. Another is to use
12 investor demand models based upon investor risk aversion, as did
13 Mehra and Precott. A third way is to look at the type of returns that
14 the corporate sector supplies. Diermeir, Ibbotson, and Siegel (1984)
15 and later Ibbotson and Chen (2003) used this supply approach. They
16 extrapolated the cash flows and earnings growth generated by
17 companies themselves. These forecasts tend to give somewhat
18 lower historical risk premiums, primarily because part of the total
19 return of the stock market has come from price-to-earnings ratio
20 expansion. This expansion is not predicated to continue on
21 indefinitely and is removed from the expected risk premium.¹¹
22

23 **Q. Are there concerns regarding using the use of historical MRPs for estimating**
24 **the investor required ROE?**

25 A. Yes. A historical MRP calculated over a long period of time may not reflect current
26 investor expectations and requirements. For example, Pratt and Grabowski
27 presented a detailed discussion of the sources of potential upward bias and

¹⁰ Duff & Phelps, Cost of Capital: Annual U.S. Guidance and Examples, Chapter 3, 45-47 (2019).

¹¹ William N. Goetzmann & Roger G. Ibbotson, Handbook of the Equity Risk Premium, 522-523 (Rajnish Mehra ed., Elsevier B.V., 2008).

1 overstatement of the long-term historical risk premium.¹² One potential source of
2 bias they analyzed was the historical period of 1942 – 1951, which included
3 government-imposed stability in interest rates for government bonds during the
4 Second World War. Pratt and Grabowski named this period “WWII Interest Rate
5 Bias” and estimated that it resulted in an overstatement of the long-run historical
6 risk premium of 117 basis points, or 1.17%. Pratt and Grabowski also considered
7 the supply-side MRP, which I considered and presented earlier.

8 Dr. Aswath Damodaran of the Stern Business School observed the
9 following regarding the use of historical MRPs:

10 Given how widely the historical risk premium approach is used, it
11 is surprising that the flaws in the approach have not drawn more
12 attention. Consider first the underlying assumption that investors’
13 risk premiums have not changed over time and that the average risk
14 investment (in the market portfolio) has remained stable over the
15 period examined. We would be hard pressed to find anyone who
16 would be willing to sustain this argument with fervor. The obvious
17 fix for this problem, which is to use a more recent time period, runs
18 directly into a second problem, which is the large noise associated
19 with historical risk premium estimates. While these standard errors
20 may be tolerable for very long time periods, they clearly are
21 unacceptably high when shorter periods are used.¹³

22 Although the long-run historical risk premium is widely used and available
23 to investors, it is flawed and, in my view, likely to overstate the investor expected
24 risk premium for forecasting purposes. It should be viewed with a great deal of
25 caution and supplemented with other sources.

¹² Pratt and Grabowski, *Cost of Capital*, 119 – 131 (Wiley, 5th ed.)

¹³ *Equity Risk Premiums (ERP): Determinants, Estimation, and Implications – The 2022 Edition, Updated: March 23, 2022*, Aswath Damodaran, Stern School of Business.

1 **Q. Did you consider any other sources for estimating the MRP?**

2 A. Yes, I also considered two other sources for estimating the MRP.

3 First, Kroll provides a recommendation for the MRP for the United States.
4 Its recommended MRP as of January 2023 is 6.00%.

5 Second, Dr. Aswath Damodaran provides monthly estimates of the MRP
6 using what he calls an implied risk premium approach. Dr. Damodaran is a
7 professor of finance at the Stern School of Business at New York University and is
8 a researcher on the topic of MRPs, among other things. For February 2023, Dr.
9 Damodaran estimated an MRP in the range of 4.50% - 5.54%, with an average of
10 5.14%.¹⁴

11 **Q. How did you determine the risk-free rate?**

12 A. I used a six-month average of the 30-year Treasury bond yield from September
13 2022 through February 2023. These yields are shown in Exhibit RAB-4, page 1.
14 The six-month average 30-Year Treasury Bond yield is 3.79%. This six-month
15 period tracks the six-month period I used for stock prices in my DCF analyses.

16 The second measure I considered comes from Kroll's most recent
17 "normalized" risk-free rate of January 17, 2023. Kroll developed this normalized
18 risk-free rate using its measure of the "real risk-free rate" and expected inflation.
19 Currently, Kroll recommends using 3.5% or the most recent spot yield on the 20-
20 Year Treasury Bond, whichever is higher.

21

¹⁴Aswath Damodaran, Damodaran Online (last visited February 13, 2023), https://pages.stern.nyu.edu/~adamodar/New_Home_Page/home.htm.

1 In 2022, interest rates and long-term bond yields rose sharply. Bond yields
2 at the beginning of the year were much lower than year-end 2022, due largely to
3 the Fed increasing short-term interest rates as well as concerns about persistent
4 inflation. Looking at the last six months of 30-Year Treasury yields, the yield
5 ranged from 3.56% in September 2022, rose to 4.04% in October 2022, declined
6 over the next two months, then rose slightly in February 2023 to 3.80%. The six-
7 month average yield of 3.79% is a reasonable proxy to use for the risk-free rate in
8 this case.

9 **Q. Please summarize your calculated MRP estimates with the forward-looking**
10 **data from Value Line, the historical MRPs, and the two other sources you**
11 **described.**

12 **A.** The MRPs from Exhibit RAB-4, pages 1 through 3 are as follows:

- | | | |
|----|---|---------------|
| 13 | • Value Line forward-looking risk premium | 9.89% |
| 14 | • Historical risk premium | 6.22% - 7.10% |
| 15 | • Kroll | 6.00% |
| 16 | • Average Damodaran MRP | 5.14% |

17 **Q. How did you determine the value for beta?**

18 **A.** I obtained the betas for the companies in the proxy group from the most recent
19 Value Line reports at the time I prepared my Direct Testimony and analyses. The
20 average of the Value Line betas for the proxy group is 0.88.

21 **Q. Please summarize the CAPM results.**

1 A. The forward-looking CAPM ROE estimate is 12.48%.¹⁵ Using historical risk
 2 premiums, the CAPM results range from 9.25% to 10.02%.¹⁶ Regarding the Kroll
 3 and Damodaran MRPs, the CAPM ROE calculations are shown on page 3 of
 4 Exhibit RAB-4. These CAPM estimates range from 8.30% to 9.06%.

5 **Recommended ROE and Common Equity Ratio**

6 Q. Please summarize the cost of equity results for your DCF and CAPM analyses.

7 A. Table 1 summarizes my ROE results using the DCF and CAPM for the proxy group.

TABLE 1 SUMMARY OF ROE ESTIMATES	
<u>DCF Methodology</u>	
Average Growth Rates	
- High	10.51%
- Low	8.89%
- Average	9.48%
Median Growth Rates:	
- High	9.92%
- Low	9.21%
- Average	9.58%
<u>CAPM Methodology</u>	
Forward-looking Market Return:	12.48%
Historical Risk Premium:	
- Arithmetic Mean	10.02%
- Supply side MRP	9.25%
Kroll MRP	9.06%
Damodaran MRP	8.30%

8

¹⁵ Refer to Exhibit RAB-4, page 1.

¹⁶ Refer to Exhibit RAB-4, page 2.

1 **Q. What is your recommended ROE range for Duke Kentucky?**

2 A. I recommend that the Commission adopt a ROE range of 9.48% - 9.58% for the
3 regulated electric operations of Duke Kentucky. My recommended ROE for the
4 Company is 9.55%, which is near the midpoint of the range. This range includes
5 consideration of current stock market prices and interest rates. It is reasonable even
6 considering the increased volatility, higher bond yields, and uncertainty inherent in
7 financial markets at this time. My recommended 9.55% ROE is a reasonable return
8 for a lower risk electric utility like Duke Kentucky.

9 Regarding the CAPM results, the forward-looking CAPM ROE of 12.48%
10 is implausibly high and represents an extreme outlier. This is due to an
11 unsustainably high growth rate for the market of 11.58%. Given recent forecasts
12 of long run GDP growth of around 4.0%, an 11.58% constant growth rate simply
13 cannot be sustained indefinitely. This causes an overstatement of the expected
14 market return and my forward-looking CAPM result. I will discuss this in more
15 detail in my response to Witness Nowak in Section IV of my Direct Testimony.
16 Thus, I do not recommend that the Commission consider this result. The rest of the
17 CAPM results ranged from 8.30% - 10.02%. My recommended 9.55% ROE falls
18 within this range.

19 **Q. Did you review the Company's requested capital structure in this case?**

20 A. Yes. I reviewed the Direct Testimonies filed by Witnesses Bauer and Nowak
21 relating to capital structure and the costs of short-term and long-term debt. In this
22 case, the Witnesses recommend a capital structure consisting of 52.505% common

1 equity, 43.713% long-term debt, and 3.782% short-term debt. The proposed cost
2 of long-term debt is 4.377%. The proposed cost of short-term debt is 4.739%.

3 **Q. Based on your review of the Witnesses testimony and supporting work papers**
4 **and schedules, do you accept the proposed costs of short-term and long-term**
5 **debt?**

6 A. Yes. I recommend the Commission adopt the Witnesses proposed costs of short-
7 term and long-term debt.

8 **Q. Should the Commission adopt Duke Kentucky's proposed capital structure?**

9 A. No. The Company's requested common equity ratio of 52.505% is clearly
10 excessive when compared to its recent historical common equity percentages.
11 Instead, I recommend that the Commission adopt the Company's proposed
12 percentage of long-term debt, which is 43.713%. I also recommend the
13 Commission adopt a common equity ratio of 50.0% and a short-term debt ratio of
14 6.287%. These ratios more closely track Duke Kentucky's recent historical
15 experience, as I shall demonstrate later.

16 **Q. Did you examine Duke Kentucky's actual historical capitalization ratios?**

17 A. Yes. Data Request AG-DR-01-166 sought information on the Company's monthly
18 amounts of common equity, long-term debt, and short-term debt from January 2020
19 through the most recent month available. Duke Kentucky responded with monthly
20 information from January 2020 through November 2022. Table 2 below
21 summarizes the average yearly capitalization ratios for the years 2020, 2021, and
22 the eleven months available for 2022 as provided by the Company.

TABLE 2
Duke Kentucky
Historical Capitalization Ratios

	<u>2020</u>	<u>2021</u>	<u>2022</u>
Short-Term Debt	7.93%	8.79%	6.26%
Long-Term Debt	45.63%	42.83%	43.54%
Common Equity	<u>46.44%</u>	<u>48.38%</u>	<u>50.19%</u>
Total	100.00%	100.00%	100.00%

1
2 Duke Kentucky's average common equity ratios ranged from 46.44% in
3 2020 to 50.19% for the eleven months in 2022. During these three years, Duke
4 Kentucky retained its investment grade credit rating of Baa1 from Moody's. Duke
5 Kentucky's S&P credit ratings were A- in 2020 and BBB+ in 2021 and 2022. These
6 are strong investment grade ratings for the Company and were not supported by a
7 common equity ratio over 50%. Given the Company's historical capitalization
8 ratios, a common equity ratio of 52.505% is not required to support its credit ratings
9 and would inflate the revenue requirement for Kentucky ratepayers. I recommend
10 that the Commission reject Duke Kentucky's requested capital structure.

11 **Q. What is your recommended capital structure in this case?**

12 A. I recommend that the Commission adopt the Company's requested long-term debt
13 ratio (43.713%), adopt a 50% common equity ratio, and adopt a 6.287% short-term
14 debt ratio. My recommended common equity ratio is consistent with Duke
15 Kentucky's 2022 common equity ratio and is significantly higher than its common
16 equity ratios in 2020 and 2021. Likewise, my recommended short-term debt ratio
17 is also consistent with 2022 and is lower than 2020 and 2021. My recommended

1 weighted cost of capital to be applied to the Company's rate base is presented in
 2 Table 3. My recommended weighted cost of capital calculation includes my
 3 recommended 9.55% ROE for Duke Kentucky.

	<u>Percentage</u>	<u>Cost</u>	<u>Weighted Cost</u>
Short-term Debt	6.287%	4.739%	0.298%
Long-Term Debt	43.713%	4.377%	1.913%
Common Equity	50.000%	9.550%	4.775%
Total	100.000%		6.986%

IV. RESPONSE TO DUKE KENTUCKY ROE TESTIMONY

6 **Q. Please summarize your conclusion with respect to Witness Nowak's ROE**
 7 **recommendation.**

8 A. Witness Nowak's recommended 10.35% ROE for Duke Kentucky is overstated and
 9 should be rejected by the Commission. A 10.35% ROE is inconsistent with current
 10 financial market evidence that I reviewed, even accounting for the steep increases in
 11 short-term and long-term interest rates that occurred in 2022 and so far in 2023.
 12 Although Witness Nowak's DCF results are fairly similar to mine, his approach to the
 13 CAPM contains serious defects, which I will describe later in this section. In addition,
 14 his use of the Risk Premium Model and the Expected Earnings model provided
 15 additional sources for his inflated 10.35% ROE recommendation. I will also address
 16 these models in more detail later.

1 **Q. How did Witness Nowak develop his recommended ROE range for Duke**
2 **Kentucky?**

3 A. Witness Nowak considered four different models to develop his ROE
4 recommendation for Duke Kentucky. These models are: the DCF model, the
5 CAPM, the Risk Premium model, and the Expected Earnings model. Witness
6 Nowak characterized the Expected Earnings model as a “benchmark” analysis. The
7 results from his various models range from 9.27% to 11.53% (including Expected
8 Earnings). From these results, Witness Nowak concluded that a reasonable ROE
9 range to be 9.85% to 10.85%. From this range and based on his evaluation of Duke
10 Kentucky’s risk profile, Witness Nowak recommended and ROE of 10.35%. The
11 results of his analyses are summarized in Figure 1, page 4 of his Direct Testimony.

12 **DCF Analyses**

13 **Q. Please comment on Witness Nowak' DCF analyses.**

14 A. Witness Nowak presented the results of his DCF analysis in Attachment JCN-4.
15 The mean, or average, results ranged from 9.15% to 9.48%. With respect to stock
16 prices, Witness Nowak used 30-day, 90-day, and 180-day average prices. Witness
17 Nowak utilized earnings growth rates from Value Line, Yahoo! Finance, and Zacks
18 to develop his DCF ROE estimates. These are all trusted sources of earnings
19 growth forecasts and the same sources that I used to develop my DCF results.

20 Witness Nowak also should have considered Value Line's dividend growth
21 forecast as I did. I agree with Witness Nowak' statement on page 33 of his Direct
22 Testimony that academic studies suggest investors base their investment decisions
23 primarily on analysts’ expectations of earnings growth. However, with dividend

1 payments being such a significant portion of the total return to utility shareholders
2 and with Value Line being a trusted source of information to investors, forecasted
3 dividend growth should also be considered. I note that Value Line's forecast of
4 dividend growth is consistent with the earnings growth projections I included in
5 Exhibit RAB-3.

6 **Q. Is your DCF approach reasonably similar to Witness Nowak's?**

7 A. Yes. Witness Nowak's approach to the DCF is generally reasonable, although I
8 expect these results will change if he presents an update to his analysis in Rebuttal
9 Testimony. The AG reserves the right to respond to any update and/or changes that
10 Witness Nowak includes in his Rebuttal Testimony.

11 **CAPM Analysis**

12 **Q. Please summarize Witness Nowak' CAPM analysis.**

13 A. Witness Nowak's CAPM discussion begins on page 34 of his Direct Testimony.
14 Witness Nowak testified on page 37 that his CAPM approach rests primarily on the
15 CAPM approach utilized at the Federal Energy Regulatory Commission ("FERC").
16 This approach calculates the MRP component of the CAPM by using the Constant
17 Growth DCF to estimate the capitalization weighted total market return for the S&P
18 500 index. Witness Nowak relied on dividend yields as of October 31, 2022, as
19 reported by Bloomberg and projected earnings per share growth rates from Value
20 Line for the companies in the S&P 500. Using all companies in the S&P 500
21 resulted in an expected market return of 15.61%. Witness Nowak also applied

1 FERC's convention to consider only a subset of S&P 500 companies with growth
2 rates between 0% and 20%. This resulted in an expected market return of 12.77%.

3 Witness Nowak chose betas for his proxy group companies from Value Line
4 and Bloomberg. The average beta from Value Line was 0.88 and from Bloomberg
5 was 0.81.

6 With respect to the risk-free rate, Witness Nowak used three sources: (1)
7 the current 30-day average yield on 30-year U.S. Treasury bonds (3.92%); (2) the
8 projected 30-year U.S. Treasury bond yield for Q1 2023 through Q1 2024 (4.00%);
9 and (3) the projected 30-year U.S. Treasury bond yield for 2024 through 2028
10 (3.80%).

11 Witness Nowak summarized the results of his CAPM analyses in Figure 7
12 on page 38 of his Direct Testimony. The results range from 11.09% to 11.70%.

13 **Q. Before you further analyze Witness Nowak's approach to the CAPM, please**
14 **comment on the range of ROE results he presented.**

15 A. Witness Nowak' CAPM results are so grossly overstated for a regulated electric
16 utility like Duke Kentucky that they should be rejected out of hand by the
17 Commission.

18 **Q. What is the primary source of Witness Nowak's overstated CAPM results?**

19 A. The main problem with Witness Nowak's CAPM analysis is his sole reliance on a
20 forward-looking market return for the S&P 500. His projected market returns are
21 overstated due to reliance on Value Line 3 – 5-year projected growth rates that are
22 unsustainable in the long run. These unsustainably high market returns translate
23 directly to overstated expected MRPs that he used in his CAPM analyses. These

1 overstated expected market returns range from 12.77% - 15.61%, with expected
2 long-run growth rates ranging from 10.83% - 13.78%.

3 These 3 – 5-year projected growth rates from Value Line are unsustainably
4 high in that they vastly exceed both the historical capital appreciation for the S&P
5 500 as well as historical and projected GDP growth rates. Kroll’s historical analysis
6 shows that the arithmetic average capital appreciation for the S&P 500 was 7.9%
7 for the historical period 1926 to 2022.¹⁷ Geometric, or compound growth was
8 6.1%. This historical experience stands in stark contrast to forecasted growth rates
9 of 10.83% and 13.78% for the S&P 500 using Value Line data that Witness Nowak
10 employed in his CAPM. I note that the forward-looking growth rate I used in my
11 CAPM analysis, 11.58%, is also excessive and provides further support for its
12 exclusion by the Commission.

13 Witness Nowak’s unsustainable earnings growth forecasts are not
14 supportable when one further considers both historical and forecasted GDP growth
15 for the U.S. Based on data from the Bureau of Economic Analysis, U.S.
16 Department of Commerce, I calculated that the compound yearly growth rate for
17 U.S. GDP from 1929 - 2022 was 6.1%. It is noteworthy that this growth matched
18 the historical compound growth rate for capital appreciation for the S&P 500 of
19 6.1%.

20 Regarding forecasts, projections that I referenced in Section II of my
21 testimony show much lower forecasted GDP growth than the historical average I

¹⁷ *Summary Statistics of Annual Total Returns, Income Returns, and Capital Appreciation Returns of Basic U.S. Asset Classes, 1926 - 2022, Cost of Capital Navigator: U.S. Cost of Capital Module.*

1 calculated. For example, the Fed projections called for longer-run real GDP growth
2 of 1.8% and PCE inflation of 2.0%. This translates into forecasted nominal GDP
3 of 3.80%. The Congressional Budget Office also projects growth in real GDP
4 through 2033 of 1.80% and CPI inflation of 2.0%.¹⁸ If we assume forecasted long
5 run nominal GDP growth of around 4.0%, then the S&P 500 constant growth rates
6 of 10.83% and 13.78% simply cannot be sustained over the long run. Using these
7 growth rates will inevitably lead to an overstatement in the long-run expected
8 market return, the associated MRP, and the CAPM ROE result.

9 In *Cost of Capital*, Pratt and Grabowski noted the following with respect to
10 growth rates that significantly exceed growth in GDP:

11 The growth rate assumed in calculating the terminal value is a
12 compound growth rate *in perpetuity*, which is a very long time. At
13 a growth rate of 20% compounded annually, the company's revenues
14 would soon exceed the gross domestic product (GDP) of the United
15 States and eventually that of the world. Long-term growth rates
16 exceeding the real growth in GDP plus inflation are generally not
17 sustainable. Most analysts use more conservative growth rates in
18 calculating the terminal value. Generally, the long-term growth rate
19 only applies to the existing enterprise or core business net cash
20 flows, consistent with the net cash flow projections in the discounted
21 cash flow method¹⁹

22
23 Since the constant growth DCF requires a sustainable long-run growth rate,
24 Witness Nowak's inflated projected market return and MRP estimates shown on
25 Attachment JCN-6 are erroneous and should be rejected. Specifically, the inflated
26 MRPs range from 8.77% to 11.70%.

¹⁸ Congressional Budget Office, *The Economic Outlook for 2023 – 2033 in 16 Charts*, February 2023.

¹⁹ Shannon Pratt and Roger Grabowski, *Cost of Capital*, 1195 (Wiley, 5th ed.)

1 **Q. Did Witness Nowak consider the MRPs from sources that you presented in**
2 **your testimony?**

3 A. No. As I cited earlier in my Direct Testimony, Kroll currently recommends an
4 MRP of 6.0%, the average of the Damodaran MRPs is 5.14%, and the historical
5 MRPs range from 6.22% - 7.10%. Witness Nowak's lowest MRP, 8.77%, is
6 significantly in excess of the historical MRP of 7.10%, which as I noted earlier is
7 likely overstated itself.

8 Finally, I note that in the authoritative corporate finance textbook by
9 Brealey, Myers, and Allen the authors stated "Brealey, Myers, and Allen have no
10 official position on the issue, but we believe that a range of 5 to 8 percent is
11 reasonable for the risk premium in the United States."²⁰

12 **Risk Premium Analyses**

13 **Q. Before you address the specifics of Witness Nowak's risk premium ("RP")**
14 **analyses, do you have any general comments regarding the risk premium**
15 **method of estimating the investor required ROE for regulated utilities?**

16 A. Yes. The bond yield plus risk premium approach is imprecise and can only provide
17 very general guidance on the current authorized ROE for regulated utilities.
18 Historical risk premiums can change substantially over time based on investor
19 preferences and market conditions. As such, this approach is a "blunt instrument,"
20 if you will, for estimating the ROE in regulated proceedings. In my view, a properly
21 formulated DCF model using current stock prices and growth forecasts is far more
22 reliable and accurate than the bond yield plus risk premium model that relies on an

²⁰ Richard A. Brealey, Stewart C. Myers, and Paul Allen, *Principles of Corporate Finance*, page 154; McGraw-Hill/Irwin, 8th Edition, 2006.

1 historical analysis of risk premiums. Using historical RPs assumes that the past
2 will look like the future, an assumption that may not hold in present day financial
3 markets.

4 **Q. Summarize and describe Witness Nowak’s approach to estimating the expected**
5 **risk premium ROE.**

6 A. Witness Nowak developed a historical risk premium using Commission-allowed
7 returns for vertically integrated utility companies from 1992 through October 31,
8 2022. He used regression analysis to estimate the value of the inverse relationship
9 between the yield on the 30-Year Treasury Bond and risk premiums during that
10 period. Witness Nowak used three different 30-Year Treasury Bond yields: the
11 current 30-day average, near-term Blue Chip consensus forecast for Q1 2023 – Q1
12 2024, and a Blue Chip consensus forecast for 2024–2028. On page 41 of his Direct
13 Testimony, Figure 9 presents his risk premium ROE results, which range from
14 10.27% to 10.36%.

15 **Q. Please respond to Witness Nowak’s allowed risk premium analysis.**

16 A. This approach suggests that the Commission should base its ROE determination for
17 Duke Kentucky on the ROE determinations of commissions in other states over a
18 long period of time. Instead, I recommend that the Commission place little weight
19 on this approach and base its decision on a review of the analyses presented in this
20 case to make its determination of a just and reasonable ROE for Duke Kentucky.

1

2 **Expected Earnings Analysis**

3 **Q. Summarize Witness Nowak’s expected earnings analysis approach to**
4 **estimating the allowed ROE for Duke Kentucky.**

5 A. Witness Nowak testified that his expected earnings analysis relied on Value Line’s
6 forecasted returns for the companies in his proxy group for the period 2025 to 2027.
7 Witness Nowak adjusted these forecasted ROEs to, in his view, “account for the
8 fact that the ROEs reported by Value Line are calculated on the basis of common
9 shares outstanding at the end of the period, as opposed to average shares
10 outstanding over the entire period.”²¹ The resulting ROE range was 11.35% to
11 11.53%.

12 **Q. Please respond to Witness Nowak’s proposed expected earnings analysis.**

13 A. Forecasted returns from Value Line will not be as reliable or as accurate as a
14 properly specified DCF analysis using current stock prices. Through current stock
15 prices, investors reveal their return requirements through what they are willing to
16 pay in the marketplace for the stocks of regulated electric utilities. Using Value
17 Line’s projected returns for a time period several years into the future is highly
18 speculative and I recommend that the Commission give this approach no weight.

19 In addition, Witness Nowak overstated the forecasted returns from Value
20 Line by making an adjustment to the average shares outstanding over the 2025 to

²¹ See Joshua Nowak Direct Testimony (“Nowak Testimony”), p. 42, ll. 13-16.

1 2027 time period. It should be kept in mind that the three-year forecasted period
2 already represents an average of shares and ROEs over the period, making Witness
3 Nowak's share adjustment both unnecessary and incorrect. Further, it is highly
4 unlikely that an investor using Value Line's data would make the adjustment to
5 each utility's forecasted common shares outstanding that Witness Nowak proposed
6 in order to calculate a projected ROE for the 2025 to 2027 time period. Subtracting
7 out Witness Nowak's adjustment results in an average forecasted ROE over the
8 2025 to 2027 period of 11.21% and a median ROE of 11.0%. However, these
9 numbers are still grossly in excess of the more reasonable and market based DCF
10 and CAPM results I presented earlier in my Direct Testimony. They are also far
11 greater than recent commission-allowed ROEs in the last two quarters of 2022. EEI
12 reported that average allowed ROEs in the 3rd and 4th quarters of 2022 were 9.34%
13 and 9.73%, respectively.²²

14 **Consideration of Specific Risk Factors**

15 **Q. On page 44, line 7 of his Direct Testimony Witness Nowak stated that his ROE**
16 **recommendation did not include either a downward or upward adjustment**
17 **for risk factors specific to Duke Kentucky. Do you agree with this position**
18 **based on your review of Duke Kentucky relative to the proxy group?**

19 **A.** Yes. My review also suggests that the Commission need not adjust its ROE for risk
20 factors specific to Duke Kentucky. I reviewed the credit reports from Standard and
21 Poor's and Moody's that the Company provided in response to discovery from the

²² <https://www.eei.org/issues-and-policy/finance-and-tax#financialreview>.

1 AG. These reports discussed and evaluated Duke Kentucky's credit strengths and
2 weaknesses in assigning the current credit ratings of BBB+/Baa1 to the Company.
3 It is reasonable to use the results of my DCF and CAPM analyses to estimate the
4 investor required ROE for Duke Kentucky based on the proxy group with no
5 additional adjustments.

6 **Q. Does this complete your Direct Testimony?**

7 A. Yes.

**COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION**

In the Matter of:

**ELECTRONIC APPLICATION OF DUKE)
ENERGY KENTUCKY, INC. FOR (1) AN)
ADJUSTMENT OF ELECTRIC RATES;)
(2) APPROVAL OF NEW TARIFFS;) CASE NO. 2022-00372
(3) APPROVAL OF ACCOUNTING PRACTICES)
TO ESTABLISH REGULATORY ASSETS AND)
LIABILITIES; AND (4) ALL OTHER)
REQUIRED APPROVALS AND RELIEF)**

**EXHIBITS
OF
RICHARD A. BAUDINO**

**ON BEHALF OF
OFFICE OF THE ATTORNEY GENERAL OF THE
COMMONWEALTH OF KENTUCKY**

**J. Kennedy and Associates, Inc.
570 Colonial Park Drive, Suite 305
Roswell, GA 30075**

MARCH 10, 2023

RESUME OF RICHARD A. BAUDINO

EDUCATION

New Mexico State University, M.A.

Major in Economics

Minor in Statistics

New Mexico State University, B.A.

Economics

English

Thirty-nine years of experience in utility ratemaking and the application of principles of economics to the regulation of electric, gas, and water utilities. Broad based experience in revenue requirement analysis, cost of capital, rate of return, cost and revenue allocation, and rate design.

REGULATORY TESTIMONY

Preparation and presentation of expert testimony in the areas of:

Cost of Capital for Electric, Gas and Water Companies

Electric, Gas, and Water Utility Cost Allocation and Rate Design

Revenue Requirements

Gas and Electric industry restructuring and competition

Fuel cost auditing

Ratemaking Treatment of Generating Plant Sale/Leasebacks

RESUME OF RICHARD A. BAUDINO

EXPERIENCE

1989 to

Present: Kennedy and Associates: Director of Consulting, Consultant - Responsible for consulting assignments in revenue requirements, rate design, cost of capital, economic analysis of generation alternatives, electric and gas industry restructuring/competition and water utility issues.

1982 to

1989: New Mexico Public Service Commission Staff: Utility Economist - Responsible for preparation of analysis and expert testimony in the areas of rate of return, cost allocation, rate design, finance, phase-in of electric generating plants, and sale/leaseback transactions.

CLIENTS SERVED

Regulatory Commissions

Louisiana Public Service Commission
Georgia Public Service Commission
New Mexico Public Service Commission

Other Clients and Client Groups

Ad Hoc Committee for a Competitive Electric Supply System	Northwest Arkansas Gas Consumers
Air Products and Chemicals, Inc.	Maryland Energy Group
Arkansas Electric Energy Consumers	Occidental Chemical
Arkansas Gas Consumers	PSI Industrial Group
AK Steel	Large Power Intervenors (Minnesota)
Armco Steel Company, L.P.	Tyson Foods
Aqua Large Users Group	West Virginia Energy Users Group
Assn. of Business Advocating Tariff Equity	The Commercial Group
Atmos Cities Steering Committee	Wisconsin Industrial Energy Group
Canadian Federation of Independent Businesses	South Florida Hospital and Health Care Assn.
CF&I Steel, L.P.	PP&L Industrial Customer Alliance
Cities of Midland, McAllen, and Colorado City	Philadelphia Area Industrial Energy Users Gp.
Cities Served by Texas-New Mexico Power Co.	Philadelphia Large Users Group
Cities Served by AEP Texas	West Penn Power Intervenors
City of New York	Duquesne Industrial Intervenors
Climax Molybdenum Company	Met-Ed Industrial Users Gp.
Connecticut Industrial Energy Consumers	Penelec Industrial Customer Alliance
Crescent City Power Users Group	Penn Power Users Group
Cripple Creek & Victor Gold Mining Co.	Columbia Industrial Intervenors
Dearborn Industrial Generation, LLC	U.S. Steel & Univ. of Pittsburg Medical Ctr.
General Electric Company	Multiple Intervenors
Holcim (U.S.) Inc.	Maine Office of Public Advocate
IBM Corporation	Missouri Office of Public Counsel
Industrial Energy Consumers	University of Massachusetts - Amherst
Kentucky Industrial Utility Consumers	WCF Hospital Utility Alliance
Kentucky Office of the Attorney General	West Travis County Public Utility Agency
Lexington-Fayette Urban County Government	Steering Committee of Cities Served by Oncor
Large Electric Consumers Organization	Utah Office of Consumer Services
Newport Steel	Healthcare Council of the National Capital Area
North Carolina Attorney General's Office	Vermont Department of Public Service
	South Carolina Office of Regulatory Staff
	Texas Industrial Energy Consumers

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdict.	Party	Utility	Subject
10/83	1803, 1817	NM	New Mexico Public Service Commission	Southwestern Electric Coop.	Rate design.
11/84	1833	NM	New Mexico Public Service Commission Palo Verde	El Paso Electric Co.	Service contract approval, rate design, performance standards for nuclear generating system
1983	1835	NM	New Mexico Public Service Commission	Public Service Co. of NM	Rate design.
1984	1848	NM	New Mexico Public Service Commission	Sangre de Cristo Water Co.	Rate design.
02/85	1906	NM	New Mexico Public Service Commission	Southwestern Public Service Co.	Rate of return.
09/85	1907	NM	New Mexico Public Service Commission	Jomada Water Co.	Rate of return.
11/85	1957	NM	New Mexico Public Service Commission	Southwestern Public Service Co.	Rate of return.
04/86	2009	NM	New Mexico Public Service Commission	El Paso Electric Co.	Phase-in plan, treatment of sale/leaseback expense.
06/86	2032	NM	New Mexico Public Service Commission	El Paso Electric Co.	Sale/leaseback approval.
09/86	2033	NM	New Mexico Public Service Commission	El Paso Electric Co.	Order to show cause, PVNGS audit.
02/87	2074	NM	New Mexico Public Service Commission	El Paso Electric Co.	Diversification.
05/87	2089	NM	New Mexico Public Service Commission	El Paso Electric Co.	Fuel factor adjustment.
08/87	2092	NM	New Mexico Public Service Commission	El Paso Electric Co.	Rate design.
10/87	2146	NM	New Mexico Public Service Commission	Public Service Co. of New Mexico	Financial effects of restructuring, reorganization.
07/88	2162	NM	New Mexico Public Service Commission	El Paso Electric Co.	Revenue requirements, rate design, rate of return.

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdiction	Party	Utility	Subject
01/89	2194	NM	New Mexico Public Service Commission	Plains Electric G&T Cooperative	Economic development.
1/89	2253	NM	New Mexico Public Service Commission	Plains Electric G&T Cooperative	Financing.
08/89	2259	NM	New Mexico Public Service Commission	Homestead Water Co.	Rate of return, rate design.
10/89	2262	NM	New Mexico Public Service Commission	Public Service Co. of New Mexico	Rate of return.
09/89	2269	NM	New Mexico Public Service Commission	Ruidoso Natural Gas Co.	Rate of return, expense from affiliated interest.
12/89	89-208-TF	AR	Arkansas Electric Energy Consumers	Arkansas Power & Light Co.	Rider M-33.
01/90	U-17282	LA	Louisiana Public Service Commission	Gulf States Utilities	Cost of equity.
09/90	90-158	KY	Kentucky Industrial Utility Consumers	Louisville Gas & Electric Co.	Cost of equity.
09/90	90-004-U	AR	Northwest Arkansas Gas Consumers	Arkansas Western Gas Co.	Cost of equity, transportation rate.
12/90	U-17282 Phase IV	LA	Louisiana Public Service Commission	Gulf States Utilities	Cost of equity.
04/91	91-037-U	AR	Northwest Arkansas Gas Consumers	Arkansas Western Gas Co.	Transportation rates.
12/91	91-410-EL-AIR	OH	Air Products & Chemicals, Inc., Armco Steel Co., General Electric Co., Industrial Energy Consumers	Cincinnati Gas & Electric Co.	Cost of equity.
05/92	910890-EI	FL	Occidental Chemical Corp.	Florida Power Corp.	Cost of equity, rate of return.
09/92	92-032-U	AR	Arkansas Gas Consumers	Arkansas Louisiana Gas Co.	Cost of equity, rate of return, cost-of-service.
09/92	39314	ID	Industrial Consumers for Fair Utility Rates	Indiana Michigan Power Co.	Cost of equity, rate of return.

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdict.	Party	Utility	Subject
09/92	92-009-U	AR	Tyson Foods	General Waterworks	Cost allocation, rate design.
01/93	92-346	KY	Newport Steel Co.	Union Light, Heat & Power Co.	Cost allocation.
01/93	39498	IN	PSI Industrial Group	PSI Energy	Refund allocation.
01/93	U-10105	MI	Association of Businesses Advocating Tariff Equality (ABATE)	Michigan Consolidated Gas Co.	Return on equity.
04/93	92-1464-EL-AIR	OH	Air Products and Chemicals, Inc., Armco Steel Co., Industrial Energy Consumers	Cincinnati Gas & Electric Co.	Return on equity.
09/93	93-189-U	AR	Arkansas Gas Consumers	Arkansas Louisiana Gas Co.	Transportation service terms and conditions.
09/93	93-081-U	AR	Arkansas Gas Consumers	Arkansas Louisiana Gas Co.	Cost-of-service, transportation rates, rate supplements; return on equity; revenue requirements.
12/93	U-17735	LA	Louisiana Public Service Commission Staff	Cajun Electric Power Cooperative	Historical reviews; evaluation of economic studies.
03/94	10320	KY	Kentucky Industrial Utility Customers	Louisville Gas & Electric Co.	Trimble County CWIP revenue refund.
4/94	E-015/GR-94-001	MN	Large Power Intervenors	Minnesota Power Co.	Evaluation of the cost of equity, capital structure, and rate of return.
5/94	R-00942993	PA	PG&W Industrial Intervenors	Pennsylvania Gas & Water Co.	Analysis of recovery of transition costs.
5/94	R-00943001	PA	Columbia Industrial Intervenors	Columbia Gas of Pennsylvania charge proposals.	Evaluation of cost allocation, rate design, rate plan, and carrying
7/94	R-00942986	PA	Armco, Inc., West Penn Power Industrial Intervenors	West Penn Power Co.	Return on equity and rate of return.
7/94	94-0035-E-42T	WV	West Virginia Energy Users' Group	Monongahela Power Co.	Return on equity and rate of return.

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdict.	Party	Utility	Subject
8/94	8652	MD	Westvaco Corp. Co.	Potomac Edison	Return on equity and rate of return.
9/94	930357-C	AR	West Central Arkansas Gas Consumers	Arkansas Oklahoma Gas Corp.	Evaluation of transportation service.
9/94	U-19904	LA	Louisiana Public Service Commission	Gulf States Utilities	Return on equity.
9/94	8629	MD	Maryland Industrial Group	Baltimore Gas & Electric Co.	Transition costs.
11/94	94-175-U	AR	Arkansas Gas Consumers	Arkla, Inc.	Cost-of-service, rate design, rate of return.
3/95	RP94-343- 000	FERC	Arkansas Gas Consumers	NorAm Gas Transmission	Rate of return.
4/95	R-00943271	PA	PP&L Industrial Customer Alliance	Pennsylvania Power & Light Co.	Return on equity.
6/95	U-10755	MI	Association of Businesses Advocating Tariff Equity	Consumers Power Co.	Revenue requirements.
7/95	8697	MD	Maryland Industrial Group	Baltimore Gas & Electric Co.	Cost allocation and rate design.
8/95	95-254-TF U-2811	AR	Tyson Foods, Inc.	Southwest Arkansas Electric Cooperative	Refund allocation.
10/95	ER95-1042 -000	FERC	Louisiana Public Service Commission	Systems Energy Resources, Inc.	Return on Equity.
11/95	I-940032	PA	Industrial Energy Consumers of Pennsylvania	State-wide - all utilities	Investigation into Electric Power Competition.
5/96	96-030-U	AR	Northwest Arkansas Gas Consumers	Arkansas Western Gas Co.	Revenue requirements, rate of return and cost of service.
7/96	8725	MD	Maryland Industrial Group	Baltimore Gas & Electric Co., Potomac Electric Power Co. and Constellation Energy Corp.	Return on Equity.
7/96	U-21496	LA	Louisiana Public Service Commission	Central Louisiana Electric Co.	Return on equity, rate of return.
9/96	U-22092	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Return on equity.

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdict.	Party	Utility	Subject
1/97	RP96-199-000	FERC	The Industrial Gas Users Conference	Mississippi River Transmission Corp.	Revenue requirements, rate of return and cost of service.
3/97	96-420-U	AR	West Central Arkansas Gas Corp.	Arkansas Oklahoma Gas Corp.	Revenue requirements, rate of return, cost of service and rate design.
7/97	U-11220	MI	Association of Business Advocating Tariff Equity	Michigan Gas Co. and Southeastern Michigan Gas Co.	Transportation Balancing Provisions.
7/97	R-00973944	PA	Pennsylvania American Water Large Users Group	Pennsylvania-American Water Co.	Rate of return, cost of service, revenue requirements.
3/98	8390-U	GA	Georgia Natural Gas Group and the Georgia Textile Manufacturers Assoc.	Atlanta Gas Light	Rate of return, restructuring issues, unbundling, rate design issues.
7/98	R-00984280	PA	PG Energy, Inc. Intervenors	PGE Industrial	Cost allocation.
8/98	U-17735	LA	Louisiana Public Service Commission	Cajun Electric Power Cooperative	Revenue requirements.
10/98	97-596	ME	Maine Office of the Public Advocate	Bangor Hydro-Electric Co.	Return on equity, rate of return.
10/98	U-23327	LA	Louisiana Public Service Commission	SWEPSCO, CSW and AEP	Analysis of proposed merger.
12/98	98-577	ME	Maine Office of the Public Advocate	Maine Public Service Co.	Return on equity, rate of return.
12/98	U-23358	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Return on equity, rate of return.
3/99	98-426	KY	Kentucky Industrial Utility Customers, Inc.	Louisville Gas and Electric Co	Return on equity.
3/99	99-082	KY	Kentucky Industrial Utility Customers, Inc.	Kentucky Utilities Co.	Return on equity.
4/99	R-984554	PA	T. W. Phillips Users Group	T. W. Phillips Gas and Oil Co.	Allocation of purchased gas costs.
6/99	R-0099462	PA	Columbia Industrial Intervenors	Columbia Gas of Pennsylvania	Balancing charges.
10/99	U-24182	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Cost of debt.

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdiction	Party	Utility	Subject
10/99	R-00994782	PA	Peoples Industrial Intervenor	Peoples Natural Gas Co.	Restructuring issues.
10/99	R-00994781	PA	Columbia Industrial Intervenor	Columbia Gas of Pennsylvania	Restructuring, balancing charges, rate flexing, alternate fuel.
01/00	R-00994786	PA	UGI Industrial Intervenor	UGI Utilities, Inc.	Universal service costs, balancing, penalty charges, capacity Assignment.
01/00	8829	MD	Maryland Industrial Gr.	Baltimore Gas & Electric Co.	Revenue requirements, cost allocation, rate design.
02/00	R-00994788	PA	Penn Fuel Transportation	PFG Gas, Inc., and	Tariff charges, balancing provisions.
05/00	U-17735	LA	Louisiana Public Service Comm.	Louisiana Electric Cooperative	Rate restructuring.
07/00	2000-080	KY	Kentucky Industrial Utility Consumers	Louisville Gas and Electric Co.	Cost allocation.
07/00	U-21453 U-20925 (SC), U-22092 (SC) (Subdocket E)	LA	Louisiana Public Service Commission	Southwestern Electric Power Co.	Stranded cost analysis.
09/00	R-00005654	PA	Philadelphia Industrial And Commercial Gas Users Group.	Philadelphia Gas Works	Interim relief analysis.
10/00	U-21453 U-20925 (SC), U-22092 (SC) (Subdocket B)	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Restructuring, Business Separation Plan.
11/00	R-00005277 (Rebuttal)	PA	Penn Fuel Transportation Customers	PFG Gas, Inc. and North Penn Gas Co.	Cost allocation issues.
12/00	U-24993	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Return on equity.
03/01	U-22092	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Stranded cost analysis.
04/01	U-21453 U-20925 (SC), U-22092 (SC) (Subdocket B) (Addressing Contested Issues)	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Restructuring issues.

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdct.	Party	Utility	Subject
04/01	R-00006042	PA	Philadelphia Industrial and Commercial Gas Users Group	Philadelphia Gas Works	Revenue requirements, cost allocation and tariff issues.
11/01	U-25687	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Return on equity.
03/02	14311-U	GA	Georgia Public Service Commission	Atlanta Gas Light	Capital structure.
08/02	2002-00145	KY	Kentucky Industrial Utility Customers	Columbia Gas of Kentucky	Revenue requirements.
09/02	M-00021612	PA	Philadelphia Industrial And Commercial Gas Users Group	Philadelphia Gas Works	Transportation rates, terms, and conditions.
01/03	2002-00169	KY	Kentucky Industrial Utility Customers	Kentucky Power	Return on equity.
02/03	02S-594E	CO	Cripple Creek & Victor Gold Mining Company	Aquila Networks – WPC	Return on equity.
04/03	U-26527	LA	Louisiana Public Service Commission	Entergy Gulf States, Inc.	Return on equity.
10/03	CV020495AB	GA	The Landings Assn., Inc.	Utilities Inc. of GA	Revenue requirement & overcharge refund
03/04	2003-00433	KY	Kentucky Industrial Utility Customers	Louisville Gas & Electric	Return on equity, Cost allocation & rate design
03/04	2003-00434	KY	Kentucky Industrial Utility Customers	Kentucky Utilities	Return on equity
4/04	04S-035E	CO	Cripple Creek & Victor Gold Mining Company, Goodrich Corp., Holcim (U.S.) Inc., and The Trane Co.	Aquila Networks – WPC	Return on equity.
9/04	U-23327, Subdocket B	LA	Louisiana Public Service Commission	Southwestern Electric Power Company	Fuel cost review
10/04	U-23327 Subdocket A	LA	Louisiana Public Service Commission	Southwestern Electric Power Company	Return on Equity
06/05	050045-EI	FL	South Florida Hospital and Health Care Assoc.	Florida Power & Light Co.	Return on equity
08/05	9036	MD	Maryland Industrial Group	Baltimore Gas & Electric Co.	Revenue requirement, cost allocation, rate design, Tariff issues.
01/06	2005-0034	KY	Kentucky Industrial Utility Customers, Inc.	Kentucky Power Co.	Return on equity.

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdict.	Party	Utility	Subject
03/06	05-1278-E-PC-PW-42T	WV	West Virginia Energy Users Group	Appalachian Power Company	Return on equity.
04/06	U-25116 Commission	LA	Louisiana Public Service	Entergy Louisiana, LLC	Transmission Issues
07/06	U-23327 Commission	LA	Louisiana Public Service	Southwestern Electric Power Company	Return on equity, Service quality
08/06	ER-2006-0314	MO	Missouri Office of the Public Counsel	Kansas City Power & Light Co.	Return on equity, Weighted cost of capital
08/06	06S-234EG	CO	CF&I Steel, L.P. & Climax Molybdenum	Public Service Company of Colorado	Return on equity, Weighted cost of capital
01/07	06-0960-E-42T Users Group	WV	West Virginia Energy	Monongahela Power & Potomac Edison	Return on Equity
01/07	43112	AK	AK Steel, Inc.	Vectren South, Inc.	Cost allocation, rate design
05/07	2006-661	ME	Maine Office of the Public Advocate	Bangor Hydro-Electric	Return on equity, weighted cost of capital.
09/07	07-07-01	CT	Connecticut Industrial Energy Consumers	Connecticut Light & Power	Return on equity, weighted cost of capital
10/07	05-UR-103	WI	Wisconsin Industrial Energy Group, Inc.	Wisconsin Electric Power Co.	Return on equity
11/07	29797	LA	Louisiana Public Service Commission	Cleco Power :LLC & Southwestern Electric Power	Lignite Pricing, support of settlement
01/08	07-551-EL-AIR	OH	Ohio Energy Group	Ohio Edison, Cleveland Electric, Toledo Edison	Return on equity
03/08	07-0585, 07-0585, 07-0587, 07-0588, 07-0589, 07-0590, (consol.)	IL	The Commercial Group	Ameren	Cost allocation, rate design
04/08	07-0566	IL	The Commercial Group	Commonwealth Edison	Cost allocation, rate design
06/08	R-2008-2011621	PA	Columbia Industrial Intervenors	Columbia Gas of PA	Cost and revenue allocation, Tariff issues

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdict.	Party	Utility	Subject
07/08	R-2008-2028394	PA	Philadelphia Area Industrial Energy Users Group	PECO Energy	Cost and revenue allocation, Tariff issues
07/08	R-2008-2039634	PA	PPL Gas Large Users Group	PPL Gas	Retainage, LUFG Pct.
08/08	6680-UR-116	WI	Wisconsin Industrial Energy Group	Wisconsin P&L	Cost of Equity
08/08	6690-UR-119	WI	Wisconsin Industrial Energy Group	Wisconsin PS	Cost of Equity
09/08	ER-2008-0318	MO	The Commercial Group	AmerenUE	Cost and revenue allocation
10/08	R-2008-2029325	PA	U.S. Steel & Univ. of Pittsburgh Med. Ctr.	Equitable Gas Co.	Cost and revenue allocation
10/08	08-G-0609	NY	Multiple Intervenors	Niagara Mohawk Power	Cost and Revenue allocation
12/08	27800-U	GA	Georgia Public Service Commission	Georgia Power Company	CWIP/AFUDC issues, Review financial projections
03/09	ER08-1056	FERC	Louisiana Public Service Commission	Entergy Services, Inc.	Capital Structure
04/09	E002/GR-08-1065	MN	The Commercial Group	Northern States Power	Cost and revenue allocation and rate design
05/09	08-0532	IL	The Commercial Group	Commonwealth Edison	Cost and revenue allocation
07/09	080677-EI	FL	South Florida Hospital and Health Care Association	Florida Power & Light	Cost of equity, capital structure, Cost of short-term debt
07/09	U-30975	LA	Louisiana Public Service Commission	Cleco LLC, Southwestern Public Service Co.	Lignite mine purchase
10/09	4220-UR-116	WI	Wisconsin Industrial Energy Group	Northern States Power	Class cost of service, rate design
10/09	M-2009-2123945	PA	PP&L Industrial Customer Alliance	PPL Electric Utilities	Smart Meter Plan cost allocation
10/09	M-2009-2123944	PA	Philadelphia Area Industrial Energy Users Group	PECO Energy Company	Smart Meter Plan cost allocation
10/09	M-2009-2123951	PA	West Penn Power Industrial Intervenors	West Penn Power	Smart Meter Plan cost allocation
11/09	M-2009-2123948	PA	Duquesne Industrial Intervenors	Duquesne Light Company	Smart Meter Plan cost allocation

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdct.	Party	Utility	Subject
11/09	M-2009-2123950	PA	Met-Ed Industrial Users Group Penelec Industrial Customer Alliance, Penn Power Users Group	Metropolitan Edison, Pennsylvania Electric Co., Pennsylvania Power Co.	Smart Meter Plan cost allocation
03/10	09-1352-E-42T	WV	West Virginia Energy Users Group	Monongahela Power	Return on equity, rate of return Potomac Edison
03/10	E015/GR-09-1151	MN	Large Power Intervenors	Minnesota Power	Return on equity, rate of return
04/10	2009-00459	KY	Kentucky Industrial Utility Consumers	Kentucky Power	Return on equity
04/10	2009-00548 2009-00549	KY	Kentucky Industrial Utility Consumers	Louisville Gas and Electric, Kentucky Utilities	Return on equity.
05/10	10-0261-E-GI	WV	West Virginia Energy Users Group	Appalachian Power Co./ Wheeling Power Co.	EE/DR Cost Recovery, Allocation, & Rate Design
05/10	R-2009-2149262	PA	Columbia Industrial Intervenors	Columbia Gas of PA	Class cost of service & cost allocation
06/10	2010-00036	KY	Lexington-Fayette Urban County Government	Kentucky American Water Company	Return on equity, rate of return, revenue requirements
06/10	R-2010-2161694	PA	PP&L Industrial Customer Alliance	PPL Electric Utilities	Rate design, cost allocation
07/10	R-2010-2161575	PA	Philadelphia Area Industrial Energy Users Group	PECO Energy Co.	Return on equity
07/10	R-2010-2161592	PA	Philadelphia Area Industrial Energy Users Group	PECO Energy Co.	Cost and revenue allocation
07/10	9230	MD	Maryland Energy Group	Baltimore Gas and Electric	Electric and gas cost and revenue allocation; return on equity
09/10	10-70	MA	University of Massachusetts-Amherst	Western Massachusetts Electric Co.	Cost allocation and rate design
10/10	R-2010-2179522	PA	Duquesne Industrial Intervenors	Duquesne Light Company	Cost and revenue allocation, rate design
11/10	P-2010-2158084	PA	West Penn Power Industrial Intervenors	West Penn Power Co.	Transmission rate design
11/10	10-0699-E-42T	WV	West Virginia Energy Users Group	Appalachian Power Co. & Wheeling Power Co.	Return on equity, rate of Return
11/10	10-0467	IL	The Commercial Group	Commonwealth Edison	Cost and revenue allocation and rate design

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdict.	Party	Utility	Subject
04/11	R-2010-2214415	PA	Central Pen Gas Large Users Group	UGI Central Penn Gas, Inc.	Tariff issues, revenue allocation
07/11	R-2011-2239263	PA	Philadelphia Area Energy Users Group	PECO Energy	Retainage rate
08/11	R-2011-2232243	PA	AK Steel	Pennsylvania-American Water Company	Rate Design
08/11	11AL-151G	CO	Climax Molybdenum	PS of Colorado	Cost allocation
09/11	11-G-0280	NY	Multiple Intervenors	Corning Natural Gas Co.	Cost and revenue allocation
10/11	4220-UR-117	WI	Wisconsin Industrial Energy Group	Northern States Power	Cost and revenue allocation, rate design
02/12	11AL-947E	CO	Climax Molybdenum, CF&I Steel	Public Service Company of Colorado	Return on equity, weighted cost of capital
07/12	120015-EI	FL	South Florida Hospitals and Health Care Association	Florida Power and Light Co.	Return on equity, weighted cost of capital
07/12	12-0613-E-PC	WV	West Virginia Energy Users Group	American Electric Power/APCo	Special rate proposal for Century Aluminum
07/12	R-2012-2290597	PA	PP&L Industrial Customer Alliance	PPL Electric Utilities Corp.	Cost allocation
09/12	05-UR-106	WI	Wisconsin Industrial Energy Group	Wisconsin Electric Power Co.	Class cost of service, cost and revenue allocation, rate design
09/12	2012-00221 2012-00222	KY	Kentucky Industrial Utility Consumers	Louisville Gas and Electric, Kentucky Utilities	Return on equity.
10/12	9299	MD	Maryland Energy Group	Baltimore Gas & Electric	Cost and revenue allocation, rate design Cost of equity, weighted cost of capital
10/12	4220-UR-118	WI	Wisconsin Industrial Energy Group	Northern States Power Company	Class cost of service, cost and revenue allocation, rate design
10/12	473-13-0199	TX	Steering Committee of Cities Served by Oncor	Cross Texas Transmission, LLC	Return on equity, capital structure
01/13	R-2012-2321748 et al.	PA	Columbia Industrial Intervenors	Columbia Gas of Pennsylvania	Cost and revenue allocation
02/13	12AL-1052E	CO	Cripple Creek & Victor Gold Mining, Holcim (US) Inc.	Black Hills/Colorado Electric Utility Company	Cost and revenue allocations
06/13	8009	VT	IBM Corporation	Vermont Gas Systems	Cost and revenue allocation, rate design
07/13	130040-EI	FL	WCF Hospital Utility Alliance	Tampa Electric Co.	Return on equity, rate of return

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdict.	Party	Utility	Subject
08/13	9326	MD	Maryland Energy Group	Baltimore Gas and Electric	Cost and revenue allocation, rate design, special rider
08/13	P-2012-2325034	PA	PP&L Industrial Customer Alliance	PPL Electric Utilities, Corp.	Distribution System Improvement Charge
09/13	4220-UR-119	WI	Wisconsin Industrial Energy Group	Northern States Power Co.	Class cost of service, cost and revenue allocation, rate design
11/13	13-1325-E-PC	WV	West Virginia Energy Users Group	American Electric Power/APCo	Special rate proposal, Felman Production
06/14	R-2014-2406274	PA	Columbia Industrial Intervenors	Columbia Gas of Pennsylvania	Cost and revenue allocation, rate design
08/14	05-UR-107	WI	Wisconsin Industrial Energy Group	Wisconsin Electric Power Co.	Cost and revenue allocation, rate design
10/14	ER13-1508 et al.	FERC	Louisiana Public Service Comm.	Entergy Services, Inc.	Return on equity
11/14	14AL-0660E	CO	Climax Molybdenum Co. and CFI Steel, LP	Public Service Co. of Colorado	Return on equity, weighted cost of capital
11/14	R-2014-2428742	PA	AK Steel	West Penn Power Company	Cost and revenue allocation
12/14	42866	TX	West Travis Co. Public Utility Agency	Travis County Municipal Utility District No. 12	Response to complain of monopoly power
3/15	2014-00371 2014-00372	KY	Kentucky Industrial Utility Customers	Louisville Gas & Electric, Kentucky Utilities	Return on equity, cost of debt, weighted cost of capital
3/15	2014-00396	KY	Kentucky Industrial Utility Customers	Kentucky Power Co.	Return on equity, weighted cost of capital
6/15	15-0003-G-42T	WV	West Virginia Energy Users Gp.	Mountaineer Gas Co.	Cost and revenue allocation, Infrastructure Replacement Program
9/15	15-0676-W-42T	WV	West Virginia Energy Users Gp.	West Virginia-American Water Company	Appropriate test year, Historical vs. Future
9/15	15-1256-G-390P	WV	West Virginia Energy Users Gp.	Mountaineer Gas Co.	Rate design for Infrastructure Replacement and Expansion Program
10/15	4220-UR-121	WI	Wisconsin Industrial Energy Gp.	Northern States Power Co.	Class cost of service, cost and revenue allocation, rate design
12/15	15-1600-G-390P	WV	West Virginia Energy Users Gp.	Dominion Hope	Rate design and allocation for Pipeline Replacement & Expansion Prog.

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdict.	Party	Utility	Subject
12/15	45188	TX	Steering Committee of Cities Served by Oncor	Oncor Electric Delivery Co.	Ring-fence protections for cost of capital
2/16	9406	MD	Maryland Energy Group	Baltimore Gas & Electric	Cost and revenue allocation, rate design, proposed Rider 5
3/16	39971	GA	GA Public Service Comm. Staff	Southern Company / AGL Resources	Credit quality and service quality issues
04/16	2015-00343	KY	Kentucky Office of the Attorney General	Atmos Energy	Cost of equity, cost of short-term debt, capital structure
05/16	16-G-0058 16-G-0059	NY	City of New York	Brooklyn Union Gas Co., KeySpan Gas East Corp.	Cost and revenue allocation, rate design, service quality issues
06/16	16-0073-E-C	WV	Constellium Rolled Products Ravenswood, LLC	Appalachian Power Co.	Complaint; security deposit
07/16	9418	MD	Healthcare Council of the National Capital Area	Potomac Electric Power Co.	Cost of equity, cost of service, Cost and revenue allocation
07/16	160021-EI	FL	South Florida Hospital and Health Care Association	Florida Power and Light Co.	Return on equity, cost of debt, capital structure
07/16	16-057-01	UT	Utah Office of Consumer Svcs.	Dominion Resources, Questar Gas Co.	Credit quality and service quality issues
08/16	8710	VT	Vermont Dept. of Public Service	Vermont Gas Systems	Return on equity, cost of debt, cost of capital
08/16	R-2016-2537359	PA	AK Steel Corp.	West Penn Power Co.	Cost and revenue allocation
09/16	2016-00162	KY	Kentucky Office of the Attorney General	Columbia Gas of Ky.	Return on equity, cost of short-term debt
09/16	16-0550-W-P	WV	West Va. Energy Users Gp.	West Va. American Water Co.	Infrastructure Replacement Program Surcharge
01/17	46238	TX	Steering Committee of Cities Served by Oncor	Oncor Electric Delivery Co.	Ring fencing and other conditions for acquisition, service quality and reliability
02/17	45414	TX	Cities of Midland, McAllen, and Colorado City	Sharyland Utilities, LP and Sharyland Dist. and Transmission Services, LLC	Return on equity
02/17	2016-00370 2016-00371	KY	Kentucky Industrial Utility Customers	Louisville Gas & Electric, Kentucky Utilities	Return on equity, cost of debt, weighted cost of capital
03/17	10580	TX	Atmos Cities Steering Committee	Atmos Pipeline Texas	Return on equity, capital structure, weighted cost of capital

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdict.	Party	Utility	Subject
03/17	R-3867-2013	Quebec, Canada	Canadian Federation of Independent Businesses	Gaz Metro	Marginal Cost of Service Study
05/17	R-2017- 2586783	PA	Philadelphia Industrial and Commercial Gas Users Gp.	Philadelphia Gas Works	Cost and revenue allocation, rate design, Interruptible tariffs
08/17	R-2017- 2595853	PA	AK Steel	Pennsylvania American Water Co.	Cost and revenue allocation, rate design
8/17	17-3112-INV	VT	Vt. Dept. of Pubic Service	Green Mountain Power	Return on equity, cost of debt, weighted cost of capital
9/17	4220-UR-123	WI	Wisconsin Industrial Energy Group	Northern States Power	Cost and revenue allocation, rate design
10/17	2017-00179	KY	Kentucky Industrial Utility Customers, Inc.	Kentucky Power Co.	Return on equity, cost of short-term debt
12/17	2017-00321	KY	Office of the Attorney General	Duke Energy Kentucky, Inc.	Return on equity
1/18	2017-00349	KY	Office of the Attorney General	Atmos Energy	Return on equity, cost of debt, weighted cost of capital
5/18	Fiscal Years 2019-2021 Rates	PA	Philadelphia Large Users Group	Philadelphia Water Department	Cost and revenue allocation
8/18	18-0974-TF	VT	Vt. Dept. of Public Service	Green Mountain Power	Return on equity, cost of debt, weighted cost of capital
8/18	48401	TX	Cities Served by Texas-New Mexico Power Company	Texas-New Mexico Power Co.	Return on equity, capital structure
8/18	18-05-16	CT	Connecticut Industrial Energy Consumers	Connecticut Natural Gas Co.	Cost and revenue allocation
9/18	9484	MD	Maryland Energy Group	Baltimore Gas & Electric	Cost and revenue allocation, rate design
9/18	2017-370-E	SC	South Carolina Office of Regulatory Staff	South Carolina Electric & Gas, Dominion Resources, SCANA	Return on equity, service quality standards, credit quality conditions
10/18	18-1115-G- 390P	WV	West Va. Energy Users Group	Mountaineer Gas Company	Customer protections for Infrastructure Replacement and Expansion Program
12/18	R-2018- 3003558, R- 2018-3003561	PA	Aqua Large Users Group	Aqua Pennsylvania, Inc.	Cost and revenue allocation
02/19	UD-18-07	CCNO	Crescent City Power Users' Gp.	Entergy New Orleans, LLC	Return on equity, Reliability Incentive Mechanism, other proposed riders
03/19	2018-00358	KY	Office of the Attorney General	Kentucky American Water Co.	Return on equity, Qualified Infrastructure Program rider

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdct.	Party	Utility	Subject
05/19	19-E-0065 19-G-0066	NY	City of New York	Consolidated Edison Co.	Cost and revenue allocation, rate design, tariff issues, fast-charging station incentives
05/2019	19-0513-TF	VT	Vt. Dept. of Public Service	Vermont Gas Systems	Return on equity, capital structure
06/2019	5-TG-100	WI	Wisconsin Industrial Energy Group	WEPCO, Wisconsin Gas, Wisconsin PS	Transportation and balancing issues
07/2019	49494	TX	Cities Served by AEP Texas	AEP Texas, Inc.	Return on equity, capital structure
08/2019	19-G-0309 19-G-0310	NY	City of New York	Brooklyn Union Gas Co., KeySpan Gas East Corp.	Cost and revenue allocation, rate design, tariff issues and modifications
08/2019	19-0316-G-42T	WV	West Virginia Energy Users Gp.	Mountaineer Gas Company	Cost and revenue allocation
8/2019	5-UR-109	WI	Wisconsin Industrial Energy Gp.	Wisconsin Electric Power Co., Wisconsin Gas, LLC	Cost Allocation, Class cost of service study
8/2019	6690-UR-126	WI	Wisconsin Industrial Energy Gp.	Wisconsin Public Service Corp.	Cost Allocation, Class cost of service study
9/2019	9610	MD	Maryland Energy Group	Baltimore Gas and Electric Co.	Cost and revenue allocation, rate design
12/2019	2019-00271	KY	Office of the Attorney General	Duke Energy Kentucky, Inc.	Return on equity
2/2020	49831	TX	Texas Industrial Energy Consumers	Southwestern Public Service Co.	Return on equity, capital structure, rate of return
2/2020	E-7. Sub 1214	NC	NC Attorney General's Office	Duke Energy Carolinas	Return on equity, capital structure, rate of return, economic conditions
2/2020	E-2. Sub 1219	NC	NC Attorney General's Office	Duke Energy Progress	Return on equity, capital structure, rate of return, economic conditions
5/2020	R-2019-3015162	PA	Industrial Energy Consumers of Pennsylvania	UGI Utilities, Inc.	Return on equity, cost of debt, revenue allocation, rate design
6/2020	20-G-0101	NY	Multiple Intervenors	Corning Natural Gas Corp.	Cost and revenue allocation
9/2020	R-2020-2019369	PA	AK Steel	Pennsylvania-American Water Company	Cost and revenue allocation, rate design
9/2020	20-035-04	UT	The Kroger Co.	Rocky Mountain Power	Cost and revenue allocation, rate design
10/2020	2020-00174	KY	Ky. Office of the Attorney General, Ky. Industrial Utility Customers	Kentucky Power Co.	Return on equity
3/2021	2020-00349	KY	Ky. Office of the Attorney General, Ky. Industrial Utility Customers	Kentucky Utilities Co.	Return on equity

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

Date	Case	Jurisdict.	Party	Utility	Subject
3/2021	2020-00350	KY	Ky. Office of the Attorney General, Ky. Industrial Utility Customers	Louisville Gas and Electric Co.	Return on equity
3/2021	20-0746-G-42T	WV	West Va. Energy Users Group	Dominion Energy West Va.	Cost and revenue allocation, cost of equity
4/2021	17-12-03RE11	CT	Connecticut Industrial Energy Consumers	PURA Investigation Into Distribution System Planning	Economic development rates
6/2021	U-20940	MI	Dearborn Industrial Generation, LLC	DTE Gas Company	Cost and revenue allocation, rate design
7/2021	21-0043-G-PC	WV	West Va. Energy Users Group	Mountaineer Gas Co., UGI Corporation	Hold harmless conditions for utility acquisition
07/2021	U-35441	LA	Louisiana Public Service Commission	Southwestern Electric Power Company	Return on equity, cost of capital, service quality
08/2021	51802	TX	Texas Industrial Energy Consumers	Southwestern Public Service Company	Return on equity
09/21	2021-00190	KY	Kentucky Office of the Attorney General	Duke Energy Kentucky, Inc.	Return on equity, cost of debt
09/21	2021-00183	KY	Kentucky Office of the Attorney General	Columbia Gas of Kentucky, Inc.	Return on equity, cost of debt, capital structure
09/21	21-0369-W-42T	WV	West Va. Energy Users Group	West Virginia-American Water Company	Revenue stabilization mechanism
09/21	2021-00185	KY	Kentucky Office of the Attorney General	Delta Natural Gas Company, Inc.	Return on equity, cost of debt, capital structure
09/21	2021-00214	KY	Kentucky Office of the Attorney General	Atmos Energy Corporation	Return on equity, common equity ratio
11/21	R-2021-3027385, R-2021-3027386	PA	Aqua Large Users Group	Aqua Pennsylvania, Inc.	Cost and revenue allocation, Rate design
11/21	21-G-0394	NY	Multiple Intervenors	Corning Natural Gas Corp.	Cost and revenue allocation
06/22	21-G-0577	NY	Multiple Intervenors	Liberty Utilities (St. Lawrence Gas) Corp.	Cost of revenue allocation, rate design
07/22	2022-89-G	SC	South Carolina Office of Regulatory Staff	Piedmont Natural Gas Co.	Return on equity, capital structure cost of capital
07/22	R-2022-3031672, R-2022-3031673	PA	Cleveland-Cliffs Steel	Pennsylvania American Water Company	Cost and revenue allocation, rate design

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 2023**

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10/22	2022-00147	KY	Kentucky Office of the Attorney General and the City of Clinton	Water Service Corporation of Kentucky	Cost of equity
12/22	2022-254-E	SC	South Carolina Office of Regulatory Staff	Duke Energy Progress	Cost of equity
12/22	22-08-08	CT	Connecticut Industrial Energy Consumers	United Illuminating Co.	Cost and revenue allocation, rate design, economic development rates
03/23	2022-00372	KY	Kentucky Office of the Attorney General	Duke Energy Kentucky, Inc.	Cost of equity, capital structure, weighted cost of capital

PROXY GROUP
AVERAGE PRICE, DIVIDEND AND DIVIDEND YIELD

		Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
ALLETE, Inc.	High Price (\$)	61.490	57.150	67.360	67.450	66.640	63.720
	Low Price (\$)	49.890	47.770	53.360	62.990	60.270	57.880
	Avg. Price (\$)	55.690	52.460	60.360	65.220	63.455	60.800
	Dividend (\$)	0.6500	0.6500	0.6500	0.6500	0.6500	0.6780
	Mo. Avg. Div.	4.67%	4.96%	4.31%	3.99%	4.10%	4.46%
	6 mos. Avg.	4.41%					
Alliant Energy Corp.	High Price (\$)	63.600	55.510	56.670	57.520	56.260	55.550
	Low Price (\$)	52.810	47.190	50.830	53.700	52.410	50.760
	Avg. Price (\$)	58.205	51.350	53.750	55.610	54.335	53.155
	Dividend (\$)	0.4275	0.4275	0.4275	0.4275	0.4275	0.4525
	Mo. Avg. Div.	2.94%	3.33%	3.18%	3.07%	3.15%	3.41%
	6 mos. Avg.	3.18%					
Ameren Corp.	High Price (\$)	96.360	84.180	89.630	92.440	90.920	88.320
	Low Price (\$)	80.340	73.280	79.880	86.020	84.950	82.680
	Avg. Price (\$)	88.350	78.730	84.755	89.230	87.935	85.500
	Dividend (\$)	0.590	0.590	0.590	0.590	0.590	0.590
	Mo. Avg. Div.	2.67%	3.00%	2.78%	2.64%	2.68%	2.76%
	6 mos. Avg.	2.76%					
American Electric Power	High Price (\$)	105.600	91.180	97.280	100.320	98.320	95.630
	Low Price (\$)	86.080	80.300	86.680	92.810	90.090	87.760
	Avg. Price (\$)	95.840	85.740	91.980	96.565	94.205	91.695
	Dividend (\$)	0.780	0.780	0.830	0.830	0.830	0.830
	Mo. Avg. Div.	3.26%	3.64%	3.61%	3.44%	3.52%	3.62%
	6 mos. Avg.	3.51%					
Edison International	High Price (\$)	71.200	60.940	66.720	69.050	69.800	70.060
	Low Price (\$)	56.560	54.450	56.670	62.720	62.870	65.510
	Avg. Price (\$)	63.880	57.695	61.695	65.885	66.335	67.785
	Dividend (\$)	0.700	0.700	0.700	0.700	0.738	0.738
	Mo. Avg. Div.	4.38%	4.85%	4.54%	4.25%	4.45%	4.35%
	6 mos. Avg.	4.47%					
Entergy Corp.	High Price (\$)	122.110	108.030	116.470	120.780	111.700	111.720
	Low Price (\$)	100.480	94.940	105.580	110.820	103.170	102.840
	Avg. Price (\$)	111.295	101.485	111.025	115.800	107.435	107.280
	Dividend (\$)	1.010	1.010	1.070	1.070	1.070	1.070
	Mo. Avg. Div.	3.63%	3.98%	3.85%	3.70%	3.98%	3.99%
	6 mos. Avg.	3.86%					

PROXY GROUP
AVERAGE PRICE, DIVIDEND AND DIVIDEND YIELD

		Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
Evergy, Inc.	High Price (\$)	71.130	62.300	62.690	64.300	65.390	63.750
	Low Price (\$)	59.260	54.120	57.090	57.810	58.080	58.160
	Avg. Price (\$)	65.195	58.210	59.890	61.055	61.735	60.955
	Dividend (\$)	0.5725	0.5725	0.6125	0.6125	0.6125	0.6125
	Mo. Avg. Div.	3.51%	3.93%	4.09%	4.01%	3.97%	4.02%
	6 mos. Avg.	3.92%					
Hawaiian Electric Industries	High Price (\$)	40.500	38.100	41.080	42.460	43.000	43.710
	Low Price (\$)	34.600	33.180	36.330	39.620	40.510	40.000
	Avg. Price (\$)	37.550	35.640	38.705	41.040	41.755	41.855
	Dividend (\$)	0.3500	0.3500	0.3500	0.3500	0.3500	0.3600
	Mo. Avg. Div.	3.73%	3.93%	3.62%	3.41%	3.35%	3.44%
	6 mos. Avg.	3.58%					
IDACORP	High Price (\$)	112.200	104.710	110.560	111.810	109.760	109.450
	Low Price (\$)	98.810	93.530	97.810	103.870	101.550	99.390
	Avg. Price (\$)	105.505	99.120	104.185	107.840	105.655	104.420
	Dividend (\$)	0.750	0.750	0.790	0.790	0.790	0.790
	Mo. Avg. Div.	2.84%	3.03%	3.03%	2.93%	2.99%	3.03%
	6 mos. Avg.	2.98%					
NextEra Energy Inc.	High Price (\$)	91.060	82.890	85.800	88.610	86.470	77.090
	Low Price (\$)	78.290	69.810	76.290	82.160	73.350	70.800
	Avg. Price (\$)	84.675	76.350	81.045	85.385	79.910	73.945
	Dividend (\$)	0.425	0.425	0.425	0.425	0.425	0.468
	Mo. Avg. Div.	2.01%	2.23%	2.10%	1.99%	2.13%	2.53%
	6 mos. Avg.	2.16%					
OGE Energy	High Price (\$)	42.280	38.380	40.490	41.000	40.360	40.250
	Low Price (\$)	36.370	33.280	35.850	38.790	37.520	35.500
	Avg. Price (\$)	39.325	35.830	38.170	39.895	38.940	37.875
	Dividend (\$)	0.410	0.414	0.414	0.414	0.414	0.414
	Mo. Avg. Div.	4.17%	4.62%	4.34%	4.15%	4.25%	4.37%
	6 mos. Avg.	4.32%					
Portland General Electric Co.	High Price (\$)	53.120	46.230	49.270	50.270	50.150	49.700
	Low Price (\$)	43.360	41.580	43.630	47.180	45.080	45.750
	Avg. Price (\$)	48.240	43.905	46.450	48.725	47.615	47.725
	Dividend (\$)	0.4525	0.4525	0.4525	0.4525	0.4525	0.4525
	Mo. Avg. Div.	3.75%	4.12%	3.90%	3.71%	3.80%	3.79%
	6 mos. Avg.	3.85%					

PROXY GROUP
AVERAGE PRICE, DIVIDEND AND DIVIDEND YIELD

		Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23
Southern Co.	High Price (\$)	80.320	71.110	67.830	72.830	73.040	69.440
	Low Price (\$)	67.850	60.710	62.420	66.690	58.850	63.020
	Avg. Price (\$)	74.085	65.910	65.125	69.760	65.945	66.230
	Dividend (\$)	0.680	0.680	0.680	0.680	0.680	0.680
	Mo. Avg. Div.	3.67%	4.13%	4.18%	3.90%	4.12%	4.11%
	6 mos. Avg.	4.02%					
Xcel Energy	High Price (\$)	77.660	66.680	70.580	72.990	72.970	70.210
	Low Price (\$)	63.840	56.890	64.160	68.420	66.950	64.390
	Avg. Price (\$)	70.750	61.785	67.370	70.705	69.960	67.300
	Dividend (\$)	0.4875	0.4875	0.4875	0.4875	0.4875	0.4875
	Mo. Avg. Div.	2.76%	3.16%	2.89%	2.76%	2.79%	2.90%
	6 mos. Avg.	2.87%					
Monthly Avg. Dividend Yield		3.43%	3.78%	3.60%	3.43%	3.52%	3.63%
6-month Avg. Dividend Yield		3.56%					

Source: Yahoo! Finance

PROXY GROUP
DCF Growth Rate Analysis

<u>Company</u>	(1) Value Line <u>DPS</u>	(2) Value Line <u>EPS</u>	(3) <u>Zacks</u>	(4) Yahoo! <u>Finance</u>
1 ALLETE, Inc.	3.50%	6.00%	9.60%	8.70%
2 Alliant Energy Corp.	6.00%	6.00%	5.80%	5.55%
3 Ameren Corp.	7.00%	6.50%	6.90%	6.64%
4 American Electric Power	6.00%	6.50%	6.10%	6.14%
5 Edison International	5.00%	16.00%	3.00%	3.92%
6 Entergy Corp.	5.00%	4.00%	6.00%	6.19%
7 Evergy, Inc.	7.00%	7.50%	5.30%	2.43%
8 Hawaiian Electric Industries	3.50%	4.50%	3.10%	1.30%
9 IDACORP	6.50%	4.50%	3.00%	3.00%
10 NextEra Energy Inc.	10.00%	10.00%	9.00%	10.21%
11 OGE Energy	3.00%	6.50%	5.00%	1.90%
12 Portland General Electric Co.	6.00%	5.00%	5.00%	4.18%
13 Southern Co.	3.50%	6.50%	4.00%	6.48%
14 Xcel Energy	6.50%	6.00%	6.60%	6.54%
Averages	5.61%	6.82%	5.60%	5.23%
Median	6.00%	6.25%	5.55%	5.85%

Sources: Value Line Investment Survey, December 9, 2022; January 20 and February 10, 2023
Yahoo! Finance and Zacks growth rates retrieved February 23, 2023

PROXY GROUP DCF RETURN ON EQUITY					
	(1) Value Line <u>Dividend Gr.</u>	(2) Value Line <u>Earnings Gr.</u>	(3) Zack's <u>Earning Gr.</u>	(4) Yahoo! <u>Earning Gr.</u>	(5) Average of <u>All Gr. Rates</u>
<u>Method 1:</u>					
Dividend Yield	3.56%	3.56%	3.56%	3.56%	3.56%
Proxy Group Average Growth Rate	5.61%	6.82%	5.60%	5.23%	5.81%
Expected Dividend Yield	<u>3.66%</u>	<u>3.69%</u>	<u>3.66%</u>	<u>3.66%</u>	<u>3.67%</u>
DCF Return on Equity	9.27%	10.51%	9.26%	8.89%	9.48%
<u>Method 2:</u>					
Dividend Yield	3.56%	3.56%	3.56%	3.56%	3.56%
Proxy Group Median Growth Rate	6.00%	6.25%	5.55%	5.85%	5.91%
Expected Dividend Yield	<u>3.67%</u>	<u>3.67%</u>	<u>3.66%</u>	<u>3.67%</u>	<u>3.67%</u>
DCF Return on Equity	9.67%	9.92%	9.21%	9.52%	9.58%

**PROXY GROUP
Capital Asset Pricing Model Analysis**

Value Line Forward-Looking MRP

<u>Line No.</u>		<u>Value Line</u>
1	Market Required Return Estimate	13.68%
2	Risk-free Rate of Return, 30-Year Treasury Bond	3.79%
3	Risk Premium	
4	(Line 1 minus Line 2)	9.89%
5	Proxy Group Beta	0.88
6	Proxy Group Beta * Risk Premium	
7	(Line 4 * Line 5)	8.69%
8	CAPM Return on Equity	
9	(Line 2 plus Line 7)	12.48%

Supporting Data for CAPM Analyses

<u>30 Year Treasury Bond Data</u>		<u>Proxy Group Betas:</u>	<u>Value Line</u>
	<u>Avg. Yield</u>	ALLETE, Inc.	0.90
Sep-22	3.56%	Alliant Energy Corp.	0.85
Oct-22	4.04%	Ameren Corp.	0.85
Nov-22	4.00%	American Electric Power	0.75
Dec-22	3.66%	Edison International	0.95
Jan-23	3.66%	Entergy Corp.	0.95
Feb-23	<u>3.80%</u>	Evergy, Inc.	0.90
6 month average	3.79%	Hawaiian Electric Industries	0.85
Source: Federal Reserve data, Treasury Department		IDACORP	0.80
		NextEra Energy Inc.	0.95
		OGE Energy	1.00
		Portland General Electric Co.	0.85
		Southern Co.	0.90
		Xcel Energy	0.80
		Average	0.88
		Source: Value Line Investment Survey	
<u>Value Line Projected Return Data:</u>			
Median Esimtated Div. Yield	2.10%		
3 - 5 Year Price Appreciation	55.00%		
Estimated Annualized Price Appreciation	11.58%		
Est. Annual Total Return	13.68%		

Source: Value Line Summary and Index,
February 24, 2023

PROXY GROUP
Capital Asset Pricing Model Analysis
Historic Market Premium

	Arithmetic Mean	Supply Side ERP
Long-Term Annual Return on Stocks	12.00%	
Long-Term Annual Income Return on Long-Term Treas. Bonds	<u>4.90%</u>	
Historical Market Risk Premium	7.10%	6.22%
Proxy Group Beta, Value Line	<u>0.88</u>	<u>0.88</u>
Beta * Market Premium	6.24%	5.46%
Risk-free Rate of Return	<u>3.79%</u>	<u>3.79%</u>
CAPM Cost of Equity, Value Line Beta	<u>10.02%</u>	<u>9.25%</u>

Source: Kroll Cost of Capital Navigator: U.S. Cost of Capital Module:
*Summary Statistics of Annual Total Returns, Income Returns, and
Capital Appreciation Returns of Basic U.S. Asset Classes;*

*Basic Building Blocks of the Cost of Equity Capital - Risk Free Rate and Equity Risk
Premium (Abridged)*

PROXY GROUP
Capital Asset Pricing Model Analysis
Kroll, KMPG, and Damodaran MRPs

	<u>Kroll</u>	<u>Damodaran</u>
Market Risk Premium	6.00%	5.14%
Gas Proxy Group Beta	0.88	0.88
Beta times MRP	5.27%	4.52%
Risk-free Rate of Return	<u>3.79%</u>	<u>3.79%</u>
CAPM Cost of Equity	9.06%	8.30%

AFFIDAVIT

STATE OF GEORGIA)

COUNTY OF FULTON)

RICHARD A. BAUDINO, being duly sworn, deposes and states: that the attached is his sworn testimony and that the statements contained are true and correct to the best of his knowledge, information and belief.

Richard A. Baudino
Richard A. Baudino

Sworn to and subscribed before me on this
10th day of March 2023.

Jessica K. Inman
Notary Public

