COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

The Electronic Application of Duke Energy Kentucky, Inc., for: 1) An Adjustment of the Natural Gas Rates; 2) Approval of New Tariffs; and 3) All Other Required Approvals, Waivers, and Relief.	)))))))	Case No. 2021-00190

REBUTTAL TESTIMONY OF

BENJAMIN WALTER BOHDAN PASSTY, PH.D.

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

October 8, 2021

TABLE OF CONTENTS

PAGE

I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Benjamin Walter Bohdan Passty. My business address is 550 South Tryon Street, Charlotte, North Carolina 28202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Duke Energy Business Services LLC (DEBS) as a Lead Load Forecasting Analyst in the Load Forecasting group. DEBS provides various administrative and other services to Duke Energy Kentucky, Inc., (Duke Energy Kentucky or Company) and other affiliated companies of Duke Energy Corporation (Duke Energy).

Q. ARE YOU THE SAME BENJAMIN WALTER BOHDAN PASSTY THAT SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to the recommendation of the Attorney General's witness, Mr. Lane Kollen, regarding the Company's commercial gas transportation revenues contained in its forecast.

II. DISCUSSION

Q. PLEASE EXPLAIN MR. KOLLEN'S RECOMMENDATION REGARDING THE COMPANY'S NATURAL GAS FORECAST FOR COMMERCIAL GAS TRANSPORTATION REVENUES IN THE TEST PERIOD.

A. Mr. Kollen disagrees with the Company's load forecast for commercial gas transportation revenues in the test period of this case. The Company's forecast depicts commercial gas transportation revenues of $1.379 million in the test year compared to $1.498 million in the base period, a decrease of 8 percent. Mr. Kollen disagrees with the Company's analysis, recommending that the Commission disregard this portion of the forecast, and instead, would actually impute an increase in commercial gas transportation revenues in the Company's forecast. Mr. Kollen imputes an increase for commercial gas transportation revenues from prior years for a total of $1.624 million, an increase of $0.126 million in sales, or a reduction of $0.245 in the Company's revenue requirement.

Q. DOES DUKE ENERGY KENTUCKY AGREE WITH MR. KOLLEN'S RECOMMENDATION?

A. No.

Q. PLEASE EXPLAIN WHY THE COMPANY DISAGREES.

A. First, I would point out that Mr. Kollen is not disputing any other portion or component of the Company's forecast. Second, Mr. Kollen has not performed any empirical analysis to support his projections. He makes unsubstantiated claims regarding increases in employment and strengthening of the economy. He

provides no support for this statement, nor does he claim this statement is applicable to either the Commonwealth of Kentucky as a whole or Duke Energy Kentucky's service territory. Nonetheless, Mr. Kollen characterizes a steady trend in sales growth in this category while admitting to the COVID-19 economic shutdowns that would interrupt the very trend he characterizes. I argue that several strong impulses have caused the growth in sales, and the impact of these will be more transitory than Mr. Kollen admits.

Q. HOW DO YOU RESPOND TO MR. KOLLEN'S CLAIMS REGARDING A THE COMPANY ACTUALLY EXPERIENCING A SURGE IN OVERALL SALES AS JUSTIFICATION FOR INCREASING COMMERCIAL GAS TRANSPORTATION REVENUES?

A. Two explanations for the recent surge in Commercial Gas Transportation revenues are: a change in the billing system classification of customers that led to many OPA customers being counted under this system for volume reporting purposes, and the startup of a large new customer that is being recorded as "commercial" rather than "industrial" as was anticipated when the load forecast was submitted. Failing to account for these factors could overstate the extent to which the recent economic growth can propel the sales to this group of customers.

Q. HOW DO YOU RESPOND TO MR. KOLLEN'S CLAIMS THAT THE COMPANY'S FORECAST FOR OPA AND INDUSTRIAL TRANSPORTATION SALES ARE INCREASING AS JUSTIFICATION FOR INCREASING THE COMMERCIAL GAS TRANSPORTATION REVENUES?

A. The growth in OPA sales comes from comparing the base—which was affected by the classification issue—to the forecast, which was prepared prior to the billing reclassification. The dramatic growth in revenues cited bears little resemblance to the dynamics affecting total sales. The growth in industrial sales is driven by that inclusion of that large, new customer.

Q. HAVE YOU PERFORMED ANY ANALYSIS REGARDING THE COMPANY'S SALES FORECAST?

A. The Company continually reviews sales volumes and revenues as they are made available on the monthly cycle. Filling in actual sales for the months of 2021 that have occurred—when adding to the budgeted volumes for the remaining months of 2021 does lead to a higher outlook for 2021. Including recent elevated commercial volumes in a repeat of our forecast process would result in a higher forecast for volume in the immediate term, but less growth would continue from 2021 to the anticipated 2022 level.

Q. WHAT IS YOUR RECOMMENDATION REGARDING MR. KOLLEN'S POSITION?

A. Mr. Kollen's assessment of Commercial transportation revenue is based on reasoning that ignores important factors that will lead to reduced revenue in the future. The Company's lower forecast is superior.

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR PRE-FILED REBUTTAL TESTIMONY?

A. YES.

VERIFICATION

STATE OF NORTH CAROLINA)
)
COUNTY OF MECKLENBURG)

SS:

The undersigned, Benjamin Passty, Lead Load Forecasting Analyst, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing rebuttal testimony and that it is true and correct to the best of his knowledge, information and belief.

Benjamin WB Passty
Benjamin Passty Affiant

Subscribed and sworn to before me by ~~Benjain~~ BENJAMIN Passty on this 30 day of September 2021.

Sheila Lemoine
Notary Public
Lincoln County
North Carolina
My Commission Expires 7/21/2024

Sheila Lemoine
NOTARY PUBLIC

My Commission Expires: July 21, 2024

G.S. § 10B-41 NOTARIAL CERTIFICATE FOR ACKNOWLEDGMENT

Mecklenburg County, North Carolina

I certify that the following person(s) personally appeared before me this day, each acknowledging to me that he or she signed the foregoing document: Benjamin Passty

Date: September 30, 2021

Sheila Lemoine
Official Signature of Notary

Sheila Lemoine, Notary Public

My commission expires: July 21, 2024

I signed this notarial certificate on September 30, 2021 according to the emergency video notarization requirements contained in G.S. 10B-25.

Notary Public location during video notarization: Mecklenburg County
Stated physical location of principal during video notarization: Mecklenburg County

This certificate is attached to a Verification signed by Benjamin Passty on September 30, 2021.

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

The Electronic Application of Duke Energy Kentucky, Inc., for: 1) An Adjustment of the Natural Gas Rates; 2) Approval of New Tariffs; and 3) All Other Required Approvals, Waivers, and Relief.	)))))	Case No. 2021-00190

REBUTTAL TESTIMONY OF

CHRIS R. BAUER

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

October 8, 2021

TABLE OF CONTENTS

PAGE

I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Chris R. Bauer and my business address is 400 South Tryon Street, Charlotte, North Carolina 28202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Duke Energy Business Services LLC ("DEBS") as Director, Corporate Finance and Assistant Treasurer. DEBS provides various administrative and other services to Duke Energy Kentucky, Inc., (Duke Energy Kentucky or the Company) and other affiliated companies of Duke Energy Corporation (Duke Energy).

Q. ARE YOU THE SAME CHRIS R. BAUER THAT SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to Attorney General Witness, Lane Kollen's recommendation IV A regarding increasing the Company's Short-Term Debt in its Capital Structure and Attorney General Witness Richard A. Baudino's recommendations.

II. DUKE ENERGY KENTUCKY'S OBJECTIONS TO MR. KOLLEN'S AND MR. BAUDINO'S TESTIMONY

Q. PLEASE DESCRIBE MR. KOLLEN'S RECOMMENDATION TO INCREASE THE SHORT-TERM DEBT IN THE CAPITAL STRUCTURE TO REFLECT HISTORICAL SHORT-TERM DEBT LEVELS.

A. Mr. Kollen recommends the Commission reflect $50 million in money pool

borrowings in the proposed capital structure and reduce the common equity by an equivalent amount. The result of this recommendation is a reduction to the Company's test year revenue requirement of $1.783 million.

Q. PLEASE EXPLAIN WHY DUKE ENERGY KENTUCKY DISAGREES WITH THIS RECOMMENDATION.

A. Duke Energy Kentucky utilizes the money pool to supplement, in the near-term, operating cash flow shortages and to temporarily fund long-term capital expenditures. The Company then engages with investors in the private placement market, typically once annually, to term out with long-term debt any money pool balances that exist at that point in time. This has been the consistent practice over the past five years as Duke Energy Kentucky has experienced higher levels of capital spending. Mr. Kollen's recommendation assumes that it is the Company's practice to maintain high levels of money pool borrowings and ignores the fact that the Company has issued long-term debt annually in each of the past five years to term out short-term money pool borrowings. The elevated capital expenditures over the past five years were to fund capital projects such as the East Bend Coal Ash basin closure and repurposing, East Bend dry bottom ash conversion, Big Bone pipeline project, and advanced metering infrastructure deployment. The Company does not anticipate, nor forecast the same levels of capital spending over the test period and expects the level of short-term money pool borrowing to return to historical levels. Before this period of elevated capital expenditures, average money pool balances, excluding the $25 million considered long term debt, were $8.8 million, well below the $50 million proposed by Mr. Kollen. In addition, requiring the Company to maintain higher levels

of short-term borrowing increases the financial risk to both the Company and to the customers of Duke Energy Kentucky. Duke Energy Kentucky is a borrower under Duke Energy Corporation's master credit facility, with a maximum sub-borrowing limit of $175 million. To provide some floating rate exposure to the outstanding debt portfolio, Duke Energy Kentucky maintains $25 million of commercial paper, that is reclassified as long-term debt, but takes away from the Company's borrowing limit under the master credit facility. Any required increases of short-term debt above $25 million would then begin to reduce the Company's remaining available liquidity position, increasing the financial risk to unforeseen events, such as the recent COVID-19 pandemic and liquidity crisis in the spring of 2020.

Q. PLEASE DESCRIBE MR. KOLLEN'S STATEMENT THE COMPANY INTENTIONALLY RAN A LOWER COMMON EQUITY RATIO TO REDUCE ITS COSTS.

A. Mr. Kollen states, "the Company actually ran a lower common equity ratio" to reduce costs and increase earnings and "in the real world, the Company actually and intentionally reduced its costs after the Commission issued its Order" in the 2018 Natural Gas Case.

Q. PLEASE EXPLAIN WHY DUKE ENERGY KENTUCKY DISAGREES WITH THIS STATEMENT.

A. Mr. Kollen's statement that the Company intentionally lowered its cost of financing by increasing the debt ratio to increase earnings is completely false and a serious accusation. As previously stated above, the Company's increased financing activity over the past five years was to fund higher levels of capital expenditures that are not

expected to recur in the forecast period. In an effort to manage the capital structure during this period of elevated capital spending, the Company increased its equity capital by retaining all earnings since 2017 and infusing $125 million of equity from Duke Energy Ohio since that time. Over the same period the company issued $370 million in long-term debt to fund current maturities of $100 million and capital expenditures. Large debt offerings will significantly, but temporarily impact the capital structure by bringing in large sums of debt all at once, to fund capital expenditures and operating cash flow shortages, while internally generated equity builds slower through time. This is why the Company manages the capital structure over longer periods of time and not month to month. The Company has a long history of terming out all of its short-term debt financing when accessing the capital markets once per year. There has been no change to the funding strategy since the last rate case. The only thing that has changed over the past five years is the amount of capital spending by the utility. That is what is driving the data that Mr. Kollen has identified, and inaccurately concluded, as intentional manipulation of the capital structure to increase earnings. This inflammatory and untrue allegation is easily refuted by looking at the facts, namely the amount of capital that the Company has had to fund during the period in question.

Q. PLEASE DESCRIBE MR. BAUDINO'S RECOMMENDATION TO USE THE UPDATED COUPON RATE OF 3.28% FOR BOTH FORECASTED LONG-TERM DEBT ISSUANCES.

A. Mr. Baudino recommends the revised coupon rate of 3.28% for the September 2021 issuance be used for both forecasted issuances in 2021 and 2022.

Q. PLEASE EXPLAIN WHY DUKE ENERGY KENTUCKY DISAGREES WITH THIS RECOMMENDATION.

A. The coupon rates for the 2021 and 2022 forecasted debt issuances were reasonable assumptions based on current market data at that time. Mr. Baudino's recommendation to adjust this item for a temporary reduction in U.S. Treasury rates is opportunistic and is to the exclusion of all other items in the Company's test year revenue requirement that may have changed. Duke Energy Kentucky is not permitted to update all of the elements of its revenue requirement to reflect actual results. The purpose of a forecasted test year is to project what the Company's revenue requirement is likely to be. It is unfair and unreasonable to single out one component of the revenue requirement that may have been lower than expected without consideration of all other components that may have changed.

Q. PLEASE DESCRIBE MR. BAUDINO'S RECOMMENDATION TO UPDATE THE COMMISSION WITH THE ACTUAL COUPON RATE FOR THE 2021 ISSUANCE.

A. Mr. Baudino recommends the Company update the Commission with the actual coupon rate for the September 2021 issuance. As of September 6, Duke Energy Kentucky ceased all marketing efforts to place $50 million of unsecured debentures with private placement investors. The decision to cancel the transaction in this market was primarily due to feedback and demands from both existing and potential new investors, including the following:

1. Increased ESG (environmental, social, corporate governance) mandates and new policies enacted by asset managers to limit exposure to utilities that

have high levels of coal-fired/high carbon emitting generation. Without a clear and publicly communicated transition path away from coal generation to a cleaner fuel source, some investors would not entertain an order of any size and at any price.

2. Overall exposure (portfolio limits) to Duke Energy Kentucky.

3. Investor demands for more investor-friendly debt provisions that would place additional risk and reduce both financial and strategic flexibility of Duke Energy Kentucky. The company declined to yield to these proposed incremental restrictive covenants.

The $50 million debt financing is still required by Duke Energy Kentucky in 2021 and the Company is actively working to secure financing in the bank market. The financing structure will be a 2-year term loan. The rate will be based on SOFR (Secured Overnight Financing Rate) plus a fixed credit spread of 60 basis points. The Company expects to close the term loan in mid-October 2021 with an expected initial interest rate of 66 bps and an average interest rate of ~85 bps over the life of the loan. The impacts of this change to the Company's proposed WACC are shown on Attachment CRB-1.

Q. PLEASE EXPLAIN WHETHER THE INABILITY TO ACCESS THE PRIVATE PLACEMENT MARKET AND THE ADDITIONAL DEMANDS FROM INVESTORS, PARTICULARLY FROM AN ESG PERSPECTIVE WILL HAVE A MATERIAL IMPACT ON DUKE ENERGY KENTUCKY'S ABILITY TO FINANCE ITS ONGOING OPERATIONS?

A. The direct feedback received from investors during this year's attempted private

placement debenture transaction will undoubtedly cause the Company to consider making further concessions, in terms of additional financial covenants and legal protections for investors, as well as higher pricing in order to continue funding the Company in the debt capital markets going forward. There are a limited number of private placement investors and the number of those investors with new or emerging ESG mandates or strategies has grown rapidly over the past three years. A number of investors that have historically participated in Duke Energy Kentucky's offerings were unable to participate in this year's deal due to portfolio limits placed on utilities with a high degree of coal exposure. For those investors who could make incremental or new investments, higher yields were requested and an additional covenant package. At this time the company was unwilling to pay the additional yield and concede to the covenant requests.

Q. DO YOU BELIEVE THAT THIS PLACES ADDITIONAL RISK ON THE COMPANY?

A. I do believe that increasing ESG mandates will continue to limit investors ability to invest in coal-heavy utilities that do not have a clear and timely exit strategy from coal generation. I believe future financing needs will get done, albeit at higher spreads than historically achieved.

Q. HAVE THERE BEEN ANY OTHER CHANGES TO THE COMPANY'S FORECASTED TEST PERIOD?

A. Yes, the $70 million long term debt financing originally forecasted for 2022 and included in the forecasted test period at the time this rate case was filed has shifted out to 2023. With the shift of the 2022 financing and as shown in Attachment CRB-

1, the revised test period capital structure is as follows:

A. Common Equity of $861,861,344 or 51.344%

B. Long-Term Debt of $772,830,214 or 46.039%

C. Short-Term Debt of $43,936,209 or 2.617%

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

VERIFICATION

STATE OF NORTH CAROLINA)
) **SS:**
COUNTY OF MECKLENBURG)

The undersigned, Chris Bauer, Director, Corporate Finance-Asst. Treasurer, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing rebuttal testimony and that it is true and correct to the best of his knowledge, information and belief.

Chris Bauer Affiant

Subscribed and sworn to before me by Chris Bauer on this 6 day of Oct, 2021.

DONNA E HARKEY
Notary Public
Cabarrus County
NORTH CAROLINA

NOTARY PUBLIC

My Commission Expires: 03-01-24

Summary of Capital Structure Changes

Class of Capital	Cap Structure with Original Forecast 13 month average	% to total	Cost	Wtd Cost
Common Equity	861,861,344	50.694%	10.30%	5.222%
Long-Term Debt	794,320,510	46.721%	3.843%	1.795%
Short-Term Debt	43,936,209	2.584%	1.667%	0.043%
	1,700,118,063	100.00%		7.060%

Class of Capital	Cap Structure with Updated Forecast (shifting of 2022 long term debt to 2023) 13 month average	% to total	Cost	Wtd Cost
Common Equity	861,861,344	51.343%	10.300%	5.288%
Long-Term Debt	772,830,214	46.039%	3.657%	1.684%
Short-Term Debt	43,936,209	2.617%	1.667%	0.044%
	1,678,627,767	100.00%		7.016%

Class of Capital	Difference 13 month average[(a)]	% to total	Cost[(b)]	Wtd Cost
Common Equity	-	0.65%	0.00%	0.067%
Long-Term Debt	(21,490,296)	-0.68%	-0.19%	-0.111%
Short-Term Debt	-	0.03%	0.00%	0.001%
	(21,490,296)	0.00%		-0.044%

[(a)] Removed 2022 future debenture from the forecast (shifted to 2023)

[(b)] Two year term loan rate estimated to be .85% over the life of the loan versus original forecasted rate of 3.686% for a forecasted private placement transaction

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

The Electronic Application of Duke Energy Kentucky, Inc., for: 1) An Adjustment of the Natural Gas Rates; 2) Approval of New Tariffs; and 3) All Other Required Approvals, Waivers, and Relief.	))))))	Case No. 2021-00190

REBUTTAL TESTIMONY OF

DAVID G. RAIFORD

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

October 8, 2021

TABLE OF CONTENTS

PAGE

I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is David G. Raiford and my business address is 550 South Tryon Street, Charlotte, North Carolina 28202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Duke Energy Business Services LLC (DEBS), as Manager Accounting I. DEBS provides various administrative and other services to Duke Energy Kentucky, Inc., (Duke Energy Kentucky or Company) and other affiliated companies of Duke Energy Corporation (Duke Energy).

Q. ARE YOU THE SAME DAVID G. RAIFORD THAT SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to Attorney General witness Mr. Lane Kollen's recommendation regarding the depreciation and amortization of Customer Connect CIS system.

II. DISCUSSION

Q. PLEASE DESCRIBE MR. KOLLEN'S RECOMMENDATION REGARDING THE USEFUL LIFE OF THE CUSTOMER CONNECT SOFTWARE SYSTEM ASSETS.

A. Kentucky Office of the Attorney General witness Kollen describes Customer Connect as an integrated system designed to perform multiple related and interdependent functions and recommends that all components of the project,

should be depreciated at a rate of 6.67 percent for all of the Customer Connect software system assets. As noted by witness Kollen, Duke Energy provided an accounting memo in response to Attorney General data request 19(d), which noted that Duke Energy's capitalization policy states:

- Software should be amortized on a straight-line basis over a period not to exceed 5 years unless there is clear and convincing evidence that it is probable that the economic life will be longer. (*Duke Energy Capitalization Guidelines, Specific Topic "Software"*)
- Amortization Period (ASC 350-30-35)
    - When determining the amortization period, entities should consider the effects of *obsolescence, technology, competition, and other economic factors*. Consideration should be given to rapid changes that may be occurring in the development of software products, software operating systems, or computer hardware and whether management intends to replace any technologically inferior software or hardware. Given the history of rapid changes in technology, software often has had a relatively short useful life. (*Duke Energy Capitalization Guidelines, Specific Topic "Software"*)

Q. DOES THE COMPANY AGREE WITH MR. KOLLEN'S RECOMMENDATION? PLEASE EXPLAIN.

A. No. In determining the appropriate useful lives to utilize for the Customer Connect software system, Asset Accounting reviewed relevant guidance from

Duke's capitalization policy and Generally Accepted Accounting Principles, held discussions with the Customer Connect project team members, and analyzed historical software useful lives attained at the Company. Based on this analysis, useful lives were determined for the various releases of Customer Connect and set the amortization at either 15 years (for the core system: Customer Connect Core Meter to Cash and Prepaid Advantage releases), which is longer than typical software useful lives, or 5 years for other releases, which is in alignment with the Duke Energy Capitalization Policy. The releases that were given a 5 year life were items that would be required to be updated prior to the end of the useful life of the core system due to a variety of factors including obsolescence, technology developments, among other items given the history of rapid changes in technology.

Witness Kollen notes that Customer Connect is an "integrated system" and that "The Company will fully recover its plant in service costs pursuant to my recommendation; however, the use of the 6.67% depreciation rates will match the recovery of the costs to the use of the Customer Connect system over its service life." Duke Energy Kentucky disagrees with this statement, as the Customer Connect system has various releases, some of which have been assessed a 5 year useful life that would not be fully recovered when they are retired prior to the proposed 15 year amortization/recovery period, as amortization would cease upon retirement of the assets. Based on Witness Kollen's recommendation, in order for Duke Energy Kentucky to avoid having stranded costs (i.e. a Net Book Value (NBV) at retirement that has not been fully recovered) for the Customer Connect

assets that are retired prior to the 15 year amortization period, the Company would need to move the NBV of the asset upon retirement to a regulatory asset that would continue to be amortized over the 15 year period to ensure the asset is fully recovered.

Q. DOES MR. KOLLEN'S ARGUMENT THAT THE FACT THAT THE CUSTOMER CONNECT SYSTEM IS AN INTEGRATED SYSTEM JUSTIFY INCLUDING A SINGLE AMORTIZATION FOR THE ENTIRE SYSTEM?

A. No. In fact, under this justification, Duke Energy Kentucky's entire natural gas and electric delivery systems, both of which are integrated systems, would have a single amortization period for each system. The Company cannot deliver natural gas without the pipes in the ground, the pipes rely upon pressure stations to keep the gas flowing, and the Company cannot deliver gas without mains, services and meters. Under Mr. Kollen's theory, all of these components should be subject to a single amortization rate. Such a preposterous result is contrary to the fundamental concept of rate making and not in the best interests of either the Company or its customers. The integrated nature of a system has absolutely no bearing on whether or not the individual components should be depreciated and amortized at the exact same rate.

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR PRE-FILED REBUTTAL TESTIMONY?

A. Yes.

VERIFICATION

STATE OF NORTH CAROLINA)
) SS:
COUNTY OF MECKLENBURG)

The undersigned, David Raiford, Manager Accounting I, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing rebuttal testimony and that it is true and correct to the best of his knowledge, information and belief.

David Raiford
David Raiford Affiant

Subscribed and sworn to before me by David Raiford on this 4th day of October, 2021.

MARGARET R. HAYHURST NOTARY PUBLIC MECKLENBURG COUNTY, NC

Margaret R. Hayhurst
NOTARY PUBLIC

My Commission Expires:
July 24, 2026

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

The Electronic Application of Duke Energy Kentucky, Inc., for: (1) An Adjustment of the Natural Gas Rates; (2) Approval of New Tariffs; and (3) All Other Required Approvals, Waivers, and Relief.	)))))	Case No. 2021-00190

REBUTTAL TESTIMONY OF

DYLAN W. D'ASCENDIS

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

October 8, 2021

TABLE OF CONTENTS

PAGE

LIST OF ATTACHMENTS

I. INTRODUCTION, PURPOSE, AND SUMMARY

Q. PLEASE STATE YOUR NAME AFFILIATION, AND BUSINESS ADDRESS.

A. My name is Dylan W. D'Ascendis. I am employed by ScottMadden, Inc. as Partner. My business address is 3000 Atrium Way, Suite 241, Mount Laurel, NJ 08054.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING THIS TESTIMONY?

A. I am submitting this rebuttal testimony (referred to throughout as my Rebuttal Testimony) before the Kentucky Public Service Commission (Commission) on behalf of Duke Energy Kentucky, Inc. (Duke Energy Kentucky or the Company).

Q. DID YOU FILE DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes, I did.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my Rebuttal Testimony is two-fold. First, I update my cost of common equity (ROE) analyses to reflect current data. Second, I respond to the direct testimony of Mr. Richard A. Baudino, witness for the Kentucky Office of the Attorney General, (AG) as it relates to the Company's ROE on its Kentucky jurisdictional rate base.

Q. HAVE YOU PREPARED ATTACHMENTS IN SUPPORT OF YOUR RECOMMENDATION?

A. Yes. I have prepared Attachments DWD-1R through DWD-10R, which were prepared by me or under my direction.

Q. PLEASE SUMMARIZE YOUR CONCLUSIONS.

A. Due to the passage of time since the analysis in my Direct Testimony, I have updated my ROE analyses as of August 31, 2021. Based on these updated analyses, my range of reasonable ROEs attributable to Duke Energy Kentucky is between 9.47% and 12.79% (unadjusted) and 9.87% to 13.19% (adjusted). Therefore, my specific ROE

recommendation of 10.30% for Duke Energy Kentucky in this case continues to be reasonable, if not conservative.

Q. IN WHAT KEY AREAS ARE MR. BAUDINO'S ANALYSES AND RECOMMENDATIONS INCORRECT OR UNSUPPORTED?

A. There are several areas including:

1. His sole reliance on and his application of the discounted cash flow (DCF) model;
2. His application of the capital asset pricing model (CAPM); and
3. His exclusion of credit, size, and flotation cost adjustments.

II. UPDATED ANALYSES

Q. HAVE YOU UPDATED YOUR COST OF COMMON EQUITY ANALYSES FOR YOUR REBUTTAL TESTIMONY?

A. Yes, I have. Due to the passage of time since my Direct Testimony analysis (data as of March 31, 2021), I have updated my analysis using data as of August 31, 2021.

Q. HAVE YOU UPDATED YOUR UTILITY PROXY GROUP FOR YOUR UPDATED ANALYSES?

A. No, I have not.

Q. HAVE YOU APPLIED ANY OF YOUR ROE MODELS DIFFERENTLY IN YOUR UPDATED ANALYSES?

A. No, I have not.

Q. WHAT ARE THE RESULTS OF YOUR UPDATED ANALYSES?

A. Using data available as of August 31, 2021, my updated results are presented in page 2 of Attachment DWD-1R and in Table 1, below.

Table 1: Updated Cost of Common Equity Results

Discounted Cash Flow Model	9.47%
Risk Premium Model	10.45%
Capital Asset Pricing Model	12.01%
Cost of Equity Models Applied to Comparable Risk, Non-Price Regulated Companies	12.79%
Indicated Range	9.47% - 12.79%
Size Adjustment	0.15%
Credit Risk Adjustment	0.13%
Flotation Cost Adjustment	0.12%
Recommended Range	9.87% - 13.19%
Recommended Cost of Common Equity	10.30%

In view of the unadjusted and adjusted ranges of ROE, I maintain my original ROE recommendation of 10.30%. Since my recommended ROE of 10.30% is in the bottom half of my range of ROEs, it is a conservative measure of the Company's ROE at this time.

III. RESPONSE TO WITNESS BAUDINO

Q. PLEASE SUMMARIZE MR. BAUDINO'S ROE RECOMMENDATIONS AS THEY RELATE TO THE COMPANY'S COST OF CAPITAL.

A. Mr. Baudino recommends an ROE range of 8.60% to 9.30%, with a point estimate of 9.10%, based primarily on the results of his Constant Growth DCF analyses applied to his proxy group of seven natural gas utilities.[1] Mr. Baudino also performs two CAPM analyses, although he does not give those results weight in arriving at his ROE recommendation.[2]

[1] Baudino Direct Testimony, at 3.
[2] *Ibid.*

A. Sole Reliance on the Discounted Cash Flow Model

Q. TO WHAT EXTENT DOES MR. BAUDINO'S RECOMMENDED ROE RELY ON HIS DCF MODEL?

A. As previously stated, Mr. Baudino relies exclusively on his constant growth DCF model results to determine his recommended ROE. As discussed in my Direct Testimony,[3] the use of multiple models adds reliability to the estimation of the common equity cost rate, with the prudence of using multiple cost of common equity models supported in both the financial literature and regulatory precedent.

Q. CAN YOU PLEASE PROVIDE SOME EXAMPLES FROM FINANCIAL LITERATURE WHICH SUPPORT THE USE OF MULTIPLE COST OF COMMON EQUITY MODELS IN DETERMINING THE INVESTOR-REQUIRED RETURN?

A. Yes. In one example, Morin states:

> Each methodology requires the exercise of considerable judgment on the reasonableness of the assumptions underlying the methodology and on the reasonableness of the proxies used to validate a theory. The inability of the DCF model to account for changes in relative market valuation, discussed below, is a vivid example of the potential shortcomings of the DCF model when applied to a given company. Similarly, the inability of the CAPM to account for variables that affect security returns other than beta tarnishes its use.
> **No one individual method provides the necessary level of precision for determining a fair return, but each method provides useful evidence to facilitate the exercise of an informed judgment.** Reliance on any single method or preset formula is inappropriate when dealing with investor expectations because of possible measurement difficulties and vagaries in individual companies' market data. (emphasis added)
>
> * * *
>
> The financial literature supports the use of multiple methods. Professor Eugene Brigham, a widely respected scholar and finance academician, asserts(footnote omitted):
>
> > Three methods typically are used: (1) the Capital Asset Pricing Model (CAPM), (2) the discounted cash flow (DCF) method, and (3) the bond-yield-plus-risk-premium approach. **These methods are not mutually**

[3] D'Ascendis Direct Testimony, at 16.

> **exclusive – no method dominates the others**, and all are subject to error when used in practice. Therefore, when faced with the task of estimating a company's cost of equity, we generally use all three methods and then choose among them on the basis of our confidence in the data used for each in the specific case at hand. (emphasis added)

Another prominent finance scholar, Professor Stewart Myers, in an early pioneering article on regulatory finance, stated(footnote omitted):

> Use more than one model when you can. Because estimating the opportunity cost of capital is difficult, **only a fool throws away useful information**. That means you should not use any one model or measure mechanically and exclusively. Beta is helpful as one tool in a kit, to be used in parallel with DCF models or other techniques for interpreting capital market data. (emphasis added)

Reliance on multiple tests recognizes that no single methodology produces a precise definitive estimate of the cost of equity. As stated in Bonbright, Danielsen, and Kamerschen (1988), '*no single or group test or technique is conclusive*.' Only a fool discards relevant evidence. (italics in original) (emphasis added)

* * *

While it is certainly appropriate to use the DCF methodology to estimate the cost of equity, there is no proof that the DCF produces a more accurate estimate of the cost of equity than other methodologies. Sole reliance on the DCF model ignores the capital market evidence and financial theory formalized in the CAPM and other risk premium methods. **The DCF model is one of many tools to be employed in conjunction with other methods to estimate the cost of equity.** It is not a superior methodology that supplants other financial theory and market evidence. The broad usage of the DCF methodology in regulatory proceedings in contrast to its virtual disappearance in academic textbooks does not make it superior to other methods. The same is true of the Risk Premium and CAPM methodologies. (emphasis added) [4]

Finally, Brigham and Gapenski note:

> In practical work, *it is often best to use all three methods* – CAPM, bond yield plus risk premium, and DCF – and then apply judgment when the methods produce different results. People experienced in estimating equity capital costs recognize that both careful analysis and some very fine judgments are required. It would be nice to pretend that these judgments are unnecessary and to specify an easy, precise way of determining the exact cost of equity capital. Unfortunately, this is not possible. Finance is in large part a matter of judgment, and we simply must face this fact. (italics in original)[5]

[4] Roger A. Morin, Ph.D., New Regulatory Finance, Public Utility Reports, Inc., 2006, at 428-431. (Morin)

[5] Eugene F. Brigham and Louis C. Gapenski, Financial Management – Theory and Practice, 4th Ed. The Dryden Press, 1985 at 256.

In the academic literature cited above, three methods are consistently mentioned: the DCF, CAPM, and the risk premium model (RPM), all of which I used in my analyses.

Q. IN ADDITION TO THE ABOVE, WHY IS SOLE RELIANCE ON THE DCF MODEL PROBLEMATIC AT THIS TIME?

A. Traditional rate base/rate of return regulation, where a market-based common equity cost rate is applied to a book value rate base, presumes that market-to-book (M/B) ratios are at unity or 1.00. However, that is rarely the case. Morin states:

> The third and perhaps most important reason for caution and skepticism is that application of the DCF model produces estimates of common equity cost that are consistent with investors' expected return only when stock price and book value are reasonably similar, that is, when the M/B is close to unity. As shown below, application of the standard DCF model to utility stocks understates the investor's expected return when the market-to-book (M/B) ratio of a given stock exceeds unity. This was particularly relevant in the capital market environment of the 1990s and 2000s where utility stocks were trading at M/B ratios well above unity and have been for nearly two decades. The converse is also true, that is, the DCF model overstates that investor's return when the stock's M/B ratio is less than unity. The reason for the distortion is that the DCF market return is applied to a book value rate base by the regulator, that is, a utility's earnings are limited to earnings on a book value rate base.[6]

As he explains, DCF models assume an M/B ratio of 1.0 and therefore under- or over-states investors' required return when market value exceeds or is less than book value, respectively. It does so because equity investors evaluate and receive their returns on the market value of a utility's common equity, whereas regulators authorize returns on the book value of common equity. This means that the market-based DCF will produce the total annual dollar return expected by investors only when market and book values of common equity are equal, a very rare and unlikely situation.

[6] Morin, at 434.

Q. WHY DO MARKET AND BOOK VALUES DIVERGE?

A. Market values can diverge from book values for a myriad of reasons including, but not limited to, earnings per share (EPS) and dividends per share (DPS) expectations, merger / acquisition expectations, interest rates, etc. As noted by Phillips:

> Many question the assumption that market price should equal book value, believing that 'the earnings of utilities should be sufficiently high to achieve market-to-book ratios which are consistent with those prevailing for stocks of unregulated companies.[7]

In addition, Bonbright states:

> In the first place, commissions cannot forecast, except within wide limits, the effect their rate orders will have on the market prices of the stocks of the companies they regulate. In the second place, *whatever the initial market prices may be, they are sure to change not only with the changing prospects for earnings, but with the changing outlook of an inherently volatile stock market*. In short, market prices are beyond the control, though not beyond the influence of rate regulation. Moreover, even if a commission did possess the power of control, any attempt to exercise it ... would result in harmful, uneconomic shifts in public utility rate levels. (italics added)[8]

Q. CAN THE UNDER- OR OVER-STATEMENT OF INVESTORS' REQUIRED RETURN BY THE DCF MODEL BE DEMONSTRATED MATHEMATICALLY?

A. Yes. Attachment DWD-2R demonstrates how a market-based DCF cost rate of 9.10%, when applied to a book value substantially below market value, will understate investors' required return on market value. As shown, there is no realistic opportunity to earn the expected market-based rate of return on book value. In Column [A], investors expect a 9.10% return on an average market price of $61.30 for Mr. Baudino's proxy group. Column [B] shows that when Mr. Baudino's 9.10% return rate is applied to a book value of $35.97,[9] the total annual return opportunity is $3.273. After subtracting dividends of $2.153 the investor only has the opportunity for $1.120 in market appreciation, or 1.83%.

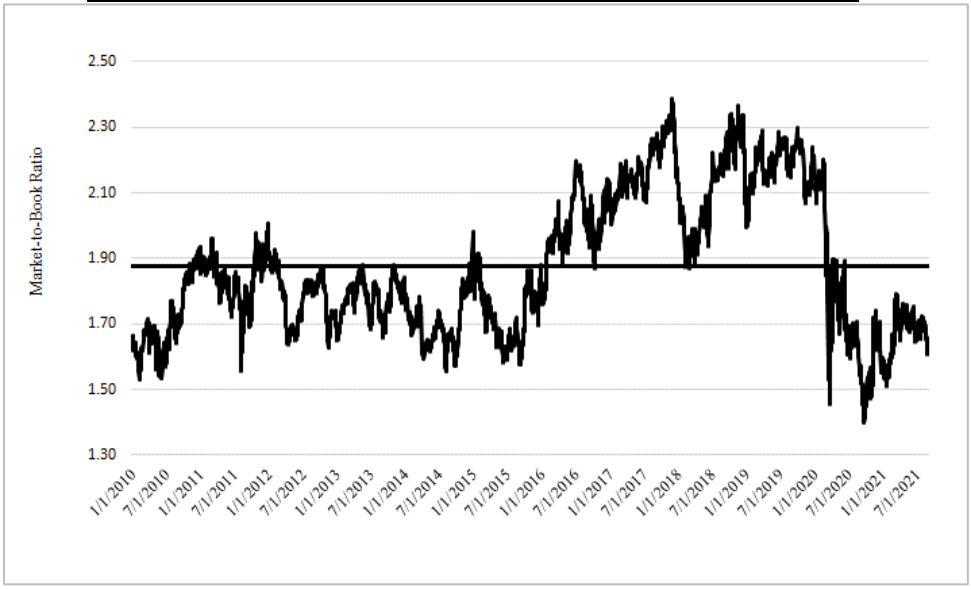
[7] Charles F. Phillips, The Regulation of Public Utilities, Public Utilities Reports, Inc., 1993, at 395.
[8] James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates (Public Utilities Reports, Inc., 1988), at 334.
[9] Representing a market-to-book ratio of 170.43%.

The magnitude of the understatement of investors' required return on market value using Mr. Baudino's 9.10% cost rate is 3.76%, which is calculated by subtracting the market appreciation based on book value of 1.83% from Mr. Baudino's expected growth rate of 5.59%.

Q. HOW DO M/B RATIOS OF MR. BAUDINO'S PROXY GROUP COMPARE TO THEIR TEN-YEAR AVERAGE?

A. The M/B ratio of the proxy group is currently close to its ten-year average of approximately 1.88 times.

Chart 1: M/B Ratios Compared with Ten-Year Average[10]



The significance of this is that the ten-year average M/B ratio has always been higher than 1.0x, which means that DCF model results have consistently understated the investor-required return.

Q. IS THERE ANOTHER WAY TO QUANTIFY THE INACCURACY OF THE DCF MODEL WHEN M/B RATIOS ARE DIFFERENT THAN UNITY?

A. Yes. One can quantify the inaccuracy of the DCF model when M/B ratios are not at unity by estimating the implied DCF model results (based on a market-value capital structure) to

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

reflect a book-value capital structure. This can be measured by first calculating the market value of each proxy company's capital structure, which consists of the market value of the company's common equity (shares outstanding multiplied by price) and the fair value of the company's long-term debt and preferred stock. All of these measures, except for price, are available in each company's SEC Form 10-K.

Second, one must de-leverage the implied cost of common equity based on the DCF. This is derived using the Modigliani / Miller equation[11] as illustrated in Attachment DWD-3R and shown below:

$$ku = ke - (((ku - i)(1 - t)) D/E) - (ku - d) P/E \text{ [Equation 1]}$$

Where:

ku	=	Unlevered (i.e., 100% equity) cost of common equity;
ke	=	Market determined cost of common equity;
i	=	Cost of debt;
t	=	Income tax rate;
D	=	Debt ratio;
E	=	Equity ratio;
d	=	Cost of preferred stock; and
P	=	Preferred equity ratio.

For example, using Mr. Baudino's average proxy group-specific data, the equation becomes:

$$ku = 9.10\% - (((ku - 4.12\%)(1 - 21\%)) 44.92\% / 54.49\%) - (ku - 5.90\%) 0.59\% / 54.49\%$$

Solving for ku results in an unlevered cost of common equity of 7.13%. Next, one must re-lever those costs of common equity by relating them to each proxy group's average book capital structure as shown below:

$$ke = ku + (((ku - i)(1 - t)) D/E) + (ku - d) P/E \text{ [Equation 2]}$$

[11] The Modigliani / Miller theorem is an influential element of economic theory and forms the basis for modern theory on capital structure. *See*, F. Modigliani, and M. Miller, *The Cost of Capital, Corporation Finance and the Theory of Investment*, The American Economic Review, Vol. 48, No. 3, (June 1958), at 261-297.

Once again, using Mr. Baudino's average proxy group-specific data, the equation becomes:

ke = 7.13% + (((7.13%-4.12%) (1-21%)) 50.44%/48.87%) + (7.13%-5.90%) 0.69%/48.87%

Solving for ke results in a 9.60% indicated cost of common equity relative to the book capital structure of the proxy group, which is an increase of 0.50% over Mr. Baudino's indicated DCF result of 9.10%. The leverage-adjusted DCF result 9.60% is still not applicable to the Company, as it does not reflect the higher risk that Duke Energy Kentucky faces relative to the proxy group given its smaller size, nor does it reflect the higher risk due to the Company's relative riskier bond rating.

Q. ARE YOU ADVOCATING A SPECIFIC ADJUSTMENT TO THE DCF RESULTS TO CORRECT FOR ITS MIS-SPECIFICATION OF THE INVESTOR-REQUIRED RETURN?

A. No. The purpose of this discussion was to demonstrate that like all cost of common equity models, the DCF has its limitations, and that the use of multiple cost of common equity models, in conjunction with informed expert judgment, provides a more accurate and reliable picture of the investor-required ROE than does a narrow evaluation of the results of one model.

B. Application of the Discounted Cash Flow Model

Q. PLEASE BRIEFLY DESCRIBE MR. BAUDINO'S CONSTANT GROWTH DCF ANALYSIS AND RESULTS.

A. Mr. Baudino calculates an average dividend yield of 3.51% by dividing each proxy company's annualized dividend by its monthly stock price for the six-month period ending July 2021[12], noting that the average dividend yield for the proxy group ranged from 3.77%

[12] Baudino Direct Testimony, at 18.

to 3.40% during the six-month period[13]. For the expected growth rate, Mr. Baudino relies on EPS growth rate projections from *Value Line*, Zacks, and Yahoo! Finance, as well as DPS growth rate projections from *Value Line*.[14] Mr. Baudino then calculates his DCF results based on the mean and median growth rate of the four sources noted above. Mr. Baudino refers to the DCF results produced using mean growth rates as "Method 1", and DCF results produced using median growth rates as "Method 2". The mean DCF results of his Method 1 and 2 were 9.45% and 9.11%, respectively.[15]

Q. DO YOU HAVE ANY CONCERNS WITH MR. BAUDINO'S APPLICATION OF THE DCF MODEL?

A. Yes, I do. On page 29 of his direct testimony, Mr. Baudino states that he arrived at his recommended ROE based on "the average Value Line dividend growth ROE and the consensus analysts' forecasted ROE results", disregarding his DCF results based on Value Line earnings growth rate. As will be discussed below, there is a significant body of empirical evidence supporting the superiority of analysts' EPS growth rates in a DCF analysis, indicating that analysts' forecasts of earnings remain the best predictor of growth to use in the DCF model.

Q. PLEASE DESCRIBE SOME OF THE EVIDENCE SUPPORTING THE RELIABILITY AND SUPERIORITY OF ANALYSTS' EPS GROWTH RATES IN A DCF ANALYSIS.

A. As discussed in my Direct Testimony,[16] over the long run there can be no growth in DPS without growth in EPS. Security analysts' earnings expectations have a more significant, but not the only, influence on market prices than dividend expectations. Thus, the use of

[13] *Ibid.*
[14] *Ibid.*, at 19.
[15] *Ibid.*, at Table 2.
[16] D'Ascendis Direct Testimony, at 19.

projected EPS growth rates in a DCF analysis provides a better match between investors' market price appreciation expectations and the growth rate component of the DCF, because they have a significant influence on market prices and the appreciation or "growth" experienced by investors.[17] This should be evident even to relatively unsophisticated investors by listening to financial news reports on radio, TV, or reading newspapers.

In addition, Myron Gordon, the "father" of the standard regulatory version of the DCF model widely utilized throughout the United States in rate base/rate of return regulation, recognized the significance of analysts' forecasts of growth in EPS in a speech he gave in March 1990 before the Institute for Quantitative Research and Finance[18], stating on page 12:

> We have seen that earnings and growth estimates by security analysts were found by Malkiel and Cragg to be superior to data obtained from financial statements for the explanation of variation in price among common stocks… estimates by security analysts available from sources such as IBES are far superior to the data available to Malkiel and Cragg.
>
> * * *
>
> Eq (7) is not as elegant as Eq (4), but it has a good deal more intuitive appeal. It says that investors buy earnings, but what they will pay for a dollar of earnings increases with the extent to which the earnings are reflected in the dividend or in appreciation through growth.

Professor Gordon recognized that the total return is largely affected by the terminal price, which is mostly affected by earnings (hence price/earnings (P/E) multiples).

Studies performed by Cragg and Malkiel[19] demonstrate that analysts' forecasts are superior to historical growth rate extrapolations. While some question the accuracy of analysts' forecasts of EPS growth, the level of accuracy of those analysts' forecasts well after the fact does not really matter. What is important is the forecasts reflect widely held

[17] Morin, at 298-303.
[18] Myron J. Gordon, *The Pricing of Common Stock*, Presented before the Spring 1990 Seminar, March 27, 1990 of the Institute for Quantitative Research in Finance, Palm Beach, FL.
[19] John G. Cragg and Burton G. Malkiel, Expectations and the Structure of Share Prices (University of Chicago Press, 1982) Chapter 4.

expectations influencing investors at the time they make their pricing decisions, and hence, the market prices they pay.

In addition, Jeremy J. Siegel also supports the use of security analysts' EPS growth forecasts when he states:

> For the equity holder, the source of future cash flows is the earnings of firms. (p. 90)
>
> * * *
>
> Some people argue that shareholders most value stocks' cash dividends. But this is not necessarily true. (p. 91)
>
> * * *
>
> Since the price of a stock depends primarily on the present discounted value of all expected future dividends, it appears that dividend policy is crucial to determining the value of the stock. However, this is not generally true. (p. 92)
>
> * * *
>
> Since stock prices are the present value of future dividends, it would seem natural to assume that economic growth would be an important factor influencing future dividends and hence stock prices. However, this is not necessarily so. The determinants of stock prices are earnings and dividends on a per-share basis. Although economic growth may influence aggregate earnings and dividends favorably, economic growth does not necessarily increase the growth of per-share earnings of dividends. It is earnings per share (EPS) that is important to Wall Street because per-share data, not aggregate earnings or dividends, are the basis of investor returns. (italics in original) (pp. 93-94)[20]

Q. HAVE YOU CONSIDERED WHETHER ANALYSTS' EPS GROWTH RATE PROJECTIONS ARE CONSISTENT WITH MANAGEMENT GUIDANCE?

A. Yes, I have. Based on data from Company investor presentations, six of seven of the proxy group companies currently issue long-term earnings growth guidance. Looking at the sources of growth rates used by Mr. Baudino, of the 18 growth rate estimates for companies that also issue earnings guidance, only three exceeded the upper bound of management guidance. On the other hand, two were below the guidance range; the remaining

[20] Jeremy J. Siegel, Stocks for the Long Run – The Definitive Guide to Financial Market Returns and Long-Term Investment Strategies, McGraw-Hill 2002, pp. 90-94.

observations were within the range. Put another way, the majority of analysts' projections were within or below management guidance.

Table 2: EPS Growth Rates and Management Guidance

Company		Guidance Range[21]		Projected EPS Growth Rate[22]		
		Lower	Upper	Yahoo!	Value Line	Zacks
Atmos Energy	ATO	6.00	8.00	7.17	7.00	7.30
New Jersey Resources	NJR	6.00	10.00	6.00	2.00	7.10
Northwest Natural	NWN	3.00	5.00	3.80	5.50	3.90
ONE Gas Inc	OGS	5.00	7.00	5.00	6.50	5.00
South Jersey Ind	SJI	5.00	8.00	4.80	11.50	5.40
Southwest Gas	SWX	-	-	4.00	9.00	5.50
Spire Inc	SR	5.00	7.00	7.31	10.00	5.50

I understand seven companies constitute a relatively small sample for such an analysis. Nonetheless, the consistency between management guidance and analysts' projections suggests analysts' projected EPS growth rates are proper inputs to the DCF model.

Q. IS THERE EMPIRICAL EVIDENCE THAT INVESTORS WOULD DISREGARD ANALYST ESTIMATES IN EPS GROWTH?

A. No, there is not. The article, "Do Analyst Conflicts Matter? Evidence from Stock Recommendations," examines whether conflicts of interest with investment banking [IB] and brokerage businesses induced sell-side analysts to issue optimistic stock recommendations and whether investors were misled by such biases. The authors conclude, "Overall, our findings do not support the view that conflicted analysts are able to systematically mislead investors with optimistic stock recommendations."

Agrawal and Chen further state:

> Overall, our empirical findings suggest that while analysts do respond to IB and brokerage conflicts by inflating their stock recommendations, the market discounts these recommendations after taking analysts' conflicts

[21] Source: Company investor presentations and Annual Reports.
[22] Source: Baudino Exhibit RAB-3.

> into account. These findings are reminiscent of the story of the nail soup told by Brealey and Myers (1991), except that here analysts (rather than accountants) are the ones who put the nail in the soup and investors (rather than analysts) are the ones to take it out. Our finding that the market is not fooled by biases stemming from conflicts of interest echoes similar findings in the literature on conflicts of interest in universal banking (for example, Kroszner and Rajan, 1994, 1997; Gompers and Lerner 1999) and on bias in the financial media (for examples, Bhattacharya et al. forthcoming; Reuter and Zitzewitz 2006). Finally, while we cannot rule out the possibility that some investors may have been naïve, our findings do not support the notion that the marginal investor was systematically misled over the last decade by analysts' recommendations.[23]

In view of the above, given the overwhelming academic and empirical support regarding the superiority of security analysts' EPS growth rate forecasts, all EPS growth rate projections, including ones from *Value Line* should be relied on by Mr. Baudino in his DCF analysis.

Q. IN REVIEWING THE FINANCIAL LITERATURE, DID YOU DISCOVER ANY PUBLICATIONS THAT SUPPORTED THE USE OF PROJECTED DPS OR BVPS GROWTH RATES FOR USE IN A DCF MODEL?

A. No, I did not.

Q. LIKEWISE, ARE YOU AWARE OF ANY SOURCES OF DATA WHICH PROVIDE PROJECTED DPS OR BVPS GROWTH RATES TO INVESTORS?

A. *Value Line* is the only widespread, readily available source of which I am aware that publishes projected DPS growth rates. If investors indeed valued projected DPS growth rates, there would be a market for those data. As they are not relied on by investors to determine their required returns on investments, there is not. Conversely, projected EPS growth rates are widely available to investors.

[23] Anup Agrawal and Mark A. Chen, *Do Analysts' Conflicts Matter? Evidence from Stock Recommendations*, Journal of Law and Economics, August 2008, Vol. 51.

Q. HAVE YOU UNDERTAKEN ANY ANALYSES TO DETERMINE WHICH MEASURES OF GROWTH ARE STATISTICALLY RELATED TO THE PROXY COMPANIES' STOCK VALUATION LEVELS?

A. Yes, I have. My analysis is based on the methodological approach used by Carleton and Vander Weide, who compared the predictive capability of historical growth estimates and analysts' forecasts on the valuation levels of 65 utility companies.[24] I structured the analysis to understand whether projected earnings or dividend growth rates best explain utility stock valuations. In particular, my analysis examined the statistical relationship between the P/E ratios of the natural gas, electric, and water utilities as classified by *Value Line*, and the projected EPS and DPS growth rates as reported by *Value Line*. To determine which, if any, of those growth rates are statistically related to utility stock valuations, I performed a series of regression analyses in which the projected growth rates were explanatory variables and the P/E ratio was the dependent variable. The results of those analyses are presented in Attachment DWD-4R.

In that analysis, I performed two separate regressions with the P/E as the dependent variable, and projected EPS and DPS as the independent variable. I also performed a separate regression with both growth rates as independent variables. I then reviewed the T- and F-Statistics to determine whether the variables and equations were statistically significant.[25]

Q. WHAT DID THOSE ANALYSES REVEAL?

A. As shown in Attachment DWD-4R, the only growth rate that was statistically significant and positively related to the P/E ratio was projected EPS. Because EPS growth is the only

[24] James H. Vander Weide and Willard T. Carleton, *Investor Growth Expectations: Analysts vs History*, The Journal of Portfolio Management (Spring 1988).

[25] In general, a T-Statistic of 2.00 or greater indicates that the variable is likely to be different than zero, or "statistically significant." The F-Statistic is used to determine whether the model as a whole has statistically significant predictive capability.

growth rate that is both statistically and positively related to utility valuation, projected earnings is the proper measure of growth in the constant growth DCF model.

Q. WHAT WOULD MR. BAUDINO'S DCF RESULT BE HAD HE ONLY RELIED ON EPS GROWTH FORECASTS?

A. As shown on Attachment DWD-5R, the DCF derived cost rate based on average EPS growth forecasts is 9.78%, and the DCF derived cost rate based on median EPS growth forecasts is 9.45%. These results should be viewed with caution, however, as the DCF model tends to mis-specify the investor-required return, as previously discussed.

C. Application of the Capital Asset Pricing Model

Q. PLEASE DESCRIBE MR. BAUDINO'S CAPM ANALYSIS AND RESULTS.

A. Mr. Baudino calculates two sets of CAPM results. The first set relies on forward-looking estimates in determining the market risk premium (MRP), for which he derives ROE estimates ranging from 7.72% to 7.76%. The second set relies on historical MRP estimates, for which he derives results ranging from 7.58% to 9.07%.[26] Mr. Baudino notes that he did not rely on the results of his CAPM in determining his recommended ROE, noting that it is less reliable than the DCF.[27]

Q. MR. BAUDINO CITES THAT A DISADVANTAGE WITH THE CAPM ANALYSIS IS THAT THE ANALYST'S APPLICATION OF JUDGMENT CAN SIGNIFICANTLY INFLUENCE THE RESULTS OBTAINED BY THE CAPM.[28] WHAT IS YOUR RESPONSE?

A. All ROE models are only as good as their inputs, and all ROE models can be easily manipulated by changing those inputs. For example, the DCF model has a number of inputs and variations of inputs that can drastically alter results as shown on Table 3:

[26] Baudino Direct Testimony, at 28.
[27] Baudino Direct Testimony, at 16.
[28] Baudino Direct Testimony, at 25.

Table 3: Various Inputs to DCF Models

Input	Variations of Inputs
Cash Flow Stream	Constant-Growth, Blended Growth, Multi-Stage Growth
Dividend Yield	Spot Dividend Yield, average dividend yield
Adjusted Dividend Yield	No adjustment, ½ g adjustment, full g adjustment, projected dividend
Growth Rates	Historical v. Projected v. Sustainable
Growth Measure	EPS, DPS, Book Value Per Share
Sources of Growth Rates	Value Line, Zacks, Yahoo, MorningStar, etc.

Q. ARE ALL COST OF EQUITY MODELS SUBJECT TO LIMITING ASSUMPTIONS THAT DO NOT HOLD IN REALITY?

A. Yes, they are. As discussed previously, all cost of equity models are subject to error when used in practice. To gain greater insight into the investor-required return, one must look to multiple models and not narrowly focus on the results of any one model, like Mr. Baudino has done.

Q. DO FIRMS USE MULTIPLE COMMON EQUITY MODELS, INCLUDING THE CAPM IN THEIR INTERNAL ANALYSES?

A. Yes, they do. Brigham and Daves state:

> Recent surveys found that the CAPM approach is by far the most widely used method. Although most firms use more than one method, almost 74 percent of respondents in one survey, and 85 percent in the other, used the CAPM.[footnote omitted] This is in sharp contrast to a 1982 survey which found that only 30 percent of respondents used the CAPM.[footnote omitted] Approximately 16 percent now use the CF, down from 31 percent in 1982. The bond yield plus risk premium is used primarily by companies that aren't publicly traded.
>
> People experienced in estimating the cost of equity recognize that both careful analysis and sound judgment are required. It would be nice to pretend that judgment is unnecessary and to specify an easy, precise way of determining the exact cost of equity capital. Unfortunately, this is not possible – finance is in large part a matter of judgment, and we simply must face that fact.[29]

[29] Eugene F. Brigham, Phillip R. Daves, Intermediate Financial Management, Ninth Edition, Thomson Southwestern, 2007, at 332-333.

This excerpt establishes four points: (1) most firms use multiple models; (2) the use of the CAPM is prevalent by firms in internal decision-making; (3) the importance of the DCF model in the decision-making process for firms have waned over time; and (4) regardless of which models one uses, judgment is the key ingredient in determining the cost of equity capital. In view of the above, the Commission should ignore Mr. Baudino's concerns regarding the applicability of the CAPM for cast of capital purposes.

Q. DO YOU HAVE ANY COMMENTS ON MR. BAUDINO'S APPLICATION OF HIS CAPM?

A. Yes, I do. Mr. Baudino's indicated returns on common equity using the CAPM, ranging from 7.72% to 9.07%, are unreasonable. I would argue that the inputs used in his application of the CAPM are the driving factors for the unreasonableness of his CAPM results.

Q. WHICH INPUTS OF MR. BAUDINO'S CAPM ANALYSIS ARE FLAWED?

A. Mr. Baudino's CAPM analysis is flawed in at least three respects. First, he has incorrectly relied on a historical, *i.e.*, recent, six-month average 30-year Treasury bond yield as his risk-free rate.[30] Second, he fails to consider several approaches, supported by his own testimony in this proceeding and in other proceedings, in calculating the MRP. Third, Mr. Baudino did not incorporate an empirical CAPM (ECAPM) analysis even though empirical evidence indicates that low-beta securities, such as utilities, earn returns higher than the CAPM predicts and high-beta securities earn less.

[30] Exhibit RAB-5.

Q. WHY IS IT APPROPRIATE TO RELY ON PROJECTED INTEREST RATES IN THE CAPM MODEL?

A. Using current measures, like interest rates, is inappropriate for cost of capital and ratemaking purposes because both cost of capital and ratemaking are prospective in nature. The cost of capital, including the cost rate of common equity, is expectational in that it reflects investors' expectations of future capital markets, including an expectation of interest rate levels, as well as future risks. As, Morningstar observes:

> It is important to note that the expected equity risk premium, as it is used in discount rates and cost of capital analysis, is a forward-looking concept. That is, the equity risk premium that is used in the discount rate should be reflective of what investors think the risk premium will be going forward.[31]

Ratemaking is also prospective in that the rates set in this proceeding will be in effect for a period in the future.

Mr. Baudino agrees with using projected measures in a cost of capital analysis, specifically the use of projected analyst growth rates in EPS in the DCF model, as he explains on page 20 of his direct testimony: "ROE analysis is a forward-looking process. Five-year or ten-year historical growth rates may not accurately represent investor expectations for future dividend growth. Analysts' forecasts for earnings and dividend growth provide better proxies for the expected growth component in the DCF model than historical growth rates."

As mentioned above, even though Mr. Baudino exclusively relies on projected growth rates in his DCF analyses, noting that growth in the DCF is expected,[32] he fails to apply that logic to selecting an appropriate interest rate in his CAPM analysis. Using projected interest rates in his CAPM analysis would be consistent with his above statement and his application of her DCF model. Additionally, Mr. Baudino relies on projected

[31] Morningstar, Inc., 2013 Ibbotson Stocks, Bonds, Bills and Inflation Valuation Yearbook, at 53.
[32] *Ibid.*, at 19.

interest rates from the *Survey of Professional Forecasters* in supporting his views on the current capital markets.[33] In view of the above, the appropriate projected risk-free rate for Mr. Baudino's CAPM analysis is the average consensus forecast of 2.86%.[34]

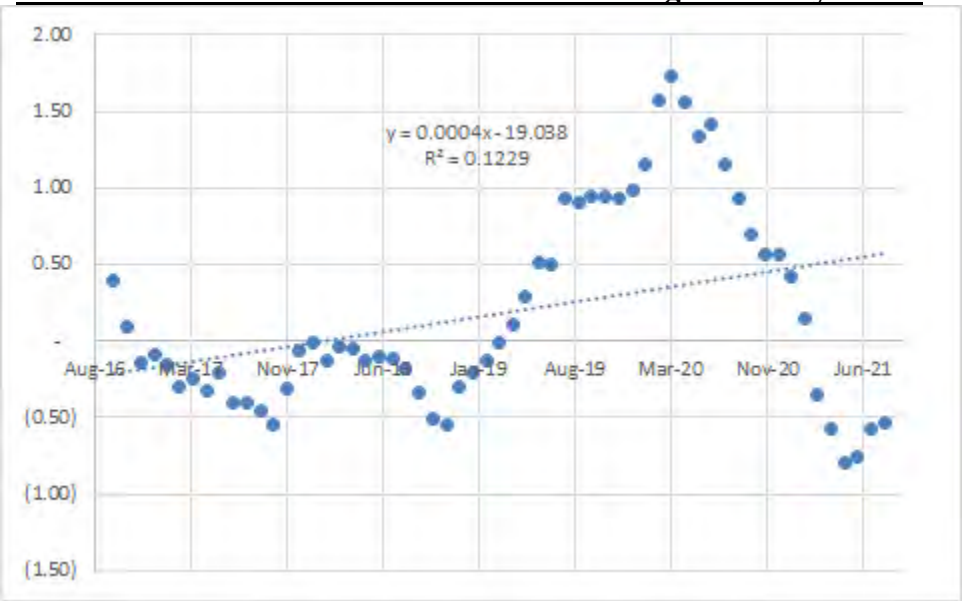
Q. ARE CURRENT INTEREST RATES ACCURATE PREDICTORS OF FUTURE INTEREST RATES?

A. No, they are not. Current interest rates are not proven to be a better predictor of future interest rates. In Chart 2 (below) I compare actual monthly yields to the three-month yield average from 12 months prior. This chart demonstrates that current Treasury yields have not been accurate predictors of future yields. Those results make intuitive sense. With the recent market dislocation, Treasury yields have decreased significantly and have been volatile. As interest rates decreased, historical Treasury yields over-projected current yields. As interest rates subsequently increased, the opposite was true.

[33] Baudino Direct Testimony, at 12.

[34] Based on approximately 50 economists from *Blue Chip* for 30-year Treasury bonds for the six quarters ending with the fourth quarter 2022, from the July 1, 2021 edition, and the long-range consensus forecasts from the June 1, 2021 edition for 2023-2027 and 2028-2032, or 2.86%, as derived in note 5 on page 1 Attachment DWD-6R.

Chart 2: Forecast Error of Three-Month Average Treasury Yields[35]



Q. WHAT IS YOUR POSITION ON THE 2.50% NORMALIZED RISK-FREE RATE QUOTED BY DUFF & PHELPS?

A. The determination of the normalized risk-free rate as calculated by Duff & Phelps is not transparent, especially in view of the historical data presented in SBBI – 2021, or the forecasts from other well-known sources of projections, such as *Blue Chip* or the *Survey of Professional Forecasters*. Further, the risk-free rate quoted by Duff & Phelps is based on a 20-year yield, which is not appropriate for cost of capital purposes.

Q. WHY IS THE USE OF A 20-YEAR TREASURY YIELD NOT APPROPRIATE FOR COST OF CAPITAL PURPOSES?

A. Mr. Baudino's use of 20-year U.S. Treasury bonds is inappropriate for cost of capital purposes because, as discussed below, the tenor of the risk-free rate used in the CAPM should match the life (or duration) of the underlying investment. As discussed in my Direct Testimony, both financial and academic literature find that the term of the risk-free rate used for cost of capital purposes should match the life of the underlying investment. Equity

[35] Source: Federal Reserve Schedule H.15.

securities represent a perpetual claim on cash flows; 30-year Treasury bonds are the longest-maturity securities available to approximate that perpetual claim.[36] Thus, Mr. Baudino's use of a 20-year Treasury bond yield does not match the life of the assets being valued. The use of a 30-year Treasury bond yield is a more appropriate risk-free rate.

In view of the above, the appropriate risk-free rate available at the time of the preparation of Mr. Baudino's direct testimony is the average of the consensus forecasts of approximately 50 economists from *Blue Chip* for 30-year Treasury bonds for the six quarters ending with the fourth quarter 2022, from the July 1, 2021 edition, and the long-range consensus forecasts from the June 1, 2021 edition for 2023-2027 and 2028-2032, or 2.86%, as derived in note 5 on page 1 of Attachment DWD-6R.[37]

Q. DO YOU GENERALLY AGREE WITH MR. BAUDINO'S HISTORICAL LONG-TERM ARITHMETIC MEAN MRP OF 7.30% AND THREE- TO FIVE-YEAR PROJECTED MARKET RETURN OF 8.34%?

A. Yes, I do. They are similar measures to what I use in the calculation of my average MRP.

Q. DO YOU AGREE WITH MR. BAUDINO'S SUPPLY SIDE MRP OF 6.00%?

A. No, I do not. The reason why I do not is because the MRP mismatches a projected return on the market with a historical bond yield. A more correct way to derive that MRP would be to use the projected return and subtract a projected risk-free rate. On page 10-29 of the 2021 SBBI® Yearbook Stocks, Bonds, Bills, and Inflation, the Ibbotson and Chen supply side model produces a forward-looking geometric return on the market of 9.18%.[38] Converting the 9.18% geometric mean return to an arithmetic mean return results in an

[36] D'Ascendis Direct Testimony, at 22.
[37] Both documents would have been available when Mr. Baudino conducted his rate of return.
[38] SBBI – 2021, at 10-29.

arithmetic, forward-looking market return of 11.11%.[39] Subtracting the applicable risk-free rate of 2.86% results in a forward-looking MRP of 8.25%.

Q. HAS MR. BAUDINO CALCULATED AN ADDITIONAL MRP FROM HIS *VALUE LINE* INVESTMENT ANALYZER DATA IN PAST PROCEEDINGS?

A. Yes, he has. In North Carolina Docket Nos. E-2, Sub 1219 and E-7, Sub 1214, concerning Duke Energy Progress, LLC and Duke Energy Carolinas, LLC, Mr. Baudino used the average dividend yield and median projected three- to five-year growth rates in EPS and book value per share (BVPS) to determine a projected market return.

Q. WHAT WOULD BE THE PROJECTED RETURN ON THE MARKET USING MR. BAUDINO'S *VALUE LINE* INVESTMENT ANALYZER DATA AS OF HIS SPOT DATE USING AVERAGE DIVIDEND YIELD AND MEDIAN PROJECTED EPS GROWTH RATES?

A. It would be 11.87%, as detailed in note 3 of Attachment DWD-6R. Subtracting the appropriate risk-free rate results in a forward-looking MRP of 9.01%. I did not consider using the projected BVPS growth rates in the projected market return because projected EPS growth rates are the superior measure of growth in a DCF model as discussed previously.

Over the long run, there can be no growth in DPS without growth in EPS. Earnings expectations have a more significant, but not sole, influence on market prices than dividend expectations. Thus, the use of earnings growth rates in a DCF analysis provides a better match between investors' market appreciation expectations implicit in market prices and the growth rate component of the DCF. Consequently, earnings expectations have a significant influence on market prices which affect market price appreciation, and hence,

[39] The conversion of a geometric mean return to an arithmetic mean return is shown in SBBI – 2021, at 10-30. 11.11% = 9.18% + 19.67%^{2}/2

the "growth" experienced by investors. This should be evident even to relatively unsophisticated investors just by listening to financial news reports on radio, TV, or reading newspapers. In fact, Morin states:

> Because of the dominance of institutional investors and their influence on individual investors, analysts' forecasts of long-run growth rates provide a sound basis for estimating required returns. Financial analysts exert a strong influence on the expectations of many investors who do not possess the resources to make their own forecasts, that is, they are a cause of g. The accuracy of these forecasts in the sense of whether they turn out to be correct is not at issue here, as long as they reflect widely held expectations. As long as the forecasts are typical and/or influential in that they are consistent with current stock price levels, they are relevant. The use of analysts' forecasts in the DCF model is sometimes denounced on the grounds that it is difficult to forecast earnings and dividends for only one year, let alone for longer time periods. This objection is unfounded, however, because it is present investor expectations that are being priced; it is the consensus forecast that is embedded in price and therefore in required return, and not the future as it will turn out to be.
>
> * * *
>
> Published studies in the academic literature demonstrate that growth forecasts made by security analysts represent an appropriate source of DCF growth rates, are reasonable indicators of investor expectations and are more accurate than forecasts based on historical growth. These studies show that investors rely on analysts' forecasts to a greater extent than on historic data only.[40]

However, while EPS is a significant factor influencing market prices, it is by no means the only factor that affects market prices, a fact recognized by Bonbright with regard to public utilities as discussed previously. In addition, studies performed by Cragg and Malkiel demonstrate that analysts' forecasts are superior to historical growth rate extrapolations. They state:

> Efficient market hypotheses suggest that valuation should reflect the information available to investors. Insofar as analysts' forecasts are more precise than other types we should therefore expect their differences from other measures to be reflected in the market. It is therefore noteworthy that our regression results do support the hypothesis that analysts' forecasts are needed even when calculated growth rates are available. As we noted when we described the data, security analysts do not use simple mechanical methods to obtain their evaluations of companies. The growth-rate figures we obtained were distilled from careful examination of all aspects of the

[40] Morin, at 298.

> companies' records, evaluation of contingencies to which they might be subject, and whatever information about their prospects the analysts could glean from the companies themselves of from other sources. It is therefore notable that the results of their efforts are found to be so much more relevant to the valuation than the various simpler and more "objective" alternatives that we tried.[41]

In addition, Vander Weide and Carleton conclude:

> . . . our studies affirm the superiority of analyst's forecasts over simple historical growth extrapolations in the stock price formation process. Indirectly, this finding lends support to the use of valuation models whose input includes expected growth rates.[42]

Q. WHAT IS THE AVERAGE MRP GIVEN THESE ADDITIONAL MEASURES?

A. Averaging the four MRPs results in an average MRP of 7.51%.[43]

Q. THE ECAPM IS ONE MEANS OF ADJUSTING THE CAPM FOR THE EMPIRICAL OBSERVATION THAT THE SECURITY MARKET LINE IS NOT AS STEEPLY SLOPED AS THE CAPM PREDICTS. HAS MR. BAUDINO INCLUDED AN ECAPM ANALYSIS?

A. No, he has not. In fact, numerous tests of the CAPM have confirmed the ECAPM's validity by showing that the empirical Security Market Line (SML) described by the traditional CAPM is not as steeply sloped as the predicted SML. While the results of these tests support the notion that Beta coefficients are related to security returns, the empirical SML described by the CAPM formula is not as steeply sloped as the predicted SML,[44] as discussed on page 35 of my Direct Testimony.

[41] John G. Cragg and Burton G. Malkiel, Expectations and the Structure of Share Prices (University of Chicago Press, 1982) Chapter 4.
[42] James H. Vander Weide and Willard T. Carleton, *Investor Growth Expectations: Analysts vs. History* (The Journal of Portfolio Management, Spring 1988) 78-82.
[43] 7.51% = (7.30% + 5.48% + 9.01% + 8.25%) / 4.
[44] Morin, at 175.

Q. IS THERE ADDITIONAL EVIDENCE THAT SUPPORTS THE VALIDITY OF THE ECAPM?

A. Yes, there is. The empirical issues with the CAPM have been present since the presentation of the model, as noted by Dianna R. Harrington in her text Modern Portfolio Theory & the Capital Asset Pricing Model:

> So far we have learned some very interesting things about the CAPM and reality. Some of the earliest work tested realized data (history) against data generated by simulated portfolios. Early studies by Douglas (1969) and Lintner (Douglas [1969]) showed discrepancies between what was expected on the basis of the CAPM and the actual relationships that were apparent in the capital markets. Theoretically, the minimal rate of return from the portfolios (the intercept) and the actual risk-free rate for the period should have been equal. They were not.
>
> * * *
>
> Another study, now more famous than Lintner's was done by Black, Jensen, and Scholes (1972). Lintner had used what is called a cross-sectional method (looking at a number of stock returns during one time period), whereas Black, Jensen, and Scholes used a time-series method (using returns for a number of stocks over several time periods). To make their test, Black, Jensen, and Scholes assumed that what had happened in the past was a good proxy for the investor expectations (a frequent assumption in CAPM tests). Using historical data, they generated estimates using what we call the market model:
>
> $$R_{jt} = \alpha_j + \beta_j (R_{mt}) + \varepsilon_j$$
>
> Where:
>
> R = total returns
> β = the slope of the line (the incremental return for risk)
> α = the intercept or a constant (expected to be 0 over time and across all firms)
> ε = an error term (expected to be random, without information)
> m = the market proxy
> j = the firm or portfolio
> t = the time period
>
> Instead of using single stocks, they formed portfolios in an effort to wash out one source of error; because betas of single firms are quite unstable. On the basis of the CAPM, they expected to find
>
> 1. That the intercept was equal to the risk-free rate (their proxy was the Treasury bill rate)
> 2. That the capital market line had a positive slope and that riskier (higher beta) securities provided higher return

Instead they found

1. That the intercept was different from the risk-free rate
2. That high-risk securities earned less and low-risk securities earned more than predicted by the model
3. That the intercept seemed to depend on the beta of any asset: high-beta stocks had a different intercept than low-beta stocks

* * *

Fama and MacBeth (1974) criticized the Black, Jensen, and Scholes study (hereafter called BJS). In a reformulation of the study, they supported the first of the BJS findings. They found that the intercept exceeded the risk-free proxy, but did not find the evidence to support the other BJS conclusions.[45]

Harrington discusses Black's potential solution to this phenomenon:

> Black's replacement for the risk-free asset was a portfolio that had no covariability with the market portfolio. Because the relevant risk in the CAPM is systematic risk, a risk-free asset would be the one with no volatility relative to the market – that is, a portfolio with a beta of zero. All investor-perceived levels of risk could be obtained from various linear combinations of Black's zero-beta portfolio and the market portfolio… Since R_z (the rate of return of the zero-beta asset) and R_m are uncorrelated (as R_f and R_m were assumed to be in the simple CAPM), the investor can choose from various combinations of R_z and R_m. On segment R_mY, R_z, is sold short and proceeds are invested in R_m. On segment R_zR_m, portions of the zero-beta portfolio are purchased. At R_m, the investor is fully invested in the market portfolio. The equilibrium CAPM was rewritten by Black as follows:
>
> $$E(R_i) = (1 - \beta_i) E(R_z) + \beta_i E(R_m)$$
>
> Where:
>
> E indicates expected,
> $E(R_z)$ is less than $E(R_m)$, and
> R_z holdings over the whole market must be in equilibrium. That is, the number of short sellers and lenders of securities must be equal.
>
> Black's adaptation is intriguing. The result of using this model is a capital market line that has a less steep slope and a higher intercept than those of the simple CAPM. If Black's model is more correct in its description of investor behavior in the marketplace, then the use of the simple model would produce equity return predictions that would be too low for sticks with betas greater than one and too high for stocks with betas of less than one.[46]

[45] Dianna R. Harrington, Modern Portfolio Theory & the Capital Asset Pricing Model – A User's Guide, Prentice-Hall, Inc. 1983, at 43-45.
[46] Dianna R. Harrington, Modern Portfolio Theory & the Capital Asset Pricing Model – A User's Guide, Prentice-Hall, Inc. 1983, at 30-31.

As such, while I still find the CAPM to be appropriate, if Mr. Baudino is of the opinion that the CAPM is not reliable, he should have applied an ECAPM analysis. Further, as discussed below, the ECAPM is not simply a second adjustment to a company's Beta coefficient.

Q. IS THE ECAPM AN ADJUSTMENT TO A COMPANY'S BETA COEFFICIENT AS ASSERTED BY MR. BAUDINO?[47]

A. No, it is not. A common critique of the ECAPM is the claim that using adjusted betas in a CAPM analysis addresses the empirical issues with the CAPM (discussed above), by increasing the expected returns for low beta stocks and decreasing the returns for high beta stocks, concluding that there is no need to use the ECAPM. This is an incorrect understanding of the ECAPM. Using adjusted betas in a CAPM analysis is not equivalent to using the ECAPM, nor is it an unnecessary redundancy.

Betas are adjusted because of their general regression tendency to converge toward 1.0 over time, *i.e.*, over successive calculations of beta. As also noted above, numerous studies have determined that the SML described by the CAPM formula at any given moment in time is not as steeply sloped as the predicted SML. Morin states:

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

[47] Baudino Direct Testimony, at 48.

> Figure 6-1, the ECAPM is a return (vertical axis) adjustment and not a beta (horizontal axis) adjustment. Both adjustments are necessary.[48]

Moreover, the slope of the SML should not be confused with beta. As Brigham and Gapenski state:

> The slope of the SML reflects the degree of risk aversion in the economy – the greater the average investor's aversion to risk, then (1) the steeper is the slope of the line, (2) the greater is the risk premium for any risky asset, and (3) the higher is the required rate of return on risky assets.[12]
>
> [12]Students sometimes confuse beta with the slope of the SML. This is a mistake. As we saw earlier in connection with Figure 6-8, and as is developed further in Appendix 6A, beta does represent the slope of a line, but *not* the Security Market Line. This confusion arises partly because the SML equation is generally written, in this book and throughout the finance literature, as $k_i = R_F + b_i(k_M - R_F)$, and in this form b_i looks like the slope coefficient and $(k_M - R_F)$ the variable. It would perhaps be less confusing if the second term were written $(k_M - R_F)b_i$, but this is not generally done.[49]

In addition, in Appendix 6A of Brigham and Gapenski's textbook entitled "Calculating Beta Coefficients," the authors demonstrate that beta, which accounts for regression bias, is not a return adjustment but rather is based on the slope of a different line.

A 1980 study by Litzenberger, *et al.* found the CAPM underestimates the ROE for companies, such as public utilities, with betas less than 1.00.[50] In that study, the authors applied adjusted betas and still found the CAPM to underestimate the ROE for low-beta companies. Similarly, Brattle Group's Risk and Return for Regulated Industries supports the use of adjusted betas in the ECAPM:

> Note that the ECAPM and the Blume adjustment are attempting to correct for different empirical phenomena and therefore both may be applicable. It is not inconsistent to use both, as illustrated by the fact that the Litzenberger et.al (1980) study relied on Blume adjusted betas and estimated an alpha of 2% points in a short-term version of the ECAPM. This issue sometimes

[48] Morin, at 191.

[49] Eugene F. Brigham and Louis C. Gapenski, Financial Management – Theory and Practice, 4th Ed. (The Dryden Press, 1985), at 201-204.

50 Robert Litzenberger, Krishna Ramaswamy and Howard Sosin, On the CAPM Approach to the Estimation of A Public Utility's Cost of Equity Capital, The Journal of Finance, Vol. XXXV, No. 2, May 1980.

arises in regulatory proceedings.[51]

Hence, using adjusted betas does not address the previously discussed empirical issues with the CAPM. In view of the foregoing, using adjusted betas in both the traditional and empirical applications of the CAPM is neither incorrect nor inconsistent with the financial literature, and is not an unnecessary redundancy. In view of financial theory and practical research, it is therefore appropriate to include the ECAPM when estimating the cost of common equity.

Q. WHAT WOULD THE RESULTS OF MR. BAUDINO'S CAPM ANALYSIS BE IF CORRECTED TO USE A PROJECTED 30-YEAR TREASURY BOND YIELD, AN APPROPRIATE MRP, AND EMPLOY THE ECAPM AS DISCUSSED ABOVE?

A. Attachment DWD-6R, pages 1 and 2 presents the results of the corrected applications of both the traditional CAPM and the ECAPM of 9.62% and 9.81%, respectively. These indicated cost rates do not reflect Duke Energy Kentucky's risk profile, as they are not adjusted for the Company's small relative size to the proxy group, its riskier bond rating, or flotation costs.

Q. WHAT WOULD MR. BAUDINO'S COMMON EQUITY COST RATES BE BASED ON THE CORRECTIONS TO HIS DCF MODEL AND CAPM ANALYSES DISCUSSED ABOVE?

A. The results of the corrections to Mr. Baudino's DCF model and CAPM are provided in Table 4, below:

Table 4: Summary of Baudino Corrected Results

Measure	Method 1	Method 2
Discounted Cash Flow Model	9.78%	9.45%
	CAPM	**ECAPM**
Capital Asset Pricing Model	9.62%	9.81%

51 Bente Villadsen, et. al, Risk and Return for Regulated Industries (2017) at 95, endnote 147 of Chapter 4.

In view of these corrected results, Mr. Baudino's reasonable range of ROEs would be from 9.45% to 9.80%. However, an indicated range of ROEs from 9.45% to 9.80% still understates Duke Kentucky's ROE because it does not reflect their unique risks and flotation costs.

D. Adjustments to the Cost of Common Equity

Q. DOES MR. BAUDINO CONSIDER A SIZE ADJUSTMENT IN HIS RECOMMENDED ROE?

A. No, he does not. Mr. Baudino claims that there is no consensus regarding the use of a size premium for utilities. He also claims that since Duke Energy Kentucky is part of Duke Energy Corporation, (Duke Energy), it should not be allowed a size premium.[52]

Q. HAVE YOU CONDUCTED AN ADDITIONAL STUDY COMPARING THE SIZE OF DUKE ENERGY KENTUCKY WITH THE AVERAGE PROXY COMPANY?

A. Yes, I have. Duff & Phelps' (D&P) 2020 Cost of Capital: Annual U.S. Guidance and Examples Market Results Through 2019 (D&P 2020) presents a Size Study based on the relationship of various measures of size and return. Relative to the relationship between average annual return and the various measures of size, D&P state:

> **The size of a company is one of the most important risk elements to consider when developing cost of equity estimates for use in valuing a firm.** Traditionally, researchers have used market value of equity (*i.e.,* "market capitalization" or simply "market cap") as a measure of size in conducting historical rate of return research. For example, the Center for Research in Security Prices (CRSP) "deciles" are developed by sorting U.S. companies by market capitalization. Another example is the Fama-French "Small minus Big" (SMB) series, which is the difference in return of "small" stocks minus "big" (*i.e.,* large) stocks, as defined by market capitalization. (emphasis added) [53]

[52] Baudino Direct Testimony, at 50-51.
[53] D&P-2020, at p. 10-2.

Attachment DWD-7R contains indicated small size risk premiums using various measures of size as described by D&P 2020.[54] The measures are listed below:

- Market Value of Common Equity;
- Book Value of Common Equity;
- Five-Year Average Net Income;
- Market Value of Invested Capital;
- Total Assets;
- Five Year Average EBITDA;
- Total Sales; and
- Number of Employees.

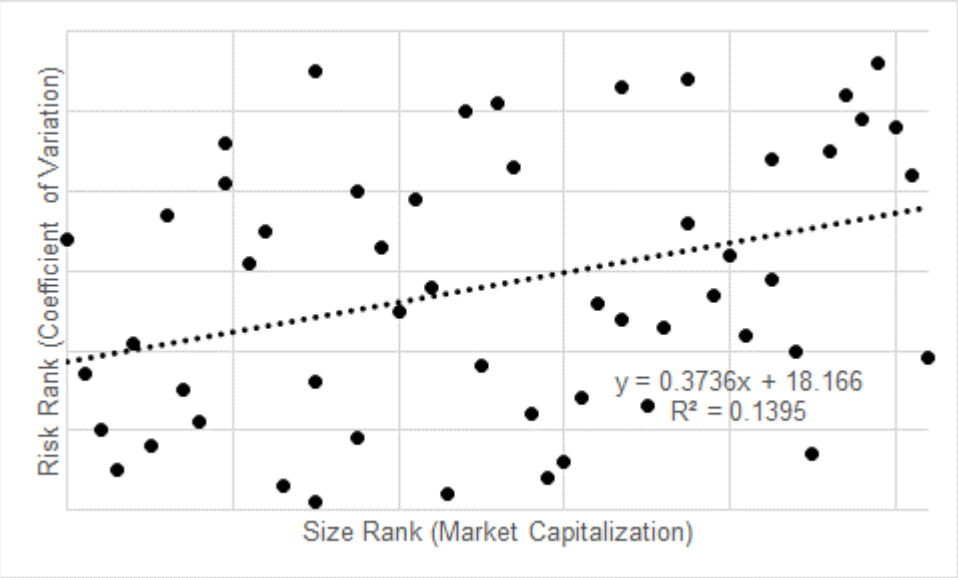
As shown on Attachment DWD-7R, in all measures, Duke Energy Kentucky is smaller than the proxy group presented in this proceeding with associated size premiums between 1.37% and 3.24%. In view of these indicated size premiums, an upward size adjustment of 0.15% to the indicated cost of common equity is extremely conservative.

Q. HAVE YOU PERFORMED A STUDY FOR UTILITY COMPANIES THAT LINK SIZE AND RISK?

A. Yes, I have. The study included the universe of electric, gas, and water companies included in *Value Line* Standard Edition. From each of the utilities' *Value Line* Ratings & Reports, I calculated the ten-year Coefficient of Variation (CoV) of net profit (a measure of risk) and current market capitalization (a measure of size) for each company. After ranking the companies by size (largest to smallest) and risk (least risky to most risky), I made a scatter plot of the data, as shown on Chart 3, below:

[54] *Ibid.*

Chart 3: Relationship Between Size and CoV of Net Profit for the *Value Line* Universe of Utility Companies[55]



As shown in Chart 3 above, as company size decreases (increasing size rank), the CoV increases, linking size and risk for utilities, which is significant at 95.0% confidence level.

Another measure of total risk provided by *Value Line* is Safety Ranking.[56] Similar to the CoV of net profit, I made a scatterplot of the relationship between Safety Ranking and size rank:

[55] Source: *Value Line*.

[56] *Value Line* also ranks stocks for Safety by analyzing the total risk of a stock compared to the approximately 1,700 stocks in the *Value Line* universe. Each of the stocks tracked in the *Value Line Investment Survey* is ranked in relationship to each other, from 1 (the highest rank) to 5 (the lowest rank). Safety is a quality rank, not a performance rank, and stocks ranked 1 and 2 are most suitable for conservative investors; those ranked 4 and 5 will be more volatile. Volatility means prices can move dramatically and often unpredictably, either down or up. The major influences on a stock's Safety rank are the company's financial strength, as measured by balance sheet and financial ratios, and the stability of its price over the past five years.

Chart 4: Relationship Between Size and Safety Ranking for the *Value Line* Universe of Utility Companies[57]

As shown on Chart 4, again, as company size rank increases, Safety Ranking degrades, indicating a link between size and risk for utilities, also significant at the 95% confidence level.

Q. EXPLAIN WHY IT IS NOT APPROPRIATE TO USE DUKE ENERGY CORPORATION WHEN DETERMINING THE NEED FOR A SIZE ADJUSTMENT FOR DUKE ENERGY KENTUCKY.

A. As discussed in my Direct Testimony,[58] the return derived in the proceeding will not apply to Duke Energy's operations as a whole, but only to Duke Energy Kentucky's operations. As such, Duke Energy Kentucky's operations should be considered a stand-alone company.

Q. WHY SHOULD THE COMMISSION CONSIDER DUKE ENERGY KENTUCKY AS A STAND-ALONE COMPANY?

A. The Commission should consider Duke Energy Kentucky as a stand-alone company because it is Duke Energy Kentucky's rate base to which the overall rates of return set forth in this proceeding will be applied, as noted above. To do otherwise would be

[57] Source: *Value Line*.
[58] D'Ascendis Direct Testimony, at 47-48.

discriminatory, confiscatory, and inaccurate. It is also a basic financial precept that the use of the funds invested give rise to the risk of the investment. As Brealey and Myers state:

> The true cost of capital depends on the use to which the capital is put.
>
> ***
>
> ***Each project should be evaluated at its own opportunity cost of capital; the true cost of capital depends on the use to which the capital is put.*** (italics and bold in original) [59]

Morin confirms Brealey and Myers when he states:

> Financial theory clearly establishes that the cost of equity is the risk-adjusted opportunity cost of the investors and not the cost of the specific capital sources employed by the investors. The true cost of capital depends on the use to which the capital is put and not on its source. The Hope and Bluefield doctrines have made clear that the relevant considerations in calculating a company's cost of capital are the alternatives available to investors and the returns and risks associated with those alternatives.[60]

Additionally, Levy and Sarnat state:

> The firm's cost of capital is the discount rate employed to discount the firm's average cash flow, hence obtaining the value of the firm. It is also the weighted average cost of capital, as we shall see below. The weighted average cost of capital should be employed for project evaluation… only in cases where the risk profile of the new projects is a "carbon copy" of the risk profile of the firm[61]

Although Levy and Sarnat discuss a project's cost of capital relative to a firm's cost of capital, these principles apply equally to the use of a proxy group-based cost of capital. Each company must be viewed on its own merits, regardless of the source of its equity capital. As *Bluefield* clearly states:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; [62]

[59] Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, McGraw-Hill, Third Edition, 1988, at pp. 173, 198.
[60] Morin, at 523.
[61] Haim Levy & Marshall Sarnat, Capital Investment and Financial Decisions, Prentice/Hall International, 1986, at 465.
[62] *Bluefield*, at 6.

In other words, it is the "risks and uncertainties" surrounding the property employed for the "convenience of the public" which determines the appropriate level of rates. In this proceeding, the property employed "for the convenience of the public" is the Kentucky jurisdictional rate base of Duke Energy Kentucky. Thus, it is only the risk of investment in Duke Energy Kentucky that is relevant to the determination of the cost of common equity to be applied to the common equity-financed portion of that rate base.

Consistent with the financial principle of risk and return, and the stand-alone nature of ratemaking, an upward adjustment must be applied to the indicated cost of common equity derived from the cost of equity models of the proxy groups used in this proceeding.

Q. DOES MR. BAUDINO CONSIDER A CREDIT RISK ADJUSTMENT IN HIS RECOMMENDED ROE?

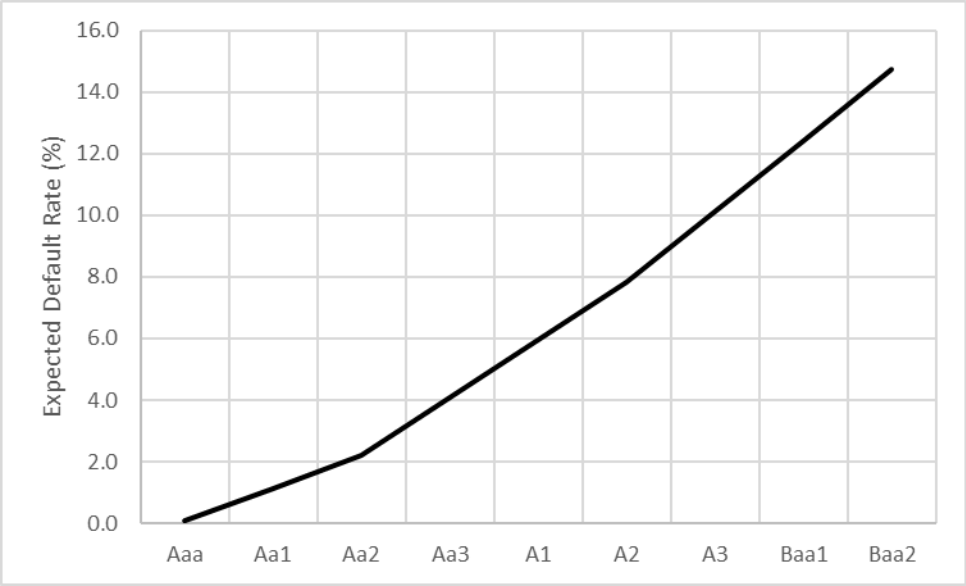
A. No, he does not. Mr. Baudino states that Duke Energy Kentucky's ROE should not be adjusted as their credit ratings "falls within" the range of credit ratings of his proxy group of companies.[63] Additionally, Mr. Baudino states that in evaluating the credit risk of Duke Energy Kentucky relative to the proxy group, "one must use the credit rating of the publicly traded parent company."[64]

Q. DOES THE FACT THAT DUKE ENERGY KENTUCKY'S CREDIT RATINGS ARE "WITHIN THE RANGE" OF THE PROXY GROUP CREDIT RATINGS INDICATE THAT THERE IS NO ADDITIONAL RISK APPLICABLE TO DUKE ENERGY KENTUCKY'S EQUITY?

No, it does not. Chart 5 below presents Moody's Idealized Cumulative Expected Default Rates for debt obligations with maturities lasting 30-years based on the respective rating.

[63] Baudino Direct Testimony, at 52-53.
[64] *Ibid.*

Chart 5: Moody's Idealized Cumulative Expected Default Rates Based on Debt Obligations with 30-Year Maturities



As shown in Chart 5, Moody's notes an observable difference in the default rates based on each respective rating. Therefore, even minor differences in credit ratings should be reflected in the ROE awarded to Duke Energy Kentucky in this proceeding.

Q. IS IT APPROPRIATE TO COMPARE DUKE ENERGY KENTUCKY'S BOND RATING TO THE PROXY PARENT COMPANIES' BOND RATINGS?

A. No, it is not. First, comparing the rating of Duke Energy Kentucky to the proxy group operating subsidiaries reflects an apples-to-apples comparison of credit risk, as opposed to using the proxy group credit ratings at the parent level, which could be impacted by non-utility operations. I reflect that consideration given that I take into account the extent to which regulated natural gas operations are in place at the individual companies, as that is a necessary consideration in selecting a proxy group that appropriately reflects the risks that Duke Energy Kentucky faces, which Mr. Baudino agrees with as he accepts my proxy group.

Q. IS IT COMMON FOR PARENT COMPANIES TO TYPICALLY BE RATED LOWER THAN THEIR OPERATING SUBSIDIARIES?

A. Yes, it is. As Moody's notes:

> Most HoldCos present their financial statements on a consolidated basis that blurs legal considerations about priority of creditors based on the legal structure of the family, and grid scoring is thus based on consolidated ratios. However, HoldCo creditors typically have a secondary claim on the group's cash flows and assets after OpCo creditors. We refer to this as structural subordination, because it is the corporate legal structure, rather than specific subordination provisions, that causes creditors at each of the utility and nonutility subsidiaries to have a more direct claim on the cash flows and assets of their respective OpCo obligors.[65]

Considering the importance of selecting a proxy group that appropriately reflects the risks facing Duke Energy Kentucky, as reflected by regulated electric operations, with the fact that ratings at the regulated operating subsidiaries reflects those that have the most direct claims on those cash-flows, it is clear that the use of parent company ratings is inappropriate, and does not reflect the same risks that investors in Duke Energy Kentucky face.

Q. MR. BAUDINO ARGUES THAT FLOTATION COSTS SHOULD NOT BE CONSIDERED BECAUSE, IN HIS OPINION, "IT IS LIKELY THAT FLOTATION COSTS ARE ALREADY ACCOUNTED FOR IN CURRENT STOCK PRICES".[66] WHAT IS YOUR RESPONSE TO MR. BAUDINO ON THAT POINT?

A. I disagree. The models used to estimate the appropriate ROE assume no "friction" or transaction costs, as these costs are not reflected in the market price (in the case of the DCF model) or risk premium (in the case of the Risk Premium and CAPM model). Mr. Baudino provides no support for his opinion that current stock prices account for flotation costs, and his position should be disregarded.

[65] Moody's Investors Service, Rating Methodology, *Regulated Electric and Gas Utilities*, June 23, 2017, at 22.
[66] Baudino Direct Testimony, at 53.

Q. DOES DUKE ENERGY KENTUCKY'S PROPOSED RIDER GMA LOWER ITS RISK PROFILE COMPARED TO YOUR UTILITY PROXY GROUP?

A. No, it does not, as stated on pages 52-53 of my Direct Testimony. The cost of capital is a comparative exercise, so the risk profile of Duke Energy Kentucky would only be lower if the mechanisms granted by the Commission were unique to Duke Energy Kentucky, and not available to other utilities of comparable risk. Mr. Baudino's statement regarding Duke Energy Kentucky's regulatory mechanisms lowering the Company's risk profile compared to comparable risk companies is without merit, as is his proposed ROE reduction.

Q. WHAT IS MR. BAUDINO'S RANGE OF ROES APPLICABLE TO DUKE KENTUCKY AFTER ADJUSTMENT?

A. Mr. Baudino's corrected, adjusted results are summarized in Table 5, below:

Table 5: Summary of Baudino Corrected Results with Adjustments

Measure	Method 2
Indicated Range of ROEs Before Adjustment	9.45% - 9.80%
Business Risk Adjustment	0.15%
Credit Risk Adjustment	0.13%
Flotation Cost Adjustment	0.12%
Indicated Range of ROEs After Adjustment	9.85% - 10.20%

In view of these corrected and adjusted model results, Mr. Baudino's initial range of ROEs from 8.60% to 9.30% significantly understates the ROE for Duke Kentucky at this time.

E. Critiques on Company Testimony

Q. DOES MR. BAUDINO HAVE CRITIQUES OF YOUR ROE ANALYSES?

A. Yes. Mr. Baudino's critiques of my analyses are as follows:

1. The application of my RPM;
2. The application of my CAPM and ECAPM;

3. My use of a non-price regulated proxy group comparable in total risk to my utility proxy group;
4. My application of a size premium to my indicated ROE;
5. My application of a credit risk adjustment to my indicated ROE; and
6. My application of a flotation cost adjustment to my indicated ROE.

I have already addressed critiques 4, 5, and 6 previously in my Rebuttal Testimony, so I will not address them again here. I will address the remaining critiques in turn below.

i. Risk Premium Model

Q. PLEASE SUMMARIZE MR. BAUDINO'S CRITIQUES OF YOUR RPM.

A. Mr. Baudino's position is that "the bond yield plus risk premium approach is imprecise and can only provide very general guidance on the current authorized ROE for a regulated gas utility."[67]

Q. DOES MR. BAUDINO PRESENT ANY EMPIRICAL EVIDENCE ON WHY HE BELIEVES THAT YOUR RPM PRODUCES "UNREASONABLE" RESULTS?[68]

A. No, he does not. He simply compares my results to historical commission-allowed ROEs.

Q. WHAT IS YOUR RESPONSE TO MR. BAUDINO'S SUGGESTION THAT YOU SHOULD HAVE CONSIDERED CURRENT UTILITY BOND YIELDS FOR YOUR RISK PREMIUM ANALYSIS?

A. I have already discussed why projected bond yields are the appropriate measures for ratemaking purposes above and will not repeat that discussion here.

Q. MR. BAUDINO NOTES YOUR EQUITY RISK PREMIUM (ERP) OF 7.99% USING YOUR BETA ADJUSTED APPROACH AND DEEMED IT TO BE

[67] Baudino Direct Testimony, at 36.
[68] Baudino Direct Testimony, at 39.

UNREASONABLE.[69] DID YOU EXCLUSIVELY RELY ON YOUR BETA ADJUSTED ERP FOR YOUR RPM RESULT?

A. No, I did not. I averaged my beta adjusted ERP (7.99%), my S&P Utility Index ERP (5.57%), and the authorized ROE ERP (5.69%) to arrive at my recommended ERP of 6.42%. Using multiple models and multiple inputs to those models gives greater insight into the cost of capital as previously and agreed to by Mr. Baudino when he states: "My past experience with the CAPM indicates that it is prudent to use a wide variety of data in estimating investor-required returns."[70]

Q. HOW DO YOUR RECOMMENDED ERPS OF 6.42% (DIRECT) AND 6.60% (REBUTTAL) COMPARE TO THE HISTORICAL DISTRIBUTION OF ERPS FROM 1929-2020?

A. The ERPs recommended in my Direct and updated analysis fall within the 52nd and 53rd percentiles, respectively, of historical ERPs (as measured by the return on the S&P Utility Index less the yield on an A-rated utility bond). Mr. Baudino's concerns regarding the level of my ERPs in my RPM should be dismissed.

Q. MR. BAUDINO CLAIMS THAT YOU HAVE NOT PROVED THAT YOUR PREDICTIVE RISK PREMIUM MODEL (PRPM) IS RELIED ON BY INVESTORS.[71] PLEASE RESPOND.

A. As discussed in my Direct Testimony,[72] the PRPM is based on the research of Dr. Robert F. Engle, dating back to the early 1980s. Dr. Engle discovered that the volatility of market prices, returns, and risk premiums clusters over time, making prices, returns, and risk premiums highly predictable. In 2003, he shared the Nobel Prize in Economics for this

[69] Baudino Direct Testimony, at 39.
[70] Baudino Direct Testimony, at 25.
[71] Baudino Direct Testimony, at 41.
[72] D'Ascendis Direct Testimony, at 20-22.

work, characterized as "methods of analyzing economic time series with time-varying volatility (ARCH).[73] Dr. Engle[74] noted that relative to volatility, "the standard tools have become the ARCH/GARCH[75] models." Hence, the methodology is not exclusively used by me.

In addition, the GARCH methodology has been well tested by academia since Engle's, et al. research was originally published in 1982, 39 years ago. I use the well-established GARCH methodology to estimate the PRPM model using a standard commercial and relatively inexpensive statistical package, Eviews,©[76] to develop a means by which to estimate a predicted ERP which, when added to a bond yield, results in a cost of common equity.

Also, the PRPM is in the public domain, having been published six times in academically peer-reviewed journals: Journal of Economics and Business (June 2011 and April 2015),[77] The Journal of Regulatory Economics (December 2011),[78] The Electricity Journal (May 2013 and March 2020),[79] and Energy Policy (April 2019).[80] Notably, none of these articles have been rebutted in the academic literature.

[73] www.nobelprize.org.
[74] Robert Engle, *GARCH 101: The Use of ARCH/GARCH Models in Applied Econometrics*, Journal of Economic Perspectives, Volume 15, No. 4, Fall 2001, at 157-168.
[75] Autoregressive Conditional Heteroskedasticity/Generalized Autoregressive Conditional Heteroskedasticity.
[76] In addition to Eviews,® the GARCH methodology can be applied and the PRPM derived using other standard statistical software packages such as SAS, RATS, S-Plus and JMulti, which are not cost-prohibitive. The software that I used in this proceeding, Eviews,® currently costs $600 - $700 for a single user commercial license. In addition, JMulti is a free downloadable software with GARCH estimation applications.
[77] Eugene A. Pilotte and Richard A. Michelfelder, *Treasury Bond Risk and Return, the Implications for the Hedging of Consumption and Lessons for Asset Pricing*, Journal of Economics and Business, June 2011, 582-604. and Richard A. Michelfelder, *Empirical Analysis of the Generalized Consumption Asset Pricing Model: Estimating the Cost of Capital*, Journal of Economics and Business, April 2015, 37-50.
[78] Pauline M. Ahern, Frank J. Hanley, and Richard A. Michelfelder, *New Approach to Estimating the Cost of Common Equity Capital for Public Utilities*, The Journal of Regulatory Economics, December 2011, at 40:261-278.
[79] Richard A. Michelfelder, Pauline M. Ahern, Dylan W. D'Ascendis, and Frank J. Hanley, *Comparative Evaluation of the Predictive Risk Premium Model, the Discounted Cash Flow Model and the Capital Asset Pricing Model for Estimating the Cost of Common Equity*, The Electricity Journal, April 2013, at 84-89; and Richard A. Michelfelder, Pauline M. Ahern, and Dylan W. D'Ascendis, *Decoupling, Risk Impacts and the Cost of Capital*, The Electricity Journal, January 2020.
[80] Richard A. Michelfelder, Pauline M. Ahern, and Dylan W. D'Ascendis, *Decoupling Impact and Public Utility Conservation Investment*, *Energy Policy*, April 2019, 311-319.

Additionally, the PRPM was presented to a number of utility industry/regulatory/academic groups including the following: The Edison Electric Institute Cost of Capital Working Group; The NARUC Staff Subcommittee on Accounting and Finance; The National Association of Electric Companies Finance/Accounting/Taxation and Rates and Regulations Committees; the NARUC Electric Committee; The Wall Street Utility Group; the Indiana Utility Regulatory Commission Cost of Capital Task Force; the Financial Research Institute of the University of Missouri Hot Topic Hotline Webinar; and the Center for Research and Regulated Industries Annual Eastern Conference on two occasions.

Q. MR. BAUDINO STATES THAT YOU HAVE NOT SHOWN THAT THE PRPM HAS BEEN ACCEPTED BY REGULATORY JURISDICTIONS.[81] PLEASE RESPOND.

A. In Docket No. 2017-292-WS, the Public Service Commission of South Carolina (PSC SC) accepted Blue Granite Water Company's entire requested ROE, which included the PRPM. The relevant portion states:

> The Commission finds Mr. D'Ascendis' arguments persuasive. He provided more indicia of market returns, by using more analytical methods and proxy group calculations. Mr. D'Ascendis' use of analysts' estimates for his DCF analysis is supported by consensus, as is his use of the arithmetic mean. The Commission also finds that Mr. D'Ascendis' non-price regulated proxy group more accurately reflects the total risk faced [by] price regulated utilities and CWS. Furthermore, there is no dispute that CWS is significantly smaller than its proxy group counterparts, and, therefore, it may present a higher risk. An appropriate ROE for CWS is 10.45% to 10.95%. The Company used an ROE of 10.5% in computing its Application, a return on the low end of Mr. D'Ascendis' range, and the Commission finds that ROE is supported by the evidence.[82]

It should also be noted that in the above passage the PSC SC also found my non-price regulated proxy group to be appropriate.

[81] Baudino Direct Testimony, at 41.
[82] PSC SC Docket No. 2017-292-WS, Order No. 2018-345, at 14 (May 17, 2018).

In addition, in Docket No. W-354, Subs 363, 364 and 365, the State of North Carolina Utilities Commission approved my RPM and CAPM analyses, which used PRPM analyses as presented in this proceeding. The relevant portion of the order states:

> In doing so the Commission finds that the DCF (8.81%), Risk Premium (10.00%) and CAPM (9.29%) model results provided by witness D'Ascendis, as updated to use current rates in D'Ascendis Late-Filed Exhibit No. 1, as well as the risk premium (9.57%) analysis of witness Hinton, are credible, probative, and are entitled to substantial weight as set forth below.[83]

As detailed above, the PRPM is considered by investors and has been accepted in part, or in full by regulatory commissions. Mr. Baudino's concerns regarding the PRPM should be dismissed.

ii. Capital Asset Pricing Model

Q. PLEASE RESPOND TO MR. BAUDINO'S CLAIM THAT YOUR PROJECTED MRPS BASED ON YOUR MARKET DCF ANALYSIS ARE "UNREASONABLY HIGH."[84]

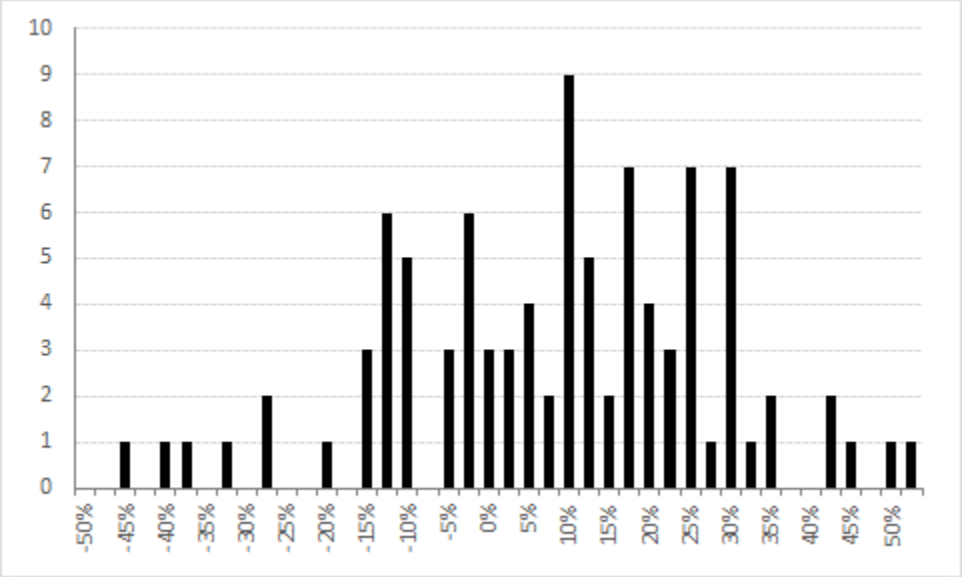
A. Mr. Baudino finds my projected market returns of 14.21% to 15.61% to be overstated. Again, Mr. Baudino fails to consider the other four measures I have considered. The average implied market return for my Direct (12.27%) and Rebuttal Testimonies (12.63%) represent the approximately 48th percentile of actual returns observed from 1926 to 2020 as shown on Attachment DWD-8R. As discussed above and as noted by Mr. Baudino, multiple measures gives greater insight into the investor-required return than a limited number of measures. The average implied market return for my Direct and Rebuttal Testimonies are 12.27% and 12.63%, respectively, which are comparable to the average historical market return of approximately 12.00%. Moreover, because market returns

[83] NCUC Docket No. W-354, Sub 363, 364, 365, *Order Granting Partial Rate Increase and Requiring Customer Notice*, at PDF 72 (March 31, 2020).
[84] Baudino Direct Testimony, at 47.

historically have been volatile, my market return estimates are statistically indistinguishable from the long-term arithmetic average market data on which Mr. Baudino relies.[85]

Recalling that Mr. Baudino includes historical data among the methods he uses to estimate the MRP, I therefore produced a histogram of the annual MRPs reported by Duff & Phelps. The results of that analysis, which are presented in Chart 6 below, demonstrate average MRPs of 9.54% (Direct Testimony) to 9.93% (Rebuttal Testimony) occur approximately 49% and 47% of the time, respectively.

Chart 6: Frequency Distribution of Observed Market Risk Premia, 1926-2020[86]



Further, Mr. Baudino finds that the growth rates underlying the projected market returns "are not supportable when one further considers both historical and forecasted gross domestic product (GDP) growth for the U.S."[87] To that end, I calculated the correlation coefficient between year-over-year GDP growth and Large-Capitalization Stock returns since 1929 and found a correlation of 0.13, meaning there is little-to-no link between GDP

[85] SBBI-2021, at Appendix A-1.
[86] Attachment DWD-8R.
[87] Baudino Direct Testimony, at 45.

and stock returns. In addition, the relationship between the two was not statistically significant.

Q. DO YOU AGREE WITH MR. BAUDINO THAT THE MRP FALLS IN A RANGE OF 5% TO 8%?

A. No, I do not. On page 47 of his Direct Testimony, Mr. Baudino cites to the eighth edition of "Principles of Corporate Finance" by Brealey, Myers, and Allen, which was published in 2006, to suggest that my MRP estimates are overstated. I do not agree that it is reasonable to compare generic estimates of the MRP from 15 years ago to current MRP estimates. As discussed in my Direct Testimony, my analysis of interest rates relative to the ERP, as well as published literature, support the finding that there is an inverse relationship between interest rates and the ERP.[88] That is, as interest rates fall, the ERP increases. Since 2006, the 30-year Treasury yield has decreased from approximately 5% to approximately 1.94%, as reported by Mr. Baudino.[89] Given the well documented inverse relationship, it is not surprising that my estimate of the MRP based on current data is higher than it was in 2006.

Adding the 2006 risk-free rate of approximately 5% to Mr. Baudino's suggested 5% to 8% MRP implies a market return of 10% to 13%. As noted above, the implied market return in my CAPM is 12.27% (Direct) and 12.63% (Rebuttal).[90] That estimate of the market return falls within the range implied by Mr. Baudino.

[88] D'Ascendis Direct Testimony, at 32.
[89] Exhibit RAB-4.
[90] As shown in Attachment DWD-8R, an MRP of 9.93% plus projected risk-free rate of 2.70% equals an implied market return of 12.63%.

iii. Non-Price Regulated Group

Q. PLEASE SUMMARIZE MR. BAUDINO'S CONCERNS WITH YOUR NON-PRICE REGULATED PROXY GROUP.

A. Mr. Baudino's concern is that non-utility companies face risks that lower risk electric companies like Duke Energy Kentucky do not face.[91]

Q. DOES MR. BAUDINO DISCUSS THE IMPORTANCE OF DETERMINING COMPARATIVE LEVELS OF RISK IN MAKING INVESTMENT DECISIONS?

A. Yes, he does. Mr. Baudino states the task of a rate of return analyst is to "estimate a return that is equal to the return being offered by other risk-comparable firms", which he notes could be a "utility stock, a utility bond, a mutual fund, a money market fund, or any other number of investment vehicles."[92] Mr. Baudino clearly recognizes that risk-comparable investments do not necessarily have to be utility based.

Q. HAVE YOU SHOWN YOUR NON-PRICE REGULATED PROXY GROUP TO BE COMPARABLE IN RISK TO YOUR UTILITY PROXY GROUP?

A. Yes, I have. As discussed in my Direct Testimony, the selection criteria for my non-regulated proxy group were based on a range of unadjusted Beta coefficients (a measure of systematic risk) and a range of standard errors of the regression (a measure of unsystematic risk), which gave rise to those Beta coefficients, and together measure total risk. [93]

As to the comparability of my Non-Price Regulated and Utility Proxy Groups, the selection criteria for my Non-Price Regulated Proxy Group was based on ranges of two measures of risk, the unadjusted beta of the proxy group, which measures systematic, or market risk, and the standard error of the regression, which gave rise to those betas, measuring non-systematic or diversifiable risk. Systematic plus non-systematic risk is one

[91] Baudino Direct Testimony, at 49.
[92] Baudino Direct Testimony, at 5.
[93] D'Ascendis Direct Testimony, at 41.

definition of total risk.[94] Mr. Baudino echoes this fact on pages 21-22 of his direct testimony.

Business and financial risks may vary between companies and proxy groups, but if the collective average betas and standard errors of the regression of the group are similar, then the total, or aggregate, non-diversifiable market risks and diversifiable risks are similar, as noted in "Comparable Earnings: New Life for an Old Precept" provided in Attachment DWD-9R. Thus, because the non-price regulated companies are selected based on analyses of market data, they are comparable in total risk (even though individual risks may vary) to the Utility Proxy Group. This is demonstrated clearly on page 273 of Jack C. Francis' Investments: Analysis and Management (page 3 of Attachment DWD-10R), which shows that total risk can be "partitioned into its systematic and unsystematic components." Essentially, companies that have similar betas and standard errors of regression have similar total investment risk.

Q. IS THERE A SPECIFIC ADVANTAGE TO USING YOUR SELECTION CRITERIA, WHICH USES MEASURES OF SYSTEMATIC AND UNSYSTEMATIC RISK, INSTEAD OF USING THE COMBINATION OF BUSINESS AND FINANCIAL RISK?

A. Yes. *Value Line* unadjusted Beta coefficients and the standard error of the regressions giving rise to those Beta coefficients are measurable objective values, whereas total business risk[95] and financial risk measures are more subjective. In view of all of the above, Mr. Baudino's concerns regarding my Non-Price Regulated Proxy Group should be dismissed by the Commission.

[94] Business risk plus financial risk is a second definition of total risk.
[95] Business risk in excess of size risk, which is measurable, as discussed previously.

Q. HAVE YOU CONDUCTED ANOTHER ANALYSIS TO DETERMINE WHETHER YOUR UTILITY PROXY GROUP AND NON-PRICE REGULATED PROXY GROUP ARE OF COMPARABLE RISK?

A. Yes, I have. On page 23 of Mr. Baudino's direct testimony, he mentions that *Value Line's* Safety Ranking is a proxy for a company's total risk. I compared the average and median Safety Ranking for the Utility Proxy Group and Non-Price Regulated Proxy Group, as shown on Table 6, below:

Table 6: Comparison of Safety Rankings of Mr. D'Ascendis' Utility Proxy Group and Non-Price Regulated Proxy Group

Group	Average Safety Ranking	Median Safety Ranking
Utility Proxy Group	2.286	2.000
Non-Price Regulated Proxy Group	2.195	2.000

As shown, the Safety Rankings of the Utility Proxy Group and the Non-Price Regulated Proxy Group are comparable, indicating comparable total risk. This, in addition to all of the above should lead the Commission to consider the results of my Non-Price Regulated Proxy Group in its determination of Duke Energy Kentucky's ROE in this proceeding.

IV. CONCLUSION

Q. PLEASE SUMMARIZE YOUR REBUTTAL TESTIMONY.

A. In this Rebuttal Testimony I updated my ROE models with market data as of August 31, 2021. The results of the ROE models produced indicated ranges of ROEs from 9.47% to 12.79% (unadjusted) and from 9.87% to 13.19% (adjusted).[96] Given these ranges, I maintain my initial recommendation of 10.30%, which, in light of the current capital markets, is reasonable, if not conservative.

[96] D'Ascendis Rebuttal Testimony, Attachment DWD-1R, at 2.

Regarding Mr. Baudino's direct testimony, I discussed my disagreements with his analyses, which I supported with citations to the academic literature and empirical analyses. I also responded to any critiques to my Direct Testimony, again, supporting my responses with citations to the academic literature and empirical analyses.

Q. SHOULD ANY OR ALL OF THE ARGUMENTS MADE BY MR. BAUDINO PERSUADE THE COMMISSION TO LOWER THE RETURN ON COMMON EQUITY IT APPROVES FOR DUKE ENERGY KENTUCKY BELOW YOUR RECOMMENDATION?

A. No, they should not. My recommended cost of common equity of 10.30% is both reasonable and conservative. It will provide the Company with sufficient earnings to enable it to attract necessary new capital efficiently and at a reasonable cost, to the benefit of both customers and investors.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

VERIFICATION

STATE OF New Jersey)
) **SS:**
COUNTY OF Burlington)

The undersigned, Dylan D'Ascendis, Partner, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing rebuttal testimony and that it is true and correct to the best of his knowledge, information and belief.

Dylan D'Ascendis Affiant

Subscribed and sworn to before me by Dylan D'Ascendis on this 28th day of September, 2021.

NOTARY PUBLIC

My Commission Expires:

HEATHER N. FULMER
NOTARY PUBLIC OF NEW JERSEY
Commission # 50115526
My Commission Expires 10/25/2024

Duke Energy Kentucky, Inc.
Table of Contents
Supporting Exhibits Accompanying the Rebuttal Testimony
of Dylan W. D'Ascendis, CRRA, CVA

Duke Energy Kentucky, Inc.
Recommended Capital Structure and Cost Rates
for Ratemaking Purposes
at August 31, 2021

Type Of Capital	Ratios (1)	Cost Rate	Weighted Cost Rate
Long-Term Debt	46.72%	3.84% (1)	1.80%
Short-Term Debt	2.58%	1.67% (1)	0.04%
Common Equity	50.70%	10.30% (2)	5.22%
Total	100.00%		7.06%

Notes:

(1) Company-provided.
(2) From page 2 of this Attachment.

Duke Energy Kentucky, Inc.
Brief Summary of Common Equity Cost Rate

Line No.	Principal Methods	Proxy Group of Seven Natural Gas Distribution Companies
1.	Discounted Cash Flow Model (DCF) (1)	9.47%
2.	Risk Premium Model (RPM) (2)	10.45%
3.	Capital Asset Pricing Model (CAPM) (3)	12.01%
4.	Market Models Applied to Comparable Risk, Non-Price Regulated Companies (4)	12.79%
5.	Range of Common Equity Model Results	9.47% - 12.79%
6.	Size Risk Adjustment (5)	0.15%
7.	Credit Risk Adjustment (6)	0.13%
8.	Flotation Cost Adjustment (7)	0.12%
9.	Indicated Range of Common Equity Cost Rates after Adjustment	9.87% - 13.19%
10.	Recommended Common Equity Cost Rate	10.30%

Notes:
(1) From page 3 of Attachment DWD-1R.
(2) From page 11 of Attachment DWD-1R.
(3) From page 24 of Attachment DWD-1R.
(4) From page 29 of Attachment DWD-1R.
(5) Adjustment to reflect the Company's greater business risk due to its smaller size relative to the Utility Proxy Group as detailed in Mr. D'Ascendis' direct testimony.
(6) Company-specific risk adjustment to reflect Duke Energy Kentucky' greater risk due to its Baa1 long-term issuer rating relative to the average A2/A3 long-term issuer rating of the Utility Proxy Group as detailed in Mr. D'Ascendis' Direct Testimony.
(7) From page 37 of Attachment DWD-1R.

Duke Energy Kentucky, Inc.
Indicated Common Equity Cost Rate Using the Discounted Cash Flow Model for the
Proxy Group of Seven Natural Gas Distribution Companies

Proxy Group of Seven Natural Gas Distribution Companies	[1] Average Dividend Yield (1)	[2] Value Line Projected Five Year Growth in EPS (2)	[3] Zack's Five Year Projected Growth Rate in EPS	[4] Bloomberg's Five Year Projected Growth Rate in EPS	[5] Yahoo! Finance Projected Five Year Growth in EPS	[6] Average Projected Five Year Growth in EPS (3)	[7] Adjusted Dividend Yield (4)	[8] Indicated Common Equity Cost Rate (5)
Atmos Energy Corporation	2.52 %	7.00 %	7.40 %	7.46 %	7.80 %	7.42 %	2.61 %	10.03 %
New Jersey Resources Corporation	3.35	2.00	7.10	7.55	6.00	5.66	3.44	9.10
Northwest Natural Holding Company	3.64	5.50	4.90	4.93	5.50	5.21	3.73	8.94
ONE Gas, Inc.	3.13	6.50	5.00	5.00	5.00	5.38	3.21	8.59
South Jersey Industries, Inc.	4.69	11.50	5.40	3.38	4.80	6.27	4.84	11.11
Southwest Gas Holdings, Inc.	3.46	8.00	5.50	5.17	4.00	5.67	3.56	9.23
Spire Inc.	3.62	10.00	5.50	6.00	7.31	7.20	3.75	10.95
							Average	9.71 %
							Median	9.23 %
							Average of Mean and Median	9.47 %

NA= Not Available
NMF= Not Meaningful Figure

Notes:

(1) Indicated dividend at 08/31/2021 divided by the average closing price of the last 60 trading days ending 08/31/2021 for each company.
(2) From pages 4 through 10 of this Attachment.
(3) Average of columns 2 through 5 excluding negative growth rates.
(4) This reflects a growth rate component equal to one-half the conclusion of growth rate (from column 6) x column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for Atmos Energy Corporation, 2.52% x (1+(1/2 x 7.42%)) = 2.61%.
(5) Column 6 + column 7.

Source of Information:

Value Line Investment Survey
www.zacks.com Downloaded on 08/31/2021
www.yahoo.com Downloaded on 08/31/2021
Bloomberg Professional Services

ATMOS ENERGY CORP. NYSE-ATO

RECENT PRICE 101.07 | P/E RATIO 19.4 (Trailing: 19.0 Median: 19.0) | RELATIVE P/E RATIO 1.01 | DIV'D YLD 2.7% | VALUE LINE

TIMELINESS 4 Lowered 8/20/21
SAFETY 1 Raised 6/6/14
TECHNICAL 3 Raised 8/27/21
BETA .80 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$75-$160	$118 (15%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	160	(+60%)	*14%*
Low	130	(+30%)	*9%*

Institutional Decisions

	3Q2020	4Q2020	1Q2021
to Buy	256	280	256
to Sell	231	228	258
Hld's(000)	108898	107949	107920

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
High:	32.0	35.6	37.3	47.4	58.2	64.8	82.0	93.6	100.8	115.2	121.1	105.0						
Low:	25.9	28.5	30.4	34.9	44.2	50.8	60.0	72.5	76.5	89.2	77.9	84.6						

LEGENDS
0.50 x Dividends p sh divided by Interest Rate
Relative Price Strength
Options: Yes
Shaded area indicates recession

Target Price Range 2024 2025 2026

% TOT. RETURN 7/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	-4.6	55.5
3 yr.	14.2	48.6
5 yr.	37.6	95.5

Percent shares traded: 24, 16, 8

© VALUE LINE PUB. LLC	24-26
Revenues per sh [A]	*35.50*
"Cash Flow" per sh	*10.25*
Earnings per sh [AB]	*6.50*
Div'ds Decl'd per sh [C■]	*3.30*
Cap'l Spending per sh	*15.15*
Book Value per sh	*87.85*
Common Shs Outst'g [D]	*155.00*
Avg Ann'l P/E Ratio	*22.5*
Relative P/E Ratio	*1.25*
Avg Ann'l Div'd Yield	*2.3%*
Revenues ($mill) [A]	*5500*
Net Profit ($mill)	*1000*
Income Tax Rate	*25.0%*
Net Profit Margin	*18.2%*
Long-Term Debt Ratio	*40.0%*
Common Equity Ratio	*60.0%*
Total Capital ($mill)	*22700*
Net Plant ($mill)	*19100*
Return on Total Cap'l	*5.5%*
Return on Shr. Equity	*7.5%*
Return on Com Equity	*7.5%*
Retained to Com Eq	*3.5%*
All Div'ds to Net Prof	*51%*

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	61.75	75.27	66.03	79.52	53.69	53.12	48.15	38.10	42.88	49.22	40.82	32.23	26.01	28.00	24.32	22.41	*24.60*	*25.05*
	3.90	4.26	4.14	4.19	4.29	4.64	4.72	4.76	5.14	5.42	5.81	6.19	6.62	7.24	7.57	8.03	*8.55*	*9.10*
	1.72	2.00	1.94	2.00	1.97	2.16	2.26	2.10	2.50	2.96	3.09	3.38	3.60	4.00	4.35	4.72	*5.10*	*5.45*
	1.24	1.26	1.28	1.30	1.32	1.34	1.36	1.38	1.40	1.48	1.56	1.68	1.80	1.94	2.10	2.30	*2.50*	*2.70*
	4.14	5.20	4.39	5.20	5.51	6.02	6.90	8.12	9.32	8.32	9.61	10.46	10.72	13.19	14.19	15.38	*15.80*	*15.75*
	19.90	20.16	22.01	22.60	23.52	24.16	24.98	26.14	28.47	30.74	31.48	33.32	36.74	42.87	48.18	53.95	*60.20*	*68.25*
	80.54	81.74	89.33	90.81	92.55	90.16	90.30	90.24	90.64	100.39	101.48	103.93	106.10	111.27	119.34	125.88	*133.00*	*137.00*
	16.1	13.5	15.9	13.6	12.5	13.2	14.4	15.9	15.9	16.1	17.5	20.8	22.0	21.7	23.2	22.3	*Bold figures are Value Line estimates*	
	.86	.73	.84	.82	.83	.84	.90	1.01	.89	.85	.88	1.09	1.11	1.17	1.24	1.13		
	4.5%	4.7%	4.2%	4.8%	5.3%	4.7%	4.2%	4.1%	3.5%	3.1%	2.9%	2.4%	2.3%	2.2%	2.1%	2.2%		
							4347.6	3438.5	3886.3	4940.9	4142.1	3349.9	2759.7	3115.5	2901.8	2821.1	*3275*	*3430*
							199.3	192.2	230.7	289.8	315.1	350.1	382.7	444.3	511.4	580.5	*665*	*735*
							36.4%	33.8%	38.2%	39.2%	38.3%	36.4%	36.6%	27.0%	21.4%	19.5%	*19.0%*	*20.0%*
							4.6%	5.6%	5.9%	5.9%	7.6%	10.5%	13.9%	14.3%	17.6%	20.6%	*20.3%*	*21.4%*
							49.4%	45.3%	48.8%	44.3%	43.5%	38.7%	44.0%	34.3%	38.0%	40.0%	*48.0%*	*45.0%*
							50.6%	54.7%	51.2%	55.7%	56.5%	61.3%	56.0%	65.7%	62.0%	60.0%	*52.0%*	*55.0%*
							4461.5	4315.5	5036.1	5542.2	5650.2	5651.8	6965.7	7263.6	9279.7	11323	*15400*	*17000*
							5147.9	5475.6	6030.7	6725.9	7430.6	8280.5	9259.2	10371	11788	13355	*14700*	*15850*
							6.1%	6.1%	5.9%	6.4%	6.6%	7.2%	6.4%	6.9%	6.1%	5.5%	*6.0%*	*5.5%*
							8.8%	8.1%	8.9%	9.4%	9.9%	10.1%	9.8%	9.3%	8.9%	8.6%	*8.5%*	*8.0%*
							8.8%	8.1%	8.9%	9.4%	9.9%	10.1%	9.8%	9.3%	8.9%	8.6%	*8.5%*	*8.0%*
							3.3%	2.8%	4.0%	4.7%	4.9%	5.1%	4.9%	4.8%	4.6%	4.4%	*4.0%*	*4.0%*
							62%	65%	56%	50%	51%	50%	50%	48%	48%	49%	*50%*	*50%*

CAPITAL STRUCTURE as of 6/30/21
Total Debt $7328.9 mill. **Due in 5 Yrs** $410.0 mill.
LT Debt $7128.5 mill. **LT Interest** $370.0 mill.
(LT interest earned: 9.5x; total interest coverage: 9.5x)
Leases, Uncapitalized Annual rentals $20.4 mill.

Pfd Stock None

Pension Assets-9/20 $528.9 mill.
Oblig. $604.2 mill.
Common Stock 130,790,813 shs.
as of 7/30/21

MARKET CAP: $13.2 billion (Large Cap)

CURRENT POSITION ($MILL.)	2019	2020	6/30/21
Cash Assets	24.5	20.8	524.6
Other	433.5	450.5	590.8
Current Assets	458.0	471.3	1115.4
Accts Payable	265.0	235.8	280.4
Debt Due	464.9	.2	200.4
Other	479.5	546.4	581.7
Current Liab.	1209.4	782.4	1062.5
Fix. Chg. Cov.	990%	1306%	1315%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Revenues	-8.5%	-11.0%	*6.0%*
"Cash Flow"	5.5%	7.0%	*5.0%*
Earnings	8.0%	9.0%	*7.0%*
Dividends	5.0%	7.5%	*7.5%*
Book Value	7.5%	10.0%	*10.5%*

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) [A] Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2018	889.2	1219.4	562.2	444.7	3115.5
2019	877.8	1094.6	485.7	443.7	2901.8
2020	875.6	977.6	493.0	474.9	2821.1
2021	914.5	1319.1	605.6	*435.8*	*3275*
2022	*960*	*1405*	*580*	*485*	*3430*

Fiscal Year Ends	EARNINGS PER SHARE [A B E] Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2018	1.40	1.57	.64	.41	4.00
2019	1.38	1.82	.68	.49	4.35
2020	1.47	1.95	.79	.53	4.72
2021	1.71	2.30	.78	*.31*	*5.10*
2022	*1.84*	*2.29*	*.82*	*.50*	*5.45*

Cal-endar	QUARTERLY DIVIDENDS PAID [C■] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.45	.45	.45	.485	1.84
2018	.485	.485	.485	.525	1.98
2019	.525	.525	.525	.575	2.15
2020	.575	.575	.575	.625	2.35
2021	.625	.625	.625		

BUSINESS: Atmos Energy Corporation is engaged primarily in the distribution and sale of natural gas to over three million customers through six regulated natural gas utility operations: Louisiana Division, West Texas Division, Mid-Tex Division, Mississippi Division, Colorado-Kansas Division, and Kentucky/Mid-States Division. Gas sales breakdown for fiscal 2020: 68.6%, residential; 26.2%, commercial; 3.6%, industrial; and 1.6% other. The company sold Atmos Energy Marketing, 1/17. Officers and directors own approximately 1.2% of common stock (12/20 Proxy). President and Chief Executive Officer: Kevin Akers. Incorporated: Texas. Address: Three Lincoln Centre, Suite 1800, 5430 LBJ Freeway, Dallas, Texas 75240. Telephone: 972-934-9227. Internet: www.atmosenergy.com.

Atmos Energy appears to be en route to a solid fiscal 2021 (ends September 30th). Through the first nine months, share net of $4.79 was about 14% above the year-ago figure of $4.21. That was made possible partly by the natural gas distribution division, which benefited from higher rates, mainly in the Mid-Tex, Mississippi, Louisiana, and West Texas units. Customer growth, primarily in the Mid-Tex unit, also helped. Elsewhere, results of the pipeline and storage business received a boost from GRIP filings approved in May, 2020 and May, 2021. Though uncertainties surrounding the coronavirus persist, we expect full-year earnings to rise around 8%, to $5.10 a share, versus fiscal 2020's $4.72 tally. Concerning next year, share net stands to increase at a similar percentage rate, to $5.45, as operating margins expand further.

There's sufficient liquidity to meet various obligations for some time. When June ended, cash and equivalents were $524.6 million. Too, long-term debt was manageable, at 48% of total capital, and short-term commitments did not seem to be a major hurdle. What's more, $4 billion in common stock and/or debt securities remained available for issuance (out of $5 billion) under a shelf registration statement that expires in June, 2024. Lastly, Atmos can tap into four revolving credit facilities totaling $2.5 billion plus a $1.5 billion commercial paper program.

Business prospects out to mid-decade look encouraging. The company ranks as one of the country's biggest natural gas-only distributors, with more than three million customers across several states, including Texas, Louisiana, and Mississippi. Furthermore, we believe the pipeline and storage unit has promising overall growth opportunities, given that it operates in one of the most-active drilling regions in the world. Healthy corporate finances are another plus. So, in Atmos' current configuration, annual bottom-line advances may be between 6% and 8% over the 2024-2026 horizon.

These shares, though untimely, possess decent, risk-adjusted total return potential. Long-term capital gains possibilities are worthwhile. Dividend growth prospects appear promising, as well.

Frederick L. Harris, III *August 27, 2021*

(A) Fiscal year ends Sept. 30th. **(B)** Diluted shrs. Excl. nonrec. gains (loss): '10, 5¢; '11, (1¢); '18, $1.43; '20, 17¢. Excludes discontinued operations: '11, 10¢; '12, 27¢; '13, 14¢; '17, 13¢. Next egs. rpt. due early Nov. **(C)** Dividends historically paid in early March, June, Sept., and Dec. ■ Div. reinvestment plan. Direct stock purchase plan avail. **(D)** In millions. **(E)** Qtrs may not add due to change in shrs outstanding.

Company's Financial Strength	A+
Stock's Price Stability	95
Price Growth Persistence	80
Earnings Predictability	100

NEW JERSEY RES. NYSE-NJR

RECENT PRICE **37.88** | P/E RATIO **16.3** (Trailing: 14.3 Median: 17.0) | RELATIVE P/E RATIO **0.85** | DIV'D YLD **3.5%** | **VALUE LINE**

TIMELINESS 4 Lowered 8/20/21
SAFETY 2 Lowered 4/17/20
TECHNICAL 2 Lowered 8/13/21
BETA 1.00 (1.00 = Market)

18-Month Target Price Range

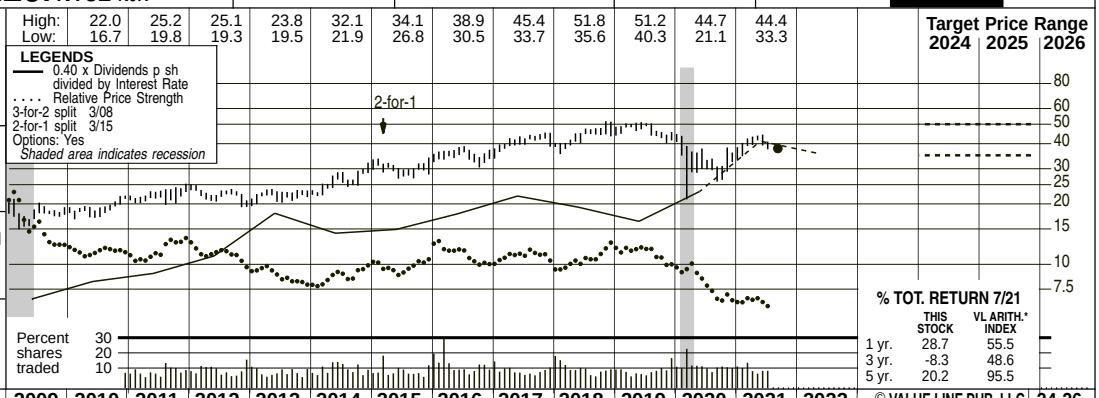
Low-High	Midpoint (% to Mid)
$16-$51	$34 (-10%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	50	(+30%)	*10%*
Low	35	(-10%)	*2%*

Institutional Decisions

	3Q2020	4Q2020	1Q2021
to Buy	129	132	105
to Sell	105	118	139
Hld's(000)	69155	71013	68468



2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
38.10	39.81	36.31	45.37	31.17	32.05	36.30	27.08	38.38	44.40	32.09	21.90	26.28	33.24	29.01	20.39	***20.90***	***26.55***	Revenues per sh [A]	***28.40***
1.31	1.37	1.22	1.81	1.58	1.63	1.70	1.86	1.93	2.73	2.52	2.46	2.68	3.72	2.99	3.30	***3.50***	***3.75***	"Cash Flow" per sh	***4.00***
.88	.93	.78	1.35	1.20	1.23	1.29	1.36	1.37	2.08	1.78	1.61	1.73	2.72	1.96	2.07	***2.20***	***2.40***	Earnings per sh [B]	***2.55***
.45	.48	.51	.56	.62	.68	.72	.77	.81	.86	.93	.98	1.04	1.11	1.19	1.27	***1.34***	***1.42***	Div'ds Decl'd per sh [C]■	***1.65***
.64	.64	.73	.86	.90	1.05	1.13	1.26	1.33	1.52	3.76	4.15	3.80	4.39	5.83	4.65	***4.10***	***4.10***	Cap'l Spending per sh	***4.00***
5.30	7.50	7.75	8.64	8.29	8.81	9.36	9.80	10.65	11.48	12.99	13.58	14.33	16.18	17.37	19.26	***20.35***	***21.55***	Book Value per sh [D]	***24.65***
82.64	82.88	83.22	84.12	83.17	82.35	82.89	83.05	83.32	84.20	85.19	85.88	86.32	87.69	89.34	95.80	***97.00***	***98.00***	Common Shs Outst'g [E]	***100.00***
16.8	16.1	21.6	12.3	14.9	15.0	16.8	16.8	16.0	11.7	16.6	21.3	22.4	15.6	24.3	17.7	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	***17.0***
.89	.87	1.15	.74	.99	.95	1.05	1.07	.90	.62	.84	1.12	1.13	.84	1.29	.91			Relative P/E Ratio	***.95***
3.1%	3.2%	3.0%	3.3%	3.5%	3.7%	3.3%	3.4%	3.7%	3.5%	3.1%	2.9%	2.7%	2.6%	2.5%	3.5%			Avg Ann'l Div'd Yield	***3.7%***
3009.2	2248.9	3198.1	3738.1	2734.0	1880.9	2268.6	2915.1	2592.0	1953.7	***2025***	***2600***	Revenues ($mill) [A]	***2840***
106.5	112.4	113.7	176.9	153.7	138.1	149.4	240.5	175.0	196.2	***215***	***235***	Net Profit ($mill)	***260***
30.2%	7.1%	25.4%	30.2%	26.3%	15.5%	17.2%	--	NMF	5.0%	***5.0%***	***5.0%***	Income Tax Rate	***5.0%***
3.5%	5.0%	3.6%	4.7%	5.6%	7.3%	6.6%	8.2%	6.7%	10.0%	***10.6%***	***9.1%***	Net Profit Margin	***9.1%***
35.5%	39.2%	36.6%	38.2%	43.2%	47.7%	44.6%	45.4%	49.8%	55.1%	***54.0%***	***54.0%***	Long-Term Debt Ratio	***53.0%***
64.5%	60.8%	63.4%	61.8%	56.8%	52.3%	55.4%	54.6%	50.2%	44.9%	***46.0%***	***46.0%***	Common Equity Ratio	***47.0%***
1203.1	1339.0	1400.3	1564.4	1950.6	2230.1	2233.7	2599.6	3088.9	4104.2	***4275***	***4610***	Total Capital ($mill)	***5265***
1295.9	1484.9	1643.1	1884.1	2128.3	2407.7	2609.7	2651.0	3041.2	3983.0	***4065***	***4145***	Net Plant ($mill)	***4400***
9.7%	9.2%	9.0%	12.1%	8.6%	6.9%	7.7%	10.1%	6.4%	5.6%	***6.0%***	***6.0%***	Return on Total Cap'l	***6.0%***
13.7%	13.8%	12.8%	18.3%	13.9%	11.8%	12.1%	16.9%	11.3%	10.6%	***11.0%***	***11.0%***	Return on Shr. Equity	***10.5%***
13.7%	13.8%	12.8%	18.3%	13.9%	11.8%	12.1%	16.9%	11.3%	10.6%	***11.0%***	***11.0%***	Return on Com Equity	***10.5%***
6.2%	6.2%	5.2%	11.0%	7.0%	4.8%	5.0%	10.2%	4.6%	4.3%	***4.5%***	***4.5%***	Retained to Com Eq	***3.5%***
55%	55%	59%	40%	50%	60%	59%	40%	59%	60%	***61%***	***59%***	All Div'ds to Net Prof	***64%***

CAPITAL STRUCTURE as of 6/30/21
Total Debt $2420.9 mill. **Due in 5 Yrs** $420.5 mill.
LT Debt $2221.6 mill. **LT Interest** $47.1 mill.
Incl. $54.9 mill. capitalized leases.
(LT interest earned: 5.0x; total interest coverage: 5.0x)
Pension Assets-9/20 $404.4 mill.
Oblig. $643.0 mill.
Pfd Stock None

Common Stock 96,433,901 shs.
as of 8/2/21
MARKET CAP: $3.7 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2019	2020	6/30/21
Cash Assets	2.7	117.0	4.7
Other	508.9	505.3	513.6
Current Assets	511.6	622.3	518.3
Accts Payable	295.9	270.1	310.8
Debt Due	46.9	152.6	199.3
Other	103.6	111.0	103.5
Current Liab.	446.4	533.7	613.6
Fix. Chg. Cov.	545%	545%	550%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Revenues	-2.5%	-6.5%	.5%
"Cash Flow"	7.0%	7.0%	*3.0%*
Earnings	6.0%	5.5%	*2.0%*
Dividends	7.0%	6.5%	*5.5%*
Book Value	7.5%	8.5%	*6.0%*

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) [A] Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2018	705.3	1019.1	543.4	647.3	2915.1
2019	811.8	866.2	434.9	479.1	2592.0
2020	615.0	639.6	299.0	400.1	1953.7
2021	454.3	802.2	367.6	***400.9***	***2025***
2022	***600***	***945***	***505***	***550***	***2600***

Fiscal Year Ends	EARNINGS PER SHARE [A B] Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2018	1.53	1.61	d.09	d.33	2.72
2019	.61	1.27	d.20	.29	1.96
2020	.44	1.12	d.06	.57	2.07
2021	.46	1.77	d.15	***.12***	***2.20***
2022	***.50***	***1.85***	***d.13***	***.18***	***2.40***

Calendar	QUARTERLY DIVIDENDS PAID [C]■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.255	.255	.255	.273	1.04
2018	.273	.273	.273	.2925	1.11
2019	.2925	.2925	.2925	.3125	1.19
2020	.3125	.3125	.3125	.3325	1.27
2021	.3325	.3325	.3325		

BUSINESS: New Jersey Resources Corp. is a holding company providing retail/wholesale energy svcs. to customers in NJ, and in states from the Gulf Coast to New England, and Canada. New Jersey Natural Gas had 558,000 cust. at 9/30/20. Fiscal 2020 volume: 215 bill. cu. ft. (14% interruptible, 21% res., 10% commercial & elec. utility, 55% capacity release programs). N.J. Natural Energy subsidiary provides unregulated retail/wholesale natural gas and related energy svcs. 2020 dep. rate: 2.8%. Has 1,156 empls. Off./dir. own 1.3% of common; BlackRock, 14.3%; Vanguard, 10.6% (12/20 Proxy). CEO, President & Director: Steven D. Westhoven. Incorporated: New Jersey. Address: 1415 Wyckoff Road, Wall, NJ 07719. Telephone: 732-938-1480. Web: www.njresources.com.

Since our May review, shares of New Jersey Resources have corrected moderately. In fact, over that time frame, the stock's price has receded approximately 9.5%. This likely reflects the challenging operating environment that has persisted for some time.

The company recently posted somewhat mixed June-period financial results. For the second quarter, revenues increased nearly 23%, to $367.6 million, thanks to a more-than-40% rise in nonutility volumes, partially offset by a low single-digit decline in regulated utility volumes. On the profitability front, total operating expenses increased 180 basis points as a function of the top line. After accounting for a sizable increase in interest expense and taxes, NJR's bottom line loss fell 2.5 times deeper into the red, to a deficit of $0.15. That said, this was still markedly better than our estimate for a loss of $0.20.

As a result, we have added a nickel to our 2021 share-net estimate, bringing that figure to $2.20. Our revised figure would represent an annual earnings advance of nearly 6.5%. This ought to be supported by an estimated top-line increase of about 3.5%, to roughly $2.1 billion. A primary driver this year will likely be the incremental contributions from the nonutility operations, particularly the Energy Services arm, which has been performing quite well, of late. Meanwhile, the New Jersey Natural Gas regulated utility business added 5,448 new customers over the first nine months of this fiscal year. However, that unit has been experiencing an uptick in bad-debt accounts, likely stemming from the COVID-19 pandemic and the loss of associated jobs. Elsewhere, other developments like the Southern Reliability Link project, which is anticipated to go into service this month, and a pending base-rate increase of about $165 million at the NJNG division should also be nicely additive.

These untimely shares appear richly valued at this time. NJR's stock price already reflects the bulk of the earnings growth potential we project for the pull to 2024-2026. Alternatively, the equity does offer attractive dividend growth potential and an above-average yield.

Bryan J. Fong *August 27, 2021*

(A) Fiscal year ends Sept. 30th.
(B) Diluted earnings. Qtly. revenues and egs. may not sum to total due to rounding and change in shares outstanding. Next earnings report due early Nov.
(C) Dividends historically paid in early Jan., April, July, and October. ■ Dividend reinvestment plan available.
(D) Includes regulatory assets in 2020: $527.5 million, $5.51/share.
(E) In millions, adjusted for splits.

Company's Financial Strength	A+
Stock's Price Stability	80
Price Growth Persistence	55
Earnings Predictability	55

N.W. NATURAL NYSE-NWN

RECENT PRICE **53.04** | P/E RATIO **20.2** (Trailing: 18.9 Median: 24.0) | RELATIVE P/E RATIO **1.06** | DIV'D YLD **3.6%** | **VALUE LINE**

TIMELINESS 4 Lowered 6/11/21
SAFETY 3 Lowered 3/19/21
TECHNICAL 5 Lowered 8/13/21
BETA .85 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$26-$67	$47 (-10%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	90	(+70%)	*17%*
Low	60	(+15%)	*7%*

Institutional Decisions

	3Q2020	4Q2020	1Q2021
to Buy	92	99	103
to Sell	94	85	89
Hld's(000)	21896	22201	21451

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
High:	50.9	49.0	50.8	46.6	52.6	52.3	66.2	69.5	71.8	74.1	77.3	56.8						
Low:	41.1	39.6	41.0	40.0	40.1	42.0	48.9	56.5	51.5	57.2	42.3	41.7						
Revenues per sh	33.01	37.20	39.13	39.16	38.17	30.56	31.72	27.14	28.02	27.64	26.39	23.61	26.52	24.45	24.49	25.29	*26.75*	*27.75*
"Cash Flow" per sh	4.34	4.76	5.41	5.31	5.20	5.18	5.00	4.94	5.04	5.05	4.91	4.93	1.04	5.28	5.15	5.69	*5.85*	*6.10*
Earnings per sh A	2.11	2.35	2.76	2.57	2.83	2.73	2.39	2.22	2.24	2.16	1.96	2.12	d1.94	2.33	2.19	2.30	*2.60*	*2.70*
Div'ds Decl'd per sh B■	1.32	1.39	1.44	1.52	1.60	1.68	1.75	1.79	1.83	1.85	1.86	1.87	1.88	1.89	1.90	1.91	*1.92*	*1.93*
Cap'l Spending per sh	3.48	3.56	4.48	3.92	5.09	9.35	3.76	4.91	5.13	4.40	4.37	4.87	7.43	7.43	7.95	9.18	*8.40*	*8.70*
Book Value per sh D	21.28	22.01	22.52	23.71	24.88	26.08	26.70	27.23	27.77	28.12	28.47	29.71	25.85	26.41	28.42	29.05	*33.85*	*37.10*
Common Shs Outst'g C	27.58	27.24	26.41	26.50	26.53	26.58	26.76	26.92	27.08	27.28	27.43	28.63	28.74	28.88	30.47	30.59	*31.00*	*31.00*
Avg Ann'l P/E Ratio	17.0	15.9	16.7	18.1	15.2	17.0	19.0	21.1	19.4	20.7	23.7	26.9	- -	26.6	30.9	25.0		
Relative P/E Ratio	.91	.86	.89	1.09	1.01	1.08	1.19	1.34	1.09	1.09	1.19	1.41	- -	1.44	1.65	1.30		
Avg Ann'l Div'd Yield	3.7%	3.7%	3.1%	3.3%	3.7%	3.6%	3.9%	3.8%	4.2%	4.1%	4.0%	3.3%	3.0%	3.0%	2.8%	3.3%		
Revenues ($mill)							848.8	730.6	758.5	754.0	723.8	676.0	762.2	706.1	746.4	773.7	*830*	*860*
Net Profit ($mill)							63.9	59.9	60.5	58.7	53.7	58.9	d55.6	67.3	65.3	70.3	*80.0*	*85.0*
Income Tax Rate							40.4%	42.4%	40.8%	41.5%	40.0%	40.9%	- -	26.4%	16.2%	23.1%	*21.0%*	*21.0%*
Net Profit Margin							7.5%	8.2%	8.0%	7.8%	7.4%	8.7%	NMF	9.5%	8.8%	9.1%	*9.6%*	*9.9%*
Long-Term Debt Ratio							47.3%	48.5%	47.6%	44.8%	42.5%	44.4%	47.9%	48.1%	48.2%	49.2%	*49.0%*	*46.5%*
Common Equity Ratio							52.7%	51.5%	52.4%	55.2%	57.5%	55.6%	52.1%	51.9%	51.8%	50.8%	*51.0%*	*53.5%*
Total Capital ($mill)							1356.2	1424.7	1433.6	1389.0	1357.7	1529.8	1426.0	1468.9	1672.0	1748.8	*2050*	*2150*
Net Plant ($mill)							1893.9	1973.6	2062.9	2121.6	2182.7	2260.9	2255.0	2421.4	2438.9	2654.8	*2640*	*2750*
Return on Total Cap'l							6.2%	5.7%	5.8%	5.8%	5.5%	5.1%	NMF	5.8%	5.2%	5.2%	*4.0%*	*4.0%*
Return on Shr. Equity							8.9%	8.2%	8.1%	7.6%	6.9%	6.9%	NMF	8.8%	7.5%	7.9%	*7.5%*	*7.5%*
Return on Com Equity							8.9%	8.2%	8.1%	7.6%	6.9%	6.9%	NMF	8.8%	7.5%	7.9%	*7.5%*	*7.5%*
Retained to Com Eq							2.4%	1.6%	1.5%	1.1%	.6%	.9%	NMF	2.1%	1.4%	1.7%	*2.0%*	*2.0%*
All Div'ds to Net Prof							73%	80%	81%	85%	92%	87%	NMF	76%	82%	79%	*74%*	*72%*

Bold figures are Value Line estimates

	24-26
© VALUE LINE PUB. LLC	
Revenues per sh	*31.10*
"Cash Flow" per sh	*6.85*
Earnings per sh A	*3.10*
Div'ds Decl'd per sh B■	*1.96*
Cap'l Spending per sh	*9.40*
Book Value per sh D	*45.30*
Common Shs Outst'g C	*32.00*
Avg Ann'l P/E Ratio	*24.0*
Relative P/E Ratio	*1.35*
Avg Ann'l Div'd Yield	*2.6%*
Revenues ($mill)	*995*
Net Profit ($mill)	*100*
Income Tax Rate	*21.0%*
Net Profit Margin	*10.1%*
Long-Term Debt Ratio	*43.0%*
Common Equity Ratio	*57.0%*
Total Capital ($mill)	*2550*
Net Plant ($mill)	*3105*
Return on Total Cap'l	*4.0%*
Return on Shr. Equity	*7.0%*
Return on Com Equity	*7.0%*
Retained to Com Eq	*2.5%*
All Div'ds to Net Prof	*63%*

CAPITAL STRUCTURE as of 6/30/21
Total Debt $1215.8 mill. **Due in 5 Yrs** $360.2 mill.
LT Debt $915.5 mill. **LT Interest** $43.1 mill.

(Total interest coverage: 3.1x)

Pension Assets-12/20 $373.9 mill.
Oblig. $595.2 mill.

Pfd Stock None

Common Stock 30,670,722 shares
as of 7/23/21

MARKET CAP $1.6 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2019	2020	6/30/21
Cash Assets	9.6	30.2	20.1
Other	284.1	293.0	253.7
Current Assets	293.7	323.2	273.8
Accts Payable	113.4	97.9	97.9
Debt Due	224.2	399.9	330.3
Other	144.6	129.3	144.3
Current Liab.	482.2	627.1	572.5
Fix. Chg. Cov.	336%	335%	312%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Revenues	-3.5%	-2.0%	*4.0%*
"Cash Flow"	.5%	1.5%	*4.0%*
Earnings	-1.5%	1.5%	*5.5%*
Dividends	1.5%	.5%	*.5%*
Book Value	1.0%	- -	*8.5%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	264.7	124.6	91.2	226.7	706.1
2019	285.4	123.4	90.3	247.3	746.4
2020	285.2	135.0	93.3	260.2	773.7
2021	315.9	148.9	*110*	*255.2*	*830*
2022	*320*	*150*	*120*	*270*	*860*

Calendar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	1.46	d.01	d.39	1.27	2.33
2019	1.50	.07	d.61	1.26	2.19
2020	1.58	d.17	d.61	1.50	2.30
2021	1.94	d.02	*d.60*	*1.28*	*2.60*
2022	*1.96*	*.01*	*d.57*	*1.30*	*2.70*

Calendar	QUARTERLY DIVIDENDS PAID B ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.47	.47	.47	.4725	1.88
2018	.4725	.4725	.4725	.475	1.89
2019	.475	.475	.475	.4775	1.90
2020	.4775	.4775	.4775	.48	1.91
2021	.48	.48	.48		

LEGENDS
0.60 x Dividends p sh divided by Interest Rate
Relative Price Strength
Options: Yes
Shaded area indicates recession

Target Price Range 2024 | 2025 | 2026

% TOT. RETURN 7/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	1.7	55.5
3 yr.	-12.1	48.6
5 yr.	-6.2	95.5

BUSINESS: Northwest Natural Holding Co. distributes natural gas to 1000 communities, 775,000 customers, in Oregon (89% of customers) and in southwest Washington state. Principal cities served: Portland and Eugene, OR; Vancouver, WA. Service area population: 3.7 mill. (77% in OR). Company buys gas supply from Canadian and U.S. producers; has transportation rights on Northwest Pipeline system. Owns local underground storage. Rev. breakdown: residential, 37%; commercial, 22%; industrial, gas transportation, 41%. Employs 1,167. BlackRock Inc. owns 16.4% of shares; State Street, 15.4%; Off./Dir., 1.03% (4/21 proxy). CEO: David H. Anderson. Inc.: Oregon. Address: 220 NW 2nd Ave., Portland, OR 97209. Tel.: 503-226-4211. Internet: www.nwnatural.com.

Northwest Natural Holding recently posted better-than-expected June-quarter financial results. To that point, revenues increased 10.3%, to $148.9 million thanks to new rates in Oregon, additional customer accounts, and reduced economic headwinds from the COVID-19 pandemic. On the profitability front, total expenses declined 190 basis points, as a percentage of the top line. After accounting for a drop in interest expenses as well, NWN's share deficit was reduced by nearly 90%, to $0.02. This was markedly above our call for a loss of $0.10.

As a result, we have raised our earnings outlook for 2021 and 2022 by a nickel each, to $2.60 and $2.70, respectively. In the current year, our revised figure would represent a share-net increase of approximately 13%. This ought to be supported by a nearly 7.5% rise in revenues, to $830 million. The company has been quite successful at adding new customer meters despite the challenging operating environment. This is evident in the Natural Gas Distribution business gaining 12,000 new accounts over the past year. Additional benefits stemmed from an increase in its base rate in Oregon that went into effect last November. Elsewhere, the NW Natural Water Company continues to grow through the acquisition of water and waster water utilities. Those efforts are helping to expand that unit's geographic footprint while providing clean and reliable service to its customers.

The balance sheet is in good shape. Although cash reserves fell 33% so far this year, that financial cushion still sits at about $20 million. Meanwhile, the long-term debt load receded a bit and sits at about 50% of total capital, which is on the lower end for this industry.

Since our May review, these shares have fallen one notch in Timeliness. At this point, our Ranking System suggests NWN stock will lag the broader market averages in the coming year. However, a near term correction may provide an attractive opportunity for income-seeking accounts. The stock does offer an above-average dividend yield. At the same time, the equity is also positioned for worthwhile recovery potential over the coming 3- to 5-year time frame.

Bryan J. Fong *August 27, 2021*

(A) Diluted earnings per share. Excludes nonrecurring items: '06, ($0.06); '08, ($0.03); '09, $0.06; May not sum due to rounding. Next earnings report due in early Nov.
(B) Dividends historically paid in mid-February, May, August, and November.
■ Dividend reinvestment plan available.
(C) In millions.
(D) Includes intangibles. In 2020: $69.2 million, $2.26/share.

Company's Financial Strength	A
Stock's Price Stability	85
Price Growth Persistence	35
Earnings Predictability	5

ONE GAS, INC. NYSE-OGS

RECENT PRICE **72.94** | P/E RATIO **18.7** (Trailing: 19.0 Median: NMF) | RELATIVE P/E RATIO **0.98** | DIV'D YLD **3.3%** | **VALUE LINE**

TIMELINESS 4 Lowered 6/11/21
SAFETY 2 New 6/2/17
TECHNICAL 4 Raised 7/23/21
BETA .80 (1.00 = Market)

18-Month Target Price Range

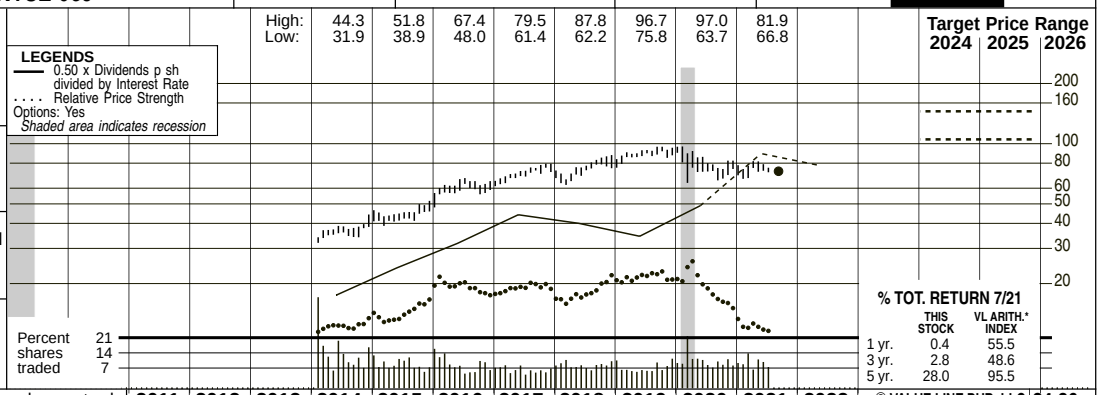
Low-High	Midpoint (% to Mid)
$57-$116	$87 (20%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	145	(+100%)	*21%*
Low	105	(+45%)	*12%*

Institutional Decisions

	3Q2020	4Q2020	1Q2021
to Buy	130	123	127
to Sell	151	163	144
Hld's(000)	42057	42726	42395



The shares of ONE Gas, Inc. began trading "regular-way" on the New York Stock Exchange on February 3, 2014. That happened as a result of the separation of ONEOK's natural gas distribution operation. Regarding the details of the spinoff, on January 31, 2014, ONEOK distributed one share of OGS common stock for every four shares of ONEOK common stock held by ONEOK shareholders of record as of the close of business on January 21. It should be mentioned that ONEOK did not retain any ownership interest in the new company.

CAPITAL STRUCTURE as of 6/30/21
Total Debt $4082.8 mill. **Due in 5 Yrs** $1020.0 mill.
LT Debt $4082.8 mill. **LT Interest** $150.0 mill.
(LT interest earned: 4.8x; total interest coverage: 4.8x)
Leases, Uncapitalized Annual rentals $7.9 mill.
Pfd Stock None
Pension Assets-12/20 $987.6 mill.
Oblig. $1077.6 mill.
Common Stock 53,500,783 shs.
as of 7/26/21
MARKET CAP: $3.9 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2019	2020	6/30/21
Cash Assets	17.9	8.0	209.1
Other	488.3	531.9	394.6
Current Assets	506.2	539.9	603.7
Accts Payable	120.5	152.3	158.4
Debt Due	516.5	418.2	- -
Other	235.7	226.6	210.9
Current Liab.	872.7	797.1	369.3
Fix. Chg. Cov.	567%	587%	595%

ANNUAL RATES (of change (per sh))	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Revenues	- -	-1.0%	*6.0%*
"Cash Flow"	- -	8.0%	*6.0%*
Earnings	- -	10.0%	*6.5%*
Dividends	- -	14.5%	*7.0%*
Book Value	- -	3.0%	*10.5%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	638.5	292.5	238.3	464.4	1633.7
2019	661.0	290.6	248.6	452.5	1652.7
2020	528.2	273.3	244.6	484.2	1530.3
2021	625.3	315.6	***257***	***477.1***	***1675***
2022	***650***	***355***	***300***	***505***	***1810***

Calendar	EARNINGS PER SHARE [A] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	1.72	.39	.31	.83	3.25
2019	1.76	.46	.33	.96	3.51
2020	1.72	.48	.39	1.09	3.68
2021	1.79	.56	***.42***	***1.08***	***3.85***
2022	***1.85***	***.60***	***.47***	***1.13***	***4.05***

Calendar	QUARTERLY DIVIDENDS PAID [B] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.42	.42	.42	.42	1.68
2018	.46	.46	.46	.46	1.84
2019	.50	.50	.50	.50	2.00
2020	.54	.54	.54	.54	2.16
2021	.58	.58	.58		

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
	- -	- -	- -	34.92	29.62	27.30	29.43	31.08	31.32	28.78	***31.30***	***33.85***	Revenues per sh	***43.00***
	- -	- -	- -	4.52	4.82	5.43	5.96	6.32	6.96	7.36	***7.75***	***8.20***	"Cash Flow" per sh	***9.75***
	- -	- -	- -	2.07	2.24	2.65	3.02	3.25	3.51	3.68	***3.85***	***4.05***	Earnings per sh [A]	***5.00***
	- -	- -	- -	.84	1.20	1.40	1.68	1.84	2.00	2.16	***2.32***	***2.48***	Div'ds Decl'd per sh [B]■	***2.95***
	- -	- -	- -	5.70	5.63	5.91	6.81	7.50	7.91	8.87	***9.00***	***9.20***	Cap'l Spending per sh	***9.75***
	- -	- -	- -	34.45	35.24	36.12	37.47	38.86	40.35	42.01	***44.40***	***48.45***	Book Value per sh	***74.40***
	- -	- -	- -	52.08	52.26	52.28	52.31	52.57	52.77	53.17	***53.50***	***53.50***	Common Shs Outst'g [C]	***57.00***
	- -	- -	- -	17.8	19.8	22.7	23.5	23.1	25.3	21.7	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	***25.0***
	- -	- -	- -	.94	1.00	1.19	1.18	1.25	1.35	1.11			Relative P/E Ratio	***1.40***
	- -	- -	- -	2.3%	2.7%	2.3%	2.4%	2.5%	2.3%	2.7%			Avg Ann'l Div'd Yield	***2.4%***
	- -	- -	- -	1818.9	1547.7	1427.2	1539.6	1633.7	1652.7	1530.3	***1675***	***1810***	Revenues ($mill)	***2450***
	- -	- -	- -	109.8	119.0	140.1	159.9	172.2	186.7	196.4	***205***	***215***	Net Profit ($mill)	***285***
	- -	- -	- -	38.4%	38.0%	37.8%	36.4%	23.7%	18.7%	17.5%	***17.0%***	***17.5%***	Income Tax Rate	***22.0%***
	- -	- -	- -	6.0%	7.7%	9.8%	10.4%	10.5%	11.3%	12.8%	***12.2%***	***11.9%***	Net Profit Margin	***11.6%***
	- -	- -	- -	40.1%	39.5%	38.7%	37.8%	38.6%	37.7%	41.5%	***64.0%***	***62.0%***	Long-Term Debt Ratio	***47.0%***
	- -	- -	- -	59.9%	60.5%	61.3%	62.2%	61.4%	62.3%	58.5%	***36.0%***	***38.0%***	Common Equity Ratio	***53.0%***
	- -	- -	- -	2995.3	3042.9	3080.7	3153.5	3328.1	3415.5	3815.7	***6600***	***6820***	Total Capital ($mill)	***8000***
	- -	- -	- -	3293.7	3511.9	3731.6	4007.6	4283.7	4565.2	4867.1	***5150***	***5380***	Net Plant ($mill)	***6000***
	- -	- -	- -	4.4%	4.7%	5.2%	5.8%	5.9%	6.4%	6.0%	***5.0%***	***5.0%***	Return on Total Cap'l	***5.0%***
	- -	- -	- -	6.1%	6.5%	7.4%	8.2%	8.4%	8.8%	8.8%	***8.5%***	***8.5%***	Return on Shr. Equity	***6.5%***
	- -	- -	- -	6.1%	6.5%	7.4%	8.2%	8.4%	8.8%	8.8%	***8.5%***	***8.5%***	Return on Com Equity	***6.5%***
	- -	- -	- -	3.7%	3.1%	3.5%	3.7%	3.7%	3.8%	3.7%	***3.5%***	***3.0%***	Retained to Com Eq	***3.0%***
	- -	- -	- -	40%	53%	52%	55%	56%	56%	58%	***61%***	***62%***	All Div'ds to Net Prof	***59%***

BUSINESS: ONE Gas, Inc. provides natural gas distribution services to more than two million customers. There are three divisions: Oklahoma Natural Gas, Kansas Gas Service, and Texas Gas Service. The company purchased 153 Bcf of natural gas supply in 2020, compared to 174 Bcf in 2019. Total volumes delivered by customer (fiscal 2020): transportation, 58.3%; residential, 31.7%; commercial & industrial, 9.4%; other, .6%. ONE Gas has around 3,600 employees. BlackRock owns 11.9% of common stock; The Vanguard Group, 9.7%; American Century Investment, 7.6%; officers and directors, 1.9% (4/21 Proxy). CEO: Robert S. McAnnally. Incorporated: Oklahoma. Address: 15 East Fifth Street, Tulsa, Oklahoma 74103. Tel.: 918-947-7000. Internet: www.onegas.com.

Profits for ONE Gas have been decent so far this year. In fact, through the first half, share net of $2.35 was 7% higher than the 2020 tally of $2.20. That stemmed partly from benefits from new rates, primarily in Texas and Oklahoma. Another plus was an expanded customer base in Oklahoma and Texas. The effective income tax rate was lower, too. Although the company is not out of the woods yet as far as COVID-19 goes, it seems that full-year earnings will advance almost 5%, to $3.85 a share, relative to the 2020 figure of $3.68. Assuming additional expansion of operating margins in 2022, share net stands to increase at a similar percentage rate, to $4.05.

There's a new CEO. Pierce H. Norton II stepped down in late June to become the head of ONEOK Inc. (ONE Gas was spun off from that company in early 2014 via the distribution of OGS common stock to ONEOK shareholders.) His successor, Robert S. McAnnally, has held some important positions since coming on board six years ago, the latest one being chief operating officer. So, we believe ONE Gas is in capable hands.

Prospects out to mid-decade appear promising. The company remains the top natural gas distributor (as measured by customer count) in both Oklahoma and Kansas, and holds the number-three spot in Texas. Furthermore, we think those markets have decent growth possibilities and are located in one of the most active drilling regions in the United States. Too, ONE Gas seems capable of meeting its working capital requirements, capital expenditures, and other obligations for a while.

There are risks to consider, however. The company's lack of geographic diversification leaves it somewhat more vulnerable to regional economic downturns and regulations. Also, there's competition from other energy suppliers, including electric companies and propane dealers. Finally, pipeline ruptures, leaks, and other unfortunate occurrences can take a big bite out of profits if not adequately covered by insurance.

The stock, though untimely, may appeal to total return-minded investors with a long-term stance.

Frederick L. Harris, III *August 27, 2021*

(A) Diluted EPS. Excludes nonrecurring gain: 2017, $0.06. Next earnings report due early Nov. Quarterly EPS for 2018 don't add up due to rounding.
(B) Dividends historically paid in early March, June, Sept., and Dec. ■ Dividend reinvestment plan. Direct stock purchase plan.
(C) In millions.

Company's Financial Strength	B++
Stock's Price Stability	95
Price Growth Persistence	70
Earnings Predictability	100

SOUTH JERSEY INDS. NYSE-SJI

RECENT PRICE **25.32** | P/E RATIO **14.8** (Trailing: 26.7 Median: 19.0) | RELATIVE P/E RATIO **0.77** | DIV'D YLD **5.1%** | **VALUE LINE**

TIMELINESS 5 Lowered 5/28/21
SAFETY 3 Lowered 8/28/20
TECHNICAL 2 Raised 7/23/21
BETA 1.05 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$10-$36	$23 (-10%)

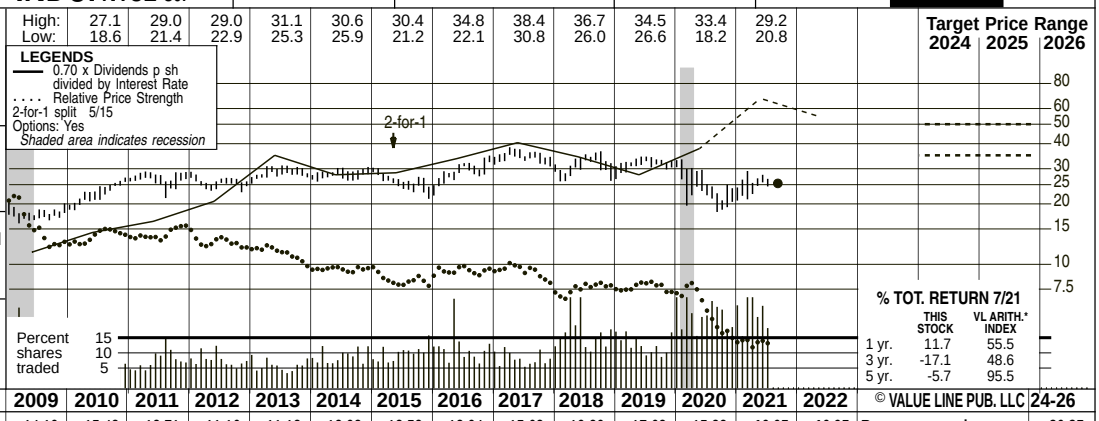
2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	50	(+95%)	*22%*
Low	35	(+40%)	*13%*

Institutional Decisions

	3Q2020	4Q2020	1Q2021
to Buy	132	110	141
to Sell	64	91	89
Hld's(000)	85672	110377	102245

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
High:	27.1	29.0	29.0	31.1	30.6	30.4	34.8	38.4	36.7	34.5	33.4	29.2								
Low:	18.6	21.4	22.9	25.3	25.9	21.2	22.1	30.8	26.0	26.6	18.2	20.8								
	15.89	15.88	16.15	16.18	14.19	15.48	13.71	11.16	11.18	12.98	13.52	13.04	15.63	19.20	17.63	15.32	***16.05***	***16.95***	Revenues per sh	***20.85***
	1.25	1.75	1.60	1.74	1.86	2.10	2.23	2.34	2.48	2.67	2.42	2.67	2.79	2.91	2.56	3.32	***2.70***	***3.00***	"Cash Flow" per sh	***4.15***
	.86	1.23	1.05	1.14	1.19	1.35	1.45	1.52	1.52	1.57	1.44	1.34	1.23	1.38	1.12	1.68	***1.65***	***1.85***	Earnings per sh [A]	***2.70***
	.43	.46	.51	.56	.61	.68	.75	.83	.90	.96	1.02	1.06	1.10	1.13	1.16	1.19	***1.25***	***1.32***	Div'ds Decl'd per sh [B] ■	***1.50***
	1.60	1.26	.94	1.04	1.83	2.79	3.20	4.01	4.84	5.01	4.87	3.50	3.43	3.99	5.46	4.84	***4.90***	***5.65***	Cap'l Spending per sh	***7.50***
	6.75	7.55	8.12	8.67	9.12	9.54	10.33	11.63	12.64	13.65	14.62	16.22	14.99	14.82	15.41	16.51	***16.75***	***17.40***	Book Value per sh [C]	***20.85***
	57.96	58.65	59.22	59.46	59.59	59.75	60.43	63.31	65.43	68.33	70.97	79.48	79.55	85.51	92.39	100.59	***112.00***	***115.00***	Common Shs Outst'g [D]	***120.00***
	16.6	11.9	17.2	15.9	15.0	16.8	18.4	16.9	18.9	18.0	17.9	21.7	27.9	22.6	28.3	14.9			Avg Ann'l P/E Ratio	***16.0***
	.88	.64	.91	.96	1.00	1.07	1.15	1.08	1.06	.95	.90	1.14	1.40	1.22	1.51	.77			Relative P/E Ratio	***.90***
	3.0%	3.2%	2.8%	3.1%	3.4%	3.0%	2.8%	3.2%	3.1%	3.4%	3.9%	3.6%	3.2%	3.6%	3.7%	4.8%			Avg Ann'l Div'd Yield	***3.5%***
							828.6	706.3	731.4	887.0	959.6	1036.5	1243.1	1641.3	1628.6	1541.4	***1800***	***1950***	Revenues ($mill)	***2500***
							87.0	93.3	97.1	104.0	99.0	102.8	98.1	116.2	103.0	163.0	***180***	***205***	Net Profit ($mill)	***320***
							22.4%	10.8%	- -	- -	5.9%	42.0%	- -	- -	- -	9.9%	***22.0%***	***21.0%***	Income Tax Rate	***21.0%***
							10.5%	13.2%	13.3%	11.7%	10.3%	9.9%	7.9%	7.1%	6.3%	10.6%	***10.0%***	***10.5%***	Net Profit Margin	***12.8%***
							40.5%	45.0%	45.1%	48.0%	49.2%	38.5%	48.5%	62.4%	59.2%	62.6%	***63.5%***	***63.5%***	Long-Term Debt Ratio	***61.5%***
							59.5%	55.0%	54.9%	52.0%	50.8%	61.5%	51.5%	37.6%	40.8%	37.4%	***36.5%***	***36.5%***	Common Equity Ratio	***38.5%***
							1048.3	1337.6	1507.4	1791.9	2043.9	2097.2	2315.4	3373.9	3493.9	4437.3	***5125***	***5450***	Total Capital ($mill)	***6500***
							1352.4	1578.0	1859.1	2134.1	2448.1	2623.8	2700.2	3653.5	4073.5	4464.2	***4800***	***5150***	Net Plant ($mill)	***5800***
							8.9%	7.4%	6.8%	6.4%	5.4%	5.4%	5.1%	4.4%	4.0%	4.8%	***4.5%***	***4.5%***	Return on Total Cap'l	***6.0%***
							13.9%	12.7%	11.7%	11.2%	9.5%	8.0%	8.2%	9.2%	7.2%	9.8%	***9.5%***	***10.5%***	Return on Shr. Equity	***13.0%***
							13.9%	12.7%	11.7%	11.2%	9.5%	8.0%	8.2%	9.2%	7.2%	9.8%	***9.5%***	***10.5%***	Return on Com Equity	***13.0%***
							6.7%	5.8%	4.8%	4.3%	2.8%	1.6%	.9%	1.7%	NMF	2.9%	***2.0%***	***2.5%***	Retained to Com Eq	***5.5%***
							52%	55%	59%	61%	71%	80%	89%	82%	104%	70%	***78%***	***74%***	All Div'ds to Net Prof	***56%***



% TOT. RETURN 7/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	11.7	55.5
3 yr.	-17.1	48.6
5 yr.	-5.7	95.5

CAPITAL STRUCTURE as of 6/30/21
Total Debt $3293.1 mill. **Due in 5 Yrs** $380.1 mill.
LT Debt $3177.4 mill. **LT Interest** $100 mill.

Leases, Uncapitalized Annual rentals $1.2 mill.
Pension Assets-12/20 $331 mill.
Oblig. $481.8 mill.

Pfd Stock None

Common Stock 112,447,099 shs.
as of 8/1/21

MARKET CAP: $2.8 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2019	2020	6/30/21
Cash Assets	6.4	34.0	87.9
Other	646.1	472.8	439.1
Current Assets	652.5	506.8	527.0
Accts Payable	232.2	256.6	226.1
Debt Due	1316.6	739.2	115.7
Other	183.1	167.8	247.8
Current Liab.	1731.9	1163.6	589.6
Fix. Chg. Cov.	176%	238%	254%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Revenues	1.5%	6.5%	*3.0%*
"Cash Flow"	4.5%	3.0%	*6.0%*
Earnings	1.5%	-1.5%	*11.5%*
Dividends	6.5%	4.0%	*4.5%*
Book Value	5.5%	2.5%	*5.0%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	521.9	227.3	302.5	589.6	1641.3
2019	637.3	266.9	261.2	463.2	1628.6
2020	534.1	260.0	261.5	485.8	1541.4
2021	674.3	311.8	***295***	***518.9***	***1800***
2022	***650***	***335***	***330***	***635***	***1950***

Calendar	EARNINGS PER SHARE [A] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	1.19	.07	d.27	.39	1.38
2019	1.09	d.13	d.30	.46	1.12
2020	1.15	d.01	d.06	.62	1.68
2021	1.26	.02	***d.15***	***.52***	***1.65***
2022	***1.32***	***.02***	***d.07***	***.58***	***1.85***

Calendar	QUARTERLY DIVIDENDS PAID [B] ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	- -	.273	.273	.553	1.10
2018	- -	.280	.280	.567	1.13
2019	- -	.287	.287	.582	1.16
2020	- -	.295	.295	.598	1.19
2021	- -	.303	.303		

BUSINESS: South Jersey Industries, Inc. is a holding company. The company distributes natural gas in New Jersey and Maryland. South Jersey Gas rev. mix '20: residential, 48%; commercial, 23%; cogen. and electric gen., 9%; industrial, 20%. Acq. Elizabethtown Gas and Elkton Gas, 7/18. Nonutil. oper. incl. South Jersey Energy, South Jersey Resources Group, South Jersey Exploration, Marina Energy, South Jersey Energy Service Plus, and SJI Midstream. Has about 1,130 empl. Off./dir. own less than 1% of common; BlackRock, 14.4%; State Street Corporation, 13.9%; The Vanguard Group, 10.8% (3/21 proxy). Pres. & CEO: Michael J. Renna. Chairman: Joseph M. Rigby. Inc.: NJ. Addr.: 1 South Jersey Plaza, Folsom, NJ 08037. Tel.: 609-561-9000. Web: www.sjindustries.com.

Shares of South Jersey Industries have traded in a fairly narrow range in recent months. The company reported solid results for the June quarter. The top line increased roughly 20%, on a year-over-year basis. Adjusted earnings per share of $0.02 marked a nice improvement over the prior-year deficit of $0.01. Utility South Jersey Gas benefited from continued growth in the customer base as well as infrastructure modernization programs. An increase in adjusted earnings here was partly offset by losses incurred at Elizabethtown Gas, owing to greater operating and depreciation expenses. Meanwhile, the Energy Management business has capitalized on improved asset optimization opportunities and additional fuel management contracts. Elsewhere, fuel cell and solar investments have paid off at the Energy Production segment. On a GAAP basis, South Jersey reported a share deficit of $0.87 for the recent interim. This was mostly due to an impairment charge of $87.4 million ($0.79 per share) related to the company's investment in the Penn East Pipeline.

Long-term prospects appear to be relatively favorable here. The company's utility business ought to further benefit from healthy customer growth, rate relief, and infrastructure modernization programs that allow it to enhance the reliability of its systems and earn an authorized return on these investments. Demand for natural gas should continue to rise within the company's service territories. We anticipate good performance on the nonutility side, as well. This should be driven by solid results at the Energy Management's Wholesale Services line. Measures by the company to control operating expenses will likely support profitability, too.

This stock is ranked to underperform the broader market averages for the coming six to 12 months. Looking further out, we anticipate solid growth in earnings per share for the company over the pull to mid-decade. From the recent quotation, this stock offers attractive long-term total return potential. This is supported by a generous dividend yield. All told, patient, income-seeking subscribers may want to take a closer look.

Michael Napoli, CFA *August 27, 2021*

Company's Financial Strength	B++
Stock's Price Stability	60
Price Growth Persistence	20
Earnings Predictability	65

(A) Based on economic egs. from 2007. GAAP EPS: '10, $1.11; '11, $1.49; '12, $1.49; '13, $1.28; '14, $1.46; '15, $1.52; '16, $1.56; '17, ($0.04); '18, $0.21; '19, $0.84; '20, $1.62. Excl. nonrecur. gain (loss): '10, ($0.24); '11, $0.04; '12, ($0.03); '13, ($0.24); '14, ($0.11); '15, $0.08; '16, $0.22; '17, ($1.27); '18, ($1.17); '19, ($0.28); '20, ($0.06). Next egs. rpt. due early November. **(B)** Div'ds paid early April, July, Oct., and late Dec. ■ Div. reinvest. plan avail. **(C)** Incl. reg. assets. In 2020: $674.0 mill., $6.70 per shr. **(D)** In mill., adj. for split.

SPIRE INC. NYSE-SR

RECENT PRICE **72.28** | P/E RATIO **17.9** (Trailing: 15.1 Median: 19.0) | RELATIVE P/E RATIO **0.94** | DIV'D YLD **3.7%** | **VALUE LINE**

TIMELINESS 4 Lowered 8/20/21
SAFETY 2 Raised 6/20/03
TECHNICAL 3 Lowered 7/2/21
BETA .85 (1.00 = Market)

18-Month Target Price Range

Low-High	Midpoint (% to Mid)
$37-$92	$65 (-10%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	130	(+80%)	*18%*
Low	95	(+30%)	*10%*

Institutional Decisions

	3Q2020	4Q2020	1Q2021
to Buy	145	131	124
to Sell	121	148	139
Hld's(000)	40642	41028	42475

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
High:	37.8	42.8	44.0	48.5	55.2	61.0	71.2	82.9	81.1	88.0	88.0	77.9						
Low:	30.8	32.9	36.5	37.4	44.0	49.1	57.1	62.3	60.1	71.7	50.6	59.3						

LEGENDS
0.35 x Dividends p sh divided by Interest Rate
Relative Price Strength
Options: Yes
Shaded area indicates recession

Target Price Range 2024 2025 2026

% TOT. RETURN 7/21

	THIS STOCK	VL ARITH.* INDEX
1 yr.	19.6	55.5
3 yr.	9.5	48.6
5 yr.	20.1	95.5

Percent shares traded 18 12 6

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
	75.43	93.51	93.40	100.44	85.49	77.83	71.48	49.90	31.10	37.68	45.59	33.68	36.07	38.78	38.30	35.96	*42.30*	*37.75*	Revenues per sh [A]	*58.20*
	2.98	3.81	3.87	4.22	4.56	4.11	4.62	4.58	3.12	3.87	6.15	6.16	6.54	7.55	7.12	5.25	*8.75*	*8.10*	"Cash Flow" per sh	*10.50*
	1.90	2.37	2.31	2.64	2.92	2.43	2.86	2.79	2.02	2.35	3.16	3.24	3.43	4.33	3.52	1.44	*4.70*	*4.00*	Earnings per sh [A B]	*5.50*
	1.37	1.40	1.45	1.49	1.53	1.57	1.61	1.66	1.70	1.76	1.84	1.96	2.10	2.25	2.37	2.49	*2.60*	*2.72*	Div'ds Decl'd per sh [C ■]	*3.10*
	2.84	2.97	2.72	2.57	2.36	2.56	3.02	4.83	4.00	3.96	6.68	6.42	9.08	9.86	16.15	12.37	*11.35*	*10.95*	Cap'l Spending per sh	*11.45*
	17.31	18.85	19.79	22.12	23.32	24.02	25.56	26.67	32.00	34.93	36.30	38.73	41.26	44.51	45.14	44.19	*47.95*	*50.90*	Book Value per sh [D]	*70.60*
	21.17	21.36	21.65	21.99	22.17	22.29	22.43	22.55	32.70	43.18	43.36	45.65	48.26	50.67	50.97	51.60	*52.00*	*53.00*	Common Shs Outst'g [E]	*55.00*
	16.2	13.6	14.2	14.3	13.4	13.7	13.0	14.5	21.3	19.8	16.5	19.6	19.8	16.7	22.8	NMF	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	*20.5*
	.86	.73	.75	.86	.89	.87	.82	.92	1.20	1.04	.83	1.03	1.00	.90	1.21	NMF			Relative P/E Ratio	*1.15*
	4.4%	4.3%	4.4%	3.9%	3.9%	4.7%	4.3%	4.1%	4.0%	3.8%	3.5%	3.1%	3.1%	3.1%	3.0%	3.4%			Avg Ann'l Div'd Yield	*2.8%*
							1603.3	1125.5	1017.0	1627.2	1976.4	1537.3	1740.7	1965.0	1952.4	1855.4	*2200*	*2000*	Revenues ($mill) [A]	*3200*
							63.8	62.6	52.8	84.6	136.9	144.2	161.6	214.2	184.6	88.6	*245*	*210*	Net Profit ($mill)	*300*
							31.4%	29.6%	25.0%	27.6%	31.2%	32.5%	32.4%	32.4%	15.7%	12.3%	*20.0%*	*21.0%*	Income Tax Rate	*23.5%*
							4.0%	5.6%	5.2%	5.2%	6.9%	9.4%	9.3%	10.9%	9.5%	4.8%	*11.1%*	*10.5%*	Net Profit Margin	*9.4%*
							38.9%	36.1%	46.6%	55.1%	53.0%	50.9%	50.0%	45.7%	45.0%	49.0%	*52.0%*	*51.0%*	Long-Term Debt Ratio	*45.0%*
							61.1%	63.9%	53.4%	44.9%	47.0%	49.1%	50.0%	54.3%	55.0%	51.0%	*48.0%*	*49.0%*	Common Equity Ratio	*55.0%*
							937.7	941.0	1959.0	3359.4	3345.1	3601.9	3986.3	4155.5	4625.6	4946.0	*5700*	*6000*	Total Capital ($mill)	*7500*
							928.7	1019.3	1776.6	2759.7	2941.2	3300.9	3665.2	3970.5	4352.0	4680.1	*5050*	*5350*	Net Plant ($mill)	*6800*
							8.1%	7.9%	3.3%	3.1%	5.1%	4.9%	5.0%	6.3%	5.1%	2.9%	*6.0%*	*5.0%*	Return on Total Cap'l	*5.5%*
							11.1%	10.4%	5.0%	5.6%	8.7%	8.2%	8.1%	9.5%	7.3%	3.5%	*9.0%*	*7.0%*	Return on Shr. Equity	*7.5%*
							11.1%	10.4%	5.0%	5.6%	8.7%	8.2%	8.1%	9.5%	7.9%	3.2%	*9.0%*	*7.0%*	Return on Com Equity	*7.5%*
							4.9%	4.3%	1.0%	1.5%	3.7%	3.3%	3.3%	4.7%	2.7%	NMF	*3.5%*	*2.0%*	Retained to Com Eq	*3.0%*
							56%	59%	81%	73%	58%	59%	60%	51%	66%	NMF	*61%*	*76%*	All Div'ds to Net Prof	*62%*

CAPITAL STRUCTURE as of 6/30/21
Total Debt $3510.8 mill. **Due in 5 Yrs** $1720.0 mill.
LT Debt $2939.0 mill. **LT Interest** $135.0 mill.
(Total interest coverage: 2.0x)

Leases, Uncapitalized Annual rentals $8.8 mill.
Pension Assets-9/20 $897.9 mill.
Oblig. $1401.3 mill.
Pfd Stock $242.0 mill. **Pfd Div'd** $14.8 mill.
Common Stock 51,684,120 shs.
as of 7/31/21

MARKET CAP: $3.7 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2019	2020	6/30/21
Cash Assets	5.8	4.1	23.9
Other	608.7	586.5	874.4
Current Assets	614.5	590.6	898.3
Accts Payable	301.5	243.3	352.1
Debt Due	783.2	708.4	571.8
Other	384.1	497.5	367.9
Current Liab.	1468.8	1449.2	1291.8
Fix. Chg. Cov.	272%	373%	385%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Revenues	-8.0%	- -	*7.5%*
"Cash Flow"	4.5%	8.5%	*8.0%*
Earnings	1.5%	4.5%	*10.0%*
Dividends	4.5%	6.0%	*4.5%*
Book Value	7.0%	5.5%	*7.5%*

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) [A] Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2018	561.8	813.4	350.6	239.2	1965.0
2019	602.0	803.5	321.3	225.6	1952.4
2020	566.9	715.5	321.1	251.9	1855.4
2021	512.6	1104.9	327.8	*254.7*	*2200*
2022	*530*	*892*	*325*	*253*	*2000*

Fiscal Year Ends	EARNINGS PER SHARE [A B F] Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2018	2.39	2.03	.52	d.51	4.33
2019	1.32	3.04	d.09	d.74	3.52
2020	1.24	2.54	d1.87	d.45	1.44
2021	1.65	3.55	.03	*d.53*	*4.70*
2022	*1.75*	*2.78*	*.05*	*d.58*	*4.00*

Cal-endar	QUARTERLY DIVIDENDS PAID [C ■] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.525	.525	.525	.525	2.10
2018	.5625	.5625	.5625	.5625	2.25
2019	.5925	.5925	.5925	.5925	2.37
2020	.6225	.6225	.6225	.6225	2.49
2021	.65	.65	.65		

BUSINESS: Spire Inc., formerly known as the Laclede Group, Inc., is a holding company for natural gas utilities, which distributes natural gas across Missouri, including the cities of St. Louis and Kansas City, Alabama, and Mississippi. Has roughly 1.7 million customers. Acquired Missouri Gas 9/13, Alabama Gas Co 9/14. Utility therms sold and transported in fiscal 2020: 3.3 bill. Revenue mix for regulated operations: residential, 68%; commercial and industrial, 22%; transportation, 6%; other, 4%. Has about 3,583 employees. Officers and directors own 3.0% of common shares; BlackRock, 12.0% (1/21 proxy). Chairman: Edward Glotzbach; CEO: Suzanne Sitherwood. Inc.: Missouri. Address: 700 Market Street, St. Louis, Missouri 63101. Tel.: 314-342-0500. Internet: www.spireenergy.com.

Spire Inc. seems to be headed toward a record fiscal 2021, which ends on September 30th. Through the first nine months, earnings per share were $5.23, some 2.7 times higher than the year-ago tally of $1.91 (hurt by the effects of the coronavirus). One supporting factor was the Gas Utility unit, aided by increased Infrastructure System Replacement Surcharge (ISRS) revenues for the Missouri operations, the impact of colder weather, plus rate adjustments at Spire Alabama. Furthermore, favorable market conditions, particularly in February when Winter Storm Uri struck parts of the United States, boosted results of the Gas Marketing division. If there are no major downside surprises in the fourth quarter, it appears that full-year profits will surge more than threefold, to $4.70 a share, compared to the fiscal 2020 total of $1.44. Concerning fiscal 2022, we anticipate diminished, though still respectable, share net of $4.00, given that this year's second-quarter number will be difficult to beat.

Corporate finances are in solid condition. When the June period concluded, cash on hand stood at nearly $24 million. Moreover, there was $975 million available through a revolving credit facility expiring in October, 2023. Also, long-term debt was a manageable 52% of total capital, and short-term obligations were not a big obstacle. So, the company should continue to satisfy its various commitments with little trouble.

Prospects out to mid-decade look decent. The gas utilities boast 1.7 million customers in Mississippi, Alabama, and Missouri, providing a measure of regional diversity. Furthermore, the other businesses, especially pipelines, hold promise. Additional expansionary projects and technological enhancements in customer service and elsewhere ought to help Spire, as well. Lastly, acquisitions are possible, supported, of course, by the healthy balance sheet.

The good-quality stock ought to draw the interest of total return-focused accounts with a long-term view. Capital appreciation potential during the 2024-2026 period seems appealing. Consider, also, the promising dividend growth possibilities. But these shares are untimely.

Frederick L. Harris, III *August 27, 2021*

(A) Fiscal year ends Sept. 30th. **(B)** Based on diluted shares outstanding. Excludes nonrecurring loss: '06, 7¢. Excludes gain from discontinued operations: '08, 94¢. Next earnings report due late Oct. **(C)** Dividends paid in early January, April, July, and October. ■ Dividend reinvestment plan available. **(D)** Incl. deferred charges. In '20: $1,171.6 mill., $22.71/sh. **(E)** In millions. **(F)** Qtly. egs. may not sum due to rounding or change in shares outstanding.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	60
Earnings Predictability	50

SOUTHWEST GAS NYSE-SWX

RECENT PRICE 72.17 | P/E RATIO 16.9 (Trailing: 15.7 Median: 19.0) | RELATIVE P/E RATIO 0.88 | DIV'D YLD 3.4% | VALUE LINE

TIMELINESS 4 Lowered 8/6/21
SAFETY 3 Lowered 1/4/91
TECHNICAL 5 Lowered 7/16/21
BETA .95 (1.00 = Market)

18-Month Target Price Range

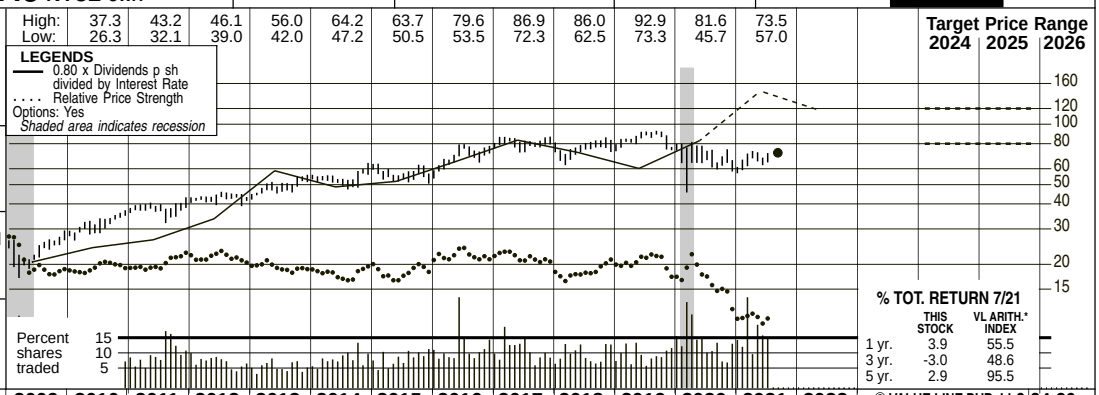
Low-High	Midpoint (% to Mid)
$31-$88	$60 (-20%)

2024-26 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	120	(+65%)	*16%*
Low	80	(+10%)	*6%*

Institutional Decisions

	3Q2020	4Q2020	1Q2021
to Buy	116	140	144
to Sell	137	123	132
Hld's(000)	46991	48058	48499



2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	© VALUE LINE PUB. LLC	24-26
43.59	48.47	50.28	48.53	42.00	40.18	41.07	41.77	42.08	45.61	52.00	51.82	53.00	54.31	56.72	57.68	***59.00***	***62.30***	Revenues per sh	***69.25***
5.20	5.97	6.21	5.76	6.16	6.46	6.81	7.73	8.24	8.47	8.62	9.29	8.83	8.14	9.40	9.87	***10.40***	***10.90***	"Cash Flow" per sh	***13.75***
1.25	1.98	1.95	1.39	1.94	2.27	2.43	2.86	3.11	3.01	2.92	3.18	3.62	3.68	3.94	4.14	***4.35***	***4.55***	Earnings per sh [A]	***6.25***
.82	.82	.86	.90	.95	1.00	1.06	1.18	1.32	1.46	1.62	1.80	1.98	2.08	2.18	2.28	***2.38***	***2.48***	Div'ds Decl'd per sh [B■†]	***2.80***
7.49	8.27	7.96	6.79	4.81	4.73	8.29	8.57	7.86	8.53	10.30	11.15	12.97	14.44	17.06	14.43	***11.85***	***14.75***	Cap'l Spending per sh	***22.30***
19.10	21.58	22.98	23.49	24.44	25.62	26.66	28.35	30.47	31.95	33.61	35.03	37.74	42.47	45.56	46.77	***49.15***	***52.05***	Book Value per sh	***66.90***
39.33	41.77	42.81	44.19	45.09	45.56	45.96	46.15	46.36	46.52	47.38	47.48	48.09	53.03	55.01	57.19	***59.00***	***61.00***	Common Shs Outst'g [C]	***65.00***
20.6	15.9	17.3	20.3	12.2	14.0	15.7	15.0	15.8	17.9	19.4	21.6	22.2	20.6	21.3	16.8	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	***16.0***
1.10	.86	.92	1.22	.81	.89	.98	.95	.89	.94	.98	1.13	1.12	1.11	1.13	.87			Relative P/E Ratio	***.90***
3.2%	2.6%	2.6%	3.2%	4.0%	3.2%	2.8%	2.8%	2.7%	2.7%	2.9%	2.6%	2.5%	2.7%	2.6%	3.3%			Avg Ann'l Div'd Yield	***2.8%***
1887.2	1927.8	1950.8	2121.7	2463.6	2460.5	2548.8	2880.0	3119.9	3298.9	***3480***	***3800***	Revenues ($mill)	***4500***
112.3	133.3	145.3	141.1	138.3	152.0	173.8	182.3	213.9	232.3	***255***	***275***	Net Profit ($mill)	***395***
36.2%	36.2%	35.0%	35.7%	36.4%	33.9%	32.8%	25.3%	20.5%	21.6%	***21.0%***	***21.0%***	Income Tax Rate	***21.0%***
6.0%	6.9%	7.4%	6.7%	5.6%	6.2%	6.8%	6.3%	6.9%	7.0%	***7.3%***	***7.2%***	Net Profit Margin	***8.8%***
43.2%	49.2%	49.4%	52.4%	49.3%	48.2%	49.8%	48.3%	47.9%	50.5%	***54.5%***	***54.0%***	Long-Term Debt Ratio	***49.0%***
56.8%	50.8%	50.6%	47.6%	50.7%	51.8%	50.2%	51.7%	52.1%	49.5%	***45.5%***	***46.0%***	Common Equity Ratio	***51.0%***
2155.9	2576.9	2793.7	3123.9	3143.5	3213.5	3613.3	4359.3	4806.4	5407.2	***6400***	***6875***	Total Capital ($mill)	***8550***
3218.9	3343.8	3486.1	3658.4	3891.1	4132.0	4523.7	5093.2	5685.2	6176.1	***6800***	***7200***	Net Plant ($mill)	***8400***
6.4%	6.4%	6.3%	5.7%	5.5%	5.8%	5.8%	5.2%	5.4%	5.3%	***5.0%***	***5.0%***	Return on Total Cap'l	***5.5%***
9.2%	10.2%	10.3%	9.5%	8.7%	9.1%	9.6%	8.1%	8.5%	8.7%	***9.0%***	***8.5%***	Return on Shr. Equity	***9.0%***
9.2%	10.2%	10.3%	9.5%	8.7%	9.1%	9.6%	8.1%	8.5%	8.7%	***9.0%***	***8.5%***	Return on Com Equity	***9.0%***
5.3%	6.1%	6.1%	5.0%	4.0%	4.1%	4.5%	3.6%	3.9%	4.0%	***4.0%***	***4.0%***	Retained to Com Eq	***5.0%***
43%	40%	41%	47%	54%	55%	53%	55%	54%	54%	***55%***	***55%***	All Div'ds to Net Prof	***46%***

CAPITAL STRUCTURE as of 6/30/21
Total Debt $3116.2 mill. **Due in 5 Yrs** $750.9 mill.
LT Debt $2478.8 mill. **LT Interest** $100.0 mill.
(Total interest coverage: 4.2x) (45% of Cap'l)
Leases, Uncapitalized Annual rentals $13.9 mill.
Pension Assets-12/20 $1238.7 mill.
Oblig. $1581.4 mill.

Pfd Stock None

Common Stock 59,093,403 shs.
as of 7/30/21

MARKET CAP: $4.3 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2019	2020	6/30/21
Cash Assets	49.5	83.4	47.6
Other	810.4	787.6	959.2
Current Assets	859.9	871.0	1006.8
Accts Payable	238.9	231.3	182.3
Debt Due	374.5	147.4	637.4
Other	466.5	533.3	452.7
Current Liab.	1079.9	912.0	1272.4
Fix. Chg. Cov.	340%	379%	513%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '18-'20 to '24-'26
Revenues	2.5%	4.0%	*3.5%*
"Cash Flow"	4.0%	1.5%	*7.0%*
Earnings	7.5%	5.5%	*8.0%*
Dividends	8.5%	8.0%	*4.5%*
Book Value	6.0%	7.0%	*7.0%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	754.3	670.9	668.1	786.7	2880.0
2019	833.6	713.0	725.2	848.1	3119.9
2020	836.3	757.2	791.2	914.2	3298.9
2021	885.9	821.4	***835***	***937.7***	***3480***
2022	***950***	***900***	***925***	***1025***	***3800***

Calendar	EARNINGS PER SHARE [A D] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2018	1.63	.44	.25	1.36	3.68
2019	1.77	.41	.10	1.67	3.94
2020	1.31	.68	.32	1.82	4.14
2021	2.03	.43	***.20***	***1.69***	***4.35***
2022	***1.95***	***.55***	***.27***	***1.78***	***4.55***

Calendar	QUARTERLY DIVIDENDS PAID [B■†] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2017	.450	.495	.495	.495	1.94
2018	.495	.520	.520	.520	2.06
2019	.520	.545	.545	.545	2.16
2020	.545	.570	.570	.570	2.26
2021	.570	.595			

BUSINESS: Southwest Gas Holdings, Inc. is the parent holding company of Southwest Gas and Centuri Group. Southwest Gas is a regulated gas distributor serving 2.1 million customers in Arizona, Nevada, and California. Centuri provides construction services. 2020 margin mix: residential and small commercial, 85%; large commercial and industrial, 3%; transportation, 12%. Total throughput: 2.2 billion therms. Has 11,149 employees. Off. & dir. own .8% of common; BlackRock, Inc., 12.3%; The Vanguard Group, Inc., 9.8%; Lazard Asset Management LLC, 9.4% (3/21 Proxy). Chairman: Michael J. Melarkey. Pres. & CEO: John P. Hester. Inc.: DE. Addr.: 8360 S. Durango Drive, P.O. Box 98510 Las Vegas, Nevada 89193. Tel.: 702-876-7237. Web: www.swgas.com.

Southwest Gas reported mixed results for the second quarter. The company posted revenue of $821.4 million, an advance of roughly 8% on a year-over-year basis. Southwest's utility operations benefited from rate relief and growth in the customer base. Elsewhere, Centuri experienced greater demand for gas infrastructure services. However, operating expenses also rose significantly, largely owing to an increase in the cost of completing gas infrastructure work. All told, share net of $0.43 was no match for the prior-year tally.

The company's infrastructure services provider, Centuri, has agreed to acquire Riggs Distler for $855 million in cash. This purchase will be funded by new debt. The transaction, which is scheduled to be completed in the current quarter, is expected to be accretive to the company's earnings in the first full year. This move will broaden Centuri's electric services platform to include 5G telecom and renewables services. It will expand the company's operating footprint into new markets in the Northeast and Mid-Atlantic region. This will also enhance Centuri's utility service offerings for its existing customers.

We anticipate solid results here in the coming years. The company's utility business ought to further benefit from rate relief and expansion in the customer base. Infrastructure investments should also bear fruit. Meantime, Centuri will probably continue to experience growing demand. This operation has a robust client base, and should further benefit from the need of utilities to replace aging infrastructure. A measure of cost control would also help.

This stock is ranked to trail the broader market for the coming six to 12 months. Looking further out, we anticipate solid growth in earnings for the company out to mid-decade. From the recent quotation, this equity offers healthy long-term total return potential. This is helped by a respectable dividend yield. The payout should continue to rise going forward. Also, Southwest Gas earns good marks for Financial Strength, Price Stability, and Earnings Predictability. Conservative accounts with a long time horizon may want to take a closer look.

Michael Napoli, CFA *August 27, 2021*

(A) Diluted earnings. Excl. nonrec. gains (losses): '05, (11¢); '06, 7¢. Next egs. report due early November. **(B)** Dividends historically paid early March, June, September, and December. ■† Div'd reinvestment and stock purchase plan avail. **(C)** In millions. **(D)** Totals may not sum due to rounding.

Company's Financial Strength	A
Stock's Price Stability	80
Price Growth Persistence	65
Earnings Predictability	95

Duke Energy Kentucky, Inc.
Summary of Risk Premium Models for the
Proxy Group of Seven Natural Gas Distribution Companies

	Proxy Group of Seven Natural Gas Distribution Companies	
Predictive Risk Premium Model (PRPM) (1)	10.46	%
Risk Premium Using an Adjusted Total Market Approach (2)	10.43	%
Average	10.45	%

Notes:
(1) From page 12 of this Attachment.
(2) From page 13 of this Attachment.

Duke Energy Kentucky, Inc.
Indicated ROE
Derived by the Predictive Risk Premium Model (1)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Proxy Group of Seven Natural Gas Distribution Companies	LT Average Predicted Variance	Spot Predicted Variance	Recommended Variance (2)	GARCH Coefficient	Predicted Risk Premium (3)	Risk-Free Rate (4)	Indicated ROE (5)
Atmos Energy Corporation	0.33%	0.37%	0.35%	2.2456	9.89%	2.70%	12.59%
New Jersey Resources Corporation	0.38%	0.33%	0.36%	2.0122	8.94%	2.70%	11.64%
Northwest Natural Holding Company	0.32%	0.26%	0.29%	1.5386	5.49%	2.70%	8.19%
ONE Gas, Inc.	0.29%	0.32%	0.30%	3.6705	14.27%	2.70%	NMF
South Jersey Industries, Inc.	0.38%	0.49%	0.44%	1.6281	8.89%	2.70%	11.59%
Southwest Gas Holdings, Inc.	0.43%	0.34%	0.39%	1.3903	6.67%	2.70%	9.37%
Spire Inc.	0.71%	0.42%	0.56%	0.9400	6.56%	2.70%	9.26%
						Average	10.44%
						Median	10.48%
						Average of Mean and Median	10.46%

Notes:
(1) The Predictive Risk Premium Model uses historical data to generate a predicted variance and a GARCH coefficient. The historical data used are the equity risk premiums for the first available trading month as reported by Bloomberg Professional Service.
(2) Given current market conditions, I recommend using average of the the long-term average predicted variance and the spot variance.
(3) $(1+(\text{Column [3]} * \text{Column [4]})^{\wedge 12}) - 1$.
(4) From note 2 on page 25 of Attachment DWD-1R.
(5) Column [5] + Column [6].

Duke Energy Kentucky, Inc.
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		Proxy Group of Seven Natural Gas Distribution Companies	
1.	Prospective Yield on Aaa Rated Corporate Bonds (1)	3.41	%
2.	Adjustment to Reflect Yield Spread Between Aaa Rated Corporate Bonds and A2 Rated Public Utility Bonds	0.38	(2)
3.	Adjusted Prospective Yield on A2 Rated Public Utility Bonds	3.79	%
4.	Adjustment to Reflect Bond Rating Difference of Proxy Group	0.04	(3)
5.	Adjusted Prospective Bond Yield	3.83	%
6.	Equity Risk Premium (4)	6.60	
7.	Risk Premium Derived Common Equity Cost Rate	10.43	%

Notes:
(1) Consensus forecast of Moody's Aaa Rated Corporate bonds from Blue Chip Financial Forecasts (see pages 20 and 21 of this Attachment).
(2) The average yield spread of A2 rated public utility bonds over Aaa rated corporate bonds of 0.38% from page 14 of this Attachment.
(3) Adjustment to reflect the A2/A3 Moody's LT issuer rating of the Utility Proxy Group as shown on page 15 of this Attachment. The 0.04% upward adjustment is derived by taking 1/6 of the spread between A2 and Baa2 Public Utility Bonds (1/6 * 0.25% = 0.04%) as derived from page 14 of this Attachment.
(4) From page 17 of this Attachment.

Duke Energy Kentucky, Inc.
Interest Rates and Bond Spreads for
Moody's Corporate and Public Utility Bonds

Selected Bond Yields - Moody's

	[1] Aaa Rated Corporate Bond	[2] A2 Rated Public Utility Bond	[3] Baa2 Rated Public Utility Bond
Aug-2021	2.55 %	2.95 %	3.19 %
Jul-2021	2.57	2.95	3.20
Jun-2021	2.79	3.16	3.41
Average	2.64 %	3.02 %	3.27 %

Selected Bond Spreads

A2 Rated Public Utility Bonds Over Aaa Rated Corporate Bonds: 0.38 % (1)

Baa2 Rated Public Utility Bonds Over A2 Rated Public Utility Bonds: 0.25 % (2)

Notes:
(1) Column [2] - Column [1].
(2) Column [3] - Column [2].

Source of Information:
Bloomberg Professional Service

Duke Energy Kentucky, Inc.
Comparison of Long-Term Issuer Ratings for
Proxy Group of Seven Natural Gas Distribution Companies

Proxy Group of Seven Natural Gas Distribution Companies	Moody's Long-Term Issuer Rating August 2021		Standard & Poor's Long-Term Issuer Rating August 2021	
	Long-Term Issuer Rating (1)	Numerical Weighting (2)	Long-Term Issuer Rating (1)	Numerical Weighting (2)
Atmos Energy Corporation	A1	5.0	A-	7.0
New Jersey Resources Corporation	A1	5.0	NR	- -
Northwest Natural Holding Company	Baa1	8.0	A+	5.0
ONE Gas, Inc.	A3	7.0	BBB+	8.0
South Jersey Industries, Inc.	A3	7.0	BBB	9.0
Southwest Gas Holdings, Inc.	Baa1	8.0	BBB	9.0
Spire Inc.	A1/A2	5.5	A-	7.0
Average	A2/A3	6.5	A-/BBB+	7.5

Notes:

(1) Ratings are that of the average of each company's utility operating subsidiaries.
(2) From page 16 of this Attachment.

Source Information: Moody's Investors Service
Standard & Poor's Global Utilities Rating Service

Numerical Assignment for
Moody's and Standard & Poor's Bond Ratings

Moody's Bond Rating	Numerical Bond Weighting	Standard & Poor's Bond Rating
Aaa	1	AAA
Aa1	2	AA+
Aa2	3	AA
Aa3	4	AA-
A1	5	A+
A2	6	A
A3	7	A-
Baa1	8	BBB+
Baa2	9	BBB
Baa3	10	BBB-
Ba1	11	BB+
Ba2	12	BB
Ba3	13	BB-
B1	14	B+
B2	15	B
B3	16	B-

Duke Energy Kentucky, Inc.
Judgment of Equity Risk Premium for
Proxy Group of Seven Natural Gas Distribution Companies

Line No.		Proxy Group of Seven Natural Gas Distribution Companies
1.	Calculated equity risk premium based on the total market using the beta approach (1)	8.46 %
2.	Mean equity risk premium based on a study using the holding period returns of public utilities with A rated bonds (2)	5.62
3.	Predicted Equity Risk Premium Based on Regression Analysis of 798 Fully-Litigated Natural Gas Utility Rate Cases	5.73
4.	Average equity risk premium	6.60 %

Notes: (1) From page 18 of this Attachment.
(2) From page 22 of this Attachment.
(3) From page 23 of this Attachment.

Duke Energy Kentucky, Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Seven Natural Gas Distribution Companies

Line No.	Equity Risk Premium Measure	Proxy Group of Seven Natural Gas Distribution Companies
	Ibbotson-Based Equity Risk Premiums:	
1.	Ibbotson Equity Risk Premium (1)	5.92 %
2.	Regression on Ibbotson Risk Premium Data (2)	8.87
3.	Ibbotson Equity Risk Premium based on PRPM (3)	7.88
4.	Equity Risk Premium Based on Value Line Summary and Index (4)	5.54
5.	Equity Risk Premium Based on Value Line S&P 500 Companies (5)	11.64
6.	Equity Risk Premium Based on Bloomberg S&P 500 Companies (6)	14.76
7.	Conclusion of Equity Risk Premium	9.10 %
8.	Adjusted Beta (7)	0.93
9.	Forecasted Equity Risk Premium	8.46 %

Notes provided on page 19 of this Attachment.

Duke Energy Kentucky, Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for the
Proxy Group of Seven Natural Gas Distribution Companies

Notes:

(1) Based on the arithmetic mean historical monthly returns on large company common stocks from Duff & Phelps 2021 SBBI® Yearbook minus the arithmetic mean monthly yield of Moody's average Aaa and Aa corporate bonds from 1928-2020.

(2) This equity risk premium is based on a regression of the monthly equity risk premiums of large company common stocks relative to Moody's average Aaa and Aa rated corporate bond yields from 1928-2020 referenced in Note 1 above.

(3) The Predictive Risk Premium Model (PRPM) is discussed in the accompanying direct testimony. The Ibbotson equity risk premium based on the PRPM is derived by applying the PRPM to the monthly risk premiums between Ibbotson large company common stock monthly returns and average Aaa and Aa corporate monthly bond yields, from January 1928 through August 2021.

(4) The equity risk premium based on the Value Line Summary and Index is derived by subtracting the average consensus forecast of Aaa corporate bonds of 3.41% (from page 13 of this Attachment) from the projected 3-5 year total annual market return of 8.95% (described fully in note 1 on page 25 of this Attachment).

(5) Using data from Value Line for the S&P 500, an expected total return of 15.05% was derived based upon expected dividend yields and long-term earnings growth estimates as a proxy for capital appreciation. Subtracting the average consensus forecast of Aaa corporate bonds of 3.41% results in an expected equity risk premium of 11.64%.

(6) Using data from the Bloomberg Professional Service for the S&P 500, an expected total return of 18.17% was derived based upon expected dividend yields and long-term earnings growth estimates as a proxy for capital appreciation. Subtracting the average consensus forecast of Aaa corporate bonds of 3.41% results in an expected equity risk premium of 14.76%.

(7) Average of mean and median beta from page 24 of this Attachment.

Sources of Information:

Stocks, Bonds, Bills, and Inflation - 2021 SBBI Yearbook, John Wiley & Sons, Inc.
Industrial Manual and Mergent Bond Record Monthly Update.
Value Line Summary and Index
Blue Chip Financial Forecasts, September 1, 2021 and June 1, 2021
Bloomberg Professional Service

Long-Range Survey:

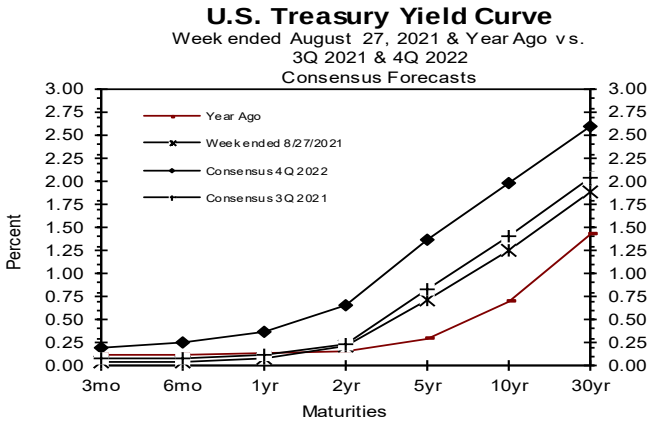
The table below contains the results of our twice-annual long-range CONSENSUS survey. There are also Top 10 and Bottom 10 averages for each variable. Shown are consensus estimates for the years 2022 through 2027 and averages for the five-year periods 2023-2027 and 2028-2032. Apply these projections cautiously. Few if any economic, demographic and political forces can be evaluated accurately over such long time spans.

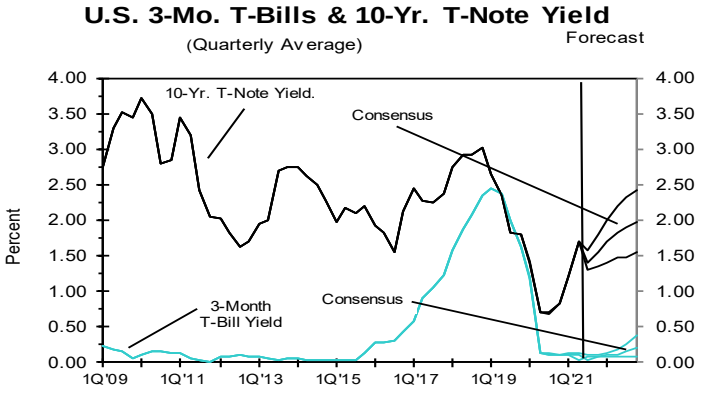
		Average For The Year						Five-Year Averages	
		2022	2023	2024	2025	2026	2027	2023-2027	2028-2032
1. Federal Funds Rate	**CONSENSUS**	**0.1**	**0.4**	**1.0**	**1.6**	**1.9**	**2.1**	**1.4**	**2.2**
	Top 10 Average	0.2	0.7	1.6	2.4	2.6	2.7	2.0	2.7
	Bottom 10 Average	0.1	0.1	0.5	0.9	1.3	1.5	0.9	1.6
2. Prime Rate	**CONSENSUS**	**3.3**	**3.5**	**4.2**	**4.7**	**5.0**	**5.2**	**4.5**	**5.2**
	Top 10 Average	3.4	3.8	4.7	5.4	5.7	5.8	5.1	5.8
	Bottom 10 Average	3.2	3.3	3.7	4.0	4.4	4.6	4.0	4.7
3. LIBOR, 3-Mo.	**CONSENSUS**	**0.4**	**0.6**	**1.3**	**1.8**	**2.1**	**2.3**	**1.6**	**2.4**
	Top 10 Average	0.5	1.0	1.8	2.4	2.7	2.9	2.2	3.0
	Bottom 10 Average	0.2	0.4	0.8	1.2	1.6	1.7	1.1	1.8
4. Commercial Paper, 1-Mo	**CONSENSUS**	**0.2**	**0.6**	**1.3**	**1.8**	**2.1**	**2.3**	**1.6**	**2.4**
	Top 10 Average	0.4	0.9	1.6	2.3	2.6	2.8	2.0	2.8
	Bottom 10 Average	0.1	0.3	0.9	1.3	1.8	1.9	1.2	2.0
5. Treasury Bill Yield, 3-Mo	**CONSENSUS**	**0.2**	**0.5**	**1.0**	**1.6**	**1.9**	**2.1**	**1.4**	**2.2**
	Top 10 Average	0.3	0.8	1.6	2.2	2.5	2.7	1.9	2.7
	Bottom 10 Average	0.1	0.2	0.6	0.9	1.3	1.5	0.9	1.6
6. Treasury Bill Yield, 6-Mo	**CONSENSUS**	**0.2**	**0.5**	**1.1**	**1.6**	**2.0**	**2.2**	**1.5**	**2.3**
	Top 10 Average	0.3	0.8	1.7	2.3	2.6	2.7	2.0	2.8
	Bottom 10 Average	0.1	0.3	0.6	1.0	1.4	1.6	1.0	1.7
7. Treasury Bill Yield, 1-Yr	**CONSENSUS**	**0.3**	**0.7**	**1.2**	**1.8**	**2.1**	**2.3**	**1.6**	**2.4**
	Top 10 Average	0.5	1.0	1.8	2.4	2.8	2.9	2.2	3.0
	Bottom 10 Average	0.2	0.3	0.7	1.1	1.5	1.7	1.1	1.8
8. Treasury Note Yield, 2-Yr	**CONSENSUS**	**0.5**	**0.9**	**1.5**	**2.0**	**2.3**	**2.5**	**1.8**	**2.6**
	Top 10 Average	0.7	1.3	2.1	2.7	3.0	3.1	2.5	3.3
	Bottom 10 Average	0.3	0.5	0.9	1.3	1.6	1.8	1.2	1.9
9. Treasury Note Yield, 5-Yr	**CONSENSUS**	**1.2**	**1.6**	**2.1**	**2.5**	**2.8**	**2.8**	**2.4**	**3.0**
	Top 10 Average	1.5	2.0	2.8	3.3	3.5	3.5	3.0	3.6
	Bottom 10 Average	0.9	1.2	1.5	1.8	2.0	2.2	1.7	2.3
10. Treasury Note Yield, 10-Yr	**CONSENSUS**	**2.0**	**2.4**	**2.7**	**3.0**	**3.2**	**3.3**	**2.9**	**3.3**
	Top 10 Average	2.3	2.8	3.4	3.8	4.0	3.9	3.6	4.0
	Bottom 10 Average	1.7	1.9	2.1	2.3	2.5	2.6	2.3	2.7
11. Treasury Bond Yield, 30-Yr	**CONSENSUS**	**2.6**	**2.9**	**3.3**	**3.6**	**3.8**	**3.8**	**3.5**	**3.9**
	Top 10 Average	3.0	3.5	4.0	4.5	4.6	4.5	4.2	4.6
	Bottom 10 Average	2.3	2.4	2.5	2.7	2.9	3.1	2.7	3.2
12. Corporate Aaa Bond Yield	**CONSENSUS**	**3.3**	**3.7**	**4.1**	**4.5**	**4.7**	**4.7**	**4.3**	**4.8**
	Top 10 Average	3.6	4.2	4.7	5.2	5.4	5.4	5.0	5.4
	Bottom 10 Average	3.1	3.2	3.4	3.7	3.9	4.1	3.7	4.2
13. Corporate Baa Bond Yield	**CONSENSUS**	**4.3**	**4.7**	**5.1**	**5.4**	**5.6**	**5.7**	**5.3**	**5.8**
	Top 10 Average	4.6	5.1	5.6	6.1	6.3	6.2	5.9	6.4
	Bottom 10 Average	4.0	4.3	4.5	4.7	4.9	5.2	4.7	5.2
14. State & Local Bonds Yield	**CONSENSUS**	**2.9**	**3.2**	**3.6**	**3.9**	**4.1**	**4.2**	**3.8**	**4.2**
	Top 10 Average	3.2	3.5	4.1	4.5	4.7	4.7	4.3	4.8
	Bottom 10 Average	2.6	2.9	3.1	3.4	3.7	3.7	3.3	3.8
15. Home Mortgage Rate	**CONSENSUS**	**3.6**	**4.0**	**4.4**	**4.7**	**4.9**	**5.0**	**4.6**	**5.0**
	Top 10 Average	4.0	4.5	5.0	5.5	5.6	5.6	5.2	5.7
	Bottom 10 Average	3.2	3.6	3.8	4.0	4.2	4.3	4.0	4.4
A. Fed's AFE Nominal $ Index	**CONSENSUS**	**103.7**	**103.7**	**104.0**	**103.7**	**103.6**	**103.3**	**103.7**	**103.1**
	Top 10 Average	105.3	106.0	106.8	107.0	107.3	107.5	106.9	107.9
	Bottom 10 Average	102.0	101.5	101.4	100.8	100.4	100.0	100.8	99.4
		Year-Over-Year, % Change						Five-Year Averages	
		2022	2023	2024	2025	2026	2027	2023-2027	2028-2032
B. Real GDP	**CONSENSUS**	**4.2**	**2.6**	**2.3**	**2.2**	**2.1**	**2.1**	**2.2**	**2.1**
	Top 10 Average	5.3	3.3	2.7	2.5	2.4	2.4	2.7	2.5
	Bottom 10 Average	2.9	2.0	1.9	1.8	1.8	1.7	1.8	1.7
C. GDP Chained Price Index	**CONSENSUS**	**2.3**	**2.3**	**2.2**	**2.1**	**2.2**	**2.1**	**2.2**	**2.1**
	Top 10 Average	2.6	2.6	2.4	2.4	2.4	2.4	2.4	2.3
	Bottom 10 Average	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9
D. Consumer Price Index	**CONSENSUS**	**2.4**	**2.4**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**	**2.2**
	Top 10 Average	2.8	2.7	2.5	2.5	2.5	2.4	2.5	2.4
	Bottom 10 Average	2.1	2.1	1.9	1.9	2.0	1.9	2.0	1.9
E. PCE Price Index	**CONSENSUS**	**2.3**	**2.2**	**2.1**	**2.1**	**2.1**	**2.1**	**2.1**	**2.1**
	Top 10 Average	2.7	2.5	2.4	2.4	2.4	2.4	2.4	2.3
	Bottom 10 Average	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9

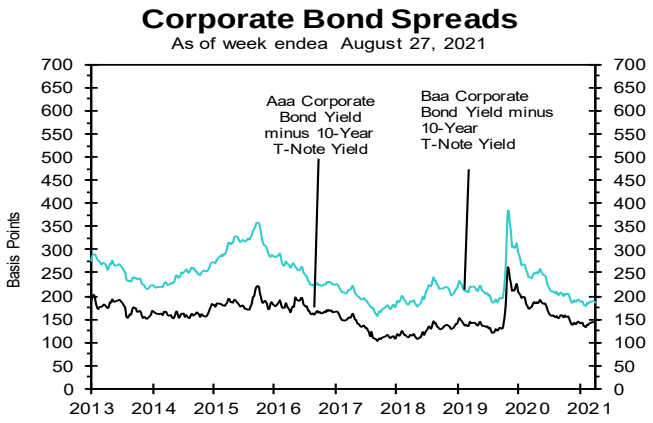
Consensus Forecasts of U.S. Interest Rates and Key Assumptions

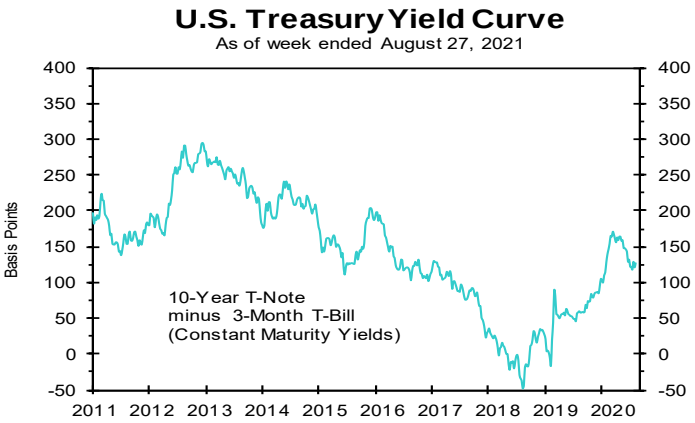
Interest Rates	History: Average For Week Ending Aug 27	Aug 20	Aug 13	Aug 6	History: Average For Month Jul	Jun	May	*Latest Qtr* 2Q 2021	Consensus Forecasts-Quarterly Avg. 3Q 2021	4Q 2021	1Q 2022	2Q 2022	3Q 2022	4Q 2022
Federal Funds Rate	0.09	0.10	0.10	0.09	0.10	0.08	0.06	0.07	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Prime Rate	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	**3.3**	**3.3**	**3.3**	**3.3**	**3.3**	**3.3**
LIBOR, 3-mo.	0.12	0.13	0.12	0.12	0.13	0.13	0.15	0.16	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**
Commercial Paper, 1-mo.	0.05	0.06	0.06	0.05	0.05	0.04	0.10	0.06	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**
Treasury bill, 3-mo.	0.05	0.06	0.06	0.05	0.05	0.04	0.02	0.03	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**
Treasury bill, 6-mo.	0.06	0.05	0.06	0.06	0.05	0.05	0.04	0.04	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**0.3**
Treasury bill, 1 yr.	0.07	0.07	0.08	0.08	0.08	0.07	0.05	0.06	**0.1**	**0.1**	**0.2**	**0.2**	**0.3**	**0.4**
Treasury note, 2 yr.	0.23	0.22	0.23	0.19	0.22	0.20	0.16	0.17	**0.2**	**0.3**	**0.4**	**0.5**	**0.5**	**0.6**
Treasury note, 5 yr.	0.81	0.78	0.81	0.69	0.76	0.84	0.82	0.84	**0.8**	**0.9**	**1.1**	**1.2**	**1.3**	**1.4**
Treasury note, 10 yr.	1.31	1.26	1.34	1.22	1.32	1.52	1.62	1.59	**1.4**	**1.6**	**1.7**	**1.8**	**1.9**	**2.0**
Treasury note, 30 yr.	1.92	1.90	1.98	1.87	1.94	2.16	2.32	2.26	**2.1**	**2.2**	**2.3**	**2.5**	**2.5**	**2.6**
Corporate Aaa bond	2.72	2.70	2.79	2.67	2.72	2.91	3.06	3.00	**2.7**	**2.9**	**3.0**	**3.1**	**3.2**	**3.3**
Corporate Baa bond	3.17	3.15	3.23	3.11	3.17	3.35	3.52	3.46	**3.4**	**3.7**	**3.9**	**4.0**	**4.1**	**4.2**
State & Local bonds	2.64	2.65	2.65	2.63	2.60	2.64	2.64	2.65	**2.3**	**2.5**	**2.5**	**2.6**	**2.7**	**2.7**
Home mortgage rate	2.87	2.86	2.87	2.77	2.87	2.98	2.96	3.00	**3.0**	**3.1**	**3.2**	**3.3**	**3.5**	**3.5**
Key Assumptions	**History: 3Q 2019**	**4Q 2019**	**1Q 2020**	**2Q 2020**	**3Q 2020**	**4Q 2020**	**1Q 2021**	**2Q 2021**	**Consensus Forecasts-Quarterly 3Q 2021**	**4Q 2021**	**1Q 2022**	**2Q 2022**	**3Q 2022**	**4Q 2022**
Fed's AFE $ Index	110.6	110.5	111.4	112.4	107.3	105.2	103.4	102.9	**105.0**	**105.2**	**105.0**	**104.7**	**104.5**	**104.3**
Real GDP	2.8	1.9	-5.1	-31.2	33.8	4.5	6.3	6.6	**6.4**	**5.4**	**4.1**	**3.4**	**2.9**	**2.4**
GDP Price Index	1.4	1.5	1.6	-1.5	3.6	2.2	4.3	6.1	**4.2**	**2.8**	**2.4**	**2.3**	**2.4**	**2.3**
Consumer Price Index	1.3	2.6	1.0	-3.1	4.7	2.4	3.7	8.4	**5.5**	**2.4**	**2.2**	**2.3**	**2.4**	**2.2**
PCE Price Index	1.1	1.7	1.3	-1.6	3.7	1.5	3.8	6.5	**4.3**	**2.3**	**2.1**	**2.1**	**2.2**	**2.2**

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index, PCE Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data: Treasury rates from the Federal Reserve Board's H.15; AAA-AA and A-BBB corporate bond yields from Bank of America-Merrill Lynch and are 15+ years, yield to maturity; State and local bond yields from Bank of America-Merrill Lynch, A-rated, yield to maturity; Mortgage rates from Freddie Mac, 30-year, fixed; LIBOR quotes from Intercontinental Exchange. All interest rate data are sourced from Haver Analytics. Historical data for Fed's Major Currency Index are from FRSR H.10. Historical data for Real GDP, GDP Price Index and PCE Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index history is from the Department of Labor's Bureau of Labor Statistics (BLS).







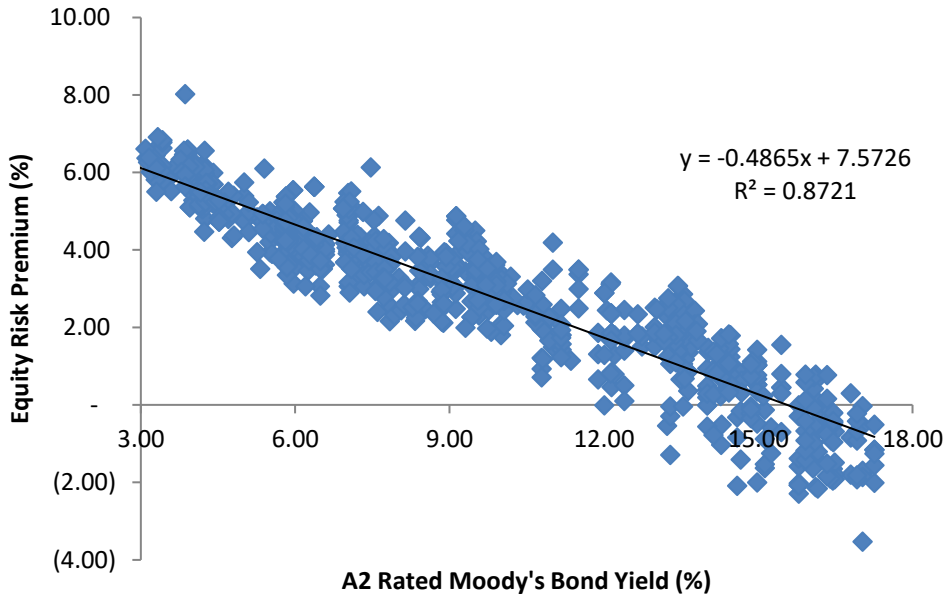


Duke Energy Kentucky, Inc.
Derivation of Mean Equity Risk Premium Based Studies
Using Holding Period Returns and
Projected Market Appreciation of the S&P Utility Index

Line No.		Implied Equity Risk Premium
	Equity Risk Premium based on S&P Utility Index Holding Period Returns (1):	
1.	Historical Equity Risk Premium	4.16 %
2.	Regression of Historical Equity Risk Premium (2)	6.51
3.	Forecasted Equity Risk Premium Based on PRPM (3)	4.94
4.	Forecasted Equity Risk Premium based on Projected Total Return on the S&P Utilities Index (Value Line Data) (4)	7.15
5.	Forecasted Equity Risk Premium based on Projected Total Return on the S&P Utilities Index (Bloomberg Data) (5)	5.32
6.	Average Equity Risk Premium (6)	5.62 %

Notes:
(1) Based on S&P Public Utility Index monthly total returns and Moody's Public Utility Bond average monthly yields from 1928-2020. Holding period returns are calculated based upon income received (dividends and interest) plus the relative change in the market value of a security over a one-year holding period.
(2) This equity risk premium is based on a regression of the monthly equity risk premiums of the S&P Utility Index relative to Moody's A2 rated public utility bond yields from 1928 - 2020 referenced in note 1 above.
(3) The Predictive Risk Premium Model (PRPM) is applied to the risk premium of the monthly total returns of the S&P Utility Index and the monthly yields on Moody's A2 rated public utility bonds from January 1928 - August 2021.
(4) Using data from Value Line for the S&P Utilities Index, an expected return of 10.94% was derived based on expected dividend yields and long-term growth estimates as a proxy for market appreciation. Subtracting the expected A2 rated public utility bond yield of 3.79%, calculated on line 3 of page 13 of this Attachment results in an equity risk premium of 7.15%. (10.94% - 3.79% = 7.15%)
(5) Using data from Bloomberg Professional Service for the S&P Utilities Index, an expected return of 9.11% was derived based on expected dividend yields and long-term growth estimates as a proxy for market appreciation. Subtracting the expected A2 rated public utility bond yield of 3.79%, calculated on line 3 of page 13 of this Attachment results in an equity risk premium of 5.32%. (9.11% - 3.79% = 5.32%)
(6) Average of lines 1 through 5.

Duke Energy Kentucky, Inc.
Prediction of Equity Risk Premiums Relative to
Moody's A2 Rated Utility Bond Yields



Constant	Slope	Prospective A2 Rated Utility Bond (1)	Prospective Equity Risk Premium
7.572627 %	-0.48654	3.79 %	5.73 %

Notes:
(1) From line 3 of page 3 of this Attachment.

Source of Information:
Regulatory Research Associates
Bloomberg Professional Services

Duke Energy Kentucky, Inc.
Indicated Common Equity Cost Rate Through Use
of the Traditional Capital Asset Pricing Model (CAPM) and Empirical Capital Asset Pricing Model (ECAPM)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Seven Natural Gas Distribution Companies	Value Line Adjusted Beta	Bloomberg Adjusted Beta	Average Beta	Market Risk Premium (1)	Risk-Free Rate (2)	Traditional CAPM Cost Rate	ECAPM Cost Rate	Indicated Common Equity Cost Rate (3)
Atmos Energy Corporation	0.80	0.93	0.86	9.93 %	2.70 %	11.24 %	11.59 %	11.41 %
New Jersey Resources Corporation	1.00	0.97	0.99	9.93	2.70	12.53	12.55	12.54
Northwest Natural Holding Company	0.85	0.86	0.86	9.93	2.70	11.24	11.59	11.41
ONE Gas, Inc.	0.80	1.01	0.90	9.93	2.70	11.64	11.88	11.76
South Jersey Industries, Inc.	1.05	0.99	1.02	9.93	2.70	12.83	12.78	12.80
Southwest Gas Holdings, Inc.	0.95	1.09	1.02	9.93	2.70	12.83	12.78	12.80
Spire Inc.	0.85	0.99	0.92	9.93	2.70	11.83	12.03	11.93
Mean			0.94			12.02 %	12.17 %	12.09 %
Median			0.92			11.83 %	12.03 %	11.93 %
Average of Mean and Median			0.93			11.93 %	12.10 %	12.01 %

Notes on page 25 of this Attachment.

Duke Energy Kentucky, Inc.
Notes to Accompany the Application of the CAPM and ECAPM

Notes:

(1) The market risk premium (MRP) is derived by using six different measures from three sources: Ibbotson, Value Line, and Bloomberg as illustrated below:

Historical Data MRP Estimates:

Measure 1: Ibbotson Arithmetic Mean MRP (1926-2020)

Arithmetic Mean Monthly Returns for Large Stocks 1926-2020:	12.20 %
Arithmetic Mean Income Returns on Long-Term Government Bonds:	5.05
MRP based on Ibbotson Historical Data:	7.15 %

Measure 2: Application of a Regression Analysis to Ibbotson Historical Data (1926-2020) 9.57 %

Measure 3: Application of the PRPM to Ibbotson Historical Data: (January 1926 - August 2021) 8.77 %

Value Line MRP Estimates:

Measure 4: Value Line Projected MRP (Thirteen weeks ending September 03, 2021)

Total projected return on the market 3-5 years hence*:	8.95 %
Projected Risk-Free Rate (see note 2):	2.70
MRP based on Value Line Summary & Index:	6.25 %

*Forcasted 3-5 year capital appreciation plus expected dividend yield

Measure 5: Value Line Projected Return on the Market based on the S&P 500

Total return on the Market based on the S&P 500:	15.05 %
Projected Risk-Free Rate (see note 2):	2.70
MRP based on Value Line data	12.35 %

Measure 6: Bloomberg Projected MRP

Total return on the Market based on the S&P 500:	18.17 %
Projected Risk-Free Rate (see note 2):	2.70
MRP based on Bloomberg data	15.47 %

Average of Value Line, Ibbotson, and Bloomberg MRP: 9.93 %

(2) For reasons explained in the direct testimony, the appropriate risk-free rate for cost of capital purposes is the average forecast of 30 year Treasury Bonds per the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts. (See pages 20 and 21 of this Attachment.) The projection of the risk-free rate is illustrated below:

Third Quarter 2021	2.10 %
Fourth Quarter 2021	2.20
First Quarter 2022	2.30
Second Quarter 2022	2.50
Third Quarter 2022	2.50
Fourth Quarter 2022	2.60
2023-2027	3.50
2028-2032	3.90
	2.70 %

(3) Average of Column 6 and Column 7.

Sources of Information:
Value Line Summary and Index
Blue Chip Financial Forecasts, September 1, 2021 and June 1, 2021
Stocks, Bonds, Bills, and Inflation - 2021 SBBI Yearbook, John Wiley & Sons, Inc.
Bloomberg Professional Services

Duke Energy Kentucky, Inc.
Basis of Selection of the Group of Non-Price Regulated Companies
Comparable in Total Risk to the Utility Proxy Group

The criteria for selection of the proxy group of forty-one non-price regulated companies was that the non-price regulated companies be domestic and reported in Value Line Investment Survey (Standard Edition).

The Non-Price Regulated Proxy Group were then selected based on the unadjusted beta range of 0.65 – 0.95 and residual standard error of the regression range of 2.8123 – 3.3543 of the Utility Proxy Group.

These ranges are based upon plus or minus two standard deviations of the unadjusted beta and standard error of the regression. Plus or minus two standard deviations captures 95.50% of the distribution of unadjusted betas and residual standard errors of the regression.

The standard deviation of the Utility Proxy Group's residual standard error of the regression is 0.1355. The standard deviation of the standard error of the regression is calculated as follows:

$$\text{Standard Deviation of the Std. Err. of the Regr.} = \frac{\text{Standard Error of the Regression}}{\sqrt{2N}}$$

where: N = number of observations. Since Value Line betas are derived from weekly price change observations over a period of five years, N = 259

$$\text{Thus, } 0.1355 = \frac{3.0833}{\sqrt{518}} = \frac{3.0833}{22.7596}$$

Source of Information: Value Line, Inc., June 2021
Value Line Investment Survey (Standard Edition)

Duke Energy Kentucky, Inc.
Basis of Selection of Comparable Risk
Domestic Non-Price Regulated Companies

Proxy Group of Seven Natural Gas Distribution Companies	[1] Value Line Adjusted Beta	[2] Unadjusted Beta	[3] Residual Standard Error of the Regression	[4] Standard Deviation of Beta
Atmos Energy Corporation	0.80	0.67	2.7774	0.0693
New Jersey Resources Corporation	1.00	0.93	3.0337	0.0757
Northwest Natural Holding Company	0.85	0.70	3.2144	0.0802
ONE Gas, Inc.	0.80	0.68	2.7447	0.0685
South Jersey Industries, Inc.	1.05	1.01	3.7945	0.0947
Southwest Gas Holdings, Inc.	0.95	0.86	3.1572	0.0788
Spire Inc.	0.85	0.73	2.8613	0.0714
Average	0.90	0.80	3.0833	0.0769
Beta Range (+/- 2 std. Devs. of Beta)	0.65	0.95		
2 std. Devs. of Beta	0.15			
Residual Std. Err. Range (+/- 2 std. Devs. of the Residual Std. Err.)	2.8123	3.3543		
Std. dev. of the Res. Std. Err.	0.1355			
2 std. devs. of the Res. Std. Err.	0.2710			

Source of Information: Valueline Proprietary Database, June 2021

Duke Energy Kentucky, Inc.
Proxy Group of Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Seven Natural Gas Distribution Companies

Proxy Group of Forty-One Non-Price Regulated Companies	[1] VL Adjusted Beta	[2] Unadjusted Beta	[3] Residual Standard Error of the Regression	[4] Standard Deviation of Beta
Apple Inc.	0.90	0.83	3.2843	0.0819
Assurant Inc.	0.90	0.84	2.8245	0.0705
ANSYS, Inc.	0.85	0.77	3.1971	0.0798
Booz Allen Hamilton	0.90	0.84	3.1767	0.0793
Bristol-Myers Squibb	0.85	0.75	3.3304	0.0831
Brady Corp.	1.00	0.94	2.9465	0.0735
CACI Int'l	0.95	0.89	2.9930	0.0747
Casey's Gen'l Stores	0.90	0.81	3.2028	0.0799
Quest Diagnostics	0.80	0.69	2.9288	0.0731
Lauder (Estee)	0.95	0.91	2.8562	0.0713
Exponent, Inc.	0.90	0.81	2.9605	0.0739
Fastenal Co.	0.95	0.88	3.2005	0.0799
FirstCash, Inc.	0.90	0.79	3.2437	0.0809
Franklin Electric	0.95	0.89	3.2374	0.0808
GATX Corp.	1.00	0.92	3.1223	0.0779
Int'l Flavors & Frag	0.95	0.85	3.3168	0.0828
Ingredion Inc.	0.90	0.84	2.8771	0.0718
Iron Mountain	0.90	0.78	3.1699	0.0791
Hunt (J.B.)	0.95	0.87	2.8702	0.0716
J&J Snack Foods	0.95	0.86	2.9559	0.0738
Henry (Jack) & Assoc	0.85	0.71	2.8328	0.0707
ManTech Int'l 'A'	0.85	0.77	3.1011	0.0774
Monster Beverage	0.85	0.76	3.0195	0.0753
Altria Group	0.95	0.86	2.9525	0.0737
MSA Safety	1.00	0.94	3.0342	0.0757
MSCI Inc.	0.95	0.87	2.9742	0.0742
Vail Resorts	0.95	0.88	3.2995	0.0823
Northrop Grumman	0.85	0.72	2.8865	0.0720
Old Dominion Freight	0.95	0.86	2.9913	0.0746
Packaging Corp.	1.00	0.92	2.8690	0.0716
PerkinElmer Inc.	0.90	0.82	3.0422	0.0759
Philip Morris Int'l	0.95	0.91	3.2461	0.0810
Pool Corp.	0.85	0.74	3.2969	0.0823
Post Holdings	0.95	0.87	2.9481	0.0736
RLI Corp.	0.80	0.67	3.0423	0.0759
Rollins, Inc.	0.85	0.73	2.9580	0.0738
Selective Ins. Group	0.90	0.80	2.9918	0.0746
Sirius XM Holdings	0.95	0.88	2.8551	0.0712
Synopsys, Inc.	0.95	0.91	2.8936	0.0722
Tetra Tech	0.95	0.88	3.2523	0.0811
West Pharmac. Svcs.	0.80	0.69	3.2862	0.0820
Average	0.91	0.83	3.0600	0.0800
Proxy Group of Seven Natural Gas Distribution Companies	0.90	0.80	3.0833	0.0769

Source of Information: Valueline Proprietary Database, June 2021

Duke Energy Kentucky, Inc.
Summary of Cost of Equity Models Applied to
Proxy Group of Forty-One Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Seven Natural Gas Distribution Companies

Principal Methods	Proxy Group of Forty-One Non-Price Regulated Companies
Discounted Cash Flow Model (DCF) (1)	13.29 %
Risk Premium Model (RPM) (2)	12.85
Capital Asset Pricing Model (CAPM) (3)	12.06
	12.73 %
	12.85 %
	12.79 %

Notes:
(1) From page 30 of this Attachment.
(2) From page 31 of this Attachment.
(3) From page 34 of this Attachment.

Duke Energy Kentucky, Inc.
DCF Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Seven Natural Gas Distribution Companies

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Forty-One Non-Price Regulated Companies	Average Dividend Yield	Value Line Projected Five Year Growth in EPS	Zack's Five Year Projected Growth Rate in EPS	Bloomberg's Five Year Projected Growth Rate in EPS	Yahoo! Finance Projected Five Year Growth in EPS	Average Projected Five Year Growth Rate in EPS	Adjusted Dividend Yield	Indicated Common Equity Cost Rate (1)
Apple Inc.	0.62 %	14.50 %	12.70 %	12.80 %	19.61 %	14.90 %	0.67 %	15.57 %
Assurant Inc.	1.66	11.50	17.90	17.92	17.90	16.31	1.80	18.11
ANSYS, Inc.	-	8.00	12.30	10.93	12.14	10.84	-	NA
Booz Allen Hamilton	1.73	8.50	8.30	9.00	8.89	8.67	1.80	10.47
Bristol-Myers Squibb	2.91	12.50	7.00	3.80	7.37	7.67	3.02	10.69
Brady Corp.	1.61	7.50	7.00	9.00	7.00	7.63	1.67	9.30
CACI Int'l	-	13.50	5.40	3.23	1.44	5.89	-	NA
Casey's Gen'l Stores	0.69	10.50	NA	14.70	7.50	10.90	0.73	11.63
Quest Diagnostics	1.78	7.00	26.50	(4.79)	(8.60)	16.75	1.93	18.68
Lauder (Estee)	0.66	11.00	11.30	15.00	18.71	14.00	0.71	14.71
Exponent, Inc.	0.80	12.00	NA	NA	15.00	13.50	0.85	14.35
Fastenal Co.	2.08	9.00	9.00	7.85	6.33	8.05	2.16	10.21
FirstCash, Inc.	1.49	9.50	NA	NA	23.00	16.25	1.61	17.86
Franklin Electric	0.86	10.00	NA	15.00	13.40	12.80	0.92	13.72
GATX Corp.	2.21	6.00	NA	7.50	12.00	8.50	2.30	10.80
Int'l Flavors & Frag	2.12	7.50	10.50	32.02	8.10	14.53	2.27	16.80
Ingredion Inc.	2.87	7.50	NA	10.70	1.90	6.70	2.97	9.67
Iron Mountain	5.55	8.00	3.80	3.93	6.41	5.53	5.70	11.23
Hunt (J.B.)	0.72	8.00	15.00	14.65	20.50	14.54	0.77	15.31
J&J Snack Foods	1.50	10.00	NA	NA	6.00	8.00	1.56	9.56
Henry (Jack) & Assoc	1.08	9.50	11.00	12.47	9.64	10.65	1.14	11.79
ManTech Int'l 'A'	1.78	9.00	5.10	5.53	5.38	6.25	1.84	8.09
Monster Beverage	-	11.50	14.70	12.17	14.85	13.31	-	NA
Altria Group	7.52	6.00	4.00	4.25	4.67	4.73	7.70	12.43
MSA Safety	1.08	6.50	NA	9.00	18.00	11.17	1.14	12.31
MSCI Inc.	0.73	16.00	NA	13.30	17.79	15.70	0.79	16.49
Vail Resorts	-	7.50	NA	58.69	56.46	40.88	-	NA
Northrop Grumman	1.72	7.00	9.00	5.29	6.66	6.99	1.78	8.77
Old Dominion Freight	0.30	9.50	22.70	20.88	22.70	18.94	0.33	19.27
Packaging Corp.	2.86	5.00	5.00	5.00	16.86	7.97	2.97	10.94
PerkinElmer Inc.	0.17	11.00	37.90	(3.57)	37.90	28.93	0.19	29.12
Philip Morris Int'l	4.82	7.00	8.80	11.45	12.63	9.97	5.06	15.03
Pool Corp.	0.69	15.00	NA	17.00	17.00	16.33	0.75	17.08
Post Holdings	-	9.50	NA	21.70	28.20	19.80	-	NA
RLI Corp.	0.94	12.00	NA	NA	9.80	10.90	0.99	11.89
Rollins, Inc.	0.88	11.50	NA	NA	8.20	9.85	0.92	10.77
Selective Ins. Group	1.25	9.50	12.40	12.44	10.00	11.09	1.32	12.41
Sirius XM Holdings	0.91	31.50	12.20	28.98	10.05	20.68	1.00	21.68
Synopsys, Inc.	-	13.00	16.00	15.89	16.00	15.22	-	NA
Tetra Tech	0.62	13.50	15.00	16.00	15.00	14.88	0.67	15.55
West Pharmac. Svcs.	0.17	17.00	28.40	20.41	25.80	22.90	0.19	23.09
							Mean	14.15 %
							Median	12.43 %
							Average of Mean and Median	13.29 %

NA= Not Available
NMF= Not Meaningful Figure

(1) The application of the DCF model to the domestic, non-price regluated comparable risk companies is identical to the application of the DCF to the Utility Proxy Group. The dividend yield is derived by using the 60 day average price and the spot indicated dividend as of March 31, 2021. The dividend yield is then adjusted by 1/2 the average projected growth rate in EPS, which is calculated by averaging the 5 year projected growth in EPS provided by Value Line, www.zacks.com, Bloomberg Professional Services, and www.yahoo.com (excluding any negative growth rates) and then adding that growth rate to the adjusted dividend yield.

Source of Information:
Value Line Investment Survey
www.zacks.com Downloaded on 08/31/2021
www.yahoo.com Downloaded on 08/31/2021
Bloomberg Professional Services

Duke Energy Kentucky, Inc.
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		Proxy Group of Forty-One Non-Price Regulated Companies
1.	Prospective Yield on Baa2 Rated Corporate Bonds (1)	4.30 %
2.	Equity Risk Premium (2)	8.55
3.	Risk Premium Derived Common Equity Cost Rate	12.85 %

Notes: (1) Average forecast of Baa2 corporate bonds based upon the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts dated September 1, 2021 and June 1, 2021 (see pages 20 and 21 of this Attachment). The estimates are detailed below.

Third Quarter 2021	3.40 %
Fourth Quarter 2021	3.70
First Quarter 2022	3.90
Second Quarter 2022	4.00
Third Quarter 2022	4.10
Fourth Quarter 2022	4.20
2023-2027	5.30
2028-2032	5.80
Average	4.30 %

(2) From page 33 of this Attachment.

Duke Energy Kentucky, Inc.
Comparison of Long-Term Issuer Ratings for the
Proxy Group of Forty-One Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Seven Natural Gas Distribution Companies

	Moody's Long-Term Issuer Rating August 2021		Standard & Poor's Long-Term Issuer Rating August 2021	
Proxy Group of Forty-One Non-Price Regulated Companies	Long-Term Issuer Rating	Numerical Weighting (1)	Long-Term Issuer Rating	Numerical Weighting (1)
Apple Inc.	Aa1	2.0	AA+	2.0
Assurant Inc.	Baa3	10.0	BBB	9.0
ANSYS, Inc.	NA	--	NA	--
Booz Allen Hamilton	NA	--	NA	--
Bristol-Myers Squibb	A2	6.0	A+	5.0
Brady Corp.	NA	--	NA	--
CACI Int'l	NA	--	BB+	11.0
Casey's Gen'l Stores	NA	--	NA	--
Quest Diagnostics	Baa2	9.0	BBB+	8.0
Lauder (Estee)	A1	5.0	A+	5.0
Exponent, Inc.	NA	--	NA	--
Fastenal Co.	NA	--	NA	--
FirstCash, Inc.	Ba1	11.0	BB	12.0
Franklin Electric	NA	--	NA	--
GATX Corp.	Baa2	9.0	BBB	9.0
Int'l Flavors & Frag	Baa3	10.0	BBB	9.0
Ingredion Inc.	Baa1	8.0	BBB	9.0
Iron Mountain	Ba3	13.0	BB-	13.0
Hunt (J.B.)	Baa1	8.0	BBB+	8.0
J&J Snack Foods	NA	--	NA	--
Henry (Jack) & Assoc	NA	--	NA	--
ManTech Int'l 'A'	WR	--	BB+	11.0
Monster Beverage	NA	--	NA	--
Altria Group	A3	7.0	BBB	9.0
MSA Safety	NA	--	NA	--
MSCI Inc.	Ba1	11.0	BB+	11.0
Vail Resorts	B2	15.0	BB	12.0
Northrop Grumman	Baa1	8.0	BBB+	8.0
Old Dominion Freight	NA	--	NA	--
Packaging Corp.	Baa2	9.0	BBB	9.0
PerkinElmer Inc.	Baa3	10.0	BBB	9.0
Philip Morris Int'l	A2	6.0	A	6.0
Pool Corp.	NA	--	NA	--
Post Holdings	B2	15.0	B+	14.0
RLI Corp.	Baa2	9.0	BBB	9.0
Rollins, Inc.	NA	--	NA	--
Selective Ins. Group	Baa2	9.0	BBB	9.0
Sirius XM Holdings	NA	--	BB	12.0
Synopsys, Inc.	NA	--	NA	--
Tetra Tech	NA	--	NA	--
West Pharmac. Svcs.	NA	--	NA	--
Average	Baa2	9.0	BBB	9.1

Notes:
(1) From page 16 of Attachment DWD-1R.

Source of Information:
Bloomberg Professional Services

Duke Energy Kentucky, Inc.
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for
Proxy Group of Forty-One Non-Price Regulated Companies of Comparable risk to the
Proxy Group of Seven Natural Gas Distribution Companies

Line No.	Equity Risk Premium Measure	Proxy Group of Forty-One Non-Price Regulated Companies
	Ibbotson-Based Equity Risk Premiums:	
1.	Ibbotson Equity Risk Premium (1)	5.92 %
2.	Regression on Ibbotson Risk Premium Data (2)	8.87
3.	Ibbotson Equity Risk Premium based on PRPM (3)	7.88
4.	Equity Risk Premium Based on Value Line Summary and Index (4)	5.54
5	Equity Risk Premium Based on Value Line S&P 500 Companies (5)	11.64
6.	Equity Risk Premium Based on Bloomberg S&P 500 Companies (6)	14.76
7.	Conclusion of Equity Risk Premium	9.10 %
8.	Adjusted Beta (7)	0.94
9.	Forecasted Equity Risk Premium	8.55 %

Notes:
(1) From note 1 of page 19 of this Attachment.
(2) From note 2 of page 19 of this Attachment.
(3) From note 3 of page 19 of this Attachment.
(4) From note 4 of page 19 of this Attachment.
(5) From note 5 of page 19 of this Attachment.
(6) From note 6 of page 19 of this Attachment.
(7) Average of mean and median beta from page 34 of this Attachment.

Sources of Information:
Stocks, Bonds, Bills, and Inflation - 2021 SBBI Yearbook, John Wiley & Sons, Inc.
Value Line Summary and Index
Blue Chip Financial Forecasts, September 1, 2021 and June 1, 2021
Bloomberg Professional Services

Duke Energy Kentucky, Inc.
Traditional CAPM and ECAPM Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the
Proxy Group of Seven Natural Gas Distribution Companies

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Forty-One Non-Price Regulated Companies	Value Line Adjusted Beta	Bloomberg Beta	Average Beta	Market Risk Premium (1)	Risk-Free Rate (2)	Traditional CAPM Cost Rate	ECAPM Cost Rate	Indicated Common Equity Cost Rate (3)
Apple Inc.	0.90	1.00	0.95	9.93 %	2.70 %	12.13 %	12.26 %	12.19 %
Assurant Inc.	0.90	1.01	0.95	9.93	2.70	12.13	12.26	12.19
ANSYS, Inc.	0.85	0.96	0.91	9.93	2.70	11.73	11.96	11.85
Booz Allen Hamilton	0.90	0.91	0.91	9.93	2.70	11.73	11.96	11.85
Bristol-Myers Squibb	0.85	0.79	0.82	9.93	2.70	10.84	11.29	11.06
Brady Corp.	1.00	1.07	1.04	9.93	2.70	13.03	12.93	12.98
CACI Int'l	0.95	1.00	0.98	9.93	2.70	12.43	12.48	12.45
Casey's Gen'l Stores	0.90	0.93	0.92	9.93	2.70	11.83	12.03	11.93
Quest Diagnostics	0.80	0.97	0.88	9.93	2.70	11.44	11.74	11.59
Lauder (Estee)	0.95	1.01	0.98	9.93	2.70	12.43	12.48	12.45
Exponent, Inc.	0.90	0.96	0.93	9.93	2.70	11.93	12.11	12.02
Fastenal Co.	0.95	0.94	0.94	9.93	2.70	12.03	12.18	12.11
FirstCash, Inc.	0.90	0.94	0.92	9.93	2.70	11.83	12.03	11.93
Franklin Electric	0.95	0.98	0.97	9.93	2.70	12.33	12.41	12.37
GATX Corp.	0.95	1.00	0.98	9.93	2.70	12.43	12.48	12.45
Int'l Flavors & Frag	0.90	1.06	0.98	9.93	2.70	12.43	12.48	12.45
Ingredion Inc.	0.90	0.93	0.91	9.93	2.70	11.73	11.96	11.85
Iron Mountain	0.90	1.05	0.97	9.93	2.70	12.33	12.41	12.37
Hunt (J.B.)	0.95	0.94	0.94	9.93	2.70	12.03	12.18	12.11
J&J Snack Foods	0.95	0.81	0.88	9.93	2.70	11.44	11.74	11.59
Henry (Jack) & Assoc	0.85	0.88	0.87	9.93	2.70	11.34	11.66	11.50
ManTech Int'l 'A'	0.85	1.13	0.99	9.93	2.70	12.53	12.55	12.54
Monster Beverage	0.85	0.97	0.91	9.93	2.70	11.73	11.96	11.85
Altria Group	0.95	0.91	0.93	9.93	2.70	11.93	12.11	12.02
MSA Safety	1.00	1.00	1.00	9.93	2.70	12.63	12.63	12.63
MSCI Inc.	0.95	0.93	0.94	9.93	2.70	12.03	12.18	12.11
Vail Resorts	0.95	1.14	1.05	9.93	2.70	13.12	13.00	13.06
Northrop Grumman	0.85	0.79	0.82	9.93	2.70	10.84	11.29	11.06
Old Dominion Freight	0.90	0.98	0.94	9.93	2.70	12.03	12.18	12.11
Packaging Corp.	1.00	0.79	0.90	9.93	2.70	11.64	11.88	11.76
PerkinElmer Inc.	0.90	0.80	0.85	9.93	2.70	11.14	11.51	11.33
Philip Morris Int'l	0.95	0.94	0.94	9.93	2.70	12.03	12.18	12.11
Pool Corp.	0.85	0.95	0.90	9.93	2.70	11.64	11.88	11.76
Post Holdings	0.95	0.90	0.92	9.93	2.70	11.83	12.03	11.93
RLI Corp.	0.80	0.91	0.85	9.93	2.70	11.14	11.51	11.33
Rollins, Inc.	0.85	0.69	0.77	9.93	2.70	10.34	10.92	10.63
Selective Ins. Group	0.90	0.99	0.94	9.93	2.70	12.03	12.18	12.11
Sirius XM Holdings	0.95	1.12	1.04	9.93	2.70	13.03	12.93	12.98
Synopsys, Inc.	0.95	1.02	0.98	9.93	2.70	12.43	12.48	12.45
Tetra Tech	0.95	1.06	1.01	9.93	2.70	12.73	12.70	12.72
West Pharmac. Svcs.	0.80	0.74	0.77	9.93	2.70	10.34	10.92	10.63
		Mean	0.93			11.92 %	12.10 %	12.01 %
		Median	0.94			12.03 %	12.18 %	12.11 %
		Average of Mean and Median	0.94			11.98 %	12.14 %	12.06 %

Notes:
(1) From note 1 of page 25 of this Attachment.
(2) From note 2 of page 25 of this Attachment.
(3) Average of CAPM and ECAPM cost rates.

Duke Energy Kentucky, Inc.
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE/AMEX/NASDAQ

Line No.		[1] Market Capitalization on August 31, 2021 (1) (millions)		[2] Applicable Decile of the NYSE/AMEX/ NASDAQ (2)	[3] Applicable Size Premium (3)	[4] Spread from Applicable Size Premium (4)
1.	Duke Energy Kentucky, Inc.	$ 1,204.482		7	1.54%	
2.	Proxy Group of Seven Natural Gas Distribution Companies	$ 4,458.458	3.7 x	4	0.75%	0.79%
			[A]	[B]	[C]	[D]

	Decile	Market Capitalization of Smallest Company (millions)	Market Capitalization of Largest Company (millions)	Size Premium (Return in Excess of CAPM)*
Largest	1	$ 29,025.803	$ 1,966,078.882	-0.22%
	2	13,178.743	28,808.073	0.49%
	3	6,743.361	13,177.828	0.71%
	4	3,861.858	6,710.676	0.75%
	5	2,445.693	3,836.536	1.09%
	6	1,591.865	2,444.745	1.37%
	7	911.586	1,591.765	1.54%
	8	451.955	911.103	1.46%
	9	190.019	451.800	2.29%
Smallest	10	2.194	189.831	5.01%

*From 2021 Duff & Phelps Cost of Capital Navigator

Notes:

(1) From page 36 of this Attachment.

(2) Gleaned from Columns [B] and [C] on the bottom of this page. The appropriate decile (Column [A]) corresponds to the market capitalization of the proxy group, which is found in Column [1].

(3) Corresponding risk premium to the decile is provided in Column [D] on the bottom of this page.

(4) Line No. 1 Column [3] – Line No. 2 Column [3]. For example, the 0.79% in Column [4], Line No. 2 is derived as follows 0.79% = 1.54% - 0.75%.

Duke Energy Kentucky, Inc.
Market Capitalization of Duke Energy Kentucky, Inc. and the
Proxy Group of Seven Natural Gas Distribution Companies

Company	Exchange	[1] Common Stock Shares Outstanding at Fiscal Year End 2020 (millions)	[2] Book Value per Share at Fiscal Year End 2020 (1)	[3] Total Common Equity at Fiscal Year End 2020 (millions)	[4] Closing Stock Market Price on August 31, 2021	[5] Market-to-Book Ratio on August 31, 2021 (2)	[6] Market Capitalization on August 31, 2021 (3) (millions)
Duke Energy Kentucky, Inc.		NA	NA	718.236 (4)	NA		
Based upon Proxy Group of Seven Natural Gas Distribution Companies						167.7 (5)	$ 1,204.482 (6)
Proxy Group of Seven Natural Gas Distribution Companies							
Atmos Energy Corporation	NYSE	$ 125.882	$ 53.949	$ 6,791.203	$ 97.510	180.7 %	$ 12,274.800
New Jersey Resources Corporation	NYSE	95.949	19.226	1,844.692	37.340	194.2	3,582.742
Northwest Natural Holding Company	NYSE	30.589	29.054	888.733	51.450	177.1	1,573.804
ONE Gas, Inc.	NYSE	53.167	42.006	2,233.311	71.820	171.0	3,818.435
South Jersey Industries, Inc.	NYSE	100.592	16.571	1,666.876	24.810	149.7	2,495.686
Southwest Gas Holdings, Inc.	NYSE	57.193	46.771	2,674.953	70.310	150.3	4,021.235
Spire Inc.	NYSE	51.612	44.182	2,280.300	66.700	151.0	3,442.506
Average		$ 73.569	$ 35.966	$ 2,625.724	$ 59.991	167.7 %	$ 4,458.458

NA= Not Available

Notes:
(1) Column 3 / Column 1.
(2) Column 4 / Column 2.
(3) Column 1 * Column 4.
(4) Requested rate base multiplied by the requested common equity ratio.
(5) The market-to-book ratio of Duke Energy Kentucky, Inc. on August 31, 2021 is assumed to be equal to the market-to-book ratio of Proxy Group of Seven Natural Gas Distribution Companies on August 31, 2021 as appropriate.
(6) Column [3] multiplied by Column [5].

Source of Information:
2020 Annual Forms 10K
yahoo.finance.com
Bloomberg Professional

Duke Energy Kentucky, Inc.
Derivation of the Flotation Cost Adjustment to the Cost of Common Equity

Equity Issuances since 2010

Date of Offering	Transaction (1)	[Column 1] Shares Issued	[Column 2] Market Price per Share	[Column 3] Average Offering Price per Share	[Column 4] Market Pressure (2)	[Column 5] Total Offering Expense per Share	[Column 6] Net Proceeds per Share (3)	[Column 7] Gross Equity Issue before Costs (4)	[Column 8] Total Net Proceeds (5)	[Column 9] Total Flotation Costs (6)	[Column 10] Flotation Cost Percentage (7)
11/18/19	Equity Offering	28,750,000	$ 88.65	$ 85.99	$ 2.66	$ 0.021	$ 85.9694	$ 2,548,687,500	$ 2,471,620,500	$ 77,067,000	3.02%
03/06/18	Equity Offering	21,275,000	$ 75.86	$ 74.07	$ 1.79	$ 0.021	$ 74.0508	$ 1,613,921,500	$ 1,575,431,800	$ 38,489,700	2.38%
03/01/16	Equity Offering	10,637,500	$ 73.35	$ 69.84	$ 3.51	$ 0.038	$ 69.8024	$ 780,260,625	$ 742,523,000	$ 37,737,625	4.84%
								$ 4,942,869,625	$ 4,789,575,300	$ 153,294,325	3.10%

Flotation Cost Adjustment

	Average Dividend Yield	Average Projected EPS Growth Rate	Adjusted Dividend Yield	Average DCF Cost Rate Unadjusted for Flotation (8)	DCF Cost Rate Adjusted for Flotation (9)	Flotation Cost Adjustment (10)
Proxy Group of Seven Natural Gas Distribution Companies	3.49 %	6.12 %	3.60 %	9.72 %	9.84 %	0.12 %

See page 38 of this Attachment for notes.

Source of Information: Company SEC filings

Duke Energy Kentucky, Inc.
Notes to Accompany the
Derivation of the Flotation Cost Adjustment to the Cost of Common Equity

(1) S&P Global Market Intelligence.

(2) Column 2 – Column 3.

(3) Column 2 – the sum of columns 4 and 5.

(4) Column 1 * Column 2.

(5) Column 1 * Column 6.

(6) Column 1 * (the sum of columns 4 and 5).

(7) (Column 7 – Column 8) divided by Column 7.

(8) Using the average growth rate from page 3 of this Attachment.

(9) Adjustment for flotation costs based on adjusting the average DCF constant growth cost rate in accordance with the following:

$$K = \frac{D(1+0.5g)}{P(1-F)} + g\,,$$

where g is the growth factor and F is the percentage of flotation costs.

(10) Flotation cost adjustment of 0.12% equals the difference between the flotation adjusted average DCF cost rate of 9.84% and the unadjusted average DCF cost rate of 9.72% of the Utility Proxy Group.

Source of Information:

S&P Global Market Intelligence

Duke Energy Kentucky, Inc.
Demonstration of the Inadequacy of
a DCF Return Rate Related to Book Value
When Market Value is Greater than Book Value

		[A]	[B]
		Based on Mr. Baudino's Proxy Group	
Line No.		Market Value	Book Value
1.	Per Share	$ 61.30 (1)	$ 35.97 (2)
2.	DCF Cost Rate (3)	9.10%	9.10%
3.	Return in Dollars (4)	$ 5.578	$ 3.273
4.	Dividends (5)	$ 2.153	$ 2.153
5.	Growth in Dollars (6)	$ 3.425	$ 1.120
6.	Return on Market Value (7)	9.10%	5.34%
7.	Rate of Growth on Market Value (8)	5.59%	1.83%

Notes:
(1) Average market price calculated using the six-month dividend yield and annual dividend as shown on Exhibit RAB-2.
(2) Average book value dividing total common equity at year-end 2020 by common shares outstanding at year-end 2020 for each proxy group company.
(3) Mr. Baudino's Recommended DCF cost rate.
(4) Line 1 x Line 2.
(5) Dividends are based on a 3.51% dividend yield from Exhibit RAB-3.
(6) Line 3 - Line 4.
(7) Line 3 / Line 1.
(8) Line 5 / Line 1.

Duke Energy Kentucky, Inc.
Calculation of Indicated DCF Applied to Book Value Capital Structure
of Mr. Baudino's Natural Gas Proxy Group

Un-lever Indicated Market Capital Structure DCF

Ku = Ke - (((Ku - i) 1 - t) D / E) - (Ku - d) P / E

Ku = 9.10% - (((Ku - 4.12%) 1 - 21%) 44.92% / 54.49%) - (Ku - 5.90%) 0.59% / 54.49%

Ku = 9.10% - (((Ku - 4.12%) 79.00%) 82.43%) - (Ku - 5.90%) 1.08%

Ku = 9.10% - ((79.00% * Ku - 3.2520%) 82.43%) - (1.08% * Ku - 0.06%)

Ku = 9.10% - (65.12% * Ku - 2.68%) -1.08% * Ku + 0.06%

Ku = 9.10% -65.12% * Ku + 2.68% -1.08% * Ku + 0.06%

Ku = 11.84% -66.20% * Ku

166.20% * Ku = 11.84%

Ku = **7.13%**

Re-lever to Indicated Book Value Capital Structure DCF

Ke = Ku + (((Ku - i) 1 - t) D / E) + (Ku - d) P / E

Ke = 7.13% + (((7.13% - 4.12%) 1 - 21%) 50.44% / 48.87%) + (7.13% - 5.90%) 0.69% / 48.87%

Ke = 7.13% + (((3.01%) 79%) 103.23%) + (1.23%) 1.41%

Ke = 7.13% + ((2.38%) 103.23%) + (0.02%)

Ke = 7.13% + (2.45%) + 0.02%

Ke = **9.60%**

Where:
- Ku = Un-levered (i.e., 100% equity) cost of common equity
- Ke = Market determined cost of common equity
- i = Cost of debt
- t = Income tax rate
- D = Debt ratio
- E = Equity ratio
- d = Cost of preferred stock
- P = Preferred equity ratio

Duke Energy Kentucky, Inc.
Growth Rate Regression Analysis

Company	Ticker	Median P/E Ratio	Proj. Earnings Growth Rate	Proj. Dividend Growth Rate
Atmos Energy Corporation	ATO	19.00	7.00%	7.50%
Chesapeake Utilities Corporation	CPK	20.00	8.50%	8.00%
New Jersey Resources Corporation	NJR	17.00	2.00%	5.50%
NiSource Inc.	NI	21.00	9.50%	4.50%
Northwest Natural Gas Company	NWN	24.00	5.50%	0.50%
ONE Gas, Inc.	OGS	NMF	6.50%	7.00%
RGC Resources, Inc.	RGCO	NMF	-	-
South Jersey Industries, Inc.	SJI	19.00	11.50%	4.50%
Spire Inc	SR	19.00	10.00%	4.50%
Southwest Gas Corporation	SWX	19.00	8.00%	4.50%
UGI Corporation	UGI	17.00	6.50%	4.50%
ALLETE, Inc.	ALE	18.00	5.00%	3.50%
Alliant Energy Corporation	LNT	19.00	5.50%	6.00%
Ameren Corporation	AEE	18.00	6.50%	7.00%
American Electric Power Company, Inc.	AEP	16.00	6.50%	5.50%
Avangrid, Inc.	AGR	NMF	2.00%	1.50%
Avista Corporation	AVA	18.00	3.00%	4.50%
Black Hills Corporation	BKH	18.00	5.00%	5.50%
CenterPoint Energy, Inc.	CNP	18.00	8.00%	-2.00%
CMS Energy Corporation	CMS	19.00	7.50%	7.00%
Consolidated Edison, Inc.	ED	17.00	4.00%	3.00%
Dominion Energy Inc.	D	22.00	12.00%	-1.50%
DTE Energy Company	DTE	17.00	6.00%	6.50%
Duke Energy Corporation	DUK	18.00	7.00%	2.00%
Edison International	EIX	15.00	NMF	3.50%
Entergy Corporation	ETR	13.00	3.00%	4.50%
Exelon Corporation	EXC	15.00	5.50%	4.50%
FirstEnergy Corp.	FE	20.00	11.50%	2.50%
Evergy, Inc.	EVRG	NMF	8.00%	5.50%
Hawaiian Electric Industries, Inc.	HE	18.00	5.00%	3.00%
IDACORP, Inc.	IDA	17.00	4.00%	6.50%
MGE Energy, Inc.	MGEE	22.00	4.50%	5.50%
NextEra Energy, Inc.	NEE	19.00	10.50%	10.00%
Eversource Energy	ES	19.00	6.50%	6.00%
NorthWestern Corporation	NWE	17.00	3.00%	3.50%
OGE Energy Corp.	OGE	17.00	4.00%	4.50%
Otter Tail Corporation	OTTR	21.00	7.00%	5.50%
Pinnacle West Capital Corporation	PNW	17.00	5.00%	5.50%
PNM Resources, Inc.	PNM	20.00	6.50%	6.50%
Portland General Electric Company	POR	18.00	8.50%	5.50%
PPL Corporation	PPL	13.00	NMF	NMF
Public Service Enterprise Group Incorporated	PEG	14.00	3.50%	4.00%
Sempra Energy	SRE	20.00	10.00%	6.00%
Southern Company	SO	16.00	6.00%	3.00%
Unitil Corp.	UTL	NMF	-	-
WEC Energy Group, Inc.	WEC	19.00	6.50%	6.50%
Xcel Energy Inc.	XEL	17.00	6.00%	6.00%
Artesian Resourses Corporation	ARTNA	NMF	-	-
American Water	AWK	24.00	8.50%	8.50%
American States Water	AWR	24.00	6.50%	9.50%
Consolidated Water Co.	CWCO	NMF	-	-
Consolidated Water	CWT	24.00	6.50%	6.50%
Global Water Resourses	GWRS	NMF	-	-
Middlesex Water	MSEX	23.00	4.50%	5.50%
SJW Group	SJW	21.00	13.00%	6.00%
Essential Utilities	WTRG	23.00	10.00%	7.50%
York Water	YORW	28.00	6.50%	6.00%

Notes:
Source: Value Line Reports as of August 31, 2021.

Duke Energy Kentucky, Inc.
Growth Rate Regression Analysis

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.38510
R Square	0.14830
Adjusted R Square	0.12938
Standard Error	2.70022
Observations	47

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	57.13106	57.13106	7.83564	0.00752
Residual	45	328.10298	7.29118		
Total	46	385.23404			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	16.21520	1.11251	14.57537	0.00000	13.97450	18.45591	13.97450	18.45591
Projected Earnings Growth Rate	43.24974	15.45063	2.79922	0.00752	12.13057	74.36890	12.13057	74.36890

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.19803
R Square	0.03922
Adjusted R Square	0.01833
Standard Error	2.89735
Observations	48

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	15.76214	15.76214	1.87764	0.17725
Residual	46	386.15453	8.39466		
Total	47	401.91667			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	17.78256	1.00956	17.61410	0.00000	15.75041	19.81471	15.75041	19.81471
Projected Dividend Growth Rate	24.87123	18.15061	1.37027	0.17725	-11.66406	61.40652	-11.66406	61.40652

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.42274
R Square	0.17871
Adjusted R Square	0.14138
Standard Error	2.68154
Observations	47

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	68.84506	34.42253	4.78712	0.01315
Residual	44	316.38898	7.19066		
Total	46	385.23404			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	15.14525	1.38685	10.92064	0.00000	12.35025	17.94026	12.35025	17.94026
Projected Earnings Growth Rate	42.83012	15.34728	2.79073	0.00775	11.89971	73.76052	11.89971	73.76052
Projected Dividend Growth Rate	21.55148	16.88530	1.27635	0.20853	-12.47862	55.58157	-12.47862	55.58157

Duke Energy Kentucky, Inc.
Mr. Baudino's DCF Analysis using only Projected EPS Growth

	(2) Value Line Earnings Gr.	(3) Zack's Earnings Gr.	(4) Yahoo! Earnings Gr.	(5) Average of All Gr. Rates
Method 1:				
Dividend Yield	3.51%	3.51%	3.51%	3.51%
Average Growth Rate	7.36%	5.67%	5.44%	6.16%
Expected Div. Yield	3.64%	3.61%	3.61%	3.62%
DCF Return on Equity	***11.00%***	***9.28%***	***9.05%***	***9.78%***
Method 2:				
Dividend Yield	3.51%	3.51%	3.51%	3.51%
Median Growth Rate	7.00%	5.50%	5.00%	5.83%
Expected Div. Yield	3.64%	3.61%	3.60%	3.62%
DCF Return on Equity	***10.64%***	***9.11%***	***8.60%***	***9.45%***

Source: Exhibit RAB-3, Page 2 of 2

Duke Energy Kentucky, Inc.
Calculation of the Capital Asset Pricing Model
to Reflect Forward-Looking Interest Rates, Market Risk Premiums
and the Employment of the ECAPM

	Arithmetic Mean	Value Line 3-5 Year Total Return	Value Line Investment Analyzer Market DCF	Ibbotson and Chen Prospective MRP	Average
CAPM with Prospective Risk-Free Rate					
Long-Term Annual Return on Stocks	12.20% (1)	8.34% (2)	11.87% (3)	11.11% (4)	
Long-Term Annual Income Return on Long-Term Treas. Bonds	4.90%	2.86% (5)	2.86% (5)	2.86% (5)	
Market Risk Premium	7.30%	5.48%	9.01%	8.25%	7.51%
Proxy Group Beta, Value Line (6)	0.90	0.90	0.90	0.90	
Beta * Market Premium	6.57%	4.93%	8.11%	7.42%	
Prospective 30-Year Treasury Bond Yield	2.86%	2.86%	2.86%	2.86%	
CAPM Cost of Equity	**9.43%**	**7.79%**	**10.97%**	**10.29%**	**9.62%**
ECAPM with Prospective Risk-Free Rate					
Historical Market Risk Premium	7.30%	5.48%	9.01%	8.25%	
Proxy Group Beta, Value Line	0.90	0.90	0.90	0.90	
Beta * Market Premium	6.57%	4.93%	8.11%	7.42%	
Prospective 30-Year Treasury Bond Yield	2.86%	2.86%	2.86%	2.86%	
ECAPM Cost of Equity (rf + 0.25(MRP) + 0.75(β*MRP))	**9.62%**	**7.93%**	**11.19%**	**10.49%**	**9.81%**

Notes:
(1) From Exhibit RAB-5.
(2) From Exhibit RAB-4, page 2.
(3) Calculated from Baudino Value Line Investment Analyzer workpapers, as shown below:

	Avg. Dividend Yield	Median Projected EPS Growth Rate	Adjusted Yield	Market DCF
Value Line Investment Analyzer Data	0.82%	11.00%	0.87%	11.87%

(4) Calculated by converting the Ibbotson and Chen projected return on the market from a geometric mean to an arithmetic mean as shown below:

$$R_A = R_G + \frac{\sigma^2}{2}$$

Where:
R_A = Arithmetic Mean
R_G = Geometric Mean
σ = Standard Deviation of Equity Returns

Geometric Mean Return	Standard Deviation of Equity Returns	Arithmetic Mean Return
9.18%	19.67%	11.11%

(5) For reasons explained in the direct testimony, the appropriate risk-free rate for cost of capital purposes is the average forecast of 30 year Treasury Bonds per the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts. (See page 20 of Attachment DWD-1R and page 2 of this Attachment.) The projection of the risk-free rate is illustrated below:

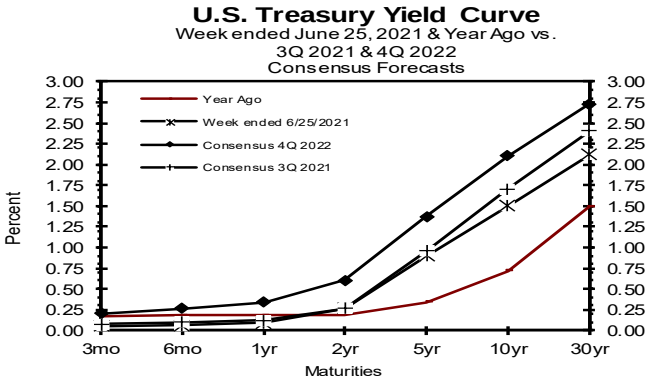
Third Quarter 2021	2.40 %
Fourth Quarter 2021	2.50
First Quarter 2022	2.60
Second Quarter 2022	2.60
Third Quarter 2022	2.70
Fourth Quarter 2022	2.70
2023-2027	3.50
2028-2032	3.90
	2.86 %

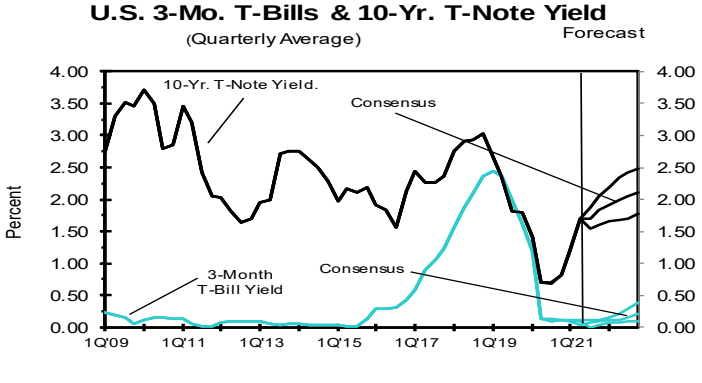
Sources of Information:
Exhibit RAB-4
Exhibit RAB-5
Baudino Workpapers
2021 SBBI® Yearbook, at 10-29, 10-30
Blue Chip Financial Forecasts, July 1, 2021 and June 1, 2021

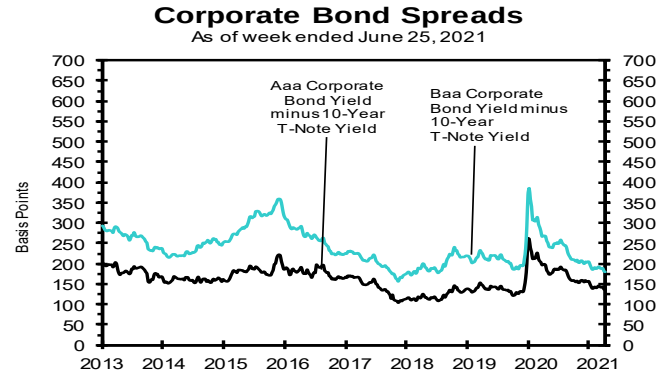
Consensus Forecasts of U.S. Interest Rates and Key Assumptions

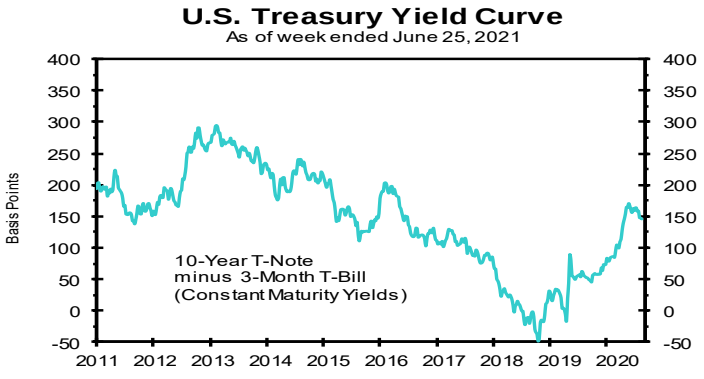
	History								Consensus Forecasts-Quarterly Avg.					
	Average For Week Ending				Average For Month			*Latest Qtr*	3Q	4Q	1Q	2Q	3Q	4Q
Interest Rates	Jun 25	Jun 18	Jun 11	Jun 4	May	Apr	Mar	2Q 2021*	2021	2021	2022	2022	2022	2022
Federal Funds Rate	0.10	0.06	0.06	0.05	0.06	0.07	0.07	0.07	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**
Prime Rate	3.25	3.25	3.25	3.25	3.25	3.25	3.25	3.25	**3.3**	**3.3**	**3.3**	**3.3**	**3.3**	**3.3**
LIBOR, 3-mo.	0.14	0.13	0.12	0.13	0.15	0.18	0.19	0.16	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**
Commercial Paper, 1-mo.	0.05	0.03	0.02	0.03	0.10	0.04	0.07	0.06	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**
Treasury bill, 3-mo.	0.05	0.04	0.03	0.02	0.02	0.02	0.03	0.02	**0.1**	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**
Treasury bill, 6-mo.	0.06	0.06	0.04	0.04	0.04	0.04	0.05	0.04	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**0.3**
Treasury bill, 1 yr.	0.09	0.08	0.05	0.05	0.05	0.06	0.08	0.06	**0.1**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**
Treasury note, 2 yr.	0.26	0.20	0.15	0.15	0.16	0.16	0.15	0.17	**0.3**	**0.3**	**0.4**	**0.5**	**0.5**	**0.6**
Treasury note, 5 yr.	0.90	0.85	0.76	0.81	0.82	0.86	0.82	0.84	**1.0**	**1.1**	**1.2**	**1.2**	**1.3**	**1.4**
Treasury note, 10 yr.	1.50	1.51	1.50	1.60	1.62	1.64	1.61	1.59	**1.7**	**1.8**	**1.9**	**2.0**	**2.1**	**2.1**
Treasury note, 30 yr.	2.12	2.14	2.19	2.28	2.32	2.30	2.34	2.26	**2.4**	**2.5**	**2.6**	**2.6**	**2.7**	**2.7**
Corporate Aaa bond	2.86	2.88	2.94	3.03	3.06	3.04	3.15	3.00	**3.0**	**3.2**	**3.2**	**3.3**	**3.4**	**3.4**
Corporate Baa bond	3.30	3.32	3.39	3.48	3.52	3.51	3.62	3.46	**3.8**	**4.0**	**4.1**	**4.1**	**4.2**	**4.3**
State & Local bonds	2.65	2.63	2.63	2.67	2.64	2.66	2.74	2.65	**2.5**	**2.6**	**2.7**	**2.7**	**2.8**	**2.8**
Home mortgage rate	3.02	2.93	2.96	2.99	2.96	3.06	3.08	3.00	**3.2**	**3.3**	**3.4**	**3.5**	**3.6**	**3.6**
	History								Consensus Forecasts-Quarterly					
	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
Key Assumptions	2019	2019	2020	2020	2020	2020	2021	2021**	2021	2021	2022	2022	2022	2022
Fed's AFE $ Index	110.6	110.5	111.4	112.4	107.3	105.2	103.4	102.9	**103.4**	**103.3**	**102.8**	**102.6**	**102.7**	**102.9**
Real GDP	2.6	2.4	-5.0	-31.4	33.4	4.3	6.4	9.4	**7.3**	**5.3**	**3.8**	**3.2**	**2.7**	**2.3**
GDP Price Index	1.5	1.4	1.4	-1.8	3.5	2.0	4.3	4.6	**3.0**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**
Consumer Price Index	1.3	2.6	1.0	-3.1	4.7	2.4	3.7	6.8	**3.6**	**2.2**	**2.3**	**2.5**	**2.4**	**2.2**
PCE Price Index	1.4	1.5	1.3	-1.6	3.7	1.5	3.7	5.5	**3.1**	**2.1**	**2.1**	**2.2**	**2.3**	**2.2**

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index, PCE Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data: Treasury rates from the Federal Reserve Board's H.15; AAA-AA and A-BBB corporate bond yields from Bank of America-Merrill Lynch and are 15+ years, yield to maturity; State and local bond yields from Bank of America-Merrill Lynch, A-rated, yield to maturity; Mortgage rates from Freddie Mac, 30-year, fixed; LIBOR quotes from Intercontinental Exchange. All interest rate data are sourced from Haver Analytics. Historical data for Fed's Major Currency Index are from FRSR H.10. Historical data for Real GDP, GDP Price Index and PCE Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index history is from the Department of Labor's Bureau of Labor Statistics (BLS). *Interest rate data for 2Q 2021 based on historical data through the week ended June 25. **Data for 2Q 2021 for the Fed's AFE $ Index based on data through the week ended June 25. Figures for 2Q 2021 Real GDP, GDP Chained Price Index, Consumer Price Index, and PCE Price Index are consensus forecasts based on a special question asked of the panelists this month.









Duke Energy Kentucky, Inc.
Portfolio Ranks by Size and Risk Premiums over CAPM Results
as Compiled by Duff and Phelps Guide to Cost of Capital

	B-1		B-2		B-3		B-4		B-5		B-6		B-7		B-8	
Portfolio Rank by Size	Average Market Val. (in $millions)	RP	Average Book Val. (in $millions)	RP	5-yr Net Income (in $millions)	RP	Market Value of Invested Capital (in $millions)	RP	Total Assets (in $millions)	RP	5-yr EBITDA (in $millions)	RP	Sales (in $millions)	RP	Average Number of Employees	RP
1	$185,926 and Up	-0.84%	$41,558 and Up	1.38%	$6,822 and Up	1.01%	$229,194 and Up	-0.32%	$114,076 and Up	1.09%	$14,974 and Up	1.13%	$90,302 and Up	1.29%	229,840 and Up	0.89%
2	$56,959 - $185,926	0.49%	$15,115 - $41,558	2.02%	$2,337 - $6,822	1.82%	$78,039 - $229,194	0.75%	$50,546 - $114,076	1.72%	$5,656 - $14,974	1.88%	$32,344 - $90,302	2.05%	89,648 - 229,840	1.76%
3	$35,409 - $56,959	0.98%	$9,686- $15,115	2.29%	$1,439 - $2,337	2.13%	$47,251 - $78,039	1.24%	$33,793 - $50,546	1.98%	$3,665 - $5,656	2.18%	$20,065 - $32,344	2.44%	60,958 - 89,648	2.10%
4	$24,895 - $35,409	1.34%	$6,887 - $9,686	2.46%	$970 - $1,439	2.41%	$33,818 - $47,251	1.55%	$23,107 - $33,793	2.22%	$2,644 - $3,665	2.41%	$15,623 - $20,065	2.61%	45,827 - 60,958	2.32%
5	$18,621 - $24,895	1.61%	$5,248 - $6,887	2.64%	$753 - $970	2.60%	$25,668 - $33,818	1.79%	$16,907 - $23,107	2.45%	$1,996 - $2,644	2.59%	$11,773 - $15,263	2.78%	35,414 - 45,827	2.52%
6	$14,297 - $18,621	1.87%	$4,392 - $5,248	2.74%	$615 - $753	2.71%	$19,728 - $25,668	2.01%	$13,508 - $16,907	2.59%	$1,559 - $1,996	2.76%	$9,610 - $11,773	2.94%	28,157 - 35,414	2.70%
7	$11,416 - $14,297	2.10%	$3,712- $4,392	2.83%	$483 - $615	2.86%	$15,391 - $19,728	2.23%	$10,972 - $13,508	2.73%	$1,270 - $1,559	2.89%	$8,275 - $9,610	3.03%	23,063 - 28,157	2.86%
8	$9,274 - $11,416	2.29%	$3,122 - $3,712	2.91%	$388 - $483	3.01%	$12,436 - $15,391	2.42%	$9,164 - $10,972	2.85%	$1,044 - $1,270	3.01%	$7,157 - $8,275	3.13%	18,965 - 23,063	3.00%
9	$7,759 - $9,274	2.48%	$2,596 - $3,122	3.01%	$328 - $388	3.12%	$10,361 - $12,436	2.58%	$7,673 - $9,164	2.95%	$852 - $1,044	3.14%	$6,098 - $7,157	3.22%	15,846 - 18,965	3.15%
10	$6,635 - $7,759	2.61%	$2,201 - $2,596	3.11%	$289 - $328	3.22%	$8,701 - $10,361	2.73%	$6,462 - $7,673	3.07%	$721 - $852	3.27%	$4,991 - $6,098	3.33%	13,921 - 15,846	3.26%
11	$5,502 - $6,635	2.77%	$1,911 - $2,201	3.18%	$256 - $289	3.28%	$7,448 - $8,701	2.88%	$5,629 - $6,462	3.17%	$636 - $721	3.35%	$4,127 - $4,991	3.47%	12,271 - 13,921	3.35%
12	$4,624 - $5,502	2.96%	$1,687 - $1,911	3.25%	$218 - $256	3.37%	$6,594 - $7,448	2.99%	$4,934 - $5,629	3.25%	$555 - $636	3.43%	$3,550 - $4,127	3.57%	10,760 - 12,271	3.45%
13	$3,983 - $4,624	3.09%	$1,499 - $1,687	3.31%	$183 - $218	3.48%	$5,781 - $6,594	3.08%	$4,236 - $4,934	3.33%	$485 - $555	3.52%	$3,093 - $3,550	3.66%	9,489 - 10,760	3.54%
14	$3,413 - $3,983	3.23%	$1,312 - $1,499	3.38%	$155 - $183	3.58%	$4,947 - $5,781	3.21%	$3,576 - $4,236	3.44%	$427 - $485	3.60%	$2,723 - $3,093	3.75%	8,303 - 9,489	3.64%
15	$2,975 - $3,413	3.38%	$1,143 - $1,312	3.45%	$132 - $155	3.69%	$4,258 - $4,947	3.34%	$3,062 - $3,576	3.54%	$374 - $427	3.68%	$2,404 - $2,723	3.82%	7,138 - 8,303	3.74%
16	$2,644 - $2,975	3.48%	$996 - $1,143	3.52%	$111 - $132	3.78%	$3,684 - $4,258	3.46%	$2,642 - $3,062	3.63%	$323 - $374	3.76%	$2.137 - $2,404	3.90%	6,060 - 7,138	3.86%
17	$2,313 - $2,644	3.59%	$857 - $996	3.59%	$93 - $111	3.90%	$3,188 - $3,684	3.59%	$2,249 - $2,642	3.73%	$274 - $323	3.86%	$1,916 - $2,137	3.97%	5,130 - 6,060	3.99%
18	$1,932 - $2,313	3.73%	$739 - $857	3.68%	$79 - $93	4.00%	$2,722 - $3,188	3.70%	$1,898 - $2,249	3.83%	$227 - $274	3.97%	$1,692 - $1,916	4.04%	4,330 - 5,130	4.11%
19	$1,578 - $1,932	3.93%	$649 - $739	3.75%	$67 - $79	4.10%	$2,229 - $2,722	3.86%	$1,591 - $1,898	3.94%	$187 - $227	4.10%	$1,446 - $1,692	4.13%	3,605 - 4,330	4.24%
20	$1,320 - $1,578	4.11%	$562 - $649	3.82%	$55 - $67	4.21%	$1,790 - $2,229	4.04%	$1,310 - $1,591	4.05%	$155 - $187	4.22%	$1,171 - $1,446	4.24%	2,894 - 3,605	4.39%
21	$1,080 - $1,320	4.26%	$464 - $562	3.90%	$44 - $55	4.33%	$1,457 - $1,790	4.23%	$1,074 - $1,310	4.18%	$127 - $155	4.33%	$926 - $1,171	4.40%	2,247- 2,894	4.57%
22	$835 - $1,080	4.48%	$373 - $464	4.02%	$34 - $44	4.49%	$1,169 - $1,457	4.39%	$845 - $1,074	4.30%	$98 - $127	4.47%	$722 - $926	4.54%	1,687 - 2,247	4.77%
23	$591 - $835	4.74%	$292 - $373	4.13%	$24 - $34	4.67%	$825 - $1,169	4.60%	$594 - $845	4.49%	$70 - $98	4.66%	$525 - $722	4.72%	1,203 - 1,687	5.01%
24	$306 - $591	5.15%	$168 - $292	4.28%	$12 - $24	4.95%	$412 - $825	5.01%	$320 - $594	4.76%	$38 - $70	4.90%	$284 - $525	4.95%	649 - 1,203	5.28%
25	Up to $306	6.20%	Up to $168	4.82%	Up to $12	5.69%	Up to $412	5.99%	Up to $320	5.38%	Up to $38	5.60%	Up to $284	5.67%	Up to 649	6.14%

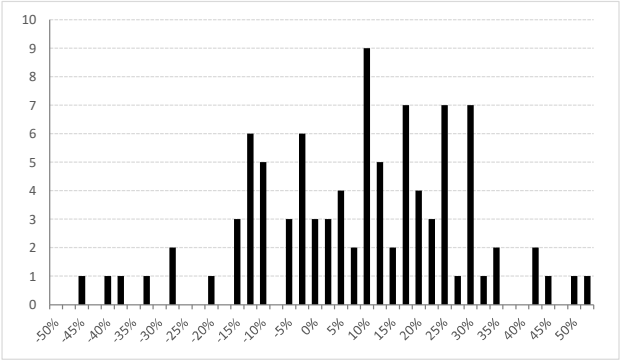
	B-1 Value	Portfolio Ranking	B-2 Value	Portfolio Ranking	B-3 Value	Portfolio Ranking	B-4 Value	Portfolio Ranking	B-5 Value	Portfolio Ranking	B-6 Value	Portfolio Ranking	B-7 Value	Portfolio Ranking	B-8 Value	Portfolio Ranking
Mr. Baudino's Proxy Group	$ 5,175	12	$ 2,361	10	$ 172	14	$ 7,498	11	$ 7,005	10	$ 462	14	$ 2,085	17	3,469	20
Duke Energy Kentucky, Inc.	$ 304	25	$ 135	25	$ 15	24	$ 507	24	$ 539	24	$ 33	25	$ 102	25	281	25
Indicated Risk Premium	3.24%		1.71%		1.37%		2.13%		1.69%		2.00%		1.70%		1.75%	

Sources of Information:

Duff & Phelps Risk Premium Size Study Premia as of December 31, 2019.
Bloomberg Professional
SEC Form 10-K
Company financial statements

Attachment DWD-7R
Page 1 of 1

Duke Energy Kentucky, Inc.
Frequency Distribution of Market Risk Premium, 1926 - 2020



Year	Large Company Stocks Total Returns Jan-Dec*	Long-Term Government Bond Income Returns Jan-Dec*	MRP Jan-Dec*
1926	0.1162	0.0373	0.0789
1927	0.3749	0.0341	0.3408
1928	0.4361	0.0322	0.4039
1929	-0.0842	0.0347	-0.1189
1930	-0.2490	0.0332	-0.2822
1931	-0.4334	0.0333	-0.4667
1932	-0.0819	0.0369	-0.1188
1933	0.5399	0.0312	0.5087
1934	-0.0144	0.0318	-0.0462
1935	0.4767	0.0281	0.4486
1936	0.3392	0.0277	0.3115
1937	-0.3503	0.0266	-0.3769
1938	0.3112	0.0264	0.2848
1939	-0.0041	0.0240	-0.0281
1940	-0.0978	0.0223	-0.1201
1941	-0.1159	0.0194	-0.1353
1942	0.2034	0.0246	0.1788
1943	0.2590	0.0244	0.2346
1944	0.1975	0.0246	0.1729
1945	0.3644	0.0234	0.3410
1946	-0.0807	0.0204	-0.1011
1947	0.0571	0.0213	0.0358
1948	0.0550	0.0240	0.0310
1949	0.1879	0.0225	0.1654
1950	0.3171	0.0212	0.2959
1951	0.2402	0.0238	0.2164
1952	0.1837	0.0266	0.1571
1953	-0.0099	0.0284	-0.0383
1954	0.5262	0.0279	0.4983
1955	0.3156	0.0275	0.2881
1956	0.0656	0.0299	0.0357
1957	-0.1078	0.0344	-0.1422
1958	0.4336	0.0327	0.4009
1959	0.1196	0.0401	0.0795
1960	0.0047	0.0426	-0.0379
1961	0.2689	0.0383	0.2306
1962	-0.0873	0.0400	-0.1273
1963	0.2280	0.0389	0.1891
1964	0.1648	0.0415	0.1233
1965	0.1245	0.0419	0.0826
1966	-0.1006	0.0449	-0.1455
1967	0.2398	0.0459	0.1939
1968	0.1106	0.0550	0.0556
1969	-0.0850	0.0595	-0.1445
1970	0.0386	0.0674	-0.0288
1971	0.1430	0.0632	0.0798
1972	0.1899	0.0587	0.1312
1973	-0.1469	0.0651	-0.2120
1974	-0.2647	0.0727	-0.3374
1975	0.3723	0.0799	0.2924
1976	0.2393	0.0789	0.1604
1977	-0.0716	0.0714	-0.1430
1978	0.0657	0.0790	-0.0133
1979	0.1861	0.0886	0.0975
1980	0.3250	0.0997	0.2253
1981	-0.0492	0.1155	-0.1647
1982	0.2155	0.1350	0.0805
1983	0.2256	0.1038	0.1218

MRP

Bin	*Frequency*	*Cumulative %*
-50.00%	0	0.0%
-47.50%	0	0.0%
-45.00%	1	1.1%
-42.50%	0	1.1%
-40.00%	1	2.1%
-37.50%	1	3.2%
-35.00%	0	3.2%
-32.50%	1	4.2%
-30.00%	0	4.2%
-27.50%	2	6.3%
-25.00%	0	6.3%
-22.50%	0	6.3%
-20.00%	1	7.4%
-17.50%	0	7.4%
-15.00%	3	10.5%
-12.50%	6	16.8%
-10.00%	5	22.1%
-7.50%	0	22.1%
-5.00%	3	25.3%
-2.50%	6	31.6%
0.00%	3	34.7%
2.50%	3	37.9%
5.00%	4	42.1%
7.50%	2	44.2%
10.00%	9	53.7%
12.50%	5	58.9%
15.00%	2	61.1%
17.50%	7	68.4%
20.00%	4	72.6%
22.50%	3	75.8%
25.00%	7	83.2%
27.50%	1	84.2%
30.00%	7	91.6%
32.50%	1	92.6%
35.00%	2	94.7%
37.50%	0	94.7%
40.00%	0	94.7%
42.50%	2	96.8%
45.00%	1	97.9%
47.50%	0	97.9%
50.00%	1	98.9%
51.00%	1	100.0%
Count:	95	

MRP from Direct	Rank
9.54%	50.90%
MRP from Rebuttal	Rank
9.93%	53.40%

Historical Market Return - Direct

	% Rank	Occurrence
12.27%	47.40%	50

Historical Market Return - Rebuttal

	% Rank	Occurrence
12.63%	48.00%	49

	Large Company Stocks Total Returns	Long-Term Government Bond Income Returns	MRP
Year	**Jan-Dec***	**Jan-Dec***	**Jan-Dec***
1984	0.0627	0.1174	-0.0547
1985	0.3173	0.1125	0.2048
1986	0.1867	0.0898	0.0969
1987	0.0525	0.0792	-0.0267
1988	0.1661	0.0897	0.0764
1989	0.3169	0.0881	0.2288
1990	-0.0310	0.0819	-0.1129
1991	0.3047	0.0822	0.2225
1992	0.0762	0.0726	0.0036
1993	0.1008	0.0717	0.0291
1994	0.0132	0.0659	-0.0527
1995	0.3758	0.0760	0.2998
1996	0.2296	0.0618	0.1678
1997	0.3336	0.0664	0.2672
1998	0.2858	0.0583	0.2275
1999	0.2104	0.0557	0.1547
2000	-0.0910	0.0650	-0.1560
2001	-0.1189	0.0553	-0.1742
2002	-0.2210	0.0559	-0.2769
2003	0.2868	0.0480	0.2388
2004	0.1088	0.0502	0.0586
2005	0.0491	0.0469	0.0022
2006	0.1579	0.0468	0.1111
2007	0.0549	0.0486	0.0063
2008	-0.3700	0.0445	-0.4145
2009	0.2646	0.0347	0.2299
2010	0.1506	0.0425	0.1081
2011	0.0211	0.0382	-0.0171
2012	0.1600	0.0246	0.1354
2013	0.3239	0.0288	0.2951
2014	0.1369	0.0341	0.1028
2015	0.0138	0.0247	-0.0109
2016	0.1196	0.0230	0.0966
2017	0.2183	0.0267	0.1916
2018	-0.0438	0.0282	-0.0720
2019	0.3149	0.0255	0.2894
2020	0.1840	0.0142	0.1698
Average	0.1216	0.0491	0.0725
Std. Dev.	0.1967	0.0264	0.1979

Source: Duff & Phelps, 2021 SBBI Yearbook, Appendix A-1, A-7

FINANCIAL QUARTERLY
R · E · V · I · E · W

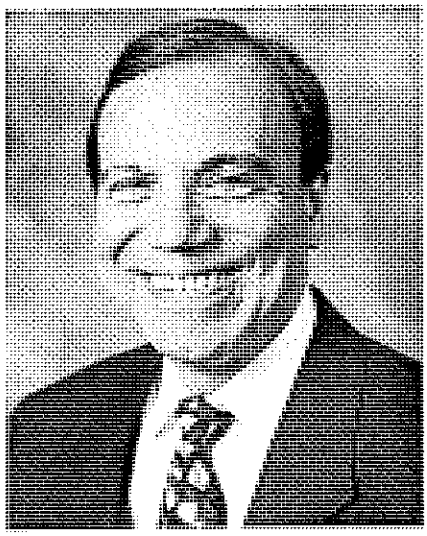
Comparable Earnings: New Life for an Old Precept

by
Frank J. Hanley
Pauline M. Ahern

Reprinted from the American Gas Association's *Financial Quarterly Review*
Summer 1994 edition, Arlington, Va.

Comparable Earnings: New Life for an Old Precept

Accelerating deregulation has greatly increased the investment risk of natural gas utilities. As a result, the authors believe it more appropriate than ever to employ the comparable earnings model. We believe our application of the model overcomes the greatest traditional objection to it — lack of comparability of the selected non-utility proxy firms. Our illustration focuses on a target gas pipeline company with a beta of 0.96 — almost equal to the market's beta of 1.00.



Frank J. Hanley is president of AUS Consultants — Utility Services Group. He has testified in several hundred rate proceedings on the subject of cost of capital before the Federal Energy Regulatory Commission and 27 state regulatory commissions. Before joining AUS in 1971, he was an assistant treasurer of a number of operating companies in the American Water Works System, as well as a financial planning officer with the Philadelphia National Bank. He is a Certified Rate of Return Analyst.

Pauline M. Ahern is a senior financial analyst with AUS Consultants — Utility Services Group. She has participated in many cost-of-capital studies. A former employee of the U.S. Department of the Treasury and the Federal Reserve Bank of Boston, she holds an MBA degree from Rutgers University and is a Certified Rate of Return Analyst.

Introduction

The comparable earnings model used to determine a common equity cost rate is deeply rooted in the standard of "corresponding risk" enunciated in the landmark *Bluefield* and *Hope* decisions of the U.S. Supreme Court.[1] With such solid grounding in the foundations of rate of return regulation, comparable earnings should be accepted as a principal model, along with the currently popular market-based models, provided that its most common criticism, non-comparability of the proxy companies, is overcome.

Our comparable earnings model overcomes the non-comparability issue of the non-utility firms selected as a proxy for the target utility, in this example, a gas pipeline company. We should note that in the absence of common stock prices for the target utility (as with a wholly-owned subsidiary), it is appropriate to use the average of a proxy group of similar risk gas pipeline companies whose common stocks are actively traded. As we will demonstrate, our selection process results in a group of domestic, non-utility firms that is comparable in total risk, the sum of business and financial risk, which reflects both non-diversifiable systematic, or market, risk as well as diversifiable unsystematic, or firm-specific, risk.

Embedded in the Landmark Decisions

As stated in *Bluefield* in 1922: "A public utility is entitled to such rates as will permit it to earn a return ... on investments in other business undertakings which are attended by corresponding risks and uncertainties ..."

In addition, the court stated in *Hope* in 1944: "By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks."

Thus, the "corresponding risk" precept of *Bluefield* and *Hope* predates the use of such market-based cost-of-equity models as the Discounted Cash Flow (DCF) and Capital Asset Pricing (CAPM), which were developed later and are currently popular in rate-base/rate-of-return regulation. Consequently, the comparable earnings model has a longer regulatory and judicial history. However, it has far greater relevance now than ever before in its history because significant deregulation has substantially increased natural gas utilities' investment risk to a level similar to that of non-utility firms. As a result, it is

Comparable Earnings *from page 4*

more important than ever to look to similar-risk non-utility firms for insight into common equity cost rate, especially in view of the deficiencies inherent in the currently popular market-based cost of common equity models, particularly the DCF model.

Despite the fact that the landmark decisions are still regarded as having set the standards for determining a fair rate of return, the comparable earnings model has experienced decreased usage by expert witnesses, as well as less regulatory acceptance over the years. We believe the decline in the popularity of the comparable earnings model, in large measure, is attributable to the difficulty of selecting non-utility proxy firms that regulators will accept as comparable to the target utility. Regulatory acceptance is difficult to gain when the selection process is arbitrary. Our application of the model is objective and consistent with fundamental financial tenets.

Principles of Comparable Earnings

Regulation is a substitute for the competition of the marketplace. Moreover, regulated public utilities compete in the capital markets with all firms, including unregulated non-utilities. The comparable earnings model is based upon the opportunity cost principle; i.e., that the true cost of an investment is the return that could have been earned on the next best available alternative investment of similar risk. Consequently, the comparable earnings model is consistent with regulatory and financial principles, as it is a surrogate for the competition of the marketplace, and investors seek the greatest available rate of return for bearing similar risk.

The selection of comparable firms is the most difficult step in applying the comparable earnings model, as noted by Phillips[2] as well as by Bonbright, Danielsen and Kamerschen.[3] The selection of non-utility proxy firms should result in a sufficiently broad-based group in order to minimize the effect of company-specific aberrations. However, if the selection process is arbitrary, it likely would result in a proxy group that is too broad-based, such as the Standard & Poor's 500 Composite Index or the Value Line Industrial Composite. The use of such groups would require subjective adjustments to the comparable earnings results to reflect risk differences between the group(s) and the target utility, a gas pipeline company in this example.

Authors' Selection Criteria

We base the selection of comparable non-utility firms on market-based, objective, quantitative measures of risk resulting from market prices that subsume investors' assessments of all elements of risk. Thus, our approach is based upon the principle of risk and return; namely, that firms of comparable risk should be expected to earn comparable returns. It is also consistent with the "corresponding risk" standard established in *Bluefield* and *Hope*. We measure total investment risk as the sum of non-diversifiable systematic and diversifiable unsystematic risk. We use the unadjusted beta as a measure of systematic risk and the standard error of the estimate (residual standard error) as a measure of unsystematic risk. Both the unadjusted beta and the residual standard error are derived from a regression of the target utility's security returns relative to the market's returns, which takes the general form:

$$r_{it} = a_i + b_i r_{mt} + e_{it}$$

where:

- r_{it} = tth observation of the ith utility's rate of return
- r_{mt} = tth observation of the market's rate of return
- e_{it} = tth random error term
- a_i = constant least-squares regression coefficient
- b_i = least-squares regression slope coefficient, the unadjusted beta.

As shown by Francis,[4] the total variation or risk of a firm's return, Var (r_i), comes from two sources:

Var (r_i)= total risk of ith asset
= var($a_i + b_i r_m + e$)
substituting ($a_i + b_i r_m + e$) for r_i
= var($b_i r_m$) + var (e) since var(a_i) = 0
= b_i^2 var(r_m) + var (e) since var($b_i r_m$) = b_i^2 var(r_m)
= systematic + unsystematic risk

Francis[5] also notes: "The term $\sigma^2(r_i|r_m)$ is called the *residual variance around the regression line* in statistical terms or *unsystematic risk* in capital market theory language. $\sigma^2 (r_i|r_m)$ = ... = var (e). The residual variance is the squared standard error in regression language, a measure of unsystematic risk." Application of these criteria results in a group of non-utility firms whose average total investment risk is indeed comparable to that of the target gas pipeline.

As a measure of systematic risk, we use the Value Line unadjusted beta. Beta measures the extent to which market-wide or macro-economic events affect a firm's stock price. We use the unadjusted beta of the target utility as a starting point because it results from the regression of the target utility's security returns relative to the market's returns. Thus, the resulting standard deviation of beta relates to the unadjusted beta. We use the standard deviation of the unadjusted beta to determine the range around it as the selection criterion based on systematic risk.

We use the residual standard error of the regression as a measure of unsystematic risk. The residual standard error reflects the extent to which events specific to the firm's operations affect a firm's stock price. Thus, it is a measure of diversifiable, unsystematic, firm-specific risk.

An Illustration of Authors' Approach

Step One: We begin our approach by establishing the selection criteria as a range of both unadjusted beta and residual standard error of the target gas

continued on page 6

Comparable Earnings *from page 5*

pipeline company.

As shown in table 1, our target gas pipeline company has a Value Line unadjusted beta of 0.90, whose standard deviation is 0.1250. The selection criterion range of unadjusted beta is the unadjusted beta plus (+) and minus (-) three of its standard deviations. By using three standard deviations, 99.73 percent of the comparable unadjusted betas is captured.

Three standard deviations of the target utility's unadjusted beta equals 0.38 (0.1250 x 3 = 0.3750, rounded to 0.38). Consequently, the range of unadjusted betas to be used as a selection criteria is 0.52 - 1.28 (0.52 = 0.90 - 0.38) and (1.28 = 0.90 + 0.38).

Likewise, the selection criterion range of residual standard error equals the residual standard error plus (+) and minus (-) three of its standard deviations. The standard deviation of the residual standard error is defined as: $\sigma/\sqrt{2N}$.

As also shown in table 1, the target gas pipeline company has a residual standard error of 3.7867. According to the above formula, the standard deviation of the residual standard error would be 0.1664 ($0.1664 = 3.7867/\sqrt{2(259)} = 3.7867/22.7596$, where 259 = N, the number of weekly price change observations over a period of five years). Three standard deviations of the target utility's residual standard error would be 0.4992 (0.1664 x 3 = .4992). Consequently, the range of residual standard errors to be used as a selection criterion is 3.2875 - 4.2859 (3.2875 = 3.7867 - 0.4992) and (4.2859 = 3.7867 + 0.4992).

Step Two: The step one criteria are applied to Value Line's data base of nearly 4,000 firms for which Value Line derives unadjusted betas and residual standard errors on a weekly basis. All firms with unadjusted betas and residual standard errors within the criteria ranges are then selected.

Step Three: In the regulatory ratemaking environment, authorized common equity return rates are applied to a book-value rate base. Thus, the earnings rates on book common equity, or net worth, of competitive, non-utility firms are highly relevant provided those firms are indeed comparable in total risk to the target gas pipeline. The use of the return rates of other utilities has no relevance because their allowed, and hence subsequently achieved, earnings rates are dependent upon the regulatory

table 1

Summary of the Comparable Earnings Analysis for the Proxy Group of 248 Non-Utility Companies Comparable in Total Risk to the Target Gas Pipeline Company[1]

	1	2	3	4	5	6	7	8
				rate of return on net worth				
	adj. beta	unadj. beta	residual standard error	3-year average[2]	4-year average[2]	5-year average[2]	5-year projected[3]	
average for the proxy group of 248 non-utility companies comparable in total risk to the target gas pipeline company	0.97	0.92	3.7705					
target gas pipeline company	0.96	0.90[4]	3.7867					
median				11.7%	12.0%	12.6%	15.5%	
average of the median historical returns					12.1%			
conclusion[5]								13.8%

[1]The criteria for selection of the non-utility group was that the non-utility companies be domestic and included in *Value Line Investment Survey*. The non-utility group was selected based on an unadjusted beta range of 0.52 to 1.28 and a residual standard error range of 3.2875 to 4.2859.
[2]Ending 1992.
[3]1996-1998/1997-1999.
[4]The average standard deviation of the target gas pipeline company's unadjusted beta is 0.1250.
[5]Equal weight given to both the average of the 3-, 4- and 5-year historical medians (12.1%) and 5-year projected median rate of return on net worth (15.5%). Thus, 13.8% = (12.1% + 15.5% / 2).
Source: Value Line Inc., March 15, 1994
Value Line Investment Survey

Comparable Earnings *from page 6*

process. Consequently, we believe all utilities must be eliminated to avoid circularity. Moreover, we believe non-domestic firms must be eliminated because their reporting methods differ significantly from U.S. firms.

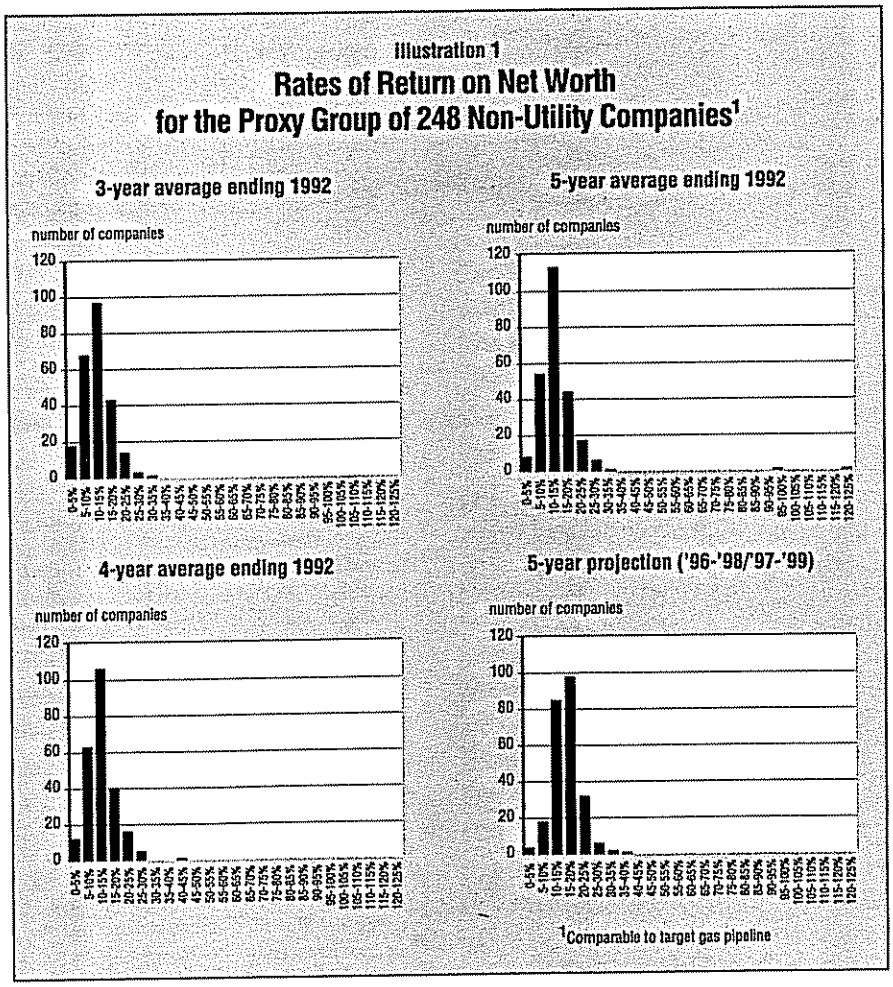
Step Four: We then eliminated those firms for which Value Line does not publish a "Ratings & Report" in *Value Line Investment Survey* so that the historical and projected returns on net worth[6] are from a consistent source. We use historical returns on net worth for the most recent five years, as well as those projected three to five years into the future. We believe it is logical to evaluate both historical and projected return rates because it is reasonable to assume that investors avail themselves of both when they are available from widely disseminated information services, such as Value Line Inc. The use of Value Line's return rates on net worth understates the common equity return rates for two reasons. First, preferred stock is included in net worth. Second, the net worth return rates are as of the end of each period. Thus, the use of average common equity return rates would yield higher results.

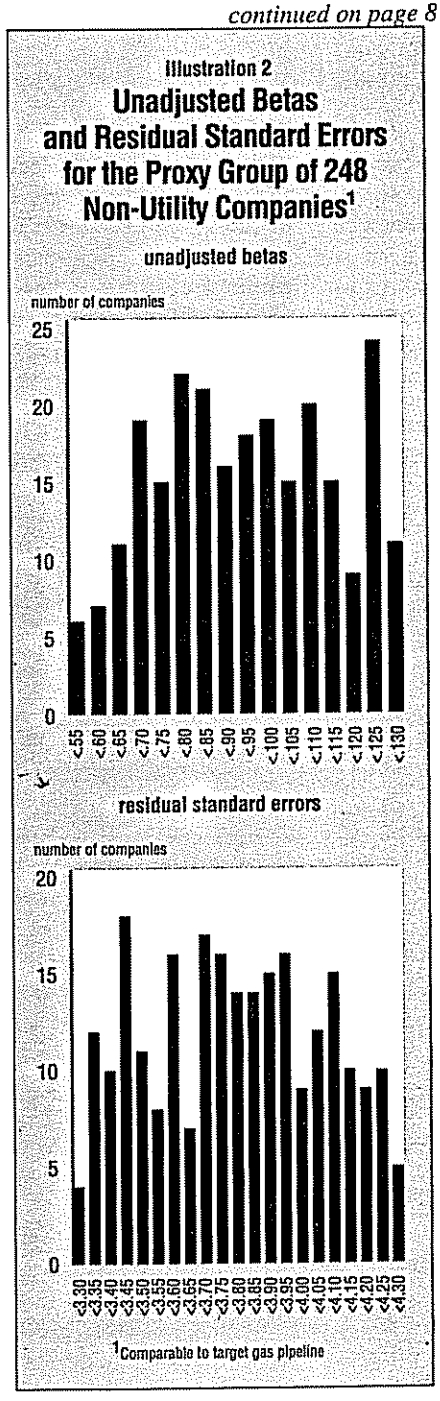
Step Five: Median returns based on the historical average three, four and five years ending 1992 and projected 1996-1998 or 1997-1999 rates of return on net worth are then determined as shown in columns 4 through 7 of table 1. The median is used due to the wide variations and skewness in rates of return on net worth for the non-utility firms as evidenced by the frequency distributions of those returns as shown in illustration 1.

However, we show the average unadjusted beta, 0.92, and residual standard error, 3.7705, for the proxy group in columns 2 and 3 of table 1 because their frequency distributions are not significantly skewed, as shown in illustration 2.

Step Six: Our conclusion of a com-

continued on page 8





Comparable Earnings *from page 7*

parable earnings cost rate is based upon the mid-point of the average of the median three-, four- and five-year historical rates of return on net worth of 12.1 percent as shown in column 5 and the median projected 1996-1998/1997-1999 rate of return on net worth of 15.5 percent as shown in column 7 of table 1. As shown in column 8, it is 13.8 percent.

Summary

Our comparable earnings approach demonstrates that it is possible to select a proxy group of non-utility firms that is comparable in total risk to a target utility. In our example, the 13.8 percent comparable earnings cost rate is very conservative as it is an expected achieved rate on book common equity (a regulatory allowed rate should be greater) and because it is based on end-of-period net worth. A similar rate on average net worth would be about 20 to 40 basis points higher (i.e., 14.0 to 14.2 percent) and still understate the appropriate regulatory allowed rate of return on book common equity.

Our selection criteria are based upon measures of systematic and unsystematic risk, specifically unadjusted beta and residual standard error. They provide the basis for the objective selection of comparable non-utility firms. Our selection criteria rely on changes in market prices over approximately five years. We compare the aggregate total risk, or the sum of systematic and unsystematic risk, which reflects investors' aggregate assessment of both business and financial risk. Thus, no adjustments are necessary to the proxy group results to compensate for the differences in business risk and financial risk, such as accounting practices and debt/equity ratios. Moreover, it is inappropriate to attempt a comparison of the target utility with any individual firm, or subset of firms, in the proxy group because only the average firm of the group is relevant.

Because the comparable earnings model is firmly anchored in the "corresponding risk" precept established in the landmark court decisions, it is worthy of consideration as a principal model for use in estimating the cost rate of common equity capital of a regulated utility. Our approach to the comparable earnings model produces a proxy group that is indeed comparable in total risk because the selection process is objective and quantitative. It therefore overcomes criticism linked to arbitrary selection processes.

All cost-of-common-equity models, including the DCF and CAPM, are fraught with deficiencies, usually stemming from the many necessary but unrealistic assumptions that underlie them. The effects of the deficiencies of individual models can be mitigated by using more than one model when estimating a utility's common equity cost rate. Therefore, when the non-comparability issue is overcome, the comparable earnings model deserves to receive the same consideration as a primary model, as do the currently popular market-based models. ■

---

[1] *Bluefield Water Works Improvement Co. v. Public Service Commission*. 262 U.S. 679 (1922) and *Federal Power Commission v. Hope Natural Gas Co.*. 320 U.S. 519 (1944).

[2] Charles F. Phillips Jr., The Regulation of Public Utilities: Theory and Practice. Public Utilities Reports Inc., 1988. p. 379.

[3] James C. Bonbright, Albert L. Danielsen and David R. Kamerschen. Principles of Public Utilities Rates. 2nd edition. Public Utilities Reports Inc. 1988, p. 329.

[4] Jack Clark Francis, Investments: Analysis and Management, 3rd edition. McGraw-Hill Book Co., 1980, p. 363.

[5] Id., p. 548.

[6] Returns on net worth must be used when relying on Value Line data because returns on book common equity for non-utility firms are not available from Value Line.

Report Lists Pipeline, Storage Projects

More than $9 billion worth of projects to expand the nation's natural gas pipeline network are in various stages of development, according to an A.G.A. report. These projects involve nearly 8,000 miles of new pipelines and capacity additions to existing lines and represent 15.3 billion cubic feet (Bcf) per day of new pipeline capacity.

During 1993 and early 1994, construction on 3,100 miles of pipeline was completed or under way, at a cost of nearly $4 billion, says A.G.A. These projects are adding 5.4 Bcf in daily delivery capacity nationwide.

Among the projects completed in 1993 were Pacific Gas Transmission Co.'s 805 miles of looping that allows increased deliveries of Canadian gas to the West Coast; Northwest Pipeline Corp.'s addition of 433 million cubic feet of daily capacity for customers in the Pacific Northwest and Rocky Mountain areas; and the 156-mile Empire State Pipeline in New York.

In addition, major construction projects were started on the systems of Texas Eastern Transmission Corp. and Algonquin Gas Transmission Co. — both subsidiaries of Panhandle Eastern Corp. — and along Florida Gas Transmission Co.'s pipeline.

The report goes on to discuss another $5 billion in proposed projects, which, if completed, will add nearly 5,000 miles of pipeline and 9.8 Bcf per day in capacity, much of it serving Florida and West Coast markets.

A.G.A. also identifies 47 storage projects and says that if all of them are built, existing storage capacity will increase by more than 500 Bcf, or 15 percent.

For a copy of *New Pipeline Construction: Status Report 1993-94* (#F00103), call A.G.A. at (703) 841-8490. Price per copy is $6 for employees of member companies and associates and $12 for other customers.

Investments: Analysis and Management

Fifth Edition

Jack Clark Francis

Bernard M. Baruch College
City University of New York

McGraw-Hill, Inc.

New York St. Louis San Francisco Auckland Bogotá
Caracas Hamburg Lisbon London Madrid Mexico
Milan Montreal New Delhi Paris San Juan
São Paulo Singapore Sydney Tokyo Toronto

Beta Measurements The beta coefficient is an *index of systematic risk.* Beta coefficients may be used for ranking the systematic risk of different assets. If the beta is larger than 1, $b > 1.0$, then the asset is more volatile than the market and is called an **aggressive asset.** If the beta is less than 1, $b < 1.0$, the asset is a **defensive asset;** its price fluctuations are less volatile than the market's. Figure 10-1 illustrates the characteristic lines for three different assets that have low, medium, and high levels of beta (or undiversifiable risk).

Figure 10-2 shows that IBM is a stock with an average amount of systematic risk. IBM's beta of 1.02 indicates that its return tends to increase 2 percent more than the return on the market average when the market is rising. When the market falls, IBM's return tends to fall 2 percent more than the market's. The characteristic line for IBM has an above average correlation coefficient of $\rho = .7495$, indicating that the returns on this security follow its particular characteristic line slightly more closely than those of the average stock.

Partitioning Risk Total risk can be measured by the variance of returns, denoted Var(r). This measure of *total risk is partitioned into its systematic and unsystematic components in Equation (10-8).*[7]

$$\begin{aligned}\text{Var}(r_i) &= \text{total risk of } i\text{th asset} \\ &= \text{Var}(a_i + b_i r_{m,t} + e_{i,t}) \\ &\quad \text{by substituting } (a_i + b_i r_{m,t} + e_{i,t}) \text{ for } r_{i,t} \\ &= 0 + \text{Var}(b_i r_{m,t}) + \text{Var}(e_{i,t}) \\ &\quad \text{since Var}(a_i) = 0 \end{aligned} \tag{10-8}$$

$$\begin{aligned}\text{Var}(r_i) &= b_i^2\,\text{Var}(r_m) + \text{Var}(e) \qquad \text{since Var}(b_i r_m) = b_i^2\,\text{Var}(r_m) \\ &= \text{systematic} + \text{unsystematic risk}\end{aligned} \tag{10-8a}$$

$$.01389 = .00780 + .00609 \qquad \text{for IBM}$$

The unsystematic risk measure Var(e) is called in regression language the *residual variance* or, synonymously, the *standard error squared.*

Undiversifiable Proportion The percentage of total risk that is systematic can be measured by the coefficient of determination ρ^2 (that is, the characteristic line's squared correlation coefficient).

[7]In this context, **partition** is a technical statistical term that means to divide the total variance into *mutually exclusive* and *exhaustive* pieces. This partition is only possible if the returns from the market are statistically independent from the residual error terms that occur simultaneously, $\text{Cov}(r_{m,t}, e_{i,t}) = 0$. The mathematics of regression analysis will orthogonalize the residuals and thus ensure that the needed statistical independence exists.

$$\frac{\text{Systematic risk}}{\text{Total risk}} = \frac{b_i^2 \operatorname{Var}(r_m)}{\operatorname{Var}(r_m)} = \rho^2 \tag{10-9}$$

$$\frac{.007802}{.01389} = \frac{(1.021)^2\,(.00749)}{.00749} = .5617 \times 100 = 56.17\% \quad \text{for IBM}$$

Diversifiable Proportion The percentage of unsystematic risk equals $(1.0 - \rho^2)$.

$$\frac{\text{Unsystematic risk}}{\text{Total risk}} = \frac{\operatorname{Var}(e)}{\operatorname{Var}(r_i)} = (1.0 - \rho^2)$$

$$\frac{.00609}{.01389} = (1.0 - .5617) = .438 \times 100 \tag{10-10}$$

$$= 43.8\% \text{ unsystematic} \quad \text{for IBM}$$

Studies of the characteristic lines of hundreds of stocks listed on the NYSE indicate that the average correlation coefficient is approximately $\rho = .5$.[8] This means that about $\rho^2 = 25$ percent of the total variability of return in most NYSE securities is explained by movements in the market.

	NYSE average	IBM
Systematic risk: ρ^2	.25	.5617
Unsystematic risk: $(1.0 - \rho^2)$	.75	.4383
Total risk: 100%	1.00	1.0000

As explained above, systematic changes are common to all stocks and are therefore undiversifiable.

A primary use of the characteristic line (or *market model,* or the *single-index model,* as it is also called) is to assess the risk characteristics of one asset.[9] The statistics in Table 10-2, for instance, indicate that IBM's common stock is slightly more risky than the average common stock in terms of total risk and

[8]The average ρ was found to be about .5, as reported in Marshall Blume, "On the Assessment of Risk," *Journal of Finance,* March 1971, p. 4. For similar estimates, see J. C. Francis, "Statistical Analysis of Risk Surrogates for NYSE Stocks," *Journal of Financial and Quantitative Analysis,* Dec. 1979.

[9]Professor Jensen reformulated the characteristic line in a risk-premium form. See M. C. Jensen, "The Performance of Mutual Funds in the Period 1945 through 1964," *Journal of Finance,* May 1968, pp. 389–416. See also M. C. Jensen, "Risk, the Pricing of Capital Assets, and the Evaluation of Investment Portfolios," *Journal of Business,* vol. XLII, 1969. Jensen interprets the alpha intercept term of the characteristic line, as he formulates it, as an investment performance measure. It has been suggested that Jensen's performance measure is biased. See Keith V. Smith and Dennis A. Tito, "Risk-Return Measures of Ex-Post Portfolio Performance," *Journal of Financial and Quantitative Analysis,* Dec. 1969, vol. IV, no. 4, p. 466.

systematic risk.[10] New risk measurements must be made periodically, however, because the risk and return of an asset may change with the passage of time.[11]

10-3 CAPITAL ASSET PRICING MODEL (CAPM)

An old axiom states "there is no such thing as a free lunch." This means that you cannot expect to get something for nothing—a rule that certainly applies to investment returns. Investors who want to earn high average rates of return must take high risks and endure the associated loss of sleep, the possibility of ulcers, and the chance of bankruptcy. The question to which we now turn is: Should investors worry about total risk, undiversifiable risk, diversifiable risk, or all three?

In Chapter 1 it was suggested that *investors should seek investments that have the maximum expected return in their risk class*. Their happiness from investing is presumed to be derived as indicated in the expected utility $E(U)$ function below.

$$E(U) = f[E(r), \sigma]$$

The investment preferences of wealth-seeking risk-averse investors represented by the function above cause them to maximize their expected utility (or, equivalently, happiness) by (1) maximizing their expected return in any given risk class, $\partial E(U)/\partial E(r) > 0$, or, conversely, (2) minimizing their total risk at any given rate of expected return, $\partial E(U)/\partial \sigma < 0$. However, in selecting individual assets, investors will not be particularly concerned with the asset's total risk σ. Figure 9-1 showed that the unsystematic portion of total risk can be easily diversified by holding a portfolio of different securities. But, systematic risk affects all stocks in the market because it is undiversifiable. Portfolio theory therefore suggests that only the undiversifiable (or systematic) risk is worth avoiding.[12]

[10]Statements about the relative degree of total risk are made in the context of a long-run horizon—that is, over at least one *complete business cycle*. Obviously, an accurate short-run forecast which says that some particular company will go bankrupt next quarter makes it more risky than IBM, although IBM may have had more historical variability of return.

[11]Empirical studies documenting the intertemporal instability of betas have been published. Marshall Blume, "Betas and Their Regression Tendencies," *Journal of Finance*, June 1975, pp. 785–795. See also J. C. Francis, "Statistical Analysis of Risk Coefficients for NYSE Stocks," *Journal of Financial and Quantitative Analysis*, Dec. 1979, vol. XIV, no. 5, pp. 981–997. An appendix at the end of this chapter reviews some evidence about shifting betas, standard deviations, and correlations.

[12]Both the systematic and unsystematic portions of total risk must be considered by **undiversified investors.** Entrepreneurs who have their entire net worth invested in one business, for example, can be bankrupted by a piece of bad luck that could be easily averaged away to zero in a diversified portfolio. Poorly diversified investors should not treat diversifiable risk lightly. Only well-diversified investors can afford to ignore diversifiable risk.

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

The Electronic Application of Duke Energy Kentucky, Inc., for: 1) An Adjustment of the Natural Gas Rates; 2) Approval of New Tariffs; and 3) All Other Required Approvals, Waivers, and Relief.	))))))	Case No. 2021-00190

REBUTTAL TESTIMONY OF

JAKE J. STEWART

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

October 8, 2021

TABLE OF CONTENTS

PAGE

I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jake J. Stewart and my business address is 550 South Tryon, Charlotte North Carolina.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Duke Energy Business Services LLC (DEBS), as Director Health and Wellness and most recently was Director Compensation. DEBS provides various administrative and other services to Duke Energy Kentucky, Inc., (Duke Energy Kentucky or Company) and other affiliated companies of Duke Energy Corporation (Duke Energy).

Q. ARE YOU THE SAME JAKE J. STEWART THAT SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to the testimony of Mr. Lane Kollen, witness for the Kentucky Office of the Attorney General related to the Company's Incentive Compensation and Retirement Benefits. Specifically, Mr. Kollen's recommend adjustments to the Company's revenue requirement related to its Short-Term Incentive Plan and 401(k) employer match.

II. DISCUSSION

Q. PLEASE DESCRIBE MR. KOLLEN'S PROPOSED ADJUSTMENT RELATED TO THE COMPANY'S SHORT-TERM INCENTIVE PLAN.

A. Mr. Kollen recommends that short-term incentive (STI) compensation expense tied to the Earnings Per Share "Circuit Breaker" threshold should be excluded. The proposed adjustment includes the amount of STI expense attributed to operational metrics such as O&M expense control, reliability, safety and environment, customer satisfaction, and team goals.

Q. PLEASE EXPLAIN THE COMPANY'S PROFORMA ADJUSTMENT TO SHORT-TERM COMPENSATION EXPENSE.

A. Duke Energy Kentucky made a proforma adjustment to remove the portion of STI expense related to the Earnings per Share (EPS) metric as part of its Application. With this adjustment, the Company proposes to share its incentive plan expense between shareholders and customers in a manner similar to what the Commission previously approved in the Company's electric base rate Case No. 2017-00321 and natural gas base rate Case No. 2018-00261. In those cases, the Commission approved recovery of incentive pay expense related to performance objectives that directly benefit customers, such as reliability, customer satisfaction and individual performance objectives. The Commission disallowed recovery of incentive pay expense for earnings-based corporate performance objectives.

In Case No 2019-00271, the Commission also disallowed the portion of STI payments that "would only be paid out in the event that a predetermined "circuit breaker" EPS value is met in the fiscal year. However, in this rate case we seek recovery of all STI measures except those that are earnings-based as we believe these expenses are prudent, benefit customers and are a component of market-competitive pay.

Q. DO YOU AGREE WITH MR. KOLLEN'S PROPOSED ADJUSTMENT?

A. No, I do not. The Commission should reject the proposed adjustment.

Q. WHY SHOULD THE COMMISSION REJECT MR. KOLLEN'S PROPOSED ADJUSTMENT?

A. As I will describe in greater detail below in my rebuttal testimony, the Company believes all STI expense should be recoverable in base rates. Mr. Kollen errs because he starts from a false premise as he assumes, but does not prove, that there is a divergence of interests between shareholders and customers. That alleged divergence does not, in fact, exist. To the contrary, employee compensation and incentives tied to the STI metrics benefit customers because those metrics reflect how employees' contributions translate into overall financial and operational performance.

First, the annual short-term incentive pay opportunity that employees have as part of their total compensation promotes a corporate culture that is performance-oriented in order to provide the greatest benefit to the customer. By motivating employees to excel at such goals as customer satisfaction, safety, reliability, and financial stewardship, the Company can deliver the highest value at a reasonable cost. Having a portion of employees' total compensation "at risk" allows the Company to tie specific performance measures to employees' pay, and focuses their efforts on performing the right work, the right way. The non-EPS STI corporate goals drive this focus as follows:

- O&M Expense Control: The intent of this goal is for employees to focus on cost control on a day to day basis, which will allow Duke

Energy to incorporate these savings into programs that will benefit our customers.

- Operational Excellence: All customers expect reliable service from Duke Energy. The two equally weighted components that comprise Operational Excellence, Reliability and Safety/Environment, both motivate employees to strive to provide safe, reliable service to our customers in a cost-effective manner.
- Customer Satisfaction: Duke Energy fosters a customer-centric culture. The customer satisfaction goal is intended to keep customers central to all that we do across the company regardless of where we work.
- Team Goals: The team goals directly benefit customers by tying employee compensation to reliability, outage frequency, time required to restore service, lost-time accidents, customer satisfaction scores, O&M expense levels and capital expenditures. Superior performance relating to these goals directly benefits Duke Energy Kentucky customers through safe and reliable service, customer service quality, and low energy costs.

The goals and payout opportunities for the STI are an aggregate of all business activities for Duke Energy Corporation. Using aggregate measures benefits all business activities because it reinforces sharing innovative and operational efficiency approaches that benefit all customers. The STI costs

charged to each individual operating company, including Duke Energy Kentucky, are based on the associated labor charged to the operating company.

Second, the Company's incentive compensation plans do not result in excessive pay levels beyond what is reasonably necessary for the Company to attract a talented workforce. Rather, Duke Energy's overall compensation philosophy is to target total compensation consisting of base pay and short- and long-term incentives, at the median of the market when compared to peer companies.

Third, the costs of the incentive plan are allocated to both customers and shareholders, as shareholders would cover any amounts above the target levels proposed to be included in base rates. For purposes of calculating the appropriate level of test year expense, the Company included incentives based upon the achievement of target levels, which the Company expects to average over time and thus considers a normal level of expense.

Finally, Mr. Kollen is incorrect that incentive compensation tied to financial goals provides an incentive for employees of the Company to seek greater base rate increases from customers in order to enhance EPS. The EPS goal helps employees focus on financial discipline, efficient operations, and prudent use of resources, all of which are vital to the health and stability of the Company. For example, achieving financial success benefits customers by reducing the cost of capital as the Company continues to invest in the necessary maintenance of the system and transforms the customer experience by providing customers with more billing options, additional energy usage information and new tools to help manage

and reduce energy costs. Separating employee performance from such an important measure of a regulated company's overall health is illogical and counterproductive.

Duke Energy Kentucky believes that its entire incentive pay expense is reasonable and necessary to attract and retain high quality employees with the critical skills necessary to provide safe, efficient and reliable service to customers and, therefore, that it should be recoverable in its entirety. In all that we do at Duke Energy, employees are encouraged to put the customer first, to think about the customer in every decision and to think about the impact each action – and inaction – has on the customer.

Q. IS THE EPS CIRCUIT BREAKER AN EPS METRIC OVERLAY ON ALL OTHER METRICS?

A. No, it is not. The purpose of the EPS circuit breaker is to create a mechanism to regulate payouts in our most financially challenging years, and it would only be engaged in those years. The Company must have strong financial performance in the form of a strong EPS in order to have the funds to payout STI payments. The Company cannot pay dollars it does not have. All non-EPS measures have non-EPS target levels that must be reached in order for an STI payout related to those measures to be paid. Payout of these measures is not solely dependent on the achievement of the EPS goal. The circuit breaker is only activated and impacts non-EPS metrics if the EPS achieved is equal to or less than the circuit breaker. If actual EPS is greater than the EPS circuit breaker, all measures will be paid out based on the actual achievement levels. Again, this circuit breaker is in place as a

protection so that the Company is not paying out non-EPS goals (*e.g.* safety/ reliability) that may have reached target levels in a period it would be financially irresponsible for the Company to do so.

Q. WHAT IS YOUR RECOMMENDATION REGARDING MR. KOLLEN'S PROPOSED ADJUSTMENT RELATED TO SHORT-TERM INCENTIVE COMPENSATION EXPENSE?

A. The Commission should reject these proposed adjustments and permit Duke Energy Kentucky to recover all STI compensation expense in base rates. Short-term incentive opportunities are a component of a market-competitive total compensation offering necessary to attract and retain qualified employees. Incentive pay is similar to the other costs related to providing gas service. It is a necessary cost to provide customers safe and reliable service. Having a portion of employees' total compensation "at risk" allows the Company to tie specific performance measures to employees' pay, and focuses their efforts on performing the right work, the right way. If the Company did not provide incentive opportunities to their employees, the same target value of incentive compensation would need to be added to base pay in order to maintain market-competitive compensation for its employees. Put another way, whether it is in base pay or a combination of base pay and incentives, Duke Energy must keep its overall compensation package competitive in order to attract and retain a skilled workforce.

Our employees strive to benefit the Company's customers every day. The energy industry is a knowledge-intensive and experience-intensive industry where

the tenure of employees matters. For example, we need to attract, develop and retain—over the long term—the engineering professionals that design, help build and operate our plants at a reasonable cost, just like we need to attract, develop and retain our gas delivery professionals charged with maintaining and improving our gas infrastructure. The skills needed for employees to render safe, reliable and high-quality utility service take more than several years to develop. Gas plant operators and control technicians are highly skilled positions that require experience and knowledge that is acquired over several years. If we were to lose such employees, we would incur additional costs to train replacements for these positions, while posing additional risk for reliability issues.

Q. PLEASE DESCRIBE MR. KOLLEN'S PROPOSED ADJUSTMENT RELATED TO THE COMPANY'S 401(k) MATCHING.

A. Mr. Kollen begins his discussion of his recommended adjustment on page 19 of his direct testimony. Mr. Kollen claims that, according to the Commission's recent precedent, benefit expense should be adjusted to remove 401(k) matching expense for those employees who also participate in a defined benefit plan.

Q. DID THE COMMISSION MAKE THIS ADJUSTMENT AS PART OF DUKE ENERGY KENTUCKY'S MOST RECENT ELECTRIC BASE RATE CASE?

A. No. It did not. Mr. Kollen made this same recommendation in the Company's 2017 electric base rate case, Case No. 2017-00321, and the Commission rejected it.[1] In the Company's natural gas base rate case No. 2018-00261, Mr. Kollen made this same recommendation. The Company opposed the adjustment in rebuttal testimony but, as part of settlement discussions, agreed to the adjustment which resulted in a reduction to Duke Energy Kentucky's test year revenue requirement. However, in the Company's electric base rate case No. 2019-00271, to address the Commission's concerns around the expense for employees receiving both a pension benefit and a 401(k) retirement benefit, the Company made a pro-forma adjustment to remove the pension cost for employees who also receive 401(k) match. This adjustment was not challenged by Mr. Kollen or other intervenors.

Q. IN THIS RATE CASE DID THE COMPANY MAKE A SIMILAR PROFORMA ADJUSTMENT TO REMOVE PENSION EXPENSE FOR EMPLOYEES WHO ALSO RECEIVE A 401(K) RETIREMENT BENEFIT?

A. No, it did not

Q. PLEASE EXPLAIN.

A. As stated in the response to discovery request AG-DR-02-017, the Company did not remove employer 401(k) match for employees who also participate in the

[1] *In re: Electronic Application of Duke Energy Kentucky , Inc. for: 1) An Adjustment of the Electric Rates; 2)Approval of an Environmental Compliance Plan and Surcharge Mechanism; 3) Approval of New Tariffs; 4) Approval of Accounting Practices to Establish Regulatory Assets and Liabilities; and 5) All Other Required Approvals and Relief* Case No. 2017-00321 (Ky P.S.C. April 13, 2018) at 22-23.

defined benefit plan. This is consistent with the Commission's decision in the Company's litigated electric base rate case, Case No. 2019-00271. The 401(k) plan is now our standard retirement plan that applies to all union and non-union new hires. Similar to Case No. 2019-00271, the Company reviewed pension expense for employees receiving both a pension benefit and a 401(k)-retirement benefit. However, pension expense for these employees in this rate case's test period is a net credit of ($287,880). In this proceeding it benefits customers to not include a proforma adjustment to remove the pension cost for employees who also receive 401(k) match since doing so would increase the test year revenue requirement, not reduce it.

Q. DO YOU AGREE WITH MR. KOLLEN'S PROPOSED ADJUSTMENT?

A. No. Mr. Kollen's sole justification for his elimination of $220,637 from the Company's revenue requirement is that "the claim addresses a potential adjustment that the Commission has not affirmed, but merely accepted, rather than the adjustment that it historically has adopted."[2]

The pro-forma adjustment to remove pension expense for employees participating in both the pension plan and 401(k) retirement plan in electric base rate case No. 2019-00271 reflects the Company's recognition of the Commission's concerns around the expense for employees receiving both benefits. This proforma adjustment also underscores the fact that the 401(k) plan is now our standard retirement plan that applies to all union and non-union new

[2] Direct testimony of Lane Kollen at 20.

hires. We made the proforma adjustment, giving customers the benefit of the reduction of the pension benefit, even though we believe all retirement plan costs should be recoverable since our retirement benefits are in line with industry benchmarks and are essential for the retention of the critical job skills that are needed to provide safe, reliable and high-quality service to our customers. As stated previously, in this rate case we would have made a proforma adjustment to remove pension expense for employees receiving both a pension benefit and a 401(k)-retirement benefit if pension expense in the test period were not a credit, as that would have increased the test year revenue requirement at a detriment to customers.

Duke Energy has aggressively managed costs related to its retirement benefit program by closing the defined benefit pension plan to new hires, and, for existing employees, freezing final average pay benefit formulas for all non-union employees and transitioning employees from a final average pay formula to a more “Defined Contribution like” cash balance pension formula. Like all prudent and cost-minded companies that offer benefit packages that include retirement programs for employees, Duke Energy continually evaluates these programs for cost and reasonableness.

The value of the Company’s retirement benefit is what is important, rather than whether the Company chooses to deliver the value through multiple components. Mr. Kollen offers no support whatsoever that the benefit being provided from these plans is not market competitive. Second, he ignores the fact that many companies, including Duke Energy, have significantly reduced

retirement related expenses by transitioning many employees eligible for pension benefits to a less rich formula and partially utilizing those pension savings to enhance 401(k) matching formulas. The Company's total rewards package, as a whole, is designed to be market competitive and compensation and benefit programs are benchmarked to ensure that is the case. Mr. Kollen makes no claim to the contrary.

Q. WHY SHOULD THE COMMISSION REJECT MR. KOLLEN'S PROPOSED ADJUSTMENT AGAIN IN THIS PROCEEDING?

A. The same justifications and reasoning that was applicable in the Company's most recent electric rate case holds true today and supports inclusion of 401(k) matching costs in base rates. Further, as it did in Case No. 2019-00271, the Company reviewed pension expense for employees receiving both a pension benefit and a 401(k)-retirement benefit in order to exclude those costs from the test year revenue requirement. As it was determined the pension expense in this case is a credit, the Company elected not to include the credit as a proforma adjustment as that would have increased the test year revenue requirement at a detriment to customers.

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR PRE-FILED REBUTTAL TESTIMONY?

A. Yes.

VERIFICATION

STATE OF NORTH CAROLINA)
) **SS:**
COUNTY OF MECKLENBURG)

The undersigned, Jake Stewart, Director Compensation, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing rebuttal testimony and that it is true and correct to the best of his knowledge, information and belief.

Jake Stewart Affiant

Subscribed and sworn to before me by Jake Stewart on this 4 day of October 2021.

MICHAEL J KELLEY
COMMISSION NO. 20170510015
NOTARY
PUBLIC
MY COMMISSION EXPIRES 02/14/2022
MECKLENBURG COUNTY, N.C.

NOTARY PUBLIC

My Commission Expires: 02/14/2022

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

The Electronic Application of Duke Energy Kentucky, Inc., for: 1) An Adjustment of the Natural Gas Rates; 2) Approval of New Tariffs; and 3) All Other Required Approvals, Waivers, and Relief.	)))))))	Case No. 2021-00190

REBUTTAL TESTIMONY OF

JAY P. BROWN

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

October 8, 2021

TABLE OF CONTENTS

PAGE

I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jay P. Brown and my business address is 139 East Fourth Street, Cincinnati, Ohio 45202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Duke Energy Business Services LLC (DEBS) as Director Rates & Regulatory Planning. DEBS provides various administrative and other services to Duke Energy Kentucky, Inc., (Duke Energy Kentucky or Company) and other affiliated companies of Duke Energy Corporation (Duke Energy).

Q. ARE YOU THE SAME JAY P. BROWN THAT SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to several of the recommendations made by the Attorney General's witness Lane Kollen. Specifically, I will address Mr. Kollen's recommendations related to:

(1) Reduction of Working Capital for Construction Accounts Payable;

(2) Deferral and Amortization of CIS Developmental Costs;

(3) Removal of SERP Expense;

(4) Removal of Payroll Taxes Related to Incentive Compensation;

(5) Removal of AGA and INGAA Dues; and

(6) The Money Pool Adjustment and Capital Structure

I also discuss the revenue requirement impacts of recent changes in the Company's Long-Term Debt Forecast.

II. REDUCTION OF WORKING CAPITAL FOR CONSTRUCTION ACCOUNTS PAYABLE

Q. PLEASE DESCRIBE MR. KOLLEN'S PROPOSAL REGARDING CONSTRUCTION ACCOUNTS PAYABLE.

A. Mr. Kollen recommends that Duke Energy Kentucky's rate base be reduced to include an offset to working capital for accounts payable related to capital expenditures. He claims that the accounts payable amounts represent temporary vendor financing at 0% cost to the Company for both operating expenses and capital expenditures. He calculates the impact of his proposed rate base adjustment to be a $0.442 million reduction to the Company's proposed revenue requirement.

Q. DO YOU AGREE WITH THE ADJUSTMENT TO REDUCE THE REVENUE REQUIREMENT BY $0.442 MILLION FOR THE FINANCING OF CONSTRUCTION ACCOUNTS PAYABLE?

A. No.

Q. PLEASE EXPLAIN.

A. In Louisville Gas & Electric's (LG&E) Case No. 2020-00350, Mr. Kollen testifies that the Commission should make the same reduction of construction related payables with one caveat. He states:

> *Fifth, if CWIP is included in rate base, then it should be offset by the related accounts payables to reflect vendor financing. However, this is not an issue if the Commission rejects the CWIP*

in rate base approach and adopts the AFUDC approach, as the AG and KIUC recommend in this proceeding"[1]

Later in his testimony in that same case, Mr. Kollen states:

The effects are a reduction in the KU revenue requirement of $12.334 million and a reduction in the LG&E revenue requirement of $5.160 million (electric) and $3.841 million (gas) if the Commission does reduce the CWIP in rate base by the related accounts payable vendor financing that I addressed in the prior section. The effects are a reduction in the KU revenue requirement of $14.055 million and a reduction in the LG&E revenue requirement of $6.025 million (electric) and $4.484 million (gas) if the Commission does not reduce the CWIP in rate base by the related accounts payable vendor financing that I addressed in the prior section.[2]

Notice that Mr. Kollen removes the impact of the construction accounts payable vendor financing if CWIP is removed from rate base. In this instant case, the Company did not include CWIP in rate base, so Mr. Kollen is asking the Commission to offset rate base with expenditures that are not even included in rate base. This is in direct contradiction to Mr. Kollen's previous testimony above.

In addition, the basis of the entire argument is predicated upon the false assumption that the Company, and only the Company, benefits from the cost-free financing provided by vendors. This can be easily refuted by considering the alternative, whereby vendor-financing was not available, the beneficial payment terms or "cost free vendor financing" did not exist, and that the Company is thus

[1] *In the Matter of the Electronic Application of Louisville Gas and Electric Company for an Adjustment of its Electric and Gas Rates, a Certificate of Public Convenience and Necessity to Deploy Advanced Metering Infrastructure, Approval of Certain Regulatory Accounting Treatments, and Establishment of a One-Year Surcredit,* Case No. 2020-00350, (Direct Testimony and Exhibits of Lane Kollen, pg. 42.)(March 5, 2021).
[2] Id. pg. 75-76.

forced to pay immediately for all construction accounts payable expenditures. It is true that under such a hypothetical, the Company would no longer enjoy the benefit of the "cost-free" financing that previously were financed by the vendors, however because the Company would be spending cash earlier, AFUDC would begin to accrue earlier, which would increase the cost of each capital project, thereby increasing rate base. Mr. Kollen conveniently ignores this fact. It is thus indisputable that under the current model, over time both the Company and the customer have benefitted from the "cost free vendor financing" received from vendors. The benefits accrue to customers through lower AFUDC, and therefore lower rate base because the Company has not had to pass on the theoretical higher costs that would have been incurred had the "cost free vendor financing" not been available to the Company.

The Commission should ignore Mr. Kollen's proposal. It directly contradicts his previous testimony filed in other recent cases, and when tested with basic logic, the premise fails to prove that the Company is the sole beneficiary of "cost free vendor financing." Therefore, any reduction in the test year revenue requirement would be inappropriate.

III. DEFERRAL AND AMORTIZATION OF CIS DEVELOPMENT COSTS

Q. HOW DOES MR. KOLLEN PROPOSE THE COMPANY HANDLE NONRECURRING CIS DEVELOPMENTAL COSTS?

A. Mr. Kollen recommends that the Company be allowed to defer, both nonrecurring Customer Connect developmental expenses and nonrecurring expenses associated with maintenance of the old CMS. He proposes that the Company be permitted to

include a regulatory asset in rate base and earn a return on the rate base and include one year of amortization expense in the test year revenue requirement based on an amortization period of 15 years.

Q. DO YOU AGREE WITH MR. KOLLEN'S RECOMMENDATION?

A. The Company is willing to accept Mr. Kollen's recommendation only if the Commission approves his recommendation in its entirety and grants regulatory asset authority and allows the regulatory asset to be included in rate base. The Company accepts Mr. Kollen's recommendation to include a regulatory asset in rate base in this proceeding with an amortization period equal to the service life used for the depreciation rate applied to the capital costs. The Company agrees to defer CIS related nonrecurring cost and amortize the approved regulatory asset over 15-years. The adjustment results in the test year revenue requirement being reduced by $1.740 million due to the removal of the O&M costs of $1.86 million offset by the inclusion of one year of regulatory asset amortization of $0.124 million. Duke Energy Kentucky's test year revenue requirement would also increase by $0.057 million to reflect the return on the regulatory asset.

IV. REMOVAL OF SERP EXPENSE

Q. DO YOU AGREE WITH MR. KOLLEN'S PROPOSED ADJUSTMENT TO REMOVE SUPPLEMENTAL EXECUTIVE RETIREMENT PLAN (SERP) EXPENSE?

A. The Company agrees with Mr. Kollen's proposal only if his proposal to remove 401(k) match expenses is denied.

Q. PLEASE EXPLAIN.

A. In the Company's last electric base rate Case No. 2019-00271, as outlined in Company witness Ms. Sarah Lawler's rebuttal testimony, the Company agreed with this adjustment to be consistent with the adjustment made for those employees who were participating in both a defined benefit pension program and a 401(k) match program. In that adjustment, the Company recognized that if only the qualified pension expense was removed the Company should have also removed the non-qualified pension expense or SERP expense. The Company did not remove the qualified pension expense in this instant proceeding because the qualified pension expense for those employees receiving both pension and 401(k) match benefits is a net credit of ($287,880). In this proceeding it benefits customers to not include the proforma adjustment to remove the qualified pension cost for employees who also receive 401(k) match since doing so would increase the test year revenue requirement. The Company should have however, removed the $33,992 from the revenue requirement associated with the non-qualified pension expense as this adjustment will benefit customers. However, if the Commission approves Mr. Kollen's adjustment to remove 401(k) match expenses, the SERP expenses must remain in the test period as this would result in both pension and 401(k) costs being removed from the revenue requirement.

Q. DOES THE COMPANY AGREE THAT THE 401(K) MATCH EXPENSES SHOULD BE REMOVED FROM THE TEST PERIOD.

A. No. It does not. Even though the Company believes that neither cost should be disallowed as explained by Company witness Jake Stewart in his rebuttal

testimony, Mr. Stewart also explains that the 401(k) plan is now our standard retirement plan that applies to all new hires. It is reasonable that these costs be reflected in rates.

V. REMOVAL OF PAYROLL TAXES RELATED TO INCENTIVE COMPENSATION

Q. DO YOU AGREE WITH MR. KOLLEN'S PROPOSED ADJUSTMENT TO REMOVE PAYROLL TAXES RELATED TO EARNINGS RELATED INCENTIVE COMPENSATION?

A. Yes. Mr. Kollen recommends that the Company reduce payroll taxes associated with the reduction in short term incentive compensation for earnings related and stock-based incentives that the Company has already excluded from its revenue requirement. The Company is willing to modify its revenue requirement for this adjustment resulting in a lower revenue requirement request of $0.045 million.

VI. REMOVAL OF AMERICAN GAS ASSOCIATION (AGA) AND INTERSTATE NATURAL GAS ASSOCIATION OF AMERICA (INGAA) DUES

Q. WHAT DOES MR. KOLLEN PROPOSE REGARDING AGA AND INGAA DUES?

A. Mr. Kollen recommends a reduction of $0.055 million to Duke Energy Kentucky's revenue requirement because the Company has not provided proof that memberships in AGA or INGAA provide a direct benefit to the ratepayers.

Q. DO YOU AGREE WITH MR. KOLLEN'S OPINION AND PROPOSED ADJUSTMENT?

A. No. In its response to AG-DR-02-002, the Company listed several benefits that the Company receives from being members of various industry associations. Many of the benefits directly benefit customers, including the following:

- programs to help enhance the safe delivery of natural gas to customers;
- the exchange of information among members to help achieve operational excellence;
- help in responding to energy needs of customers, regulatory trends, and emerging technologies;
- collaboration with industry peers to learn successful practices of other members; and
- the combining of resources with other member to develop advanced technologies for the natural gas industry.

Q. DO YOU AGREE WITH ANY OF MR. KOLLEN'S ARGUMENT TO REMOVE THE AGA AND INGGA MEMBERSHIP DUES?

A. No, not entirely. The Company is willing to concede that both of these organizations engage in lobbying activities and as a result a small portion of the membership dues should be eliminated. However, the associations themselves identify the portion of the dues that actually support lobbying activities. The invoice from AGA indicates that 3.80% or $1,900 of the billed dues is related to lobbying activities. The invoice from INGAA indicates that 16% or $800 of the billed dues is related to lobbying activities. It is unreasonable to take the position

that none of the aforementioned benefits of association membership warrant recovery, particularly when such a small portion of the total costs actually support lobbying. As a result, the Company agrees that $0.003 million should be eliminated from its revenue requirement.

VII. MONEY POOL ADJUSTMENT AND CAPITAL STRUCTURE

Q. DO YOU AGREE WITH MR. KOLLEN'S ARGUMENT SUPPORTING THE CHANGE TO THE COMPANY'S CAPITAL STRUCTURE?

A. No. Mr. Kollen's recommendation states:

> *I recommend that the Commission reflect $50.000 million in money pool borrowings in the proposed capital structure. I recommend that the Commission reduce common equity by an equivalent amount. This is consistent with the Company's recent experience and its likely financing in the future, especially given its experience in 2019 and 2020 when it intentionally ran a leaner common equity ratio and greater money pool borrowings than its forecasts for the test year in Case No. 2018-00261.*[3]

On page 32 of his corrected testimony, Mr. Kollen provided a table comparing the Company's Capital structure from its last base rate case:

[3] Corrected Direct Testimony of Lane Kollen pg. 35.

Duke Energy Kentucky, Inc.
Capital Structure Comparison
Case No. 2018-00261 Forecast and 2019 and 2020 Actuals

	2018-00261 Test Year	Actual 2020	Actual 2019
Short Term Debt	6.91%	4.96%	5.95%
Long Term Debt	42.34%	47.87%	47.52%
Common Equity	50.76%	47.18%	46.53%
Total Capital	100.00%	100.00%	100.00%

As I discuss later based on the magnitude of the actual equity and debt balances compared to the equity and debt balances that were included in the 2018 rate case test year, it t is clear that the Company did not intentionally run a leaner common equity ratio and greater money pool borrowings than its forecasts for the test year in Case No. 2018-00261. In fact, short term debt was forecasted at higher levels than what was actually used. In his corrected testimony, Mr. Kollen continues his false assertion that the Company ran greater than forecasted money pool borrowings in order to reduce costs, stating as follows:

> *In the real world, the Company actually and intentionally reduced its costs after the Commission issued its Order in that proceeding. This experience highlights the need for the Commission to assess the utility's forecast costs with a healthy degree of skepticism, as I noted in the Summary section of my testimony, and to adjust the forecast amounts if they are not consistent with known facts, historic practices, or actual data.*[4]

As explained by Company witness Mr. Bauer, Mr. Kollen's claims are false. Mr. Kollen is unable to show any actual data or evidence to support his hypothesis

[4] Corrected Direct Testimony and Exhibits of Lane Kollen at 32.

that the Company intentionally forecasted its capitalization in Case No. 2018-00261 in such a way to artificially raise customer rates and then was subsequently able to intentionally reduce its costs. That is because, to use his term, in the "real world," the Company increased both equity and debt balances above the forecasted levels in Case 2018-00261 due to higher than expected capital expenditures.

		Staff-DR-01-020 Attachment	
Class of Capital	Case No. 2018-00261 March 31, 2020	Actual 2019	Actual 2020
Common Equity	$ 621,113	$ 645,094	$ 718,237
Long-Term Debt	518,106	658,807	728,796
Short-Term Debt	84,508	82,509	75,472
Total Capital	$ 1,223,727	$ 1,386,410	$ 1,522,505

The effect of this change increases (not lowers) Company costs, due to higher interest expense to cover the increase in debt. The Company's equity base was also higher than forecasted because it suspended a forecasted dividend payment to it's the parent.[5]

Mr. Kollen also omits important caveats when providing his analysis. Through discovery Mr. Kollen notes that his "real world" senario is only possible if all else is equal:

"All else equal, the lower equity ratio improved earnings".[6]

This means that the Company's capital forecast would have to be exactly the same as forecasted for costs to go down, and that the overall capital structure

[5] Response to AG-DR-02-022.

[6] *See* Mr. Kollen's response to Duke Energy Kentucky's Request for Information No. 12.

would have to remain the same as forecasted for his statement to be true. However, in the "real world" this wasn't true and the Company's overall debt and equity were higher than forecasted. Mr. Kollen knows this, yet made the claims that the Company "actually and intentionally reduced costs"[7] and "…intentionally ran a leaner common equity ratio and greater money pool borrowings than its forecasts for the test year in Case No. 2018-00261."[8] These statements, clearly intended to cast the Company in a negative light and are clearly not true when one looks at the actual facts and evidence. The Commission should disregard Mr. Kollen's claims.

VIII. LONG-TERM DEBT FORECAST CHANGES

Q. PLEASE SUMMARIZE THE REVENUE REQUIREMENT IMPACT OF RECENT CHANGES TO THE COMPANY'S LONG-TERM DEBT FORECAST.

A. As explained by Witness Bauer, the Company has recently ceased all marketing efforts to place the planned 2021 $50 million of unsecured debentures with private placement investors. The $50 million debt financing is still required by Duke Energy Kentucky in 2021 and the company is actively working with select banks to secure bridge financing. As a result of this change the Company's forecasted cost of long-term debt has decreased from 3.843 percent to 3.656 percent. Additionally, the Company will no longer be making the $70 million September 2022 debt issuance it had originally planned at the time this rate case

[7] Id. pg. 32.
[8] Id. pg. 35.

was filed. As a result of this change, the revised test period capital structure is as follows:

a. Common Equity of $861,861,344 or 51.344%

b. Long-Term Debt of $772,830,214 or 46.039%

c. Short-Term Debt of $43,936,209 or 2.617%

The impact of these changes on the weighted average cost of capital is a decrease from the originally filed 7.060 percent to 7.015 percent which results in a decrease in the revenue requirement of $0.107 million.

IX. REVISED REVENUE REQUIREMENT

Q. PLEASE SUMMARIZE THE COMPANY'S REVISED REVENUE REQUIREMENT BASED ON THE CHANGES DISCUSSED IN YOUR REBUTTAL TESTIMONY.

A. The following table reflects the Company's revised revenue requirement increase based on my testimony and assumes the Commission grants deferral authority associated with the Customer Connect O&M Expenses and approves the inclusion of the regulatory asset in rate base. The SERP adjustment also assumes the Commission rejects Mr. Kollen's recommendation to remove 401(k) match expense.

Line No.	Summary	Impact to Revenue Requirement
1	**Duke Energy Kentucky Initial Request**	$ 15,228,161
2	Payroll Taxes Associated with Incentive Compensation	(44,716)
3	Customer Connect - Return on Rate Base	57,479
4	Customer Connect O&M Expenses	(1,740,133)
5	SERP Expense	(33,992)
6	AGA & INGAA Dues	(2,705)
7	**Total Adjustments to Company's Proposed Revenue Requirement**	$ (1,764,067)
8	**Duke Energy Kentucky Revised Revenue Requirement Request**	$ 13,464,094

X. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

VERIFICATION

STATE OF OHIO)
) **SS:**
COUNTY OF HAMILTON)

The undersigned, Jay Brown, Director Rates & Regulatory Planning, deposes and says that he has personal knowledge of the matters set forth in the foregoing rebuttal testimony and that it is true and correct to the best of his knowledge, information and belief.

Jay Brown Affiant

Subscribed and sworn to before me by Jay Brown on this 4th day of October, 2021.

NOTARY PUBLIC

My Commission Expires: July 8, 2022

NOTARY PUBLIC STATE OF OHIO

E. MINNA ROLFES-ADKINS
Notary Public, State of Ohio
My Commission Expires
July 8, 2022

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

The Electronic Application of Duke Energy Kentucky, Inc., for: 1) An Adjustment of the Natural Gas Rates; 2) Approval of New Tariffs; and 3) All Other Required Approvals, Waivers, and Relief.	))))))	Case No. 2021-00190

REBUTTAL TESTIMONY OF

JEFFREY R. SETSER

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

October 8, 2021

TABLE OF CONTENTS

PAGE

I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jeffrey R. Setser and my business address is 550 South Tyron Street, Charlotte, North Carolina 28202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Duke Energy Business Services LLC (DEBS), as Director of Allocations and Reporting. DEBS provides various administrative and other services to Duke Energy Kentucky, Inc., (Duke Energy Kentucky or Company) and other affiliated companies of Duke Energy Corporation (Duke Energy).

Q. ARE YOU THE SAME JEFFREY R. SETSER THAT SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my Rebuttal Testimony is to address the erroneous claims and adjustments made by the Attorney General's witness Lane Kollen related to the Company's inclusion of DEBS cost of capital expense included in the Company's base revenue requirement.

II. DISCUSSION

Q. PLEASE DESCRIBE MR. KOLLEN'S RECOMMENDED ADJUSTMENT RELATED TO THE COST OF CAPITAL OF DEBS.

A. Mr. Kollen argues that the Commission should reduce the Company's revenue requirement by approximately $0.327 million for what he characterizes as "rent" expense for an imputed return on DEBS' "so-called" rate base costs.

Q. DOES DUKE ENERGY KENTUCKY AGREE WITH THIS RECOMMENDATION?

A. No. Notwithstanding Mr. Kollen's intentional mischaracterization of these costs, these assets are properly includable in the Company's base rates.

Q. PLEASE EXPLAIN.

A. Including a return on DEBS assets in test period expenses is in accordance with the Company's Cost Allocation Manual (CAM). The Duke Energy Kentucky CAM states that "by the terms of the Service Company Utility Service Agreement, compensation for any service rendered by the Service Company to its utility affiliates is the fully embedded costs thereof (*i.e.*, the sum of: (i) direct costs, (ii) indirect costs; and (iii) costs of capital)." Any reasonable interpretation of the term 'costs of capital' would include a return on ALL of the components of capitalization. DEBS' capitalization includes debt and equity; so, just like any of the regulated utilities, the cost of capital would be the weighted average of all costs of capital. It is certainly not fair to say that the return on equity for DEBS common equity is 0%.

Prior to the return on DEBS assets being applied, efforts were made to try and apportion common assets to each of the participating jurisdictions when the assets were placed in service. This would result in the return for each jurisdiction being applied to those assets as they were on the utility books. The current method for calculating the return on DEBS' assets is replicating this approach. Alternatively, certain jurisdictions had also been allocated a pro forma share of the assets on DEBS in the calculations for rate base in the regulatory filings and rate

cases. The current approach eliminates the needs for these methods and simply uses a revenue requirement based on each jurisdiction's allowed return for the use of common assets, which are used to provide service to customers.

Q. DID MR. KOLLEN MAKE A SIMILAR RECOMMENDATION BEFORE THE COMMISSION IN THE COMPANY'S MOST RECENT ELECTRIC BASE RATE CASE, 2019-00271?

A. Yes. Mr. Kollen raised this same issue and the Company disputed it. The issue was litigated as part of that proceeding.

Q. DID THE COMMISSION AGREE WITH MR KOLLEN'S RECOMMENDATION?

A. No. In fact, they did the exact opposite. First, it must be understood that in the Company's most recent electric base rate case, the Company inadvertently excluded the entire return on DEBS' assets from its test period expenses. So, Mr. Kollen's recommendation was completely moot and not necessary. In its order, the Commission actually added that inadvertently omitted return back into the Company's revenue requirement. Specifically, the Commission found as follows:

> The Commission concludes that if the entirety of Duke Kentucky's DEBS cost of capital expense was excluded from the test year, then the maximum amount necessary to correct the exclusion is $0.736 million, Duke Kentucky's calculation corrected to use the WACC it proposed in this proceeding. Accordingly, the Commission will include a revenue requirement increase of $0.738 million.[1]

Therefore, not only did the Commission disagree with Mr. Kollen's recommendation just over a year ago, it actually explicitly added the dollars into the Company's revenue requirement, as it had been inadvertently omitted from the outset. Had the Commission wanted to adopt Mr. Kollen's position, it simply would have made no adjustment whatsoever.

Q. DO YOU BELIEVE THE COMMISSION SHOULD CHANGE ITS DECISION?

A. No.

Q. PLEASE EXPLAIN MR. KOLLEN'S RECOMMENDATION REGARDING REMOVAL OF THE DEBS PENSION ASSET FROM THE DEBS RATE BASE.

A. Mr. Kollen argues that if the Commission disagrees with his adjustment to remove the DEBS cost of capital from the Company's base rates, that it should then remove the imputed return on the DEBS pension asset from the calculation of the DEBS expense. Mr. Kollen argues that if the Company did not include a pension asset in its rate base, then the DEBS pension asset should not be included in the DEBS rate base in the calculation of the affiliate expense.

[1] *In the Matter of the Electronic Application of Duke Energy Kentucky, Inc., for 1) An Adjustment of the Electric Rates; 2) Approval of New Tariffs; 3) Approval of Accounting Practices to Establish Regulatory Assets and Liabilities; and 4) All Other Required Approvals and Relief,* Ky.P.S.C. Order Pg. 20. April 27, 2020.

Q. DOES DUKE ENERGY KENTUCKY AGREE WITH THIS RECOMMENDATION?

A. No.

Q. PLEASE EXPLAIN WHY NOT.

A. The Company has not currently asked for a return on a prepaid pension assets at the Duke Energy Kentucky entity, but disagrees that there is not a valid asset that exists that could be included in rate base to earn a return. Mr. Kollen's testimony twists the response to AG-DR-02-27 omitting language to infer that the Company agrees that a prepaid pension asset is not valid. For the return on a prepaid pension for DEBS, the company is not asking for a return on the regulatory asset that is created as a result of unrecognized losses that are dictated by current pension accounting rules, but on the net prepaid pension asset that exists as a result of contributions made to the plans in excess of the expense recognized and collected from customers as recorded in Duke Energy Kentucky's financial statement.

The company is seeking recovery based on the following fundamental concept:

<u>Prepaid Pension Assets</u>

Guidance under SFAS No. 87, *Employers' Accounting for Pensions* (superseded by SFAS No. 158) required employers to record the sum of the Funded Status and Unrecognized Gains and Losses of a benefit plan on the statement of financial position. A Prepaid Pension Asset was recognized when the cash contributions made to the plan by the employer exceed the amount of Net Periodic Pension Cost. Cash contributions are reflected as a debit to Prepaid Pension Assets (offsetting

credit is to Cash) while Net Period Pension Cost is a credit to Prepaid Pension Assets (offsetting debit is to FERC Account 926). This net debit represents shareholder advances to the external pension trust fund on behalf of customers.

While the current accounting rules require the books to recognize the actuarial funded status of the plans, the simple concept of whether you have contributed more cash than you have recognized in expense is easily reflected in the combination of the regulatory assets and liabilities with the current funded status to determine the net prepaid or accrued position. This is accomplished by summing a benefit plan's Funded Status and SFAS 158 Regulatory Assets in determining the amount of net cash contributed by customers and shareholders. It is necessary to include both items for ratemaking purposes, one cannot be included or excluded, without the other.

In addition, the benefits of this prepaid position include additional assets that earn an actuarial return lowering net periodic benefit costs for customers and adequately funded plans that avoid Pension Benefit Guaranty Corporation (PBGC) variable rate premiums.

Q. HAS MR. KOLLEN MADE SIMILAR RECOMMENDATIONS IN ANY OF DUKE ENERGY KENTUCKY'S SISTER UTILITY RATE CASES?

A. Yes, most recently in Duke Energy Indiana, LLC rate case (CAUSE NO. 45253). In that case Mr. Kollen also argued against including a return on a prepaid pension asset that was being proposed as part of rate base in that case.

Q. DID THE COMMISSION AGREE WITH MR. KOLLEN'S RECOMMENDATION?

A. No, in that case, the Commission ruled against Mr. Kollen and concluded that the prepaid pension asset was properly included in rates.

Q. PLEASE SUMMARIZE THE IMPACT OF YOUR REBUTTAL

A. For the reasons I previously stated, the Commission should reject Mr. Kollen's recommended $0.312 million adjustment to the Company's base rates.

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR PRE-FILED REBUTTAL TESTIMONY?

A. Yes.

VERIFICATION

STATE OF NORTH CAROLINA)

) **SS:**

COUNTY OF ALLEGHANY)

The undersigned, Jeffrey R. Setser, Director of Allocations and Reporting, being duly sworn, deposes and says that he has personal knowledge of the matters set forth in the foregoing rebuttal testimony and that it is true and correct to the best of his knowledge, information and belief.

Jeffrey R. Setser Affiant

Subscribed and sworn to before me by Jeffrey R. Setser on this 30 day of September 2021.

Barbara T Blankenship NOTARY PUBLIC Wilkes County, NC

NOTARY PUBLIC

My Commission Expires: June 29, 2025

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

The Electronic Application of Duke Energy Kentucky, Inc., for: 1) An Adjustment of the Natural Gas Rates; 2) Approval of New Tariffs; and 3) All Other Required Approvals, Waivers, and Relief.	)))))	Case No. 2021-00190

REBUTTAL TESTIMONY OF

SARAH E. LAWLER

ON BEHALF OF

DUKE ENERGY KENTUCKY, INC.

October 8, 2021

TABLE OF CONTENTS

PAGE

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Sarah E. Lawler and my business address is 139 East Fourth Street, Cincinnati, Ohio 45202.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Duke Energy Business Services LLC (DEBS), as Vice President, Rates and Regulatory Strategy for Ohio and Kentucky. DEBS provides various administrative and other services to Duke Energy Kentucky, Inc., (Duke Energy Kentucky or Company) and other affiliated companies of Duke Energy Corporation (Duke Energy).

Q. ARE YOU THE SAME SARAH E. LAWLER THAT SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to respond to certain opinions and recommendations expressed by Attorney General (AG) witness Lane Kollen. Specifically, I address Mr. Kollen's recommendation that the Commission deny the Company's proposal for a Governmental Mandate Adjustment Rider (Rider GMA).

II. OBJECTIONS TO MR. KOLLEN'S TESTIMONY

Q. PLEASE BRIEFLY SUMMARIZE DUKE ENERGY KENTUCKY'S RIDER GMA PROPOSAL.

A. As its name implies, Rider GMA is proposed to allow the Company to respond to specific forms of governmental mandates that impact the Company's natural gas

operations, including changes in federal or state income tax rates, and regulations promulgated by federal governmental entities and agencies that require the Company to upgrade or replace its natural gas delivery infrastructure.

The Company proposed to include costs associated with compliance with regulations issued by the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA) in Rider GMA. The Company would calculate a revenue requirement to recover a return on the rate base associated with these incremental capital costs along with recovery of the associated depreciation and property tax expenses.

The Company also proposed to include in Rider GMA any change in its cost of service resulting from increases or decreases in federal or state income tax expense resulting from changes in federal or state income tax rates. The Company would revise the revenue requirement calculation agreed upon in its most recently approved natural gas base rate case by updating the federal and/or state income tax rates. The Company also proposed to include any changes in amortization of unprotected excess or deficient deferred income taxes in the Rider GMA. Because of the IRS tax normalization rules outlined in Company witness John R. Panizza's direct testimony, any changes in amortization of protected excess or deficient deferred income taxes would not be included in Rider GMA, but rather updated in the Company's next natural gas base rate case.

Rider GMA would act as either a credit or a charge to customers, depending upon the impact of the governmental mandate.

Q. PLEASE DESCRIBE MR. KOLLEN'S CRITICISMS OF THE RIDER GMA PROPOSAL?

A. Mr. Kollen's criticisms of the Rider GMA proposal are as follows:

1) The Company did not define a "governmental mandate or how it will determine scope or costs;
2) The ability to recover costs between rate cases will incentivize the Company to characterize costs as new or expanded governmental mandates;
3) It is impossible to distinguish between new and incremental costs due to new or expanded governmental mandates from costs incurred in the normal course of business;
4) PHMSA rules and regulations are subject to interpretation and the utility has discretion as to its responses to the rules and regulations;
5) The rider is not necessary to address changes in tax laws because the Commission has previously initiated generic and company specific proceedings for natural gas and electric utilities;
6) The Rider GMA proposal lacks an expiration date; and
7) The existing rate-making paradigm is adequate.

Mr. Kollen concludes that the Commission reject the Rider GMA. In the alternative, he suggests that if the Commission does approve it, that the Company be required to:

1) Establish a baseline inventory of existing mandates, the specific scope of work that the Company plans to comply for the next ten

years, and the cost to perform the specific scope of work for each of the next ten years;

2) Include as credits to the revenue requirement in the Rider GMA, reductions in depreciation expense, savings due to reductions in maintenance expense on existing plant in service and rate base reductions due to the ADIT effect of the abandonment loss deduction for the remaining tax basis.

3) Limit scope and recovery of costs of any system-wide replacements of pipe as it has in prior pipeline replacement mechanisms to ensure the project is well-managed; and

4) Implement a lower ROE for the rider.

Q. DOES THE COMPANY AGREE WITH MR. KOLLEN'S CRITICISMS OR RECOMMENDATIONS FOR APPROVAL OF RIDER GMA?

A. No. Mr. Kollen's criticisms are baseless and his recommendations are unnecessary and unreasonable.

Q. PLEASE EXPLAIN WHY MR. KOLLEN'S CRITICISM REGARDING THE SCOPE OF RIDER GMA IS BASELESS.

A. First, the Company did explain the scope of its rider GMA proposal in its Application, Direct Testimony, and responses to data requests. The purpose is twofold. First, as I explained in my Direct Testimony and summarized above, the Company proposes to include in Rider GMA any change in its cost of service resulting from increases or decreases in federal or state income tax expense resulting from changes in federal or state income tax rates. In other words, if the

law changes to impact the statutory federal or state tax rates, then Rider GMA would be a mechanism to pass the increase or decrease to customers. This is precisely what the Commission ultimately approved for nearly every electric and natural gas utility in the Commonwealth, not in a base rate case proceeding, following the passage of the 2017 Tax Cuts and Jobs Act. Rider GMA would simply be a "placeholder" if similar laws were to pass either on the state or federal level in the future. Duke Energy Kentucky witness John Panizza discusses the tax implications of Rider GMA at length in his direct testimony, including the implication of normalization rules on EDIT balances. Mr. Kollen's testimony completely ignores this.

Second, regarding pipeline replacements under Rider GMA, Company witness Weisker details in his direct testimony, the scope of replacements that would be eligible under the Company's proposal. Specifically, he discusses the Company's need to replace the AM07 pipeline and associated regulator stations as a result of the PHMSA Mega Rule. The Company has not identified additional projects at this time, but as explained in direct testimony, for replacement projects that are necessary to comply with PHMSA regulations, Rider GMA would be available. Ultimately, the Company would bear the burden of proof that the investment was reasonable. And to the extent the project is large enough to not qualify as an ordinary extension in the ordinary course of business, the Company would then also file for approval of a certificate of public convenience and necessity (CPCN). The Rider will be adjusted annually, so the Commission, and interested stakeholders, will have even greater insight into the Company's natural gas capital

investments through an annual review proceeding.

Q. PLEASE EXPLAIN WHY MR. KOLLEN'S ALLEGATION THAT RIDER GMA WILL INCENT THE COMPANY TO CHARACTERIZE COSTS AS NEW OR EXPANDED GOVERNMENTAL MANDATES IS IRRATIONAL?

A. Duke Energy Kentucky will continue to have the burden of proof that its investments are both necessary and reasonable. With an annual review, using a forecasted in-service date for capital, the Commission will be able to know what investments the Company is making and why. The Company will explain how these investments are necessary to meet PHMSA regulations. The Commission has essentially followed this exact process for electric generating environmental compliance under the environmental surcharge mechanisms for decades. To say the Company will mischaracterize costs is an insult to the Company and to the Commission who has the expertise to determine whether or not a project is necessary to comply with federal regulations.

Q. PLEASE EXPLAIN WHY MR. KOLLEN'S CONCERN THAT IT IS IMPOSSIBLE TO DISTINGUISH BETWEEN NEW AND INCREMENTAL COSTS DUE TO NEW OR EXPANDED GOVERNMENTAL MANDATES FROM COSTS INCURRED IN THE ORDINARY COURSE OF BUSINESS IS INVALID.

A. Mr. Kollen's lack of experience in managing a natural gas utility is apparent. As Mr. Weisker explains, it is the Federal Regulations that drive the Company's distribution and transmission integrity management initiatives. PHMSA

regulations require the Company to continually assess its system to identify risks and come up with corrective actions. This is not to drive investments as Mr. Kollen would have this Commission believe, but rather, is to ensure a safe and reliable natural gas delivery system. Mr. Weisker explains the regulations that have impacted the Company in recent years and those that are "on the horizon."[1] Again, the Company would have the burden of proof from a recovery standpoint under the Rider GMA to show that the costs are reasonable and necessary for PHMSA compliance.

Q. PLEASE EXPLAIN WHY MR. KOLLEN'S CRITICISM THAT PHMSA RULES AND REGULATIONS ARE SUBJECT TO INTERPRETATION AND THAT THE UTILITY HAS DISCRETION IN ITS RESPONSE TO SUCH RULES AND REGULATIONS IS UNSOUND.

A. While PHMSA's regulations may not identify a specific remedy in all instances, that does not mean the Company has discretion as to whether or not it must comply. As Mr. Weisker explained in his Direct Testimony, Duke Energy Kentucky must respond to changes in federal or state regulations that necessitate replacement of older infrastructure that either does not meet, or cannot be proven to meet, new standards, or newer interpretations of existing standards.[2]

Q. PLEASE EXPLAIN WHY MR. KOLLEN'S CRITICISM THAT RIDER GMA IS UNNECESSARY TO ADDRESS CHANGES IN TAX LAW IS INVALID.

A. Mr. Kollen's reasoning that Rider GMA is not necessary to adjust tax law changes

[1] Direct Testimony of Brian Weisker, pg. 24.
[2] Direct Testimony of Brian Weisker, pg. 30

because of the Commission's existing process to open an individual proceeding to address tax changes for individual utilities on an ad hoc basis is circular. For utilities that were not already before the Commission for a base rate proceeding at the time of the passage of the TCJA, the Commission did open proceedings and, in many instances, approved rider/tracking mechanisms to adjust for the changes in the tax rate. That is precisely what the Company is attempting to do with Rider GMA. We are proposing to create a mechanism as a placeholder for these potential changes to tax laws if and when they occur. The Company would still file an application to adjust the rider if and when the tax changes occur. This is exactly what the Commission has already done.

Q. PLEASE EXPLAIN WHY MR. KOLLEN'S CRITICISM THAT RIDER GMA HAS NO EXPIRATION IS INVALID.

A. Mr. Kollen is correct that the Company did not propose an expiration date for its Rider GMA. The simple reason is that the PHMSA regulations that would drive compliance and investments do not expire. Existing regulations are enforced and new regulations are enacted. Neither PHMSA nor the Commission coast through maintaining existing regulations. They require consistent and constant evaluation to make sure the Company is meeting the regulatory requirements. To suggest that rider should have an expiration date when the Company's compliance obligation has no expiration is defeating the purpose of the mechanism and ignoring the ongoing compliance obligation.

Q. PLEASE EXPLAIN WHY MR. KOLLEN'S POSITION THAT RIDER GMA IS UNNECESSARY BECAUSE THE EXISTING RATE-MAKING PARADIGM IS SUFFICIENT IS INCORRECT.

A. Under the existing paradigm, Duke Energy Kentucky has filed its second natural gas base rate case in three years. The application for the current proceeding was approximately 24 months following the Commission's order approving the prior rate increase. In between, the Company also filed an electric base rate case proceeding. Base rate cases result in large one-time increases to customers on a percentage basis. A rider mechanism like the proposed Rider GMA, as is allowable under Kentucky Law, allows the Company to increase rates to recover prudent and reasonable pipeline replacement investments in a much more gradual and levelized increment verses the large percentage increases that can occur in a base rate proceeding.

Q. PLEASE EXPLAIN WHY MR. KOLLEN'S RECOMMENDATION THAT IF RIDER GMA IS APPROVED, THE COMMISSION SHOULD ESTABLISH A BASELINE INVENTORY OF EXISTING MANDATES AND SPECIFIC SCOPE OF WORK THAT THE COMPANY PLANS TO COMPLY FOR THE NEXT TEN YEARS IS UNREASONABLE.

A. Again, Mr. Weisker explains in his direct testimony, the Company's DIMP and TIMP programs and how PHMSA regulations require natural gas utilities to continually monitor their systems to assess risk. Mr. Weisker's direct testimony also outlines the existing regulations that impact the natural gas delivery system and the programs the Company currently has in place to address those system risks.

He further discusses upcoming regulations that are currently in draft form. Because the obligation to assess the system is continual, the assessment itself evolves as risks are identified and actions are taken to address those risks. Mr. Kollen's recommendation is simply unreasonable and unnecessary.

Q. PLEASE RESPOND TO MR. KOLLEN'S RECOMMENDATION THAT IF RIDER GMA IS APPROVED, THE COMPANY INCLUDE REDUCTIONS IN DEPRECIATION EXPENSE AND SAVINGS DUE TO REDUCTIONS IN MAINTENANCE EXPENSE ON EXISTING PLANT IN SERVICE AS A CREDIT TO REDUCE THE REVENUE REQUIREMENT AND RATE BASE DUE TO THE ADIT EFFECT OF THE ABANDONMENT LOSS DEDUCTION FOR THE REMAINING TAX BASIS.

A. To the extent that retirements in existing net plant in-service result from projects that are approved to be recovered through Rider GMA, the Company would agree that it is reasonable to reflect the plant in service net of retirements in the rate base included in the rider filing. The Company does not anticipate any reductions in maintenance expense to existing plant in service.

Q. PLEASE EXPLAIN WHY MR. KOLLEN'S RECOMMENDATION THAT IF APPROVED, RIDER GMA SHOULD HAVE A LOWER ROE IS UNREASONABLE.

A. The Company believes that the ROE approved in the most recent base rate case is the most appropriate ROE to use for riders. The ROEs authorized in base rate case proceedings are supported by robust analysis and testimony of expert witnesses.

Additionally, as the Company's witness Dylan D'Ascendis states in his Direct Testimony, the existence of rider mechanisms has been found to have no statistically significant effect on investor perceived risk and hence ROE. He further states in his rebuttal testimony that the risk profile of Duke Energy Kentucky is not lowered by the existence of Rider GMA. The risk profile of the Company would only be lower if the mechanisms granted by this Commission were unique to Duke Energy Kentucky, and not available to other utilities of comparable risk. If the existence of the mechanism itself does not impact the risk profile of the Company and thus the ROE that is included in base rates, then the same argument would be true that a lower ROE should not be applied to the mechanism itself.

III. CONCLUSION

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes.

VERIFICATION

STATE OF OHIO)
) **SS:**
COUNTY OF HAMILTON)

The undersigned, Sarah E. Lawler, VP Rates & Regulatory Strategy, OH/KY, being duly sworn, deposes and says that she has personal knowledge of the matters set forth in the foregoing rebuttal testimony and that it is true and correct to the best of her knowledge, information and belief.

Sarah E. Lawler Affiant

Subscribed and sworn to before me by Sarah E. Lawler on this 28th day of September, 2021.

NOTARY PUBLIC