NORTH CAROLINA
PUBLIC STAFF
UTILITIES COMMISSION

June 9, 2023

Ms. A. Shonta Dunston, Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4300

Re: Docket No. E-34, Subs 54 and 55 – Application of Appalachian State University, d/b/a New River Light and Power Company for Adjustment of General Base Rates and Charges Applicable to Electric Service, and for an Accounting Order to Defer Certain Capital Costs and New Tax Expenses

Dear Ms. Dunston:

Attached for filing on behalf of the Public Staff in the above-referenced docket is the testimony of John R. Hinton, Director of the Economic Research Division of the Public Staff – North Carolina Utilities Commission.

By copy of this letter, we are forwarding a copy to all parties of record by electronic delivery.

Sincerely,

Electronically submitted
/s/ Thomas J. Felling
Staff Attorney
thomas.felling@psncuc.nc.gov

Attachments

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CERTIFICATE OF SERVICE

I certify that a copy of the foregoing Testimony has been served on all parties of record or their attorneys, or both, in accordance with Commission Rule R1-39, by United States Mail, first class or better; by hand delivery; or by means of facsimile or electronic delivery upon agreement of the receiving party.

This the 6th day June, 2023.

Electronically submitted
/s/ Thomas J. Felling
Staff Attorney

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-34, SUB 54	)	
	)	
In the Matter of	)	
Application of Appalachian State	)	
University, d/b/a New River Light and	)	
Power Company for Adjustment of	)	
General Base Rates and Charges	)	**TESTIMONY OF**
Applicable to Electric Service	)	**JOHN R. HINTON**
	)	**PUBLIC STAFF –**
DOCKET NO. E-34, SUB 55	)	**NORTH CAROLINA**
	)	**UTILITIES COMMISSION**
In the Matter of	)	
Petition of Appalachian State University,	)	
d/b/a New River Light and Power	)	
Company for an Accounting Order to	)	
Defer Certain Capital Costs and New	)	
Tax Expenses	)	

JUNE 6, 2023

Q. Please state your name, business address, and present position.

A. My name is John R. Hinton. I am the Director of the Economic Research Division of the Public Staff of the North Carolina Utilities Commission, representing the using and consuming public. My business address is 430 North Salisbury Street, Raleigh, North Carolina 27603. My qualifications and experience are provided in Appendix A.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony in this proceeding is to present the Commission with my findings and recommendation regarding the cost of capital for rates and charges applicable to electric service in New River Light and Power (NRLP).

Q. How is your testimony structured?

A. The remainder of my testimony is structured as follows:

I. Introduction and Background

II. Present Financial Market Conditions

III. Appropriate Capital Structure for Ratemaking

IV. Cost of Long-Term Debt

V. Cost of Common Equity

VI. Impact of Changing Economic Conditions

VII. Recommended Overall Cost of Capital

VIII. Customer Growth and Usage Adjustments

I. INTRODUCTION AND BACKGROUND

Q. What is the currently approved cost of capital for NRLP?

A. On March 29, 2018, the Commission approved 6.525% as the overall cost of capital in Docket No. E-34, Sub 46, NRLP's last general rate case. The components of NRLP's currently approved cost of capital are shown below, along with the cost of capital components from the preceding case.

Currently Approved
Cost of Capital
Docket No. E-34, Sub 46

Item	Ratio%	Cost Rate	Weighted Cost Rate
Long-Term Debt	50.00%	3.800%	1.900%
Common Equity	50.00%	9.250%	4.625%
Total	100.00%		6.525 %

Q. What is the cost of capital requested by NRLP?

A. According to NRLP witness Randall E. Halley's testimony, NRLP is proposing an overall return of 7.007%. The recommendation is based on a hypothetical 48% debt and 52% common equity capital structure, a 4.20% cost rate of long-term debt, along with a

recommended rate of return on common equity of 9.60%, as shown below:

NRLP Proposed
Cost of Capital
as of December 31, 2021

Item	Ratio%	Cost Rate	Weighted Cost Rate
Long-Term Debt	48.00%	4.20%	2.015%
Common Equity	52.00%	9.60%	4.992%
Total	100.00%		7.007%

Q. What is your recommended cost of capital for NRLP?

A. I determined that 6.07% is an appropriate overall cost of capital. This recommendation is based on a hypothetical capital structure consisting of 50.00% common equity and 50.00% long-term debt. I have incorporated a cost rate of long-term debt of 3.23% and a cost rate of common equity of 8.90%.

Public Staff Recommended
Cost of Capital
as of December 31, 2022

Item	Ratio%	Cost Rate	Weighted Cost Rate
Long-Term Debt	50.00%	3.23%	1.63%
Common Equity	50.00%	8.90%	4.45%
Total	100.00%		6.07%

Q. Are there any legal and economic guidelines to follow when determining the cost of capital to a public utility?

A. Yes. The appropriate legal and economic guidelines are thoroughly addressed in prior Commission orders (including the Commission's July 23, 2015 Order on Remand in Docket No. E-22, Sub 479). Rather than repeat prior discussions, I will summarize the two cases that established the basic principles for determining rate of return on equity (ROE).

In Federal Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591 (1944) (Hope), the U.S. Supreme Court stated:

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

Id. at 603.

In Bluefield Water Works & Improvement Co. v. Public Serv. Comm'n of West Virginia, 262 U.S. 679 (1923) (Bluefield), the U. S. Supreme Court stated:

> 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; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time and become too high or too low by changes affecting opportunities for investment, the money market and business conditions generally.

Id. at 692-93.

These two decisions recognize that utilities are competing for the capital of investors and provide legal guidelines as to how the allowed rate of return should be set. The decisions specifically speak to the standards or criteria of capital attraction, financial integrity, and comparable earnings. The Hope decision, in particular, recognizes that the cost of common equity is commensurate with risk relative to investments in other enterprises. In competitive capital markets, the required return on common equity will be the expected return foregone by not investing in alternative investments of comparable risk. For the utility to attract capital, possess financial integrity, and exhibit comparable earnings, the return allowed on a utility's

common equity should be that return required by investors for stocks with comparable risk.

It is widely recognized that a public utility should be allowed a rate of return on capital which, under prudent management, will allow the utility to meet the criteria or standards referenced by the Hope and Bluefield decisions. If the allowed rate of return is set too high, consumers are burdened with excessive costs, current investors receive a windfall, and the utility has an incentive to overinvest. If the return is set too low, and the utility is not able to attract capital on reasonable terms to invest in capital improvements for its service area, then its ability to meet its future service obligations may be impaired. Because a public utility is capital intensive, the cost of capital is a very large part of its overall revenue requirement and is a crucial issue for a utility and its ratepayers.

Q. How did you determine the cost of capital that you recommend in this proceeding?

A. To determine the cost of capital, I performed a study consisting of three steps.

First, I determined the appropriate capital structure. Firms normally finance assets with a combination of debt capital and equity capital.

Because each form of capital has a different cost, especially after income tax considerations, the relative amounts of each form that are employed to finance the assets can have a significant influence on the overall cost of capital.

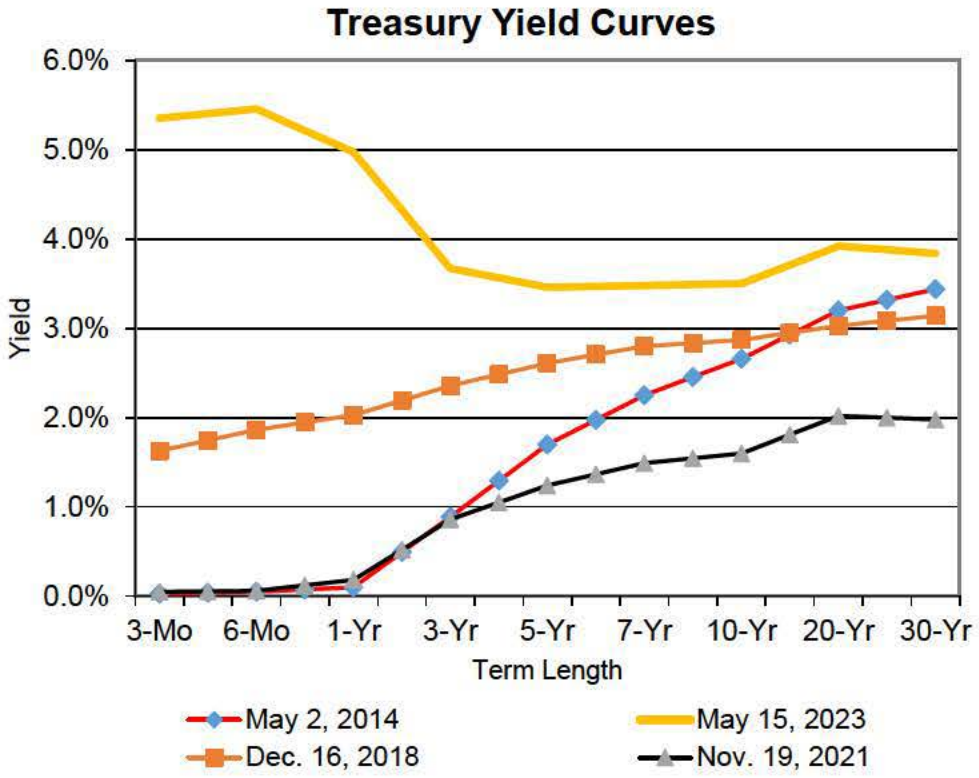
Second, I determined the cost rates for both forms of financial capital.

Third, by combining the capital structure ratios with the associated cost rates, I calculated an overall weighted cost of capital.

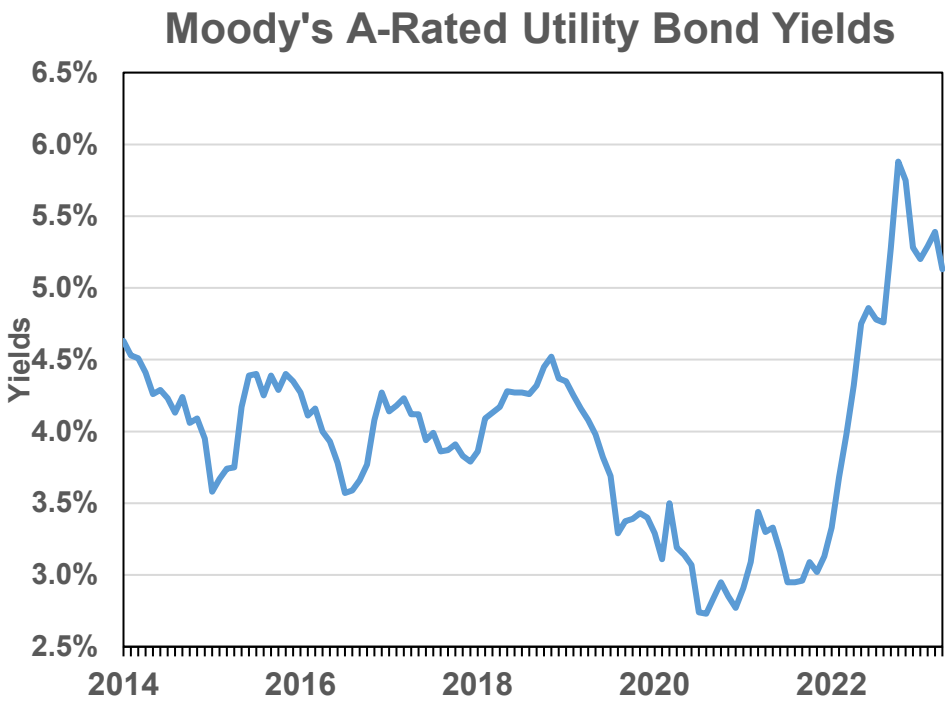
II. PRESENT FINANCIAL MARKET CONDITIONS

Q. Can you briefly describe the current financial market conditions?

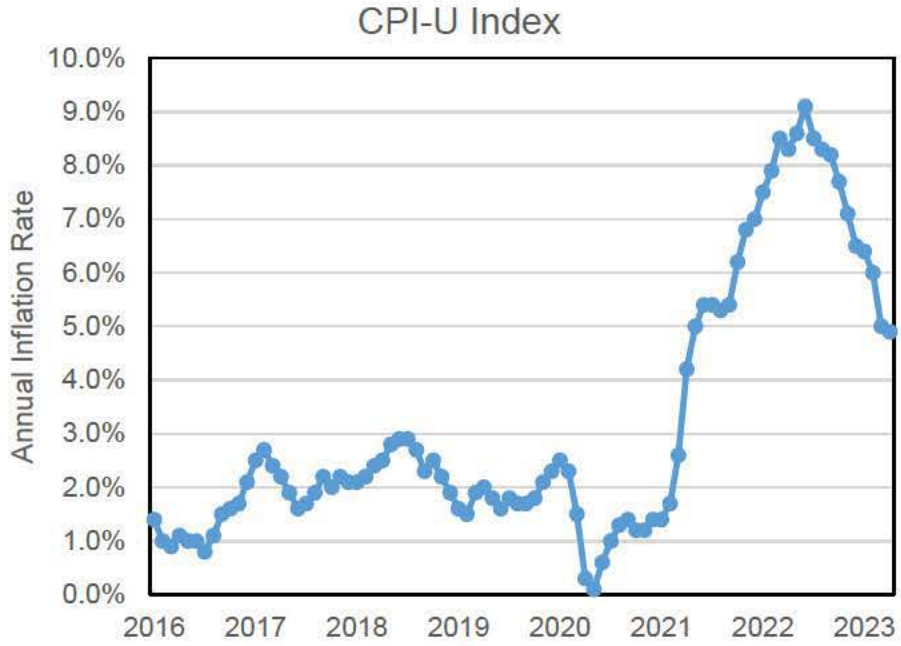
A. Yes. As compared to the last decades there has been a resurgence of inflation, which has contributed to an increase in inflationary expectations and increases in nominal interest rates. The changes in the U.S. Treasury bond yield curves illustrate differences in increases in interest rates over various terms. The largest increase in the difference from current yields compared to the last 12 months is with the short-term securities of one year or less, which have increased by over 380 basis points. However, the average increases in the 10- and 20-year term U.S. Treasury yields have risen approximately 51 basis points over the last 12-months.



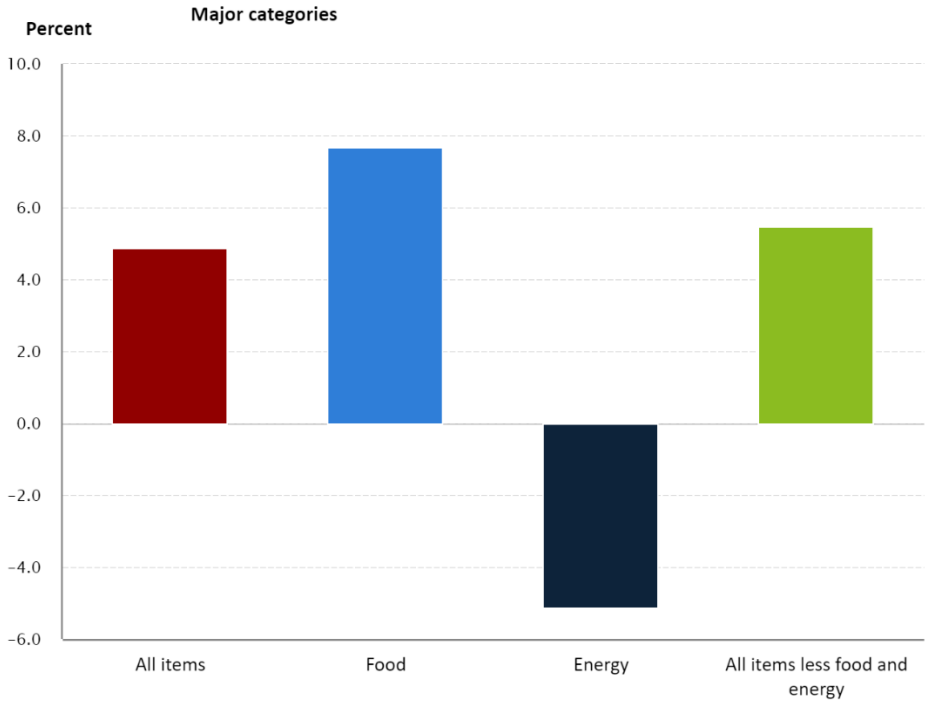
With particular importance to utility financings, yields on long-term "A" rated utility bonds, as reported by Moody's *Bond Survey*, are 5.13% for April 2023. Although elevated compared to historical returns, this is down 75 basis points from the 5.88% rate observed in October 2022. The changes in the A-rated Public Utility bond yields are shown below:



As of April 2023, the annual inflation rate was 4.9%, as measured by the Consumer Price Index for all items with urban consumers (CPI-U), which is down from its highest rate of 9.1% observed in June 2022. The chart below illustrates the recent downward trend.



Per the most recent release from the U.S. Bureau of Labor Statistics, the index for electricity decreased 0.7% in April, as it also did in March 2023. Below is the 12-month percentage change in the consumer price index for selected categories (not seasonally adjusted) from the April 2023 release from the U.S. Bureau of Labor Statistics. As shown below, notwithstanding the overall increase of all items, the energy index has decreased by 5.1% over the past year.

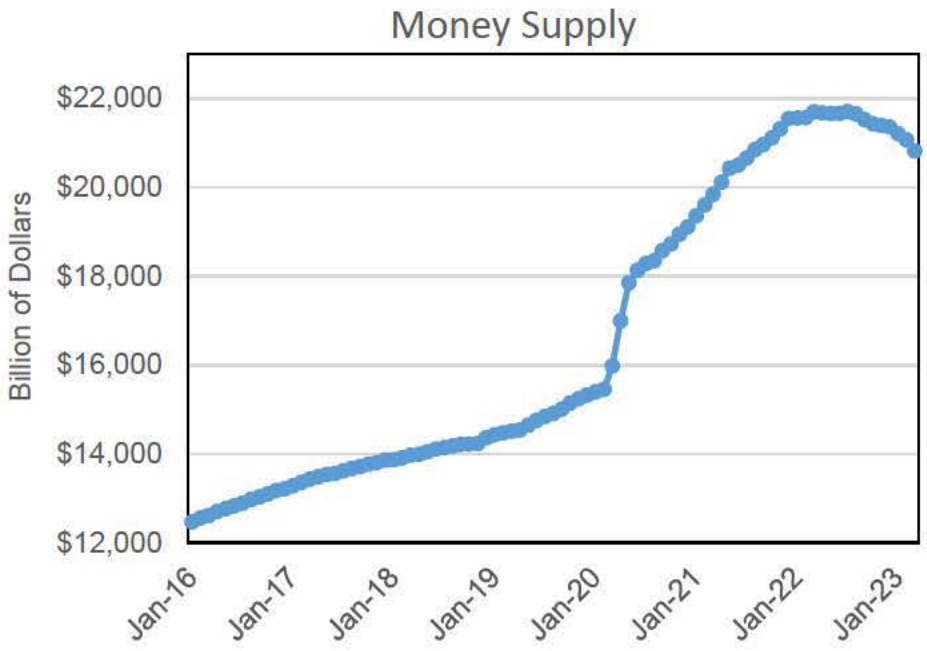


I maintain that the decreases in the utility bond yields and the recent decreases in treasury yields are, in part, due to the decreased inflation rates over the last nine months from their peak observed for June 2022.

In my opinion, the decreased inflation rate has been largely driven, in part, by the decreased growth rate of the money supply as measured by M2.[1] I believe that the restrictive monetary policy by the Federal

[1] https://fred.stlouisfed.org/series/M2SL

Reserve illustrated in the below graph represents a significant factor with the decreasing inflation rates.[2]



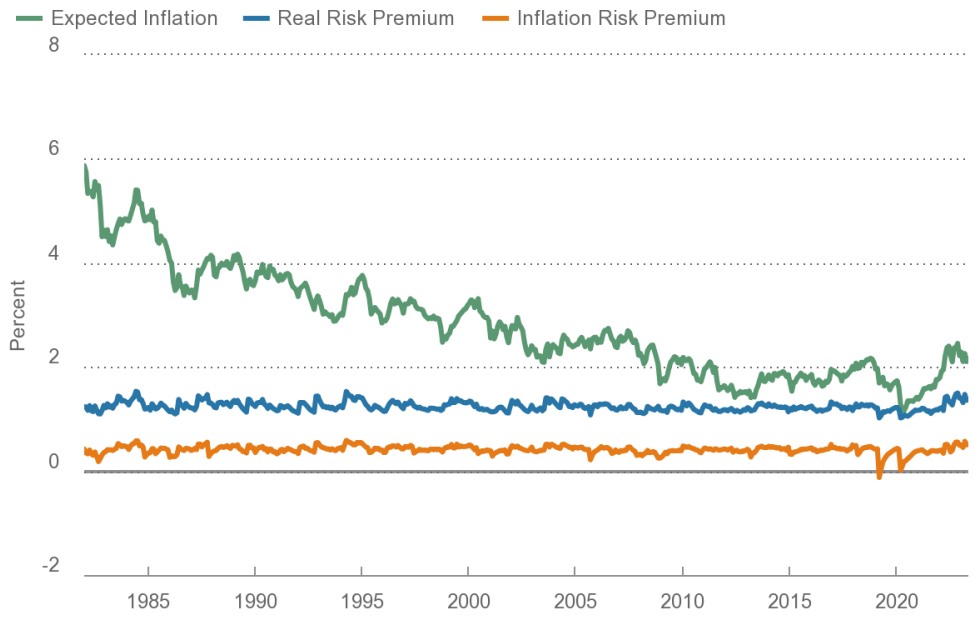
However, there remains debate about the timing and effects of monetary policy.[3] Furthermore, monetary policies have contributed to the recent 1.1% annual growth rate of the Gross National Product that reflects a slowing economy and the rising belief of a near-term recession.

[2] Milton Friedman and Anna j. Schwartz, A Monetary history of the United States, 1867-1960, National Bureau of Economic Research, Princeton University Press, 1963.

[3] Economic Brief, Why are Economists still Uncertain about the effects of Monetary Policy, Federal Reserve Bank of Richmond, May 2023.

Lower long-term inflation expectations are observed in the analysis performed by the Federal Reserve Bank of Cleveland. As of May 1, 2023, the Federal Reserve Bank of Cleveland estimated the expected annual inflation rate[4] over the next 10 years to be 2.2%.

Ten Year Expected Inflation and Real and Inflation Risk Premia:



Source: Federal Reserve Bank of Cleveland calculations based on data from Blue Chip, Bloomberg, Burea of Labor Statistics, Federal Reserve Bank of Philadelphia, Federal Reserve Board, Haver Analytics, and th model of Haubrich, Pennacchi, and Ritchken, 2012. "Inflation Expectations, Real Rates, and Risk Premia: Evidence from Inflation Swaps." Review of Financial Studies, 25(5).

This discussion demonstrates the considerations of present financial and economic conditions used in arriving at the Public Staff's recommended return on equity and overall cost of capital. It is my

[4] https://www.clevelandfed.org/en/indicators-and-data/inflation-expectations

belief that the heightened expectations of above-normal inflation and interest rates have peaked and are now fading.

III. APPROPRIATE CAPITAL STRUCTURE FOR RATEMAKING

Q. Please explain the term "capital structure" and how the capital structure approved for ratemaking purposes affects rates.

A. The typical electric power utility obtains external capital from investors by borrowing debt and issuing common equity. The capital obtained from debt and equity investors, along with retained earnings, is utilized to finance assets. The capital structure is simply a representation of how a utility's assets are financed. A goal for ratemaking is to use a reasonable mix of debt and equity capital that allows the opportunity to attract capital and maintain the utilities financial integrity while also maintaining the cost of capital at the lowest overall rate that is fair to the utility investor and the utility rate payer.

Q. From an investors' perspective, is NRLP a typical electric utility?

A. No. First, NRLP is a wholly owned operation of Appalachian State University (ASU). Second, relatively little of NRLP's assets are financed with debt capital. According to the December 31, 2022 financial statements, NRLP's capital structure contains 26% debt and 74% common equity, which in my opinion is unreasonable for

ratemaking. Such a large degree of common equity contributes to a higher overall cost of capital unless adjustments are made to reduce the cost rate for equity to reflect the lower financial risk. The absence of publicly traded electric utility companies with similar capital structures makes it quite difficult to arrive at a reasoned and market-based capital structure and cost rates. As such, the use of a hypothetical capital structure is appropriate.

While the goal of my investigation is to determine the appropriate cost rate of debt capital and cost rate of common equity capital for a risk-equivalent electric utility, it is incumbent to recognize the unique ownership of this utility as compared to other investor-owned utilities (IOUs), which I will further address with the cost rate of common equity.

Q. Is the requested capital structure identified in NRLP witness Halley's testimony appropriate for ratemaking purposes in this proceeding?

A. No. NRLP has requested the use of a 48% debt ratio and a 52% common equity ratio. The proposed capital structure is more appropriate for a vertically integrated electric utility that must compete

for investors to provide both debt and equity capital to assist in the financing of its operations and capital expenditures.

Q. What is your recommended capital structure?

A. I recommend the use of a hypothetical capital structure comprised of 50% common equity and 50% debt. This structure is reasonable for the reduced investment risk associated with electric distribution-only utilities. I have reviewed the data associated with distribution-only utilities since NRLP purchases its power from wholesale generation providers, as compared to a vertical integrated utility. The approved equity ratios[5] for electric distribution cases over the period 2017 through April 30, 2023, is approximately 50.00%, as shown in Public Staff Hinton Exhibit 1.

IV. COST OF LONG-TERM DEBT

Q. Is the requested cost of long-term debt appropriate for ratemaking purposes in this proceeding?

A. No. NRLP has requested a cost rate of 4.20%, which is reported to be the average approved cost of debt for recent rate cases involving Piedmont Natural Gas, Inc. (PNG) and Public Service Company of

[5] S&P Global Market Intelligence, Major Energy Rate Case Decisions – January-March 2023, April 26, 2023.

North Carolina, Inc. (PSNC). In my opinion, these debt cost rates do not reflect the credit risk of NRLP; rather, the proposed cost of debt is reflective of the credit risk of these privately-owned natural gas distribution companies. Even though the credit risk of NRLP is not explicitly rated, ASU's General Revenue bonds are rated Aa3 by Moody's, as compared to an A3 for PNG and Baa1 for PSNC. NRLP is not an independent or separate entity but is rather an operating division of ASU. Nonetheless, I accept that the credit risk of NRLP may be slightly higher than for ASU; however, any appraisal of this utility must consider the ultimate owner of the utility system by the State of North Carolina. Lastly, the proposed cost rates of PNG and PSNC bonds reflect investor-required returns net of taxes; however, the Tax Certificate associated with its most recent loan from Truist Bank confirms that income from interest payments is excluded from taxes as shown in Public Staff Hinton Exhibit 2.

Q. What is your recommended cost of long-term debt?

A. I recommend an embedded cost of debt of 3.23%. This cost rate is based on the actual debt of NRLP as of December 31, 2022, and I imputed additional debt to match the 50% of debt capital of the Public Staff's proposed rate base. The actual embedded cost of debt reflects the weighted average of NRLP's three outstanding long-term issues;

a May 5, 2016 loan of a $3.7 million for 10-years at 2.82%, a December 10, 2020 loan of $6.5 million at 1.73%, and a Oct. 12, 2022 loan for $3.0 million loan at 4.77%. In addition, to the outstanding balance of $10.5 million, I have imputed approximately $4.5 million of additional debt with NRLP's outstanding balance. To estimate the cost rate of the $4.5 million issue, I averaged the treasury spreads for the two existing fixed rate Truist loans to calculate a current cost rate of 4.35%. Therefore, the 3.23% represents a weighted cost rate of the existing Truist debt and the cost rate for an additional debt issue shown in Public Staff Hinton Exhibit 3. As such, the recommended cost rate of debt is aligned with the credit risk of NRLP.

V. COST OF COMMON EQUITY

Q. How did you determine the cost of common equity?

A. Even though NRLP does not have to compete in the equity market with other comparable risk utility and non-utility companies, I believe the appropriate starting point is to determine the cost rate of common equity as if NRLP had to obtain external capital from the marketplace. As such, I used the Discounted Cash Flow (DCF) model on a group of electric utilities that exhibit low investment risk, and I have used the Regression Analysis of Allowed Returns on Equity for electric

distribution utilities to determine the appropriate cost of common equity. In prior testimony on cost of equity, I have used a comparable earnings method as a check on my other methods; however, given the lack of traded common stocks of distribution-only utilities to derive a historical measure of earned returns, I feel that the use of this approach creates more uncertainty instead of providing any market insight.

Q. Would you please describe the DCF model?

A. The Discounted Cash Flow model is a method of evaluating the expected cash flows from an investment by giving appropriate consideration to the time value of money. Theory dictates that the price of the investment will equal the discounted cash flows of returns. The return to an equity investor comes in the form of expected future dividends and price appreciation. However, as the new price will again be the sum of the discounted cash flows, price appreciation can be ignored and attention focused on the expected stream of dividends. Mathematically, this relationship may be expressed as follows:

Let D_1 = expected dividends per share over the next twelve months;

g = expected growth rate of dividends;

k = cost of equity capital; and

P = price of stock or present value of the future income stream.

Then,

$$P = \frac{D_1}{1+k} + \frac{D_1(1+g)}{(1+k)^2} + \frac{D_1(1+g)^2}{(1+k)^3} + \ldots\infty \ldots + \frac{D_1(1+g)^{t-1}}{(1+k)^t}$$

This equation represents the amount an investor would be willing to pay for a share of common equity with a dividend stream over the future periods. Using the formula for a sum of an infinite geometric series, this equation may be reduced to:

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

Solving for K yields the DCF equation:

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

Therefore, the rate of return on equity capital required by investors is the sum of the dividend yield (D_1/P) plus the expected long-term growth rate in dividends (g).

Q. How did you identify a group of companies comparable in risk to NRLP?

A. I have identified companies that exhibit investment-related risk measures common with the electric utility industry. I started with over 1,700 companies analyzed in Value Line that are traded in domestic stock exchanges. From this initial group, I selected electric utility companies with following criteria:

1. Safety Ranks of 1 or 2,
2. Beta coefficients of 0.85 or less,
3. Earnings Predictability Rank of 90 or more
4. S&P Bond Rating of BBB+ or higher.

These screens were produced by a group of 12 electric utility companies. From there I eliminated Fortis due to it being traded overseas and Dominion because of a relatively recent dividend cut. The risk measures for the comparable group of electric utility companies are shown in Public Staff Hinton Exhibit 4.

Q. How did you determine the dividend yield component of the DCF?

A. I calculated the dividend yield by using the Value Line estimate of dividends to be declared over the next 12 months divided by the price of the stock as reported in the Value Line Summary and Index

sections for each week of the 13-week period from February 17, 2023, through May 12, 2023. The averaging period tends to smooth out short-term variations in the share prices and yields. This process resulted in an average dividend yield of 3.39% for my comparable group.

Q. How did you determine the expected growth rate component of the DCF?

A. It is reasonable to assume that investors develop their expected long-term growth with investment returns by examining actual, known past performance and stock analysts' forecasts of the growth of earnings, dividends, and common equity. I have used both historical growth rates and forecasted growth rates to determine an expected growth rate.

First, I employed the growth rates of the comparable group in earnings per share (EPS), dividends per share (DPS), and book value per share (BPS), as reported in Value Line over the past five to ten years. Value Line employs a three-year smoothing process in an attempt to avoid the distortion that may be associated with choosing an unrepresentative high or low beginning or ending point.

Second, I employed the forecasts of growth rates of the comparable group in EPS, DPS, and BPS, as also reported in Value Line. These forecasts are prepared by analysts of an independent advisory service. This service is widely available to investors and should also provide an estimate of investor expectations. Third, I incorporated the consensus of various analysts' five-year earnings forecasts of EPS growth rates as published by the Yahoo Finance website.

In Public Staff Hinton Exhibit 5, I have presented the dividend yields and various growth rates as described above for the comparable group. That exhibit also shows the resulting DCF range of estimated cost rates for common equity.

Q. What is your conclusion of the cost of common equity based on the DCF method?

A. Based upon the DCF method and giving primary weight to the DCF results that rely on the predicted future growth rates of EPS, DPS, and BPS, I determined that the cost of common equity is within the range of 8.64% to 9.20%. This range is based on a dividend yield of 3.39% and an expected growth rate of 5.09% to 5.40%.

Q. Please describe the regression analysis method you applied to electric distribution-only decisions.

A. I used a regression analysis to analyze the relationship between allowed returns on equity for distribution-only electric utilities and Moody's index yields for A-rated utility bonds. I first presented a similar method (developed by Federal Energy Regulatory Commission staff) to this Commission in DNCP's 1993 rate case, Docket No. E-22, Sub 333.

Q. Please continue.

A. This risk premium method attempts to quantify the risk premium that equity investors require to invest in a utility's stock instead of its bonds. The regression analysis incorporates the annual average allowed returns on equity for distribution-only related investments as the dependent variable and the average "A" rated Moody's bond yield as the independent variable. The use of utility bond yields is preferred over the use of US treasury yields because it allows the examination of the added risk premium associated with an investment in electric utility common stocks over a relatively secure investment in utility bonds. Page 1 of Public Staff Hinton Exhibit 6 presents the allowed ROEs and public utility yield data, while page 2 presents the results of

the regression analysis that provides an estimate of the current cost of common equity for a distribution-only electric utility.

Q. What did you conclude from your regression analysis of allowed equity returns?

A. The regression equation quantifies the historical relationship (2007-2023) of allowed returns and yields on Moody's public utility bonds. I applied this historical relationship to a recent six-month average bond yield to generate a predicted estimate for the current cost of equity of 9.76%, as shown on page 2 of Exhibit 6.

Q. Please discuss the historically allowed ROE for distribution-only providers.

A. The average allowed ROE for distribution-only providers reflects lower investment risk and lower awarded returns of 9.19% relative to vertically integrated electric utilities of 9.61%. This figure stems from data compiled through April 20, 2023, as reported by Regulatory Research Associates and is set forth in Hinton Exhibit 7. This data point is not dispositive but does support my analyses.

Q. Will you summarize your conclusions on the cost of equity for NRLP?

A. Yes. I employed the DCF method on a comparable risk group of electric utilities and determined that a reasonable range is 8.49% to 8.80%. The Regression Analysis of Allowed ROEs method provided a single estimate of 9.76%. This produces cost of equity estimates ranging between 8.49% and 9.76%.

NRLP confronts operational risks similar to a distribution-only electric utility. Recently, NRLP experienced the capital requirements associated with a new substation, as well as having sufficient capital available to purchase power during the spike in its power costs resulting from increased natural gas prices in 2021 and 2022.

While the business risk to NRLP is comparable to similar utilities, its management does not face the same commitment, accountability, and pressure to offer its equity investors a rate of return commensurate with the investment risk as other investor-owned utilities. In my opinion, these factors justify an allowed return on equity that is at the lower end of the range of reasonableness. In my judgment, an 8.90% ROE is a reasonable estimate that is rounded

from the 8.92% average of the three DCF estimates and the risk premium estimate shown on Public Staff Hinton Exhibit 8.

VI. IMPACT OF CHANGING ECONOMIC CONDITIONS

Q. To what extent does your recommended rate of return on equity take into consideration the impact of changing economic conditions on customers?

A. The determination of the rate of return for purposes of compensating investors must be based on the requirements of capital markets. However, as noted by the North Carolina Supreme Court in recent decisions, it is also necessary to consider the impact of changing economic conditions on consumers when determining the ROE.

In this case, I have made no quantitative adjustment to my recommended rate of return to reflect the impact of economic conditions on customers. Rather, it is a qualitative consideration in my review. It should further be noted that under North Carolina law the rate of return on common equity should be set as low as possible without impairing NRLP's reasonable access to capital, as set forth in the Hope and Bluefield cases discussed previously.

I am aware of no clear numerical basis for quantifying the impact of changing economic conditions on customers in determining an

appropriate rate of return on equity in setting rates for a public utility. Rather, the impact of changing economic conditions nationwide is inherent in the analytical methods and data I used to determine the cost of equity for utilities that are comparable in risk to NRLP. I have also considered the impact of changing economic conditions on customers from two other perspectives. However, I reviewed recent economic data applicable to the Town of Boone, North Carolina and Watauga County.

With regard to economic data for North Carolina and NRLP's service area, I have reviewed county-wide data on total personal income and income per capita for the years 2019 through 2021 with State-wide data through 2022, as compiled by the Bureau of Economic Analysis (BEA);[6] data compiled by the North Carolina Department of Commerce; and data compiled by City-Data.com.[7] All of the information indicates that the average level of per-capita income in Boone is lower than the State of North Carolina as a whole. The 2021 per-capita income published by the BEA shows that the North Carolina average per capital income is approximately 17% greater

[6] https://www.bea.gov/data/income-saving/personal-income-county-metro-and-other-areas

[7] http://www.city-data.com/city/Boone-North-Carolina.html

than for Watauga County. According to the County Profiles[8] published by the North Carolina Department of Commerce, Watauga County is considered to have a County Distress Score of "2" out of "3". The County unemployment rate for March 2023 is 3.1%, which is better than the 3.5% statewide unemployment rate. Given that Boone has a higher percentage of workers in the food and service industry, it is not unexpected that the unemployment rate would be relatively low; however, this positive indicator is somewhat offset with the significantly lower per-capital income for Watauga County.

In addition, the proposed increase in residential rates would result in a $139 average bill, assuming a 1,000-kWh usage. This is similar to the $133 average energy bill that same customer would receive from Blue Ridge Electric Membership Corporation or the $138 bill they would receive from Duke Energy Progress. NRLP customer bills would be higher than North Carolina customers served by Duke Energy Carolinas and Dominion Energy.

[8] https://www.nccommerce.com/lead/

VII. RECOMMENDED OVERALL COST OF CAPITAL

Q. What is your recommended overall rate of return?

A. I recommend an overall cost of capital of 6.07%, as shown in Public Staff Hinton Exhibit 8. This overall cost of capital is comprised of a hypothetical capital structure comprised of 50% debt capital and 50% equity capital, a 3.12% cost rate for long-term debt, and an 8.90% cost rate of return on common equity cost rate.

Q. Did you perform any tests of reasonableness with your recommended rate of return on equity and overall cost of capital?

A. Yes. Based on the recommended capital structure and cost rate of debt, and the recommended ROE, the pre-tax times interest coverage ratio (TIER) is 4.3 times, which is slightly higher than most of the TIER ratings that I recommend to this Commission, and this recommendation should enable NRLP to meet its debt service covenants with Truist Bank.

VIII. CUSTOMER GROWTH AND USAGE ADJUSTMENTS

Q. Please explain the customer growth adjustment.

A. The customer growth adjustment adjusts revenues by an amount that represents the growth in kilowatt-hour (kWh) sales due to the change in the number of customers. The revenue adjustment is calculated by multiplying the total kWh adjustment by average customer class rates based on annualized revenues divided by per book sales.

Q. Did the utility adjust revenues for customer growth?

A. No. The NRLP based total revenues on the actual kWh sales and number of bills generated during the test year.

Q. How did you adjust for customer growth?

A. I used regression analysis to derive equations that best fit historic billing data ending December 31, 2022. In so doing, my analysis fit 12-, 24-, 36- and 48-month data to linear, exponential, power, logarithmic, quadratic, cubic and quartic equations. The equation with the highest adjusted r-square[9] value was used to calculate the representative end-of-period (EOP) level of customers for the

[9] The R-square measures the degree of explanatory power of the regression equation, which is adjusted to the degrees of freedom or the number of observations minus the number of parameters.

Residential, Commercial Non-demand, Commercial Demand, and ASU Campus rate classes. The change in the number of customers was determined by taking the difference between the calculated EOP level of customers and the actual bills for each month of the test period, which added 2,563 customers. The results of the regression based EOP customer growth adjustment as of December 31, 2022, for its residential, commercial, and lighting classes increased its energy sales of 3,877,543 kWh, which equates to $373,421 increase in its EOP revenue, as shown in Hinton Exhibits 9 and 10. The revenue adjustment associated with customer growth as shown in Exhibit 10 was provided to Public Staff witnesses Johnson and Morgan for incorporation into their schedules.

Q. Did you make any further adjustments to the revenues?

A. Yes. To account for changes in the energy sales per customer for the EOP customers, I calculated a usage adjustment for each rate class. The usage adjustment was based on the difference in the annual average usage per customer between the year ending December 31, 2021, and the year ending December 31, 2022. The difference was then multiplied by the regression based EOP customers. The total usage adjustment increased sales by 4,606,715 kWh, which equates to a revenue increase of $370,613, as shown in

Public Staff Hinton Exhibits 11 and 12. The revenue adjustment associated with usage as shown in Public Staff Hinton Exhibit 12 was provided to Public Staff witnesses Johnson and Morgan for incorporation into their schedules.

Q. Does this conclude your testimony?

A. Yes, it does.

QUALIFICATIONS AND EXPERIENCE

JOHN R. HINTON

I received a Bachelor of Science degree in Economics from the University of North Carolina at Wilmington in 1980 and a Master of Economics degree from North Carolina State University in 1983. I joined the Public Staff in May of 1985. I filed testimony on the long-range electrical forecast in Docket No. E-100, Sub 50. In 1986, 1989, and 1992, I developed the long-range forecasts of peak demand for electricity in North Carolina. I filed testimony on electricity weather normalization in Docket Nos. E-7, Sub 620, E-2, Sub 833, and E-7, Sub 989. I filed testimony on customer growth and the level of funding for nuclear decommissioning costs in Docket No. E-2, Sub 1023. I filed testimony on the level of funding for nuclear decommissioning costs in Docket Nos. E-7, Sub 1026 and E-7, Sub 1146. I have filed testimony on the Integrated Resource Plans (IRPs) filed in Docket No. E-100, Subs 114 and 125, and I have reviewed numerous peak demand and energy sales forecasts and the resource expansion plans filed in electric utilities' annual IRPs and IRP updates.

I have been the lead analyst for the Public Staff in numerous avoided cost proceedings, filing testimony in Docket No. E-100, Subs 106, 136, 140, 148, and Sub 158. I have filed a Statement of Position in the arbitration case involving EPCOR and Progress Energy Carolinas in Docket No. E-2, Sub

966. I have filed testimony in avoided cost related to the cost recovery of energy efficiency programs and demand side management programs in Dockets Nos. E-7, Sub 1032, E-7, Sub 1130, E-2, Sub 1145, and E-2, Sub 1174.

I have filed testimony on the issuance of certificates of public convenience and necessity (CPCN) in Docket Nos. E-2, Sub 669, SP-132, Sub 0, E-7, Sub 790, E-7, Sub 791, and E-7, Sub 1134.

I filed testimony on the merger of Dominion Energy, Inc. and SCANA Corp. in Docket Nos. E-22, Sub 551, and G-5, Sub 585, the merger of Ullico and Frontier Natural Gas in Docket No. G-40, Sub 160, and the Transfer of Bald Head Island Ferry in Docket No. A-41, Sub 22.

I have filed testimony on the issue of fair rate of return in Docket Nos. E-22, Subs 333 412, and 532; P-26, Sub 93; P-12, Sub 89; P-31, Sub 125; G-21, Sub 293; P-31, Sub 125; P-100, Sub 133b; P-100, Sub 133d (1997 and 2002); G-21, Sub 442; G-5, Subs 327, 386; and 632; G-9, Subs 351, 382, 722 and 781, W-778, Sub 31; W-218, Subs 319, 497, 526, and 573; W-354, Sub 360, 364, 384, and 400 and in several smaller water utility rate cases. I have filed testimony on financial metrics and the risk of a credit rating downgrade in Docket No. E-7, Sub 1146.

I have filed testimony on the hedging of natural gas prices in Docket No. E-2, Subs 1001, 1018, 1031, and 1292. I have filed testimony on the expansion of natural gas in Docket No. G-5, Subs 337 and 372. I performed the financial analysis in the two audit reports on Mid-South Water Systems, Inc., Docket No. W-100, Sub 21. I testified in the application to transfer of the CPCN from North Topsail Water and Sewer, Inc. to Utilities, Inc., in Docket No. W-1000, Sub 5. I have filed testimony on rainfall normalization with respect to water sales in Docket No. W-274, Sub 160. I have filed testimony on the transfer of Bald Head Island Transportation and Bald Head Limited, Inc. in Docket A-21 Sub 22.

With regard to the 1996 Safe Drinking Water Act, I was a member of the Small Systems Working Group that reported to the National Drinking Water Advisory Council of the U.S. Environmental Protection Agency. I have published an article in the National Regulatory Research Institute's Quarterly Bulletin entitled Evaluating Water Utility Financial Capacity.

INVESTOR-RELATED RISK MEASURES

SAFETY RANK

The Safety Rank is a measure of the total risk of a stock. It includes factors unique to the Company's business such as its financial condition, management competence, etc. The Safety Rank is derived by averaging two variables: the stock's Price Stability Index, and the Financial Strength Rating of the Company.

BETA (ß)

The Beta is derived from a regression analysis between weekly percent changes in the price of a stock and weekly percent price changes in the New York Stock Exchange Composite Index over a period of five years.

There has been a tendency over the years for high Beta stocks to become lower and for low Beta stocks to become higher. This tendency can be measured by studying Betas of stocks in five consecutive intervals. The Betas published in the Value Line Investment Survey are adjusted for this tendency and hence are likely to be better predictors of future Betas than those based exclusively on the experience of the past five years.

The New York Stock Exchange Composite Index is used as the basis for calculating the Beta because this index is a good proxy for the complete equity portfolio. Since Beta's significance derives primarily from its usefulness in portfolios rather than individual stocks, it is best constructed by relating to an overall market portfolio. The Value Line Index, because it weighs all stocks equally, would not serve as well.

The security's return is regressed against the return on the New York Stock Exchange Composite Index over the past five years, so that 259 observations of weekly price changes are used. Value Line adjusts its estimate of Beta ($ß_i$) for regression described by Blume (1971). The estimated Beta is adjusted as follows:

$$\text{Adjusted } ß_i = 0.35 + 0.67ß$$

FINANCIAL STRENGTH RATING

The Financial Strength Ratings are primarily a measure of the relative financial strength of a company. The rating considers key variables such as coverage of debt, variability of return, stock price stability, and company size. The Financial Strength Ratings range from the highest at A++ to the lowest at C.

PRICE STABILITY INDEX

The Price Stability Index is based upon a ranking of the standard deviation of weekly percent changes in the price of a stock over the last five years. The top 5% carry a Price Stability Index of 100; the next 5%, 95; and so on down to an Index of 5.

EARNINGS PREDICTABILITY INDEX

The Earnings Predictability Index is a measure of the reliability of an earnings forecast. The most reliable forecasts tend to be those with the highest rating (100); the least reliable (5).

S&P BOND RATING

The S&P Bond Ratings is an appraisal of the credit quality based on relevant risk factors. S&P reviews both the company's financial and business profiles. Shown below are the rankings:

AAA	An extremely strong capacity to pay interest and repay principal.
AA+ AA AA-	A very strong capacity to pay interest and repay principal. There is only a small degree of difference between "AAA" or "AA" debt issues.
A+ A A-	A strong capacity to pay interest and repay principal. However, these ratings indicate the obligor is more susceptible to adverse effects of changes in circumstances and economic conditions than "AAA" or "AA" debt issues.
BBB+ BBB BBB-	An adequate capacity to pay interest and repay principal. Adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity to pay interest and repay principal.
BB+ BB BB-	"BB" indicates less near-term vulnerability to default than other speculative issues. However, these bonds face major ongoing uncertainties or exposure to adverse conditions that could lead to inadequate capacity to meet timely interest and principal payments.

The ratings of Single B, Triple CCC, Double CC, Single C, and Single D are assigned to debt with greater vulnerability to default and lower and less capacity to meet timely interest and principal payments.

S&P BUSINESS PROFILE

Business profile scores are assessed using five qualitative categories: regulation, markets, operations, competitiveness, and management. The emphasis placed on each category may be influenced by the dominant strategy of the company or other factors. For example, for a regulated transmission and distribution company, regulation may account for 30% to 40% of the business profile scores because regulation can be the single-most important credit driver for this type of company. Utility business scores are categorized from "1" (strong) to "10" (weak).

S&P STOCK RATING

The S&P Stock Rankings is an appraisal of the growth and stability of the company's earnings and dividends over the past 10 years. Shown below are the rankings:

A+	Highest	B+	Average	C	Lowest
A	High	B	Below Average	D	In reorganization
A-	Above average	B-	Low		

S&P BETA

The Beta is derived from a regression analysis between 60 months of total return of a stock and the S&P500. Where the total return is defined as the monthly change in stock price plus a corresponding dividend yield and the return of the S&P500 is the monthly price change of the S&P500 plus a corresponding dividend yield.

Sources:

Value Line Investment Analyzer, Version 3, New York, NY.
Standard & Poor's, September 15, 1993, New York, NY.

Approved Rate Cases for Electric Distribution Utilities

State	Company	Docket	Case Type	Order Date	Return on Equity	%Common Equity
Texas	Oncor Electric Delivery Co.	D-53601	Distribution	3/9/2023	9.70	42.50
Maryland	Delmarva Power & Light Co.	C-9681	Distribution	12/14/2022	9.60	50.50
Ohio	Duke Energy Ohio Inc.	C-21-0887-EL-AI	Distribution	12/14/2022	9.50	50.50
Ohio	The Dayton Power & Light Co.	C-20-1651-EL-AI	Distribution	12/14/2022	10.00	53.87
Illinois	Ameren Illinois	D-22-0297	Distribution	12/1/2022	7.85	50.00
Massachusetts	NSTAR Electric Co.	DPU 22-22	Distribution	11/30/2022	9.80	53.21
Illinois	Commonwealth Edison Co.	D-22-0302	Distribution	11/17/2022	7.85	49.45
Massachusetts	Massachusetts Electric Co.	DPU 22-73	Distribution	9/26/2022	NA	NA
New Hampshire	Unitil Energy Systems Inc.	D-DE-21-030	Distribution	5/12/2022	9.20	52.00
New York	Orange & Rockland Utlts Inc.	C-21-E-0074	Distribution	4/14/2022	9.20	48.00
Maryland	Delmarva Power & Light Co.	C-9670	Distribution	3/2/2022	NA	NA
New York	Niagara Mohawk Power Corp.	C-20-E-0380	Distribution	1/20/2022	9.00	48.00
				Average	**9.17**	**49.80**
Massachusetts	NSTAR Electric Co.	DPU 21-106	Distribution	12/22/2021	NA	NA
Pennsylvania	Duquesne Light Co.	DR-2021-302475	Distribution	12/16/2021	NA	NA
New Jersey	Rockland Electric Company	DER21050823	Distribution	12/15/2021	9.60	48.51
Illinois	Ameren Illinois	D-21-0365	Distribution	12/13/2021	7.36	51.00
Illinois	Commonwealth Edison Co.	D-21-0367	Distribution	12/1/2021	7.36	48.70
New York	Central Hudson Gas & Electric	C-20-E-0428	Distribution	11/18/2021	9.00	50.00
Pennsylvania	PECO Energy Co	D-R-2021-30246(	Distribution	11/18/2021	NA	NA
Ohio	Ohio Power Co.	C-20-0585-EL-AI	Distribution	11/17/2021	9.70	54.43
Maine	Versant Power	D-2020-00316	Distribution	10/28/2021	9.35	49.00
Pennsylvania	UGI Utilities Inc.	D-R-2021-30236'	Distribution	10/28/2021	NA	NA
Massachusetts	Massachusetts Electric Co.	DPU 21-74	Distribution	9/8/2021	NA	NA
Delaware	Delmarva Power & Light Co.	D-20-0149	Distribution	8/5/2021	9.60	NA
New Jersey	Atlantic City Electric Co.	D-ER20120746	Distribution	7/14/2021	9.60	50.21
Maryland	Potomac Electric Power Co.	C-9655	Distribution	6/28/2021	9.55	50.50
District of Colun	Potomac Electric Power Co.	FC-1156	Distribution	6/4/2021	9.28	50.68
				Average	**8.98**	**50.34**
Massachusetts	NSTAR Electric Co.	DPU 20-96	Distribution	12/30/2020	NA	NA
Maryland	Baltimore Gas and Electric Co.	C-9645 (EL)	Distribution	12/16/2020	9.50	52.00
New Hampshire	Public Service Co. of NH	D-DE-19-057	Distribution	12/15/2020	9.30	54.40
Illinois	Ameren Illinois	D-20-0381	Distribution	12/9/2020	8.38	50.00
Illinois	Commonwealth Edison Co.	D-20-0393	Distribution	12/9/2020	8.38	48.16
New York	NY State Electric & Gas Corp.	C-19-E-0378	Distribution	11/19/2020	8.80	48.00
New York	Rochester Gas & Electric Corp.	C-19-E-0380	Distribution	11/19/2020	8.80	48.00
New Jersey	Jersey Cntrl Power & Light Co.	D-ER20020146	Distribution	10/28/2020	9.60	51.44
Massachusetts	Massachusetts Electric Co.	DPU-20-68	Distribution	9/23/2020	NA	NA
Maryland	Delmarva Power & Light Co.	C-9630	Distribution	7/14/2020	9.60	50.53
New Hampshire	Liberty Utilities Granite St	D-DE-19-064	Distribution	6/30/2020	9.10	52.00
Massachusetts	Fitchburg Gas & Electric Light	DPU 19-130	Distribution	4/17/2020	9.70	52.45
Texas	AEP Texas Inc.	D-49494	Distribution	2/27/2020	9.40	42.50
Maine	Central Maine Power Co.	D-2018-00194	Distribution	2/19/2020	8.25	50.00
Texas	CenterPoint Energy Houston	D-49421	Distribution	2/14/2020	9.40	42.50
New Jersey	Rockland Electric Company	D-ER19050552	Distribution	1/22/2020	9.50	48.32
New York	Consolidated Edison Co. of NY	C-19-E-0065	Distribution	1/16/2020	8.80	48.00
				Average	**9.10**	**49.22**

Approved Rate Cases for Electric Distribution Utilities

State	Company	Docket	**Case Type**	Order Date	Return on Equity	%Common Equity
Massachusetts	NSTAR Electric Co.	DPU 19-115	Distribution	12/19/2019	NA	NA
Maryland	Baltimore Gas and Electric	C-9610 (EL)	Distribution	12/17/2019	9.70	NA
Illinois	Ameren Illinois	D-19-0436	Distribution	12/16/2019	8.91	50.00
Illinois	Commonwealth Edison	D-19-0387	Distribution	12/4/2019	8.91	47.97
Massachusetts	Massachusetts Electric Co.	DPU-18-150	Distribution	9/30/2019	9.60	53.49
Maryland	Potomac Electric Power	C-9602	Distribution	8/12/2019	9.60	50.46
Maine	Versant Power	D-2019-00019	Distribution	4/23/2019	NA	NA
Maryland	The Potomac Edison Co.	C-9490	Distribution	3/22/2019	9.65	52.82
New York	Orange & Rockland Utlts.	C-18-E-0067	Distribution	3/14/2019	9.00	48.00
New Jersey	Atlantic City Electric Co.	D-ER18080925	Distribution	3/13/2019	9.60	49.94
				Average	**9.32**	**50.38**
Massachusetts	NSTAR Electric Co.	DPU 18-101	Distribution	12/27/2018	NA	NA
Pennsylvania	Duquesne Light Co.	D-R-2018-3000124	Distribution	12/20/2018	NA	NA
Pennsylvania	PECO Energy Co	D-R-2018-3000164	Distribution	12/20/2018	NA	NA
Texas	Texas-New Mexico Power	D-48401	Distribution	12/20/2018	9.65	45.00
Ohio	Duke Energy Ohio Inc.	C-17-0032-EL-AIR	Distribution	12/19/2018	9.84	50.75
Illinois	Commonwealth Edison	D-18-0808	Distribution	12/4/2018	8.69	47.11
Illinois	Ameren Illinois	D-18-0807	Distribution	11/1/2018	8.69	50.00
New Jersey	Public Service Electric Gas	D-ER18010029	Distribution	10/29/2018	9.60	54.00
Pennsylvania	UGI Utilities Inc.	D-R-2017-2640058	Distribution	10/4/2018	9.85	54.02
Ohio	The Dayton Power & Light	C-15-1830-EL-AIR	Distribution	9/26/2018	10.00	47.52
Rhode Island	The Narragansett Electric	D-4770 (electric)	Distribution	8/24/2018	9.28	50.95
Delaware	Delmarva Power & Light	D-17-0977	Distribution	8/21/2018	9.70	50.52
Dist. of Columbia	Potomac Electric Power	FC-1150	Distribution	8/8/2018	9.53	50.44
New Jersey	Atlantic City Electric Co.	D-ER18060638	Distribution	7/25/2018	NA	NA
Maine	Versant Power	D-2017-00198	Distribution	6/28/2018	9.35	49.00
New York	Central Hudson Gas & Ele.	C-17-E-0459	Distribution	6/14/2018	8.80	48.00
Maryland	Potomac Electric Power	C-9472	Distribution	5/31/2018	9.50	50.44
Connecticut	The CT Light & Power Co	D-17-10-46	Distribution	4/18/2018	9.25	53.00
New York	Niagara Mohawk Power	C-17-E-0238	Distribution	3/15/2018	9.00	48.00
Maryland	Delmarva Power & Light	C-9455	Distribution	2/9/2018	NA	NA
				Average	**9.38**	**49.92**

Source: S&P Capital IQ, Major Rate Case Decisions Databook - January - March 2023, April 26, 2023.

$6,500,000
APPALACHIAN STATE UNIVERSITY
D/B/A NEW RIVER LIGHT & POWER COMPANY
UTILITY SYSTEM REVENUE BONDS,
SERIES 2020

TAX CERTIFICATE

The undersigned, who is the Vice Chancellor for Business Affairs of Appalachian State University d/b/a New River Light & Power Company (the **"Issuer"**), a constituent institution of the University of North Carolina, and has all the corporate authority necessary to execute this Certificate on behalf of the Issuer in connection with the issuance of its $6,500,000 Utility System Revenue Bonds, Series 2020 (the **"Series 2020 Bonds"**), DOES HEREBY CERTIFY, pursuant to Section 148 of the Internal Revenue Code of 1986, as amended (the **"Code"**), and Section 1.148-2(b)(2) of the Treasury Regulations promulgated thereunder, as follows:

Recitals

WHEREAS, the Series 2020 Bonds are issued pursuant to a Resolution of the Issuer, dated December 4, 2020, and a General Trust Indenture dated as of December 1, 2011 (the "**Original Indenture**"), as supplemented by a Series Indenture, Number 1 and Series Indenture, Number 2 (the "**Prior Supplements**" and, together with the NLRP Indenture, the "**Prior Indenture**"), and a Series Indenture, Number 3 dated as of December 1, 2020 ("**Third Series Indenture**" and, together with the Prior Indenture, the "**Indenture**") between Appalachian State University d/b/a New River Light & Power Company and The Bank of New York Mellon Trust Company, N.A., as trustee (the "**Trustee**"); and

WHEREAS, the Issuer has determined to issue the Series 2020 Bonds as of the date hereof (the "**Issue Date**") to (a) pay for certain capital improvements to the electrical system owned and operated by the Issuer (the "System"), including a substation replacement and installation of underground transmission lines, underground conversion of high maintenance overhead lines, remodeling of a warehouse, parking lot repairs, replacement of two bucket trucks, and other miscellaneous capital improvements, as described in Exhibit A (the "**Project**"), and (b) pay certain costs incurred in connection with the sale and issuance of the Series 2020 Bonds (the "**Issuance Costs**"); and

WHEREAS, under the Code, the Treasury Regulations (including final, temporary and proposed regulations) promulgated thereunder and the rulings with respect thereto, the interest paid and to be paid on state or local governmental bonds will be excludable from gross income for federal income tax purposes if the Issuer complies with certain limitations and requirements imposed on the use and operation of the facilities deemed financed or refinanced with the bonds and on the use and investment of proceeds, if any, of the bonds and certain other moneys relating to the bonds; and

WHEREAS, the Issuer has determined to deliver this Tax Certificate, inclusive of exhibits (this **"Tax Certificate"**), to set forth certain facts and estimates that form the basis for the Issuer's reasonable expectations as to the use and investment of proceeds of the Series 2020

Bonds and of certain other moneys relating to the Series 2020 Bonds and to set forth certain terms and conditions relating thereto, in order to assure that interest on the Series 2020 Bonds will be excludable from gross income for federal income tax purposes.

PART A. IN GENERAL

Section 1. Reliance on Tax Certificate. The undersigned is executing this Tax Certificate with the understanding and acknowledgement that McGuireWoods LLP (referred to herein as **"Bond Counsel"**) will rely on the certifications, covenants and representations made in this Tax Certificate in rendering its opinion that interest on the Series 2020 Bonds is excludable from gross income for federal income tax purposes.

Section 2. Sale of Series 2020 Bonds. The Series 2020 Bonds will be delivered to BB&T Community Holdings Co. (the "**Purchaser**") pursuant to a term sheet dated October 26, 2020 and a Rate Lock Letter dated November 9, 2020. The par amount of the Series 2020 Bonds is $6,500,000. The proceeds from the sale of the Series 2020 Bonds total $6,500,000 (the "**Sale Proceeds**").

Section 3. Issuance of the Series 2020 Bonds; Terms of the Series 2020 Bonds. The Series 2020 Bonds are being issued on the Issue Date. Interest on the Series 2020 Bonds will be payable on February 5, 2021 and thereafter on each February 5, May 5, August 5 and November 5 to and including the final maturity date of the Series 2020 Bonds on May 5, 2040. The Series 2020 Bonds are subject to mandatory sinking fund redemption on each May 5 and November 5 as set forth in the form of the Series 2020 Bonds and the Third Series Indenture. The Series 2020 Bonds are subject to optional redemption and mandatory tender as provided for in the Indenture.

Section 4. Security for the Series 2020 Bonds. The Series 2020 Bonds are special obligations of the Issuer and are secured by Net Revenues of the System on a parity basis with the Parity Indebtedness issued under the Indenture.

Section 5. Purpose of Financing. The Series 2020 Bonds are being issued pursuant to the Act, and the Indenture to (i) finance the Project and (ii) pay the Issuance Costs. The Issuer will use the proceeds of the Series 2020 Bonds solely for the above-described purposes, unless an opinion of Bond Counsel is received with respect to permitted uses of proceeds for other than the above-described purposes.

Section 6. Issuer Reliance on Other Parties. The expectations of the Issuer concerning the Series 2020 Bonds and certain matters set forth herein are based in whole or in part upon representations of certain third parties, as set forth in this Tax Certificate and contained in exhibits hereto. The Issuer places a good faith reliance upon such representations on the basis of the reputable business practices of such third parties. The Issuer is not aware of any facts or circumstances that would cause it to question the accuracy or reasonableness of such representations or computations.

Section 7. Definitions; Capitalized Terms. All capitalized terms used in this Tax Certificate and not specifically defined herein shall have the meanings given such terms in the Indenture.

PART B. USE OF BOND PROCEEDS AND THE PROJECT.

Section 1. Governmental Use of Proceeds. No more than ten percent (10%) of the Sale Proceeds shall be Used (as defined below) in any activity that constitutes "Private Use". Use of the Project is treated as direct use of the Sale Proceeds. The term **"Private Use"** means any activity that constitutes a trade or business that is carried on by persons or entities other than state or local governmental entities ("**Non-Exempt Persons**") on a basis other than as a member of the general public (**"General Public Use"**). Any activity carried on by a person other than a natural person is treated as a trade or business. Use of the Project by a Non-Exempt Person constitutes General Public Use only if the property is intended to be available and is in fact reasonably available for use on the same basis by natural persons not engaged in a trade or business.

Section 2. No Private Payments or Private Security. No more than ten percent (10%) of the principal of or interest on the Series 2020 Bonds, under the terms thereof or any underlying arrangement, has been, or, throughout the stated term of the Series 2020 Bonds, will be, directly or indirectly, (a) secured by any interest in (I) property used for a Private Use or (II) payments in respect of such property or (b) derived from payments in respect of property used or to be used for a Private Use, whether or not such property is a part of the Project.

Section 3. Definition of Use. "Use" may be either actual or beneficial use by a person or entity of the proceeds of the Series 2020 Bonds or the Project. In most cases, Use arises only if a person or entity has special legal entitlements to use the Project under an arrangement with the Issuer. In general, these special legal entitlements would be deemed to arise as a result of ownership of the Project, actual or beneficial use of the Project pursuant to a lease, management or service contract, research contract or incentive payment contract; or certain other arrangements such as a take-or-pay or other output-type contracts.

Section 4. Ownership. Ownership of the Project by a Non-Exempt Person shall constitute Private Use if the Project is used in a trade or business. For purposes of this Tax Certificate, ownership of the Project refers to ownership for federal income tax purposes. No portion of the Project will be owned by Non-Exempt Persons and used in a trade or business throughout the stated term of the Series 2020 Bonds.

Section 5. Leases. A lease of the Project to a Non-Exempt Person may constitute Private Use. For purposes of this Section, any arrangement that is properly characterized as a lease for federal income tax purposes is treated as a lease. Consequently, an arrangement that is referred to as a management, service or research contract may nevertheless be treated as a lease, and in determining whether a management or service contract with a Non-Exempt Person is properly characterized as a lease, it is necessary to consider all of the facts and circumstances, including the following factors:

(a) the degree of control over the Project that is exercised by the Non-Exempt

Person; and

(b) whether the Non-Exempt Person bears risk of loss of the Project.

Section 6. Management or Service Contract. The determination of whether Use by a Non-Exempt Person pursuant to a management or service contract constitutes Private Use for purposes of this Tax Certificate shall be made on the basis of applying Revenue Procedure 2017-13.

Section 7. Research Contracts. Unless the research is of the type described in the next sentence, use of the Project for any research sponsored by a Non-Exempt Person may constitute Private Use. However, Private Use will not result from Non-Exempt Person-sponsored research if it is Basic Research (as defined below) and (i) the use of the resulting technology by the sponsor is permitted only on the same terms as use by any non-sponsoring unrelated party, and the price paid is determined at the time the technology is available for use, or (ii) the research is performed under an arrangement whereby (A) a single sponsor agrees, or multiple sponsors agree, to fund governmentally performed Basic Research; (B) the Issuer determines the research to be performed and the manner in which it is to be performed (for example, selection of the personnel to perform the research); (C) title to any patent or other product incidentally resulting from the research lies exclusively with the Issuer; and (D) the sponsor or sponsors are entitled to no more than a nonexclusive, royalty-free license to use the product of any such research. In applying the foregoing requirements to federally sponsored research under clause (ii) of the preceding sentence, the rights of the federal government and its agencies mandated by the Patent and Trademark Law Amendments Act of 1980, as amended, 35 U.S.C. §200, et. seq. (the Bayh-Dole Act) will not cause a research agreement to fail to meet such requirements, provided that the requirements described in clauses (B) and (C) of the preceding sentence are met, and the license granted to any party other than the Issuer to use the product of the research is no more than a nonexclusive, royalty-free license. "Basic Research" means any original investigation for the advancement of scientific knowledge not having a specific commercial objective (for example, product testing supporting the trade or business of a specific corporation is not treated as Basic Research).

Section 8. Other Actual Use. Any other arrangement that conveys special legal entitlements for beneficial use of the Sale Proceeds or the Project comparable to the special legal entitlements described in Sections 4 through 7 above results in Use. For example, an arrangement that conveys priority rights to the use or capacity of a facility generally results in Use.

Section 9. Special Rule for Facilities Not Used by the General Public. In the case of the Project that is not available for General Public Use, Private Use may be established solely on the basis of a special economic benefit to one or more Non-Exempt Persons, even if those Non-Exempt Persons have no special legal entitlements to use the Project. In determining whether special economic benefit gives rise to Private Use it is necessary to consider all of the facts and circumstances, including one or more of the following factors:

(a) whether the Project is functionally related or physically proximate to other property used in the trade or business of a Non-Exempt Person;

(b) whether only a small number of Non-Exempt Persons receive the special economic benefit; and

(c) whether the cost of the Project is treated as depreciable by any Non-Exempt Person.

Section 10. Limitation on Sale or Disposition of the Project. Unless an opinion of Bond Counsel is obtained, the Issuer will not sell or otherwise dispose of any portion of the Project so long as any of the Series 2020 Bonds remain outstanding.

Section 11. Capital Expenditures. All of the Sale Proceeds will be used to finance or refinance expenditures that are capital expenditures for federal income tax purposes.

Section 12. Equity Contributions and Allocations. To the extent permitted under the Treasury Regulations, the Issuer hereby allocates Sale Proceeds to those portions of the Project that do not result in Private Use, provided that the Issuer reserves the authority to change any such allocation of the Sale Proceeds for the entire period permitted under Sections 1.141-6 and 1.148-6 and other applicable Treasury Regulations.

PART C. USE OF PROCEEDS; ARBITRAGE

Section 1. Application of Series 2020 Sale Proceeds. On the basis of the facts, estimates and circumstances in existence on the date hereof, the Issuer reasonably expects the following with respect to the use of the Series 2020 Sale Proceeds:

(a) Series 2020 Sale Proceeds in the amount of $6,430,000 will be deposited into the 2020 ASU/New River Project Fund held by Truist Bank, pursuant to the Third Series Indenture (the "**Project Fund**") and will be used to pay costs of the Project;

(b) Series 2020 Sale Proceeds in the amount of $70,000 will be deposited into the Project Fund and will be used to pay the Issuance Costs;

Section 2. Funds and Accounts. The following funds and accounts will be maintained in connection with the Series 2020 Bonds:

(a) Project Fund. Amounts in the Project Fund will be used to pay costs of the Project and Issuance Costs.

(b) Debt Service Fund. The Debt Service Fund created under the Indenture (the "**Debt Service Fund**") will be used primarily to achieve a proper matching of the revenues of the Issuer and debt service on the Series 2020 Bonds within each Bond Year (as defined in Section 1(b) of Part D of this Tax Certificate). Amounts deposited in the Debt Service Fund will be depleted at least once each Bond Year except for a reasonable carryover amount, if any, not to exceed the greater of (i) the earnings on the Debt Service Fund for the immediately preceding Bond Year, or (ii) one-twelfth (1/12) of the debt service payable on the Series 2020 Bonds for the immediately preceding Bond Year. To the extent that the Debt Service Fund functions as described in the preceding sentence, it

is a **"bona fide debt service fund"**; and

(c) Revenue Fund. ASU will cause all Revenues to be deposited in the Revenue Fund and amounts in the Revenue Fund will be disbursed as described in Section 5.3 of the Original Indenture. Amounts in the Revenue Fund are pledged as security for the Bonds but other than amounts transferred to the Debt Service Fund there is no expectation that amounts in the Reserve Fund will be available to pay debt service if the issuer encounters financial difficulties.

(d) Rebate Fund. No Sale Proceeds will be deposited into the Rebate Fund. Amounts shall be deposited into the Rebate Fund and used to pay any required rebate as described in Section 5.6 of the Original Indenture. Amounts in the Rebate Fund are not pledged to pay debt service on the Bonds and are not reasonably expect to pay debt service on the Bonds.

(e) No Other Funds as Security. Other than those funds and accounts described above, there are no funds or accounts established by the Issuer or the Indenture that are reasonably expected to be used directly or indirectly to pay debt service on the Series 2020 Bonds or that are pledged (including negative pledges) as collateral for the Series 2020 Bonds and for which there is reasonable assurance that amounts on deposit therein will be available to pay debt service on the Series 2020 Bonds if the Issuer encounters financial difficulties.

Section 3. Investment of Proceeds. The amounts described in this Tax Certificate will be invested as follows:

(a) Project Fund. Amounts in the Project Fund are reasonably expected to be allocated to expenditures for the Project within three years of the date hereof. The Issuer has incurred or expect to incur within six months of the date hereof substantially binding obligations (i.e., not subject to contingencies within the control of the Issuer or any related party) to third parties to expend at least five percent (5%) of the proceeds for such purpose. The allocation of the proceeds (and investment proceeds thereon) to expenditures for the aforementioned purpose will proceed with due diligence to the completion thereof. Therefore, to the extent such proceeds are invested, they may be invested at an unrestricted yield for a period not to exceed three years from the date hereof and, thereafter, shall be invested at a yield not in excess of the yield on the Series 2020 Bonds plus 0.125%. Investment earnings on obligations acquired with such proceeds may be invested at an unrestricted yield for a period not exceeding three years from the date hereof or one year from the receipt thereof, whichever period ends later and, thereafter, shall be invested at a yield not in excess of the yield on the Series 2020 Bonds plus 0.125%.

(b) Debt Service Fund. Amounts deposited in the Debt Service Fund may be invested at an unrestricted yield for a period not to exceed thirteen (13) months from the date of deposit of such amounts to such fund and thereafter shall be invested at a yield not in excess of the yield of the Series 2020 Bonds plus one-one thousandth of one percentage point (0.001%). Investment earnings on such amounts that are retained in

such fund may be invested at an unrestricted yield for a period not to exceed one year from the date of receipt of the amount earned and, thereafter, shall be invested at a yield not in excess of the yield of the Series 2020 Bonds plus one-one thousandth of one percentage point (0.001%).

(c) Revenue Fund. Amounts in the Revenue Fund may be invested at an unrestricted yield.

(d) Rebate Fund. Amounts in the Rebate Fund may be invested at an unrestricted yield.

(e) Replacement Proceeds. Replacement proceeds (as such term is defined in Section 1.148-1(c) of the Treasury Regulations) may be invested at an unrestricted yield for a period of thirty (30) days beginning on the date that the amounts are first treated as replacement proceeds and, thereafter, shall be invested at a yield not in excess of the yield of the Series 2020 Bonds plus one thousandth of one percentage point (0.001%).

Section 4. Yield. The Bonds are a variable yield issue (as such term is defined in the Treasury Regulations). For purposes of this Tax Certificate, Bond Counsel has advised the Issuer that the term "**yield**" means (i) with respect to a variable yield issue such as the Bonds, the yield computed pursuant to Section 1.148-4 of the Treasury Regulations separately for each computation period (as referred to in subparagraph (d) below), including in such computation all payments properly attributable to each such computation period of principal and interest on the Bonds, fees paid and reasonably expected to be paid for a Qualified Guarantee (as defined in Section 1.148-4(f) of the Treasury Regulations) on the Bonds and amounts properly allocable to a Qualified Hedge (as defined in Section 1.148-4(h)(2) of the Treasury Regulations), and (ii) with respect to obligations acquired with amounts described in Section 3 of Part C hereof, that discount rate that, when used in computing the present value as of the date the investment is first allocated to Gross Proceeds (as defined in Section 3 of Part D hereof) of all unconditionally payable receipts from the investment, produces an amount equal to the present value using the same discount factor as the amounts actually or constructively paid for such obligation. The yield on obligations acquired with amounts described in Section 3 of Part C hereof and the yield on the Bonds will be calculated by the use of the same frequency interval of compounding interest.

(a) Issue Price. The Purchaser has delivered the certificate in Exhibit B with respect to the issue price of the Series 2020 Bonds. Based on this certificate, for purposes of calculating yield the issue price of the Series 2020 Bonds is $6,500,000.

(b) Qualified Guarantee. Fees properly allocable to payments for a qualified guarantee for an issue of tax-exempt bonds are treated as additional interest on that issue for purposes of computing the yield thereon under Treasury Regulations Section 1.148-4(f). However, no qualified guarantees are expected to be procured to provide credit enhancement for the Series 2020 Bonds.

(c) Qualified Hedge. Payments made or received under a qualified hedge (as defined in Treasury Regulations Section 1.148-4(h)) are taken into account in

determining the yield on an issue. As of the date hereof, the Issuer has not taken the steps necessary to cause any hedge with respect to the Series 2020 Bonds to be a qualified hedge.

(d) Computation Periods. The yield on the Bonds is computed separately for each computation period. A computation period is the period between computation dates with respect to the Bonds (a "**Computation Period**"). The Issuer may treat the last day of any Bond Year ending on or before December 10, 2025 (the "**first required payment date**") as a computation date with respect to the Bonds. After the first required payment date, the Issuer must consistently treat either the last day of each Bond Year or the last day of each fifth Bond Year as a computation date (the "**Computation Date**") and may not change the Computation Date after the first required payment date.

(e) Single Issue. The Series 2020 Bonds have been sold at substantially the same time, have been sold pursuant to the same plan of financing, and are reasonably expected to be paid from substantially the same source of funds, determined without regard to guarantees from unrelated parties. No other governmental obligations have been, or will be, sold within 15 days of the Series 2020 Bonds, pursuant to the same plan of financing and are reasonably expected to be paid from substantially the same source of funds, determined without regard to guarantees from unrelated parties.

Section 5. Yield Reduction Payments. Notwithstanding the provisions of Section 4 above that require the Issuer to invest proceeds derived from the sale of the Series 2020 Bonds and investment earnings thereon at a yield not in excess of the yield on the Series 2020 Bonds, the yield on certain Nonpurpose Investments (as defined in Section 2 of Part D below) acquired with proceeds of the Series 2020 Bonds will not be considered to be higher than the applicable yield limitation described in Section 4 above if the Issuer timely makes or causes to be made "**yield reduction payments**" to the United States Treasury at the time and in the amounts described in Section 1.148-5(c) of the Treasury Regulations.

The Issuer covenants to consult with Bond Counsel prior to making any yield reduction payments.

Section 6. Universal Cap. Notwithstanding any restrictions on the investment of the amounts set forth above, proceeds of the Series 2020 Bonds and other amounts treated as proceeds, if any, of the Series 2020 Bonds are allocated and remain allocated to the Series 2020 Bonds, and are thereby subject to the restrictions contained in this Tax Certificate, only to the extent that the value of such proceeds does not exceed the value of the outstanding obligations of the Series 2020 Bonds. This Section does not apply to bona fide debt service funds or reasonably required reserve funds, if any.

Section 7. No Replacement Proceeds. (a) General. No portion of the Series 2020 Bonds will be used as a substitute for other funds that have been, or are expected to be, used to finance the costs of the Project and that have been or will be used to acquire directly or indirectly securities or obligations or other investment property producing a yield in excess of the yield with respect to the Series 2020 Bonds.

(b) Economic Life of the Project. In accordance with Section 1.148-1(c) of the Treasury Regulations regarding the safe harbor against the creation of "replacement proceeds," as of the date hereof, the weighted average maturity of the Series 2020 Bonds of 10.9339 years, as calculated by First Tryon Advisors, as financial advisor to the Issuer, in Exhibit C, does not exceed 120% of the remaining average reasonably expected economic life of the Project.

Section 8. No Artifice or Device. The Issuer has not engaged and will not engage in a transaction or series of transactions enabling it to exploit the difference between tax-exempt and taxable interest rates to gain a material financial advantage and which increases the burden on the market for tax-exempt obligations, including selling obligations that would not otherwise be necessary or issuing obligations sooner or allowing them to remain outstanding longer than would otherwise be necessary.

Section 9. Tax Covenant. The Issuer hereby covenants that whether or not any of the Series 2020 Bonds remain outstanding, money on deposit in any fund or account maintained in connection with the Series 2020 Bonds, whether or not such money was derived from the proceeds of the sale of the Series 2020 Bonds or from any other sources, will not be used in a manner that would cause the Series 2020 Bonds to be "arbitrage bonds" within the meaning of Section 148 of the Code and the applicable regulations thereunder. The Issuer hereby covenants that it will not take any action which will, or fail to take any action which failure will, cause the interest on the Series 2020 Bonds to become includable in the gross income of the owners of the Series 2020 Bonds for federal income tax purposes pursuant to the provisions of the Code and the Treasury Regulations promulgated thereunder in effect on the date of this Tax Certificate.

PART D. REBATE REQUIREMENTS

Section 1. In General. (a) The Issuer recognizes that Section 148(f) of the Code, which sets forth the Rebate Requirement (defined below), requires that an amount equal to the sum of (i) the excess of the aggregate amount earned on all Nonpurpose Investments (defined in Section 2 below) over the amount that would have been earned if such Nonpurpose Investments had a yield equal to the yield with respect to the Series 2020 Bonds, plus (ii) any income attributable to the excess described in (i), be paid to the United States Treasury. Accordingly, the Issuer covenants to comply with the applicable yield restrictions and limitations and guidelines set forth in this Tax Certificate to effectuate compliance with the Rebate Requirement, as set forth in Section 148(f) of the Code and the Treasury Regulations promulgated thereunder (the **"Rebate Requirement"**).

(b) For purposes of this Tax Certificate (including determining the Rebate Requirement), the term **"Bond Year"** shall mean each one-year (or shorter) period selected by the Issuer. The first and last Bond Years may be short periods. If no day is selected by the Issuer before the earlier of the final maturity date of the Series 2020 Bonds or the date that is five years after the date hereof, each Bond Year shall end on each anniversary of the date hereof and on the final maturity date.

Section 2. Nonpurpose Investments. The rules contained in this Part D shall apply to the investment of Gross Proceeds (as defined below) in any security, obligation, annuity contract or

any other investment-type property (as such term is defined in Section 1.148-1(b) of the Treasury Regulations) that is not acquired to carry out the governmental purpose of the Series 2020 Bonds (**"Nonpurpose Investments"**).

Section 3. Gross Proceeds. For purposes of this Tax Certificate, the term **"Gross Proceeds"** means:

(a) proceeds derived from the sale of the Series 2020 Bonds, if any;

(b) amounts that are reasonably expected to be or are in fact used to pay debt service with respect to the Series 2020 Bonds;

(c) amounts pledged as security for the payment of debt service with respect to the Series 2020 Bonds, if any;

(d) amounts treated as "transferred proceeds" of the Series 2020 Bonds, within the meaning of Section 1.148-1(b) of the Treasury Regulations, if any;

(e) amounts treated as "replacement proceeds" of the Series 2020 Bonds, within the meaning of Section 1.148-1(c) of the Treasury Regulations, if any; and

(f) investment earnings on amounts described in (a)-(e) above.

Section 4. Fair Market Price. For purposes of this Tax Certificate, the purchase price and disposition price of a Nonpurpose Investment will be the fair market value of the investment (the **"Fair Market Price"**). An investment that is not of a type traded on an established market, within the meaning of Section 1273 of the Code, is rebuttably presumed to be acquired or disposed of at a price that is not equal to its Fair Market Price. Accordingly, a premium may not be paid to adjust the yield on an investment, a lower interest rate than is usually paid may not adjust the yield on an investment and no transaction may result in a smaller profit or larger loss than would have resulted if the transaction had been at arm's-length and had the yield with respect to the Series 2020 Bonds not been relevant to either party. In determining payments and receipts on Nonpurpose Investments, qualified administrative costs are taken into account. Qualified administrative costs are reasonable, direct administrative costs, other than carrying costs, such as separately stated brokerage or selling commissions, but not legal and accounting fees, recordkeeping, custody, and similar costs. General overhead costs and similar indirect costs of the Issuer such as employee salaries and office expenses and costs associated with computing the Rebate Requirement are not qualified administrative costs. In general, administrative costs are not reasonable unless they are comparable to administrative costs that would be charged for the same investment or a reasonably comparable investment if acquired with a source of funds other than gross proceeds of tax-exempt bonds. The Issuer agrees to maintain or cause to be maintained records for each such obligation sufficient to establish that the purchase price and the disposition price of each Nonpurpose Investment is the Fair Market Price.

Section 5. Record Keeping. With respect to all Nonpurpose Investments acquired in any fund or account, the Issuer shall record or cause to be recorded the following information:

(i) purchase date, (ii) purchase price, (iii) information establishing that the purchase price is the Fair Market Price as of such date (*e.g.*, the published quoted bid by a dealer in such an investment on the date of purchase), (iv) any accrued interest paid, (v) face amount, (vi) coupon rate, (vii) periodicity of interest payments, (viii) disposition price, (ix) any accrued interest received, and (x) disposition date. To the extent any investment becomes a Nonpurpose Investment by becoming Gross Proceeds after it was originally purchased or ceases to be a Nonpurpose Investment by ceasing to be Gross Proceeds before it is sold or matures, it shall be treated as if it were acquired or disposed of, respectively, at its Fair Market Price at the time it becomes a Nonpurpose Investment or ceases to be a Nonpurpose Investment, as the case may be.

Section 6. Bona Fide Debt Service Fund Exception. With respect to issues that are not private activity bonds and that have an average maturity of greater than five (5) years and a fixed rate of interest, amounts earned on moneys in a bona fide debt service fund shall not be taken into account for a Bond Year for purposes of complying with the Rebate Requirement. For purposes of complying with the Rebate Requirement with respect to issues other than as described in the preceding sentence, amounts earned on moneys in a bona fide Debt Service Fund shall not be taken into account for a Bond Year if the gross earnings thereon are less than $100,000; an issue with an average annual debt service not in excess of $2,500,000 may be treated as satisfying this $100,000 limitation.

Section 7. Expenditure Exceptions. The Rebate Requirement will be considered satisfied with respect to the Series 2020 Bonds if the Series 2020 Bonds meet certain exceptions to the rebate requirement as described in Section 148 of the Code or Treas. Reg. Section 1.148-7.

Section 8. Engagement of Experts. The Issuer covenants that it will engage a firm of certified public accountants, or a firm nationally recognized in the calculation of rebate, to perform the calculations necessary to comply with the Rebate Requirement applicable to any of the Gross Proceeds of the Series 2020 Bonds that do not qualify for a spending or other exception to the Rebate Requirement.

Section 9. Survival of Defeasance. Notwithstanding anything in this Tax Certificate to the contrary, the Rebate Requirement shall survive the defeasance or payment in full of the Series 2020 Bonds.

PART E. OTHER MATTERS

Section 1. No Pooled Financing Bonds. No portion of the proceeds of the Series 2020 Bonds will be used, directly or indirectly, to make or finance loans to two (2) or more ultimate borrowers.

Section 2. No Hedge Bonds. Not less than eighty-five percent (85%) of the spendable proceeds of the Series 2020 Bonds will be used to carry out the governmental purpose of the Series 2020 Bonds within the three-year period beginning on the Issue Date. Additionally, not more than fifty percent (50%) of the proceeds of the Series 2020 Bonds will be invested in Nonpurpose Investments having a substantially guaranteed yield for four years or more.

Section 3. No Federal Guarantee. The Issuer will not directly or indirectly use or permit the use of any proceeds, if any, of the Series 2020 Bonds or any other funds of the Issuer, or take or omit to take any action, that would cause the Series 2020 Bonds to be considered "federally guaranteed" within the meaning of Section 149(b) of the Code. The Issuer has not entered into, nor will the Issuer enter into, any (i) long-term service contracts with any federal governmental agency, (ii) service contracts with any federal governmental agency under terms that are materially different from the terms of any contracts with any persons other than federal government agencies, and (iii) leases of property to any federal government agency, that would cause the Series 2020 Bonds to be considered "federally guaranteed" within the meaning of Section 149(b) of the Code.

Section 4. Information Reporting. The Issuer certifies that the information required by Section 149(e) of the Code and set forth on Internal Revenue Service Form 8038-G relating to the Series 2020 Bonds and attached as Exhibit D hereto reflects its reasonable expectations with respect to the Series 2020 Bonds and the proceeds thereof as of the date of this Tax Certificate. Form 8038-G shall be filed at the Internal Revenue Service Center, Ogden, Utah 84201 no later than the fifteenth (15th) day of the second (2nd) calendar month following the close of the calendar year quarter ending December 31, 2020.

Section 5. Recordkeeping and Retention. (a) The Issuer agrees to maintain and/or retain the following records (or to cause them to be maintained and/or retained) (collectively, the "**Material Records**"):

(i) the bound transcripts of proceedings for the Series 2020 Bonds;

(ii) documentation evidencing the expenditure and allocation of the Sale Proceeds and investment proceeds and any other Gross Proceeds of the Series 2020 Bonds;

(iii) documentation evidencing Private Use, if any, of the Project;

(iv) documentation evidencing all sources of payment or security for the Series 2020 Bonds;

(v) all calculations of the arbitrage rebate liability and yield reduction payments for the Series 2020 Bonds and copies of any Forms 8038-T filed with the IRS; and

(vi) documentation pertaining to all Nonpurpose Investments as specified in Section 5 of Part D above.

(b) The Issuer agrees to keep the Material Records in a manner that ensures their complete access to the Internal Revenue Service. This may be accomplished through the maintenance of hard copies or by maintenance of the Material Records in an electronic format if the requirements of Rev. Proc. 97-22 (or any successor thereto) are satisfied.

(c) The Issuer agrees to keep the Material Records until the third anniversary of

the later of the final redemption date of the Series 2020 Bonds or the final redemption date of any bonds issued to refund the Series 2020 Bonds.

Section 6. Reimbursement. No Sale Proceeds are expected to be applied to reimburse the Issuer for costs of the Project incurred and paid by the Issuer prior to the date hereof.

Section 7. Additional Post-Issuance Compliance Matters

(a) Post-Issuance Compliance Procedures. The Issuer has adopted post issuance compliance procedures which are designed to assure ongoing compliance with the Issuer's federal tax obligations, including the Series 2020 Bonds.

(b) Remedial Actions. In the event an action takes place (or is anticipated to take place) that will cause the Project not to be used for qualified uses under Section 141 of the Code, the Issuer will consult with Bond Counsel as soon as practicable about taking remedial action as described in Treas. Reg. Section 1.141-12. As advised by Bond Counsel, the Issuer will take all actions necessary to ensure that the "nonqualified bonds" (as defined in Treas. Reg. Section 1.141-12) are properly remediated in accordance with the requirements of the Treasury Regulations. The Issuer is familiar with the Internal Revenue Service's Voluntary Compliance Agreement Program pursuant to which issuers of tax-exempt debt may voluntarily resolve violations of the Code and applicable Treasury Regulations on behalf of their bondholders or themselves through closing agreements with the Internal Revenue Service.

(c) Private Use Monitoring. The Issuer will actively monitor the requirements of the Code and the Treasury Regulations as set forth in Part B of this Tax Certificate and confirm that such requirements are met no less than once per annum. The responsibility for such monitoring will be maintained by the Office of Business Affairs.

(d) Use of Proceeds Monitoring. The Issuer will actively monitor the requirements of the Code and the Treasury Regulations related to the allocation and accounting of proceeds to capital projects and will maintain a list that specifies the allocation of proceeds of the Series 2020 Bonds to costs of the Project. The responsibility for such monitoring will be maintained by the Office of Business Affairs.

(e) Arbitrage Monitoring. The Issuer will actively monitor the requirements of the Code and the Treasury Regulations related to arbitrage limitations, including yield restriction, rebate requirements and the investment of Gross Proceeds. The responsibility for such monitoring will be maintained by the Office of Business Affairs.

Section 8. Allocation. The Issuer reserves the right to use any reasonable, consistently applied accounting method to account for the Gross Proceeds, investments and expenditures allocable to the Series 2020 Bonds, in particular to account for the allocation of the Sale Proceeds to expenditures for the qualified purposes and to expenditures for the purposes for which the Issuer used funding other than tax-exempt bonds. The Issuer will make consistent allocations with respect to the Gross Proceeds, investments and expenditures of the Series 2020 Bonds for purposes of Section 141 of the Code (relating to the private activity bond tests) and

Section 148 of the Code (relating to the arbitrage yield restriction and rebate requirements). The Issuer will at all times maintain books and records sufficient to establish the accounting method chosen for the Series 2020 Bonds and to account in writing in such books and records for the allocation of the Sale Proceeds to each refinanced expenditure by the date not later than 18 months after the later of (i) the expenditure is paid or (ii) the date the respective financed project component is placed in service; provided, however, that such accounting must be made in any event by the date 60 days after the fifth anniversary of date hereof or the date 60 days after the retirement of the Series 2020 Bonds if earlier.

Section 9. Amendment. Notwithstanding any provision of this Tax Certificate, the Issuer may amend this Tax Certificate and thereby alter any actions allowed or required by this Tax Certificate if such amendment is based on a written opinion of Bond Counsel approving such amendment.

WITNESS my hand this 10th day of December, 2020.

Paul Forte
Vice Chancellor for Business Affairs of
Appalachian State University

[Signature Page to Tax Certificate]

List of Exhibits

EXHIBIT A

PROJECT DESCRIPTION

Acquisition, installation and equipping of improvements to the Issuer's electric utility system, including the following:

Project Description	Amount
Substation replacement and installation of underground transmission line	$3,200,000
Underground conversion of high maintenance overhead lines	1,200,000
Remodel of NRLP warehouse	700,000
Resurfacing and regrading of NRLP parking lot	490,000
Two bucket truck replacements and outdoor stock facility	450,000
Other miscellaneous capital improvements*	390,000
COI	70,000
Total	$6,500,000
*Includes GIS/outage management improvements ($75k), a system study ($100k), AMI/Eco-one improvements ($75k), dark fiber installation ($100k), contingency, and other miscellaneous capital improvements.	

EXHIBIT B

CERTIFICATE OF FINANCIAL ADVISOR

EXHIBIT C

ISSUE PRICE CERTIFICATE

EXHIBIT D

FORM 8038-G

Hypothetical Test Year Capital Structure

	Balance	Ratio
Common Equity	$ 15,127,294	50.00%
Long-Term Debt	$ 15,127,294	50.00%
Rate Base	$ 30,254,588	100.00%

Imputted Cost of Debt as of July 2023

	Balance	Cost Rate	Weighted Cost Rate
Embedded Long-Term Debt[1]	10,497,500	2.73%	1.90%
Pro forma Long-Term Debt[2]	4,629,794	4.35%	1.33%
Total Long-Term Debt	$ 15,127,294		3.23%

Notes:

1. The 2.73% cost rate reflects the embedded cost of three debt issues
2. The 4.35% cost rate refelects spreads from US treasury yields of May 11, 2023.

New River Light and Power
Embedded Cost of debt
as of Dec. 31, 2022

Description:	Date Issued	Maturity Date	Outstanding Balance	Weighting	Interest Expense	Weighted Cost Rate of Long-Term Debt (%)
2.82% due 2026	5/5/16	5/5/26	1,277,500	12.2%	36,021	0.34%
1.73% due 2040	12/10/20	5/5/40	6,220,000	59.3%	107,606	1.03%
4.77% Variable	10/12/22	NA	3,000,000	28.6%	143,219	1.36%
Total			10,497,500	100.0%	286,846	2.73%

RISK MEASURES
Group of Electric Utility Companies

		Value Line[1]					S&P[2]	S&P[3]	Moody's[3]
	Company Name	Safety	Beta	Price Stability	Earnings Predict.	Financial Strength	S&P[2] Beta	Quality Ranking	Bond Rating	Bond Rating
1	Alliant Energy	2	0.85	95	95	A	0.51	A	A-	Baa2
2	Amer. Ele. Power	1	0.75	100	95	A+	0.44	A-	A-	Baa2
3	Ameren	1	0.85	100	95	A	0.43	A-	BBB+	Baa1
4	CMS Energy	2	0.80	95	90	A	0.33	A	BBB+	Baa2
5	Con. Edison	1	0.80	90	100	A+	0.35	B+	A-	Baa2
6	Duke Energy	2	0.85	95	100	A	0.41	B+	BBB+	Baa2
7	IDACORP.	1	0.80	100	100	A+	0.60	A	BBB	Baa2
8	Portland Gen.	2	0.85	95	95	B++	0.60	A-	BBB+	A3
9	WEC Energy	1	0.80	95	100	A+	0.39	A	A-	Baa1
10	XCEL Energy	1	0.80	90	100	A+	0.42	A	A-	Baa1
	Average	1.4	0.82	96	97		0.45			

Sources:

[1] December 9 2022, Jnuary 20, 2023, and February 10, 2023 Value Line Reports.

[2] CFRM Stock Reports, downloaded on February 16, 2023.

[3] S&P Global, downloaded on February 14, 2023.

DCF ANALYSIS
Group of Electric Utility Companies

			Value Line[2]						Value Line Forecast			Yahoo[3]
		Expected	EPS	DPS	BPS	EPS	DPS	BPS	EPS	DPS	BPS	EPS
	Company Name	Yield[1]	10-Yr	10-Yr	10-Yr	5-Yr	5-Yr	5-Yr	5-Yr	5-Yr	5-Yr	5-Yr
1	Alliant Energy	3.4	7.0	6.5	5.5	8.0	6.5	7.0	6.0	6.0	5.0	5.6
2	American Ele. Power	3.6	4.5	5.0	4.0	4.0	6.0	3.5	6.5	6.0	6.0	6.1
3	Ameren	2.9	3.0	3.0	1.0	7.5	4.0	4.5	6.5	7.0	6.5	6.6
4	CMS Energy	3.2	7.5	9.5	5.5	6.5	7.0	6.5	6.5	6.0	7.0	8.0
5	Con. Edison	3.4	1.5	2.5	3.5	1.0	3.0	3.5	4.5	3.0	3.0	6.9
6	Duke Energy	4.1	3.0	3.0	2.0	4.5	3.5	1.0	5.0	2.0	2.5	5.4
7	IDACORP.	2.9	4.5	8.5	5.0	4.0	7.0	4.5	4.5	6.5	5.0	3.0
8	Portland General	3.9	5.0	4.5	3.5	4.5	6.0	3.0	5.0	6.0	4.0	1.4
9	WEC Energy Goup	3.3	7.5	11.5	7.5	8.0	7.5	6.0	6.0	7.0	4.0	6.0
10	XCEL Energy	3.1	6.0	5.5	5.0	6.0	6.0	5.0	6.0	6.5	5.5	6.5
	Average	3.4	5.0	6.0	4.3	5.4	5.7	4.5	5.7	5.6	4.9	5.6
	Avg. DCF Result		8.3	9.3	7.6	8.8	9.0	7.8	9.0	9.0	8.2	8.9

Source:

[1] Value Line Summary and Index, Febraury XX throgh April X, 2023.

[2] December 9 2022, Jnuary 20, 2023, and February 10, 2023 Value Line Reports.

[3] Yahoo Finance, downloaded on February 16, 2023.

Regression Analysis of Allowed Returns on Equity

	Year	[A] Electric Distribution Utilites Returns on Equity[1]	[B] Moody's A-Rated Bond Yields[2]	[C]=[A]-[B] Risk Premium
1	2007	9.86%	6.05%	3.81%
2	2008	10.04%	6.51%	3.53%
3	2009	10.16%	6.04%	4.12%
4	2010	9.98%	5.47%	4.51%
5	2011	9.85%	5.04%	4.81%
6	2012	9.75%	4.13%	5.62%
7	2013	9.37%	4.48%	4.89%
8	2014	9.49%	4.28%	5.21%
9	2015	9.17%	4.12%	5.05%
10	2016	9.31%	3.93%	5.38%
11	2017	9.43%	4.00%	5.43%
12	2018	9.38%	4.25%	5.13%
13	2019	9.37%	3.77%	5.60%
14	2020	9.10%	3.02%	6.08%
15	2021	9.04%	3.11%	5.93%
16	2022	9.11%	4.72%	4.39%
17	2023	9.70%	5.29%	4.41%
	Average			4.94%

[1] Regulatory Research Associates (RRA), Regulatory Focus,April 26, 2023.

[2] Moody's Credittrends, various issues.

Regression Analysis of Allowed Returns on Equity

Regression Statistics	
Multiple R	0.8524525
R Square	0.7266752
Adjusted R Square	0.7084536
Standard Error	0.0019148
Observations	17

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.0001462	0.00014622	39.879767	1.3864E-05
Residual	15	0.0000550	3.6666E-06		
Total	16	0.0002012			

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0.081524	0.002239	36.404371	0.000000
X Variable 1	0.300712	0.047618	6.315043	0.000014

Date	A-Rated Public Utility Bond Yield
Nov-22	5.75%
Dec-22	5.28%
Jan-23	5.20%
Feb-23	5.29%
Mar-23	5.39%
Apr-23	5.13%
Average	5.34%

Predicted Cost of Equity 9.76%

Note:
Predicted Cost of Equity of 9.76% = 0.081524 + 0.300712 x 5.34%.

S&P Global
Market Intelligence

Table 3: Electric authorized ROEs

Settled vs. fully litigated cases

	All cases			Settled cases			Fully litigated cases		
Year	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations
2007	10.30	10.20	38	10.42	10 33	14	10.23	10.15	24
2008	10.41	10.30	37	10.43	10 25	17	10.39	10.54	20
2009	10.52	10.50	41	10.61	10 61	17	10.45	10.50	24
2010	10.37	10.30	61	10.39	10 30	34	10.35	10.10	27
2011	10.29	10.17	42	10.12	10 07	16	10.39	10.25	26
2012	10.17	10.08	58	10.06	10 00	29	10.28	10.25	29
2013	10.03	9.95	49	10.12	9 98	32	9.85	9.75	17
2014	9.91	9.78	38	9.73	9.75	17	10.05	9.83	21
2015	9.84	9.60	31	10.04	9 60	15	9.66	9.62	16
2016	9.77	9.75	42	9.80	9 85	17	9.74	9.60	25
2017	9.74	9.60	53	9.75	9 60	29	9.73	9.56	24
2018	9.60	9.58	48	9.57	9 63	26	9.63	9.53	22
2019	9.66	9.65	47	9.76	9.73	20	9.58	9.50	27
2020	9.44	9.45	55	9.46	9.45	23	9.43	9.41	32
2021	9.38	9.38	55	9.57	9 50	25	9.22	9.20	30
2022	9.54	9.50	53	9.62	9 50	21	9.48	9.35	32
Q1'23	9.71	9.68	10	9.73	9.75	5	9.68	9.65	5
LTM 3/31/2023	9.61	9.56	51	9.70	9 50	22	9.55	9.65	29

General rate cases vs. limited-issue riders

	All cases			General rate cases			Limited-issue riders		
Year	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations
2007	10.30	10.20	38	10.32	10 23	36	9.90	9.90	1
2008	10.41	10.30	37	10.37	10 30	35	11.11	11.11	2
2009	10.52	10.50	40	10.52	10 50	39	10.55	10.55	2
2010	10.37	10.30	61	10.29	10 26	58	11.87	12.30	3
2011	10.29	10.17	42	10.19	10.14	40	12.30	12.30	2
2012	10.17	10.08	58	10.02	10 00	51	11.57	11.40	6
2013	10.03	9.95	49	9.82	9 82	40	11.34	11.40	7
2014	9.91	9.78	38	9.76	9.75	32	10.96	11.00	5
2015	9.84	9.60	31	9.60	9 53	23	10.87	11.00	6
2016	9.77	9.75	42	9.60	9 60	32	10.31	10.55	10
2017	9.74	9.60	53	9.68	9 60	42	10.01	9.95	10
2018	9.60	9.58	48	9.56	9 58	38	9.74	9.70	10
2019	9.66	9.65	47	9.65	9 65	33	9.68	9.31	14
2020	9.44	9.45	55	9.39	9.48	42	9.62	9.20	13
2021	9.38	9.38	55	9.39	9 50	35	9.37	9.20	19
2022	9.54	9.50	53	9.52	9 50	32	9.56	9.35	21
Q1'23	9.71	9.68	10	9.71	9.70	7	9.68	9.35	3
LTM 3/31/2023	9.61	9.56	51	9.58	9 60	35	9.68	9.35	16

Vertically integrated cases vs. distribution-only cases

	All cases			Vertically integrated cases			Distribution-only cases		
Year	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations	Average ROE (%)	Median ROE (%)	Number of observations
2007	10.30	10.20	38	10.50	10.45	26	9.86	9.98	10
2008	10.41	10.30	37	10.48	10.47	26	10.04	10.25	9
2009	10.52	10.50	41	10.66	10 66	28	10.16	10.25	11
2010	10.37	10.30	61	10.42	10.40	41	9.98	10.00	17
2011	10.29	10.17	42	10.33	10 20	28	9.85	10.00	12
2012	10.17	10.08	58	10.10	10 20	39	9.75	9.73	12
2013	10.03	9.95	49	9.95	10 00	31	9.37	9.36	9
2014	9.91	9.78	38	9.94	9 90	19	9.49	9.55	13
2015	9.84	9.60	31	9.75	9.70	17	9.17	9.07	6
2016	9.77	9.75	42	9.77	9.78	20	9.31	9.33	12
2017	9.74	9.60	53	9.80	9 65	28	9.43	9.55	14
2018	9.60	9.58	48	9.68	9.73	23	9.38	9.50	15
2019	9.66	9.65	47	9.74	9.73	25	9.37	9.60	8
2020	9.44	9.45	55	9.55	9 50	27	9.10	9.30	15
2021	9.38	9.38	55	9.53	9 50	25	9.04	9.45	10
2022	9.54	9.50	53	9.69	9 56	23	9.11	9.20	9
Q1'23	9.71	9.68	10	9.72	9.70	6	9.70	9.70	1
LTM 3/31/2023	9.61	9.56	51	9.72	9.70	26	9.19	9.50	9

Data compiled April 20, 2023.
Source: Regulatory Research Associates, a group within S&P Global Commodity Insights.

Cost of Equity Summary

DCF Method	
Based on Average Historical	8.49%
Based on Historical & Forecasted Growth Rates	8.62%
Based on Predicted Growth Rates	8.80%
Risk Premium Method	9.76%
Average of DCF estimates and Risk Premium	8.92%
Recommended Cost of Equity	8.90%

NEW RIVER LIGHT & POWER COMPANY
RECOMMENDED COST OF CAPITAL
as of December 31, 20222

Item	Ratios	Cost Rate	Weighted Cost Rate	Pre-Tax Cost of Capital
Long-Term Debt	50.00%	3.23%	1.62%	1.63%
Common Equity	50.00%	8.90%	4.45%	5.36%
Total	100.00%		6.07%	6.99%
			Pre-Tax Interest Coverage[1]	4.3

[1] Pre-Tax Interest Coverage is adjusted for the taxed sales to its customers in Boone, NC.

New River Light and Power
Change in Number of Bills
Twelve Months Ended December 31, 2022

	# of Customers (12 Months)		
	Test Period	EOP	Change
Residential	85,708	88,080	2,372
Commercial	17,578	17,760	182
Commercial - Demand	3,289	3,348	59
ASU	31,358	31,308	(50)
Total	137,933	140,496	2,563

New River Light and Power
Increased Customer Growth and Usage Adjustment
Twelve Months Ended December 31, 2022

	KWH Attributed to Customer Growth	KWH Attributed to Increased Usage	Total KWH
Residential	2,327,221	324,657	2,651,878
Commercial	243,406	102,523	345,929
Commercial - Demand	1,311,156	476,877	1,788,033
ASU	-	3,702,657	3,702,657
Lighting	(4,240)	-	(4,240)
Total	3,877,543	4,606,715	8,484,258

New River Light and Power
Annualize Revenues for Customer Growth and Usage
Twelve Months Ended December 31, 2022

Customer Growth Adjustment

	Total kWh Adjustment	Revenue Adjustment
Residential	2,327,221	$ 247,616
Commercial	243,406	$ 24,049
Commercial - Demand	1,311,156	$ 102,270
ASU	-4,240	$ (514)
Total	3,877,543	$ 373,421

Usage Adjustment

	Total kWh Adjustment	Revenue Adjustment
Residential	324,657	$ 28,894
Commercial	102,523	$ 8,786
Commercial - Demand	476,877	$ 36,720
ASU	3,702,657	$ 296,213
Total	4,606,715	$ 370,613

Total Adjustments to Revenue	$ 744,034