STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-2, SUB 1321

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of Application of Duke Energy Progress, LLC Pursuant to G.S. 62-133.2 and NCUC Rule R8-55 Relating to Fuel and Fuel-Related Charge Adjustments for Electric Utilities	)))))	**DIRECT TESTIMONY OF DANA M. HARRINGTON FOR DUKE ENERGY PROGRESS, LLC**

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Dana M. Harrington, and my business address is 525 South Tryon Street, Charlotte, North Carolina ("NC").

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

A. I am a Rates and Regulatory Strategy Manager supporting both Duke Energy Progress, LLC ("DEP" or the "Company") and Duke Energy Carolinas, LLC ("DEC") (collectively, the "Companies").

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Arts degree in Psychology with Honors from the University of North Carolina at Chapel Hill and I am a certified public accountant licensed in the State of North Carolina. I began my accounting career in 2005 with Greer and Walker, LLC as a tax accountant and later a staff auditor. From 2007 until 2010 I was an Accounting Analyst with Duke Energy in the Finance organization. In 2010, I joined the Rates Department as a Lead Rates Analyst where I spent eight years before being promoted to the position of Rates and Regulatory Strategy Manager. I have served in the Rates Manager capacity since 2019.

Q. HAVE YOU PREVIOUSLY TESTIFIED OR SUBMITTED TESTIMONY BEFORE THE NORTH CAROLINA UTILITIES COMMISSION?

A. Yes. I testified in DEP's 2019 fuel proceeding under Docket No. E-2, Sub 1204 and have filed testimony or appeared before the Commission in each of DEP's annual fuel cost proceedings thereafter. This is my fifth time testifying before the Commission.

Q. ARE YOU FAMILIAR WITH THE ACCOUNTING PROCEDURES AND BOOKS OF ACCOUNT OF DEP?

A. Yes. Duke Energy Progress' books of account follow the uniform classification of accounts prescribed by the Federal Energy Regulatory Commission ("FERC").

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to present the information and data required by North Carolina General Statutes ("N.C. Gen. Stat.") § 62-133.2(c) and (d) and Commission Rule R8-55, as set forth in Harrington Exhibits 1 through 8, along with supporting workpapers. The test period used in supplying this information is the period of April 1, 2022 through March 31, 2023 ("test period"), and the billing period is December 1, 2023 through November 30, 2024 ("billing period").

Q. WHAT IS THE SOURCE OF THE ACTUAL INFORMATION AND DATA FOR THE TEST PERIOD?

A. Actual test period kilowatt hour ("kWh") generation, kWh sales, fuel-related revenues, and fuel-related expenses were taken from the Company's books and records. These books and records of DEP are subject to review by the appropriate regulatory agencies in the three jurisdictions that regulate DEP's electric rates, which are: the North Carolina Utilities Commission, the Public Service Commission of South Carolina, and the Federal Energy Regulatory Commission. In addition, third-party independent auditors perform an annual audit to provide assurance that, in all material respects, internal accounting controls are operating effectively, and DEP's financial statements are accurate.

Q. WERE HARRINGTON EXHIBITS 1 THROUGH 8 PREPARED BY YOU OR AT YOUR DIRECTION AND UNDER YOUR SUPERVISION?

A. Yes, these exhibits were prepared by me and consist of the following:

- Harrington Exhibit 1: Summary Comparison of Fuel and Fuel-Related Costs Factors.
- Harrington Exhibits 2A, 2B, and 2C: Fuel and Fuel-Related Costs Factors - reflecting a 92.27% proposed nuclear capacity factor and projected billing period megawatt hour ("MWh") sales.
- Harrington Exhibit 3A: Calculation of Proposed Composite Experience Modification Factor ("EMF").
- Harrington Exhibit 3B: Calculation of Proposed EMF for Residential customers.
- Harrington Exhibit 3C: Calculation of Proposed EMF for Small General Service customers.
- Harrington Exhibit 3D: Calculation of Proposed EMF for Medium General Service customers.
- Harrington Exhibit 3E: Calculation of Proposed EMF for Large General Service customers.
- Harrington Exhibit 3F: Calculation of Proposed EMF for Lighting customers.
- Harrington Exhibit 4: Normalized Test Period MWh Sales, Fuel and Fuel-Related Revenue, Fuel and Fuel-Related Expense, and System Peak.
- Harrington Exhibit 5: Nuclear Capacity Ratings in megawatts.
- Harrington Exhibits 6A, 6B, and 6C: Fuel and Fuel-Related Costs Factors - reflecting a 92.27% proposed nuclear capacity factor and normalized test period MWh sales.
- Harrington Exhibits 7A, 7B, and 7C: Fuel and Fuel-Related Costs Factors -

reflecting a 93.92% North American Electric Reliability Corporation ("NERC") five-year national weighted average nuclear capacity factor for comparable units and projected billing period MWh sales.

- Harrington Exhibit 8A: March 2023 Monthly Fuel Report, as required by NCUC Rule R8-52.
- Harrington Exhibit 8B: March 2023 Monthly Base Load Power Plant Performance Report, as required by NCUC Rule R8-53.

Q. PLEASE EXPLAIN WHAT IS SHOWN ON HARRINGTON EXHIBIT 1.

A. Harrington Exhibit 1 presents a summary of fuel and fuel-related cost factors, which include: (1) the currently approved fuel and fuel-related cost factors, (2) the projected fuel and fuel-related cost factors using the proposed capacity factor with normalized test period sales, (3) the projected fuel and fuel-related cost factors using the NERC five-year national weighted average capacity factor with projected billing period sales, and (4) the proposed fuel and fuel-related cost factors using the proposed capacity factor with projected billing period sales.

Q. WHAT FUEL AND FUEL-RELATED COST FACTORS DOES DEP PROPOSE FOR INCLUSION IN RATES FOR THE BILLING PERIOD?

A. The Company proposes that the fuel and fuel-related costs factors shown in the table below be reflected in rates during the billing period. The factors that DEP proposes in this proceeding utilize a 92.27% nuclear capacity factor as testified to by Company Witness Simril. The components of the proposed fuel and fuel-related cost factors by customer class, as shown on Harrington Exhibit 1 in cents per kWh, are:

Description	Residential cents/kWh	Small General Service cents/kWh	Medium General Service cents/kWh	Large General Service cents/kWh	Lighting cents/kWh
Total adjusted Fuel and Fuel-Related Costs Factors	2.887	3.295	2.574	2.119	4.053
EMF Increment/(Decrement)	1.187	1.040	1.080	1.243	1.681
Proposed Net Fuel and Fuel-Related Costs Factors	4.074	4.335	3.654	3.362	5.734

Q. WHAT IS THE IMPACT TO CUSTOMERS' BILLS IF THE PROPOSED FUEL AND FUEL-RELATED COST FACTORS ARE APPROVED BY THE COMMISSION?

A. Under the uniform percentage average bill adjustment methodology, if the proposed fuel and fuel-related cost factors are approved, there will be an increase of 5.1%, on average, to customers' bills. The table below shows both the proposed and existing fuel and fuel-related cost factors (excluding regulatory fee).

Description	Residential cents/kWh	Small General Service cents/kWh	Medium General Service cents/kWh	Large General Service cents/kWh	Lighting cents/kWh
Proposed Net Fuel and Fuel-Related Costs Factors	4.074	4.335	3.654	3.362	5.734
Approved Net Fuel and Fuel-Related Costs Factors	3.457	3.546	3.166	3.036	4.210

Q. HOW DOES DEP DEVELOP THE FUEL FORECASTS FOR ITS GENERATING UNITS?

A. For this filing, DEP used an hourly dispatch model in order to generate its fuel forecasts. This hourly dispatch model considers the latest forecasted fuel prices, outages at the generating units based on planned maintenance and refueling schedules, forced outages at generating units based on historical trends, generating unit performance parameters, and expected market conditions associated with power purchases and off-system sales opportunities. In addition, the model economically dispatches DEP's and DEC's generation resources jointly, which optimizes the generation fleets of DEP and DEC.

Q. PLEASE EXPLAIN HARRINGTON EXHIBITS 2A, 2B, AND 2C.

A. The proposed net fuel and fuel-related cost factors shown on Harrington Exhibit 1 line 12 are calculated on Harrington Exhibits 2A, 2B, and 2C. These factors utilize a 92.27% proposed nuclear capacity factor, which is further discussed by Company Witness Simril, and are based on projected billing period MWh sales.

Harrington Exhibit 2A presents projected system generation and the fuel and fuel-related costs required to supply that generation during the billing period. Harrington Exhibit 2B calculates the component of the proposed fuel factor needed to recover purchased power capacity costs incurred on power purchases from renewable and qualifying facilities. Harrington Exhibit 2C presents the North Carolina retail share of prospective billing period costs and determines the increase or decrease in fuel costs to be recovered or returned during the billing period from the amount in existing fuel rates. This exhibit further calculates the total fuel rate increase or decrease by customer class under the uniform percentage average bill adjustment methodology, which incorporates the proposed composite EMF rate from Harrington Exhibit 3A.

Q. HOW ARE PROJECTED BILLING PERIOD FUEL AND FUEL-RELATED COSTS ALLOCATED TO THE NORTH CAROLINA RETAIL JURISDICTION?

A. Projected system fuel and fuel-related costs excluding purchased capacity costs are allocated to the North Carolina retail jurisdiction based on projected billing period MWh sales including line losses as shown on Harrington Exhibit 2C. System renewable and qualifying facility capacity costs as described in subsections (5), (6) and (10) of N.C. Gen. Stat. § 62-133.2(a1), are allocated to the North Carolina retail jurisdiction and among North Carolina retail customer classes based on the 2022

production plant allocator as shown on Harrington Exhibit 2B. Costs are further allocated among the North Carolina retail customer classes using the uniform percentage average bill adjustment methodology as adopted in DEP's most recent fuel and fuel-related cost recovery proceeding under Docket No. E-2, Sub 1292.

Q. PLEASE EXPLAIN THE CALCULATION OF THE UNIFORM PERCENTAGE AVERAGE BILL ADJUSTMENT METHOD SHOWN ON HARRINGTON EXHIBIT 2C.

A. The North Carolina retail share of projected billing period costs is divided by North Carolina retail projected billing period sales to yield a prospective cents per kWh fuel rate. The proposed composite EMF rate from Harrington Exhibit 3A is added to the prospective cents per kWh fuel rate to yield a total proposed fuel rate. The difference between the total proposed fuel rate and the equivalent total fuel rate currently in effect is calculated. This rate difference, when multiplied by the North Carolina retail projected billing period kWh sales, yields a net increase in fuel costs needing to be recovered from North Carolina ratepayers or a net decrease needing to be returned to North Carolina ratepayers during the billing period.

To allocate the increase or decrease in fuel costs among the North Carolina retail customer classes under the uniform percentage average bill adjustment method, each customer class's contribution to annualized North Carolina retail revenues must be determined. Annualized North Carolina retail revenues are the twelve-month North Carolina retail test period kWh sales, itemized by customer class, and multiplied by the total existing rates currently in effect for each class, respectively. Total annualized North Carolina retail revenues for the twelve-month test period ending March 2023 are approximately $4.1 billion. The increase of approximately $208.4 million in fuel

costs needing to be recovered from North Carolina retail customers during the billing period is allocated to the customer classes by each class's contribution to the $4.1 billion in revenues. Harrington Exhibit 2C presents this calculation and the resulting 5.1% uniform percentage average bill adjustment for all customer classes.

Harrington Exhibits 6C and 7C use the same uniform percentage average bill adjustment methodology, but under the guidelines prescribed by NCUC Rule R8-55(e)(3) and NCUC Rule R8-55(d)(1), respectively. These guidelines will be discussed further in my testimony.

Q. DID YOU DETERMINE THAT DEP'S ANNUAL CHANGE IN THE AGGREGATE AMOUNT OF THE COSTS IDENTIFIED IN SUBSECTIONS (4), (5), (6), (10) AND (11) OF N.C. GEN. STAT. § 62-133.2(A1) DID NOT EXCEED 2.5% OF ITS NC RETAIL GROSS REVENUES FOR 2022, AS REQUIRED BY N.C. GEN. STAT. § 62-133.2(A2)?

A. Yes. The Company's analysis shows that the annual change in the costs recoverable under the relevant sections of the statute increased but the increase did not exceed 2.5% of DEP's North Carolina Retail gross revenues for calendar year 2022.

Q. HARRINGTON EXHIBIT 3 SHOWS THE CALCULATION OF THE TEST PERIOD (OVER)/UNDER RECOVERY BALANCE AND THE PROPOSED EMF RATES BY CUSTOMER CLASS. HOW WAS THIS CALCULATED?

A. DEP system fuel and fuel-related costs incurred were allocated to the North Carolina retail jurisdiction based on North Carolina's retail billed sales at generation as a percentage of system billed sales at generation including an adjustment for South Carolina Distributed Energy Resource Program estimated net metered kWhs. The adjustment to system billed sales yields a smaller share of system fuel and fuel-related

costs allocated to the North Carolina retail jurisdiction than without the adjustment. The North Carolina retail share of system fuel and fuel-related costs were allocated among customer classes using the uniform percentage average bill adjustment method consistent with DEP's 2022 annual fuel proceeding.

DEP system purchased power capacity costs from renewables and qualifying facilities were allocated to the North Carolina retail jurisdiction and among customer classes based on production plant allocators from DEP's 2021 cost of service study.

The test period (over)/under collection was determined each month by comparing the actual fuel revenues collected from each customer class to actual costs incurred by each customer class under the allocation methods described. Harrington Exhibits 3B through 3F show the EMF balance by customer class divided by the normalized test period sales without line losses by customer class and Harrington Exhibit 3A shows the composite EMF balance for all classes divided by total North Carolina retail normalized test period sales without line losses for all classes.

Q. PLEASE EXPLAIN HARRINGTON EXHIBIT 4.

A. As required by NCUC Rule R8-55(e)(1) and (e)(2), Harrington Exhibit 4 presents test period actual MWh sales, the customer growth MWh adjustment, and the weather MWh adjustment. Test period MWh sales were normalized for weather using a 30-year period, consistent with the methodology utilized in DEP's most recent general rate case. Customer growth was determined using regression analysis for residential, small general service, and lighting classes, and a customer-by-customer analysis for medium and large general service customers. Finally, Harrington Exhibit 4 shows the prior calendar year end peak demand for the system and for North Carolina Retail customer classes using the same methodology adopted by the Commission in the

utility's most recently approved general rate case, which was Docket No. E-2, Sub 1219.

Q. PLEASE IDENTIFY WHAT IS SHOWN ON HARRINGTON EXHIBIT 5.

A. Harrington Exhibit 5 presents the capacity ratings for each of DEP's nuclear units, in compliance with Rule R8-55(e)(12).

Q. PLEASE EXPLAIN HARRINGTON EXHIBITS 6A, 6B, AND 6C.

A. NCUC Rule R8-55(e)(3) requires the equivalent of the proposed net fuel and fuel-related cost factors to be determined using the proposed nuclear capacity factor, based on normalized test period sales, and utilizing the same methodology adopted by the Commission in the utility's last general rate case. Harrington Exhibits 6A, 6B, and 6C present these calculations. The resulting projected fuel and fuel-related cost factors following these guidelines are shown on Harrington Exhibit 1 Line 5.

Q. PLEASE EXPLAIN HARRINGTON EXHIBITS 7A, 7B, AND 7C.

A. NCUC Rule R8-55(d)(1) requires the equivalent of the proposed net fuel and fuel-related cost factors to be determined based on projected billing period sales and utilizing the same methodology adopted by the Commission in the utility's last general rate case with the exception of adjusting the proposed nuclear capacity factor to the most recent NERC five-year weighted average capacity factor. The most recent NERC five-year weighted average capacity factor is 93.92% and is further discussed by Witness Simril. Harrington Exhibits 7A, 7B, and 7C present these calculations. The resulting projected fuel and fuel-related cost factors following these guidelines are shown on Harrington Exhibit 1 Line 6.

Q. PLEASE SUMMARIZE THE METHOD USED TO ADJUST MWH GENERATION AND FUEL COSTS ON HARRINGTON EXHIBITS 6 AND 7.

A. Harrington Exhibit 6 adjusts the coal generation produced by the dispatch model to account for the difference between forecasted generation and normalized test period generation. The total system fuel costs are respectively adjusted at the coal price per MWh produced by the dispatch model.

Harrington Exhibit 7 increases the nuclear generation produced by the dispatch model to account for the higher NERC five-year average nuclear capacity factor and decreases the coal generation produced by the dispatch model respectively. The total system fuel costs are also adjusted at the nuclear and coal prices per MWh produced by the dispatch model, respectively.

Q. HOW DID ACTUAL FUEL EXPENSES COMPARE WITH FUEL REVENUE DURING THE TEST PERIOD?

A. Harrington Exhibit 3A demonstrates that, for the test period, the Company experienced a net under-recovery of approximately $486.0 million for the combined customer classes of the North Carolina retail jurisdiction.

The Company typically experiences some amount of (over)/under recovery of fuel costs during the test period. The EMF provision of fuel rates was established to address the differences between fuel revenues realized and fuel costs incurred during a test period. Beginning around June 2021 the Company experienced an unexpected increase in fuel commodity costs, and continued to see actual fuel costs out-pace projected costs in the revenues it collected during the test period. This trend is further described in the direct testimony of Witness Swez. For the test period, fuel revenues collected by DEP were materially less than the fuel costs incurred, resulting in a large under collection of costs, which is reflected in DEP's proposed EMF rates.

Q. HAS THE COMPANY MADE ANY COST ADJUSTMENTS TO THE TWELVE-MONTH TEST PERIOD UNDER-COLLECTION OF FUEL AND FUEL-RELATED COSTS THAT WERE REMITTED ON THE MONTHLY FUEL REPORTS?

A. Yes. Four adjustments were made on the Monthly Fuel Report during the test period, two of which pertained to the cost of fuel associated with line losses.

The line loss factor used in the months of April – October 2022 to allocate fuel costs incurred at generation had been modified by an adjustment that was necessary to normalize test year billings in base rates Docket No. E-2, Sub 1300. That modification was necessary in the context of billings but was not appropriate for cost allocation. Removing the modification increased the April – October 2022 under-collection by $5,698,688 in the reporting month of November 2022.

Also pertaining to line losses as calculated on the Monthly Fuel Report, it was discovered that the formula used to convert billed kWh sales, which are measured at the delivery point, to the quantity of generation needing to be produced at the station to supply those delivered sales was incorrect. The formula that had been used was:

billed kWh sales x (1 + line loss factor)

The correct formula is:

billed kWh sales / (1 – line loss factor)

Correcting this formula error increased the April 2022 – February 2023 under-collection by $1,740,010. This adjustment was made on the Revised March 2023 Monthly Fuel Report.

Third, as discussed in the direct testimony of Company Witness Swez, the Company and the Public Staff reached an agreement and entered a Stipulation

Regarding the Proper Methodology for Determining the Fuel Costs Associated with Power Purchases from Power Marketers and Others ("Stipulation" also Swez Exhibit 4). The Stipulation established that an annual compilation of actual total fuel and fuel-related costs as a component of total short-term off-system sales revenue is an appropriate ratio for estimating fuel costs on power purchases when the actual fuel component is unavailable or unidentified as a component of the price paid for energy under a power purchase contract. Based on analysis of the 2022 composite (i.e., DEP and DEC combined) short-term off-system sales, the actual fuel and fuel-related costs of such sales to total sales revenues was 98.0%. Given that the actual ratio of costs to revenues fell outside of the agreed upon 75% - 85% range per the Stipulation, the Company revalued the fuel and fuel-related cost component of applicable purchases during the test period at the maximum percentage allowed under the Stipulation, which is 85% of the total purchase cost. To reflect this revaluation of fuel costs for the test period, the Company recognized a $77,349 adjustment on the December 2022 Monthly Fuel report applicable to the reporting months of April – November 2022. The Company has continued to use the 85% to estimate the fuel and fuel-related cost component of similar purchases for the remainder of the test period.

Finally, it is customary to update the production plant allocation factor used to allocate system purchased power capacity costs from renewables and qualifying facilities to the North Carolina retail jurisdiction and among North Carolina retail customer classes each April to the production plant allocation factor from the prior calendar year cost of service study. This allocation factor is utilized consistently for an entire test period. In April of 2022, the update to the 2021 production plant allocation factor was inadvertently overlooked and capacity costs continued to be

allocated based on the 2020 production plant allocation factor. In the month of December 2022, DEP calculated a $461,792 true-up applicable to the months of April – November 2022 to reflect utilization of the 2021 production plant allocation factor.

Q. IS THE COMPANY PROPOSING ANY OTHER COST ADJUSTMENTS TO THE TWELVE-MONTH TEST PERIOD UNDER-COLLECTION BEING REQUESTED FOR COST RECOVERY IN THIS PROCEEDING THAT WERE NOT REMITTED ON THE MONTHLY FUEL REPORTS?

A. Yes. NCUC Rule R8-55(d)(3) allows the Company to update the fuel and fuel-related cost recovery balance up to thirty (30) days prior to the hearing. The Company elected this option and supplemented the proposed fuel rates in Docket No. E-2, Sub 1292 to include the under-collection experienced by the Company of $45,010,462 during the months of April, May, and June 2022. That request was approved by the Commission in the rates set forth in Docket No. E-2, Sub 1292; therefore, that under-collected amount has been excluded from the request for recovery in this proceeding.

Finally, consistent with the approach approved by the Commission in Docket No. E-2, Sub 1204, the Company is proposing to recover the related component of liquidated damages associated with the sale of by-products that were incurred in the test period on a cash basis rather than an accrual basis. To achieve this result, the North Carolina retail share of associated liquidated damages accrued during the test period has been excluded from the test period under-collection and the North Carolina retail share of the associated liquidated damages cash payment made during the test period has been included. These adjustments of approximately $(1.2) million and $5.3 million, respectively, are presented on Harrington Exhibit 3A and further itemized by customer class on Harrington Exhibits 3B through 3F.

For additional clarity, please note that the prospective North Carolina retail portion of the associated liquidated damages cash payment to be made during the billing period of approximately $5.2 million has also been included in projected billing period costs consistent with the approach approved by the Commission in Docket No. E-2, Sub 1292.

Q. DO YOU BELIEVE DEP'S FUEL AND FUEL-RELATED COSTS INCURRED IN THE TEST YEAR ARE REASONABLE?

A. Yes. As shown on Harrington Exhibit 8A, DEP's test year actual fuel and fuel-related costs were 3.506 cents/kWh. Key factors in DEP's ability to maintain lower fuel and fuel-related rates include its generating portfolio of diverse fuel sources, the capacity factors of its nuclear fleet, and fuel procurement strategies, which mitigate volatility in supply costs. Other key factors include DEP's and DEC's respective expertise in transporting, managing and blending fuels, procuring reagents, and utilizing purchasing synergies of the combined Company, as well as the joint dispatch of DEP's and DEC's generation resources.

Company Witness Flanagan discusses the performance of the fossil/hydro/solar fleet, as well as the chemicals that DEP uses to reduce emissions. Company Witness Swez discusses fossil fuel costs and fossil fuel procurement strategies. Company Witness Cameron discusses nuclear fuel costs and nuclear fuel procurement strategies, and Company Witness Simril discusses the performance of DEP's nuclear generation fleet.

Q. WHAT ARE THE KEY DRIVERS IMPACTING THE PROPOSED FUEL AND FUEL-RELATED COST FACTORS?

A. Ninety-one percent of the fuel rate increase is the request for collection of $445.1 million in under-collected fuel costs compared to the requested $255.4 million under-collection in existing rates. The remaining nine percent of the fuel rate increase is driven by anticipated increases in sales volumes that require the dispatch of higher cost generating units to supply additional sales.

Q. HAS THE COMPANY FILED WORKPAPERS SUPPORTING THE CALCULATIONS, ADJUSTMENTS, AND NORMALIZATIONS AS REQUIRED BY NCUC RULE R8-55(E)(11)?

A. Yes. Working papers supporting the calculations, adjustments, and normalizations utilized to derive the proposed fuel factors are included with this filing.

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

A. Yes. It does.