STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1304

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of Application of Duke Energy Carolinas, 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 SIGOURNEY CLARK FOR DUKE ENERGY CAROLINAS, LLC**

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Sigourney Clark. My business address is 5413 Shearon Harris Road, New Hill, North Carolina.

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

A. I am a Rates and Regulatory Strategy Manager for Duke Energy Carolinas, LLC ("DEC" or the "Company").

Q. PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL QUALIFICATIONS.

A. I received my Bachelor of Science, focused in Finance and Accounting, from North Carolina State University, and I received a Master of Business Administration degree from East Carolina University. I began my career in 2013 with Duke Energy at the Shearon Harris Nuclear Power Plant, and I have held various roles, most recently Senior Project Controls Specialist. I joined the Rates Department in 2022 as Rates and Regulatory Strategy Manager.

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

A. Yes. I filed testimony in the Company's 2023 fuel proceeding in Docket No. E-7, Sub 1282.

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

A. Yes. DEC's 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 Clark Exhibits 1 through 7, along with supporting work papers. The test period used in supplying this information and data is the twelve months ended December 31, 2023 ("test period"), and the billing period is September 1, 2024 through August 31, 2025 ("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 DEC's books and records. These books, records, and reports of DEC are subject to review by the appropriate regulatory agencies in the three jurisdictions that regulate DEC's electric rates. In addition, independent auditors perform an annual audit to provide assurance that, in all material respects, internal accounting controls are operating effectively and DEC's financial statements are accurate.

Q. WERE CLARK EXHIBITS 1 THROUGH 7 PREPARED BY YOU OR AT YOUR DIRECTION AND UNDER YOUR SUPERVISION?

A. Yes, these exhibits were either prepared by me or at my direction and under my supervision, and consist of the following:

Exhibit 1: Summary Comparison of Fuel and Fuel-Related Costs Factors.

Exhibit 2:

Schedule 1: Fuel and Fuel-Related Costs Factors - reflecting a

95.73% proposed nuclear capacity factor and projected megawatt hour ("MWh") sales.

Schedule 2: Fuel and Fuel-Related Costs Factors - reflecting a 95.73% nuclear capacity factor and normalized test period sales.

Schedule 3: Fuel and Fuel-Related Costs Factors - reflecting a 91.90% North American Electric Reliability Corporation ("NERC") five-year national weighted average nuclear capacity factor for pressurized water reactors and projected billing period MWh sales.

Exhibit 3:

Page 1: Calculation of the Proposed Composite Experience Modification Factor ("EMF") rate.

Page 2: Calculation of the EMF for residential customers.

Page 3: Calculation of the EMF for general service/lighting customers.

Page 4: Calculation of the EMF for industrial customers.

Exhibit 4: MWh Sales, Fuel Revenue, and Fuel and Fuel-Related Expense, as well as System Peak for the test period.

Exhibit 5: Nuclear Capacity Ratings.

Exhibit 6: December 2023 Monthly Fuel Reports.

1) December 2023 Monthly Fuel Report required by NCUC

Rule R8-52.

2) December 2023 Monthly Base Load Power Plant Performance Report required by NCUC Rule R8-53.

Exhibit 7: Voltage Differential Calculation Proposed Base Rate Decrement Adjustment Related to Voltage Differential

Q. PLEASE EXPLAIN CLARK EXHIBIT 1.

A. Clark Exhibit 1 presents a summary of fuel and fuel-related cost factors, including the current fuel and fuel-related cost factors, the fuel and fuel-related cost factor calculations as required under Rule R8-55, and the proposed fuel and fuel-related cost factors.

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

A. DEC proposes fuel and fuel-related costs factors for residential, general service/lighting, and industrial customers of 2.7880¢, 2.5505¢, and 2.6843¢ per kWh, respectively, to be reflected in rates during the billing period. The factors DEC proposes in this proceeding incorporate a 95.73% nuclear capacity factor as testified to by Company witness Capps, projected fossil fuel costs as testified to by Company witness Swez, projected nuclear fuel costs as testified to by Company witness Cameron, and projected reagents costs as testified to by Company witness Flanagan. The components of the proposed fuel and fuel-related cost factors by customer class, as shown on Clark Exhibit 1, are as follows:

Description	Residential cents/kWh	General cents/kWh	Industrial cents/kWh	Composite cents/kWh
Total adjusted Fuel and Fuel Related Costs	2.3061	2.3045	2.2951	2.3032
EMF Increment (Decrement)	0.4819	0.2460	0.3892	0.3656
EMF Interest (Decrement)	-	-	-	-
Net Fuel and Fuel Related Costs Factors	2.7880	2.5505	2.6843	2.6688

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

A. Customer bills will increase when the proposed fuel and fuel-related costs factors become effective on September 1, 2024 but then decrease on January 1, 2025.

For the four-month period beginning September 1, 2024 and ending December 31, 2024, a typical residential customer using 1,000 kWh per month would experience an increase of $1.60, or 1.1%. The impacts for average general service/lighting customers and industrial customers vary by customer, but are approximately increases of 2.9% and 9.1%, respectively. The increases are attributable to billing the EMF and EMF interest increment fuel factors from Docket No. E-7, Sub 1282 over 16 months, as approved by the Commission in the prior fuel proceeding.

Upon the expiration of the additional four-month billing of the EMF and EMF interest increment fuel factors described above, customer bills are expected to decrease. A typical residential customer using 1,000 kWh per month would experience a decrease of $12.68, or 8.9% from fuel factors currently in effect. The impacts for average general service/lighting customers and industrial customers vary by customer, but are approximate decreases of 12.5% and

15.9%, respectively from fuel factors currently in effect.

The table below shows both the proposed and existing fuel and fuel-related costs factors.

Description	Residential cents/kWh	General cents/kWh	Industrial cents/kWh	Composite cents/kWh
Proposed Total Fuel Factor	2.7880	2.5505	2.6843	2.6688
EMF (Extension from Docket No. E-7, Sub 1282)	1.2579	1.2342	1.3007	1.2568
EMF Interest (Extension from Docket No. E-7, Sub 1282)	0.0084	0.0082	0.0087	0.0084
Total Fuel Factor Charged 9/1/24 to 12/31/24	4.0543	3.7929	3.9937	3.934
Existing Total Fuel Factor	3.8950	3.5020	3.2422	3.6069
Increase in Fuel Factor at 9/1/24	0.1593	0.2909	0.7515	0.3271
Decrease in Fuel Factor at 1/1/25	(1.2663)	(1.2424)	(1.3094)	(1.2652)

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

A. The decrease in the proposed net fuel and fuel-related costs factors is primarily driven by a $215 million under-recovery in the current test period compared to a $998 million under-recovery included in current rates. While this decrease in the under-recovered position is the primary driver for the change in fuel and fuel-related cost factors year over year, the Company continued to experience a fairly significant under-recovery during the test year. As Witness Swez states in his testimony delivered coal prices continued to increase during the test year due to historically high coal commodity costs experienced in 2021 and 2022. Inversely, the Company's average price of gas purchased, inclusive of gas supply, transportation, storage and financial hedging, for the test period declined.

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

A. For this filing, DEC used an hourly stochastic dispatch model in order to generate its fuel forecasts. This hourly stochastic dispatch model considers the latest forecasted fuel prices, reflective of market supply chain dynamics, 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 dispatches DEC's and DEP's generation resources via joint dispatch, which optimizes the generation fleets of DEC and DEP for the benefit of customers.

Q. PLEASE EXPLAIN WHAT IS SHOWN ON CLARK EXHIBIT 2, SCHEDULES 1, 2, AND 3, INCLUDING THE NUCLEAR CAPACITY FACTORS.

A. Exhibit 2 is divided into three schedules. Schedule 1 sets forth system fuel costs used in the determination of the prospective fuel and fuel-related costs. The calculation uses the nuclear capacity factor of 95.73% and provides the forecasted MWh sales for the billing period on which system generation and costs are based. Forecasted generation and purchased power associated with the Company's CPRE Program, established by N.C. Gen. Stat § 62-110.8 and approved by this Commission in Docket No. E-7, Sub 1156, used to supply the Company's native load has been included in Exhibit 2, as part of total system generation to supply native load sales. Recovery of the purchased and generated power costs associated with CPRE generation and purchased power are included in the Company's Rider CPRE filing in Docket No. E-7, Sub 1307.

Schedule 2 also uses the proposed capacity factor of 95.73% along with normalized test period kWh generation, as prescribed by NCUC Rule R8-55 (e)(3), which requires the use of the methodology adopted by the Commission in DEC's last general rate case.

The capacity factor shown on Schedule 3 is prescribed in NCUC Rule R8-55(d)(1). The normalized five-year national weighted average NERC nuclear capacity factor is 91.90%. This capacity factor is based on the 2018 through 2022 data reported in the NERC Generating Unit Statistical Brochure for pressurized water reactors rated at and above 800 MWs. Projected billing period kWh generation was also used for Schedule 3 per NCUC Rule R8-55 (d)(1).

Page 2 of Exhibit 2, Schedules 1, 2, and 3 presents the calculation of the proposed fuel and fuel-related costs factors by customer class resulting from (1) the allocation of costs for which there is no specific guidance in N.C. Gen. Stat. § 62-133.2(a2) and (2) the allocation of renewable and cogeneration power capacity costs by customer class.

For the allocation of costs for which there is no specific guidance, the Company historically utilized a uniform percentage average bill adjustment method. However, in the Company's most recent general rate case, in Docket No. E-7, Sub 1276, the Commission ordered that the Company shall use base fuel rates, exclusive of this uniform method in its 2024 fuel adjustment proceeding. Therefore, the Company has calculated its proposed fuel factors on projected sales, by customer class, at the customer meter during the billing period, which follows cost-causation principles.

For the allocation of renewable and cogeneration power capacity costs, the Company has calculated its proposed fuel factors on the basis of the 2022 annual cost of service production demand allocators since the 2023 cost of service study is not available at the time of filing. When this allocator becomes known, DEC may elect to make a supplemental filing to adjust its proposed billing period rates, if the estimated rates are materially impacted.

Q. PLEASE SUMMARIZE THE METHOD USED TO ADJUST TEST PERIOD KWH GENERATION IN CLARK EXHIBIT 2, SCHEDULES 2 AND 3.

A. The methodology used by DEC in its most recent general rate case for determining generation mix is based upon generation dispatch modeling as used on Clark Exhibit 2, Schedule 1. For purposes of this filing, as a proxy for generation dispatch modeling, Clark Exhibit 2, Schedules 2 and 3 adjust the coal generation produced by the dispatch model. For example, on Exhibit 2, Schedule 2, which is based on the proposed capacity factor and normalized test period sales, DEC decreased the level of coal generation to account for the difference between forecasted generation and normalized test period generation. On Exhibit 2, Schedule 3, which is based on the NERC capacity factor, DEC increased the level of coal generation to account for the decrease in nuclear generation. The decrease in nuclear generation results from assuming a 91.90% NERC nuclear capacity factor compared to the proposed 95.73% nuclear capacity factor.

Q. CLARK EXHIBIT 3 SHOWS THE CALCULATION OF THE TEST PERIOD (OVER)/UNDER RECOVERY BALANCE AND THE EMF RATE. HOW DID FUEL EXPENSES COMPARE WITH FUEL REVENUE DURING THE TEST PERIOD?

A. Clark Exhibit 3, Pages 1 through 4, demonstrates that for the test period, DEC experienced an under-recovery for the residential, general service/lighting and industrial customer classes of approximately $109.9 million, $60.2 million and $45.5 million respectively.

The (over)/under recovery amount was determined each month by comparing the amount of fuel revenue collected for each class to actual fuel and fuel-related costs incurred by class. The revenue collected is based on actual monthly sales for each class. Actual fuel and fuel-related costs incurred were first allocated to the NC retail jurisdiction based on jurisdictional sales, with consideration given to any fuel and fuel-related costs or benefits that should be directly assigned. The North Carolina retail amount is further allocated among customer classes as follows: (1) capacity-related purchased power costs were allocated among customer classes based on production plant allocators from DEC's cost of service study and (2) all other fuel and fuel-related costs were allocated among customer classes based on fixed allocation percentages established in DEC's previous fuel and fuel-related cost recovery proceeding based on the uniform percentage average bill adjustment method.

Q. PLEASE EXPLAIN CLARK EXHIBIT 4.

A. As required by NCUC Rule R8-55(e)(1) and (e)(2), Clark Exhibit 4 sets forth 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 and adjusted for projected customer growth. Both of these adjustments were determined using the methods approved for use in DEC's last general rate case (Docket No. E-7, Sub 1276) and used in its last fuel proceeding. Clark Exhibit 4 also sets forth actual test period fuel-related revenue and fuel expense on a total DEC basis and for North Carolina retail. The test period peak demand data for the system and for NC retail customer classes, typically included on Exhibit 4 for informational purposes, is not available at the time of this filing. The Company will make a supplemental filing to update Exhibit 4 to include this data when it becomes available.

Q. PLEASE EXPLAIN CLARK EXHIBIT 5.

A. Clark Exhibit 5 sets forth the capacity ratings for each of DEC's nuclear units, in compliance with Rule R8-55(e)(12).

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

A. Yes. As shown on Clark Exhibit 6, DEC's test year actual fuel and fuel-related costs were 2.3867¢ per kWh. Key factors in DEC's ability to maintain lower fuel and fuel-related rates for the benefit of customers include (1) its diverse generating portfolio mix of nuclear, coal, natural gas, and hydro; (2) the high capacity factors of its nuclear fleet; and (3) fuel procurement strategies that mitigate volatility in supply costs. Other key factors include the combination of DEC's and DEP's

respective skills in procuring, transporting, managing, and blending fuels, procuring reagents and the increased and broader purchasing ability of Duke Energy Corporation after its merger with Progress Energy, Inc., as well as the joint dispatch of DEC's and DEP's generation resources. Company witness Capps discusses the performance of DEC's nuclear generation fleet, and Company witness Flanagan discusses the performance of the fossil and hydro fleet, as well as the use of chemicals for reducing emissions. Company witness Swez discusses fossil fuel procurement strategies, and Company witness Cameron discusses DEC's nuclear fuel costs and procurement strategies.

Q. PLEASE EXPLAIN CLARK EXHIBIT 7.

A. In the Company's most recent general rate case in Docket No. E-7, Sub 1276, the Commission ordered the Company to implement voltage differentiation in fuel rates in its next fuel proceeding. With the transition of voltage differentiation out of the Company's base rates from the general rate case proceeding into the Company's proposed fuel rates in this proceeding, the Company is proposing a decrement adjustment to its base rates, effective September 1, 2024 to coincide with new fuel rates that will become effective on the same date, once approved, in this proceeding. The Company proposes this decrement adjustment expire when new base rates become effective in a future general rate case proceeding. The decrement adjustment, if approved, will ensure that customers are held harmless in the transition of fuel expense associated with voltage differentiation between base rates and fuel rates.

Clark Exhibit 7 calculates the amount of fuel expense associated with voltage

differentiation allocated to North Carolina retail customers and determines a decrement adjustment by customer class using each class's contribution to total projected sales.

Q. IN DEVELOPING THE PROPOSED FUEL AND FUEL-RELATED COSTS FACTORS, WERE THE FUEL COSTS ALLOCATED IN ACCORDANCE WITH N.C. GEN. STAT. § 62-133.2(A2)?

A. Yes, the costs for which statutory guidance is provided are allocated in compliance with N.C. Gen. Stat. § 62-133.2(a2). These costs are described in subdivisions (4), (5), (6), (10) and (11) of N.C. Gen. Stat. § 62-133.2(a1). Subdivisions (4), (6), (10) and (11) address purchased power non-capacity costs. Subdivisions (5), (6), (10) and (11) address purchased power capacity costs. The allocation methods for these costs are as follows:

(a) Capacity-related purchased power costs in Subdivisions (5), (6), (10) and (11) are allocated based upon the method approved in the Company's most recent general rate case proceeding, which occurred in Docket No. E-7, Sub 1276. In that proceeding, the Commission ordered that the production demand allocation method is appropriate for allocating capacity-related purchased power costs in the Company's annual fuel proceedings. In this proceeding, the Company is allocating these costs based on the 2022 annual cost of service production demand allocators since the 2023 cost of service study is not available at the time of filing. During the billing period, when DEC computes its actual fuel costs for comparison to fuel revenues realized, DEC will use the appropriate production demand allocator from the 2023 cost of service study in determining North Carolina

retail's share of actual costs by customer class. In addition, when this allocator becomes known, DEC may elect to make a supplemental filing to adjust its proposed billing period rates, if the estimated rates are materially impacted.

(b) Non-capacity related purchased power costs in Subdivisions (4), (6), (10) and (11) are allocated in the same manner as all other fuel and fuel-related costs, which is based on projected sales, by customer class, at the customer meter during the billing period, which follows cost-causation principles.

Q. HOW ARE THE OTHER FUEL AND FUEL-RELATED COSTS ALLOCATED FOR WHICH THERE IS NO SPECIFIC GUIDANCE IN N.C. GEN. STAT. § 62-133.2(A2)?

A. System costs are allocated to the NC retail jurisdiction based on jurisdictional sales, with consideration given to any fuel and fuel-related costs or benefits that should be directly assigned. Costs are further allocated among customer classes using the cost causation methodology in setting fuel rates in this fuel proceeding.

Q. HAS THE COMPANY REVIEWED ITS FUEL COST PROXY PERCENTAGE CALCULATION FOR 2023?

A. Yes, based on the analysis of the composite (i.e., DEC and DEP combined) 2023 short-term off-system sales, the actual fuel and fuel-related ratio of such sales was 77.36% of total sales revenues. Accordingly, the Company proposes setting fuel costs associated with power purchases made by the Company in calendar year 2023 at a level equal to 77.36% of the total fuel cost as reflected in Clark Exhibit 6 Schedule 3, Page 3 of 5.

Q. HAS DEC'S ANNUAL INCREASE IN THE AGGREGATE AMOUNT OF THE COSTS IDENTIFIED IN SUBDIVISIONS (4), (5), (6), (10) AND (11) OF N.C. GEN. STAT. § 62-133.2(a1) EXCEEDED 2.5% OF ITS NORTH CAROLINA RETAIL GROSS REVENUES FOR THE TEST PERIOD?

A. No. N.C. Gen. Stat. § 62-133.2(a2) limits the amount of annual increase in certain purchased power costs identified in § 62-133.2(a1) that DEC can recover to 2.5% of its North Carolina retail gross revenues for the preceding calendar year. The amount recoverable in DEC's proposed rates for purchased power under the relevant sections of N.C. Gen. Stat. § 62-133.2(a1) does not increase by more than 2.5% of DEC's gross revenues for its North Carolina retail jurisdiction for the test period.

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

A. Yes. The work papers supporting the calculations, adjustments and normalizations are included with the filing in this proceeding**.**

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

A. Yes, it does.