PLACE: Dobbs Building, Raleigh, North Carolina

DATE: Wednesday, May 31, 2023

TIME: 1:00 p.m. - 3:54 p.m.

DOCKET NO: E-7, Sub 1282

BEFORE: Commissioner Karen M. Kemerait, Presiding
Chair Charlotte A. Mitchell
Commissioner ToNola D. Brown-Bland
Commissioner Daniel G. Clodfelter
Commissioner Kimberly W. Duffley
Commissioner Jeffrey A. Hughes
Commissioner Floyd B. McKissick, Jr.

IN THE MATTER OF:

Application of Duke Energy Carolinas, LLC, Pursuant to N.C.G.S. 62-133.2 and Commission Rule R8-55 Relating to Fuel and Fuel-Related Charge Adjustments for Electric Utilities

VOLUME 2

NORTH CAROLINA UTILITIES COMMISSION

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TABLE OF CONTENTS

EXAMINATIONS

E X A M I N A T I O N S (Cont'd.)

Panel,
SIGOURNEY CLARK and CHRIS BAUER

E X A M I N A T I O N S (Cont'd.)

E X H I B I T S

P R O C E E D I N G S

COMMISSIONER KEMERAIT: Good afternoon, everyone. We'll go back on the record.

Before we get started with the Applicant's case, are there any preliminary matters that we need to discuss before we get started?

MR. KAYLOR: Yes. The Company and the Public Staff are finalizing the Partial Settlement and Stipulation, and we hope to have that up here for the parties to see in writing, hopefully within the next half hour or so.

COMMISSIONER KEMERAIT: Any preliminary matters from any other parties?

(No response)

Seeing none, so what we're going to do is we're going to start with the Applicant's case, and my understanding is it is going to be DEC Witness Swez.

MR. KAYLOR: Correct.

COMMISSIONER KEMERAIT: And then my hope and expectation is that the Settlement Agreement will be in this hearing room before we move on to DEC's next panel so that everyone will have an opportunity to look at the Settlement Agreement. We had certainly hoped and expected to have had the Settlement

Agreement finalized and prepared and provided to the Commission and all of the parties in advance of the beginning of the hearing but that hasn't happened so we will get it to everyone as soon as possible.

MR. KAYLOR: Thank you.

MS. TOON: If I may, Commissioner?

COMMISSIONER KEMERAIT: Yes. Would you like to --

MS. TOON: Yes, I just wanted to give you an update if that will be helpful.

COMMISSIONER KEMERAIT: Right.

MS. TOON: So, we're working on execution papers now. Apologies, and thank you for your patience. We should have hard copies in the next 30 minutes.

COMMISSIONER KEMERAIT: Okay. Within the next 30 minutes. And as a preliminary matter about the Settlement Agreement or the Stipulation, did DEC and the Public Staff provide information - workpapers, any information, documentation - to the other parties so that they have detailed information about what is included in the Settlement Agreement or Stipulation?

MS. TOON: Yes. Last night, we provided CUCA, CIGFUR and SACE counsel with a summary of the

core terms as well as relative workpapers and added some references there, and they did confirm our confirm receipts.

COMMISSIONER KEMERAIT: Okay. With that, we'll go ahead with the hearing and the case is with DEC.

MS. TOON: Thank you.

COURT REPORTER: Please use your microphone.

MS. TOON: Absolutely. My apologies. Is that better?

COURT REPORTER: Yes, thank you.

MS. TOON: The Company would like to call Mr. Swez to the stand, please.

COMMISSIONER KEMERAIT: Good afternoon, Mr. Swez. I'll begin by swearing you in. Please place your left hand on the Bible and raise your right hand.

JOHN D. SWEZ;

having been duly sworn,

testified as follows:

COMMISSIONER KEMERAIT: Thank you.

DIRECT EXAMINATION BY MS. TOON:

Q Good morning, Mr. Swez.

A Good afternoon.

Q It is afternoon. We've done that again. Good

afternoon. Would you please state your name and business address for the record?

A Yes, my name is John Swez. My business address is 526 South Church Street, Charlotte, North Carolina 28202.

Q And by whom are you employed and in what capacity?

A I am employed by Duke Energy Carolinas as Managing Director of Trading and Dispatch.

Q Did you cause to be prefiled in this docket on February 28th, 2023, 14 pages of direct testimony and four exhibits?

A Yes, I did.

Q Do you have any changes or corrections to your direct testimony or exhibits?

A I do not.

Q If I were to ask you the same questions that appear in your direct testimony today, would your answers remain the same?

A Yes, they would.

Q Did you also cause to be prefiled in this docket on May 5th, 2023, seven pages of supplemental testimony?

A Yes, I did.

Q Do you have any changes or corrections to your supplemental testimony?
A I do not.
Q And Mr. Swez, if I were to ask the same questions that appear in your supplemental testimony today, would your answers remain the same?
A Yes, they would.
Q Did you also cause to be prefiled in this docket on May 18th, 2023, four pages of rebuttal testimony and one exhibit?
A Yes, I did.
Q Do you have any changes or corrections to your rebuttal testimony or exhibit?
A I did have changes and I corrected those in the revised -- I corrected the testimony as well as the one exhibit in the revised rebuttal testimony submitted on May 26th.
Q If I were to ask you the same questions that appear in your rebuttal testimony today, acknowledging the edits you made on May 26th, would your answers be the same?
A Yes, they would in conjunction with my revised rebuttal testimony.
Q Did you also cause to be filed -- prefiled in

this docket on May 26th, three pages of revised rebuttal testimony and one exhibit?

A Yes, I did.

Q Do you have any changes or corrections to your revised rebuttal testimony or exhibit?

A I do not.

Q And if I were to ask you the same questions that appear in your rebuttal -- revised rebuttal testimony, would your answers be the same?

A Yes, they would.

MS. TOON: Commissioner Kemerait, at this time, I move that the prefiled direct testimony, supplemental testimony, rebuttal testimony, and revised rebuttal testimony of Mr. Swez be copied into the record as if orally given from the stand.

COMMISSIONER KEMERAIT: So the direct testimony filed on February 28th of 2023 consisting of 14 pages, the supplemental testimony filed on May the 5th, 2023 consisting of seven pages, the rebuttal testimony filed on May 18th of 2023 consisting of four pages, the revised rebuttal testimony filed on May the 26th of 2023 consisting of three pages will be copied into the record as if given orally from the stand.

The four exhibits that were attached to the

direct testimony, the one exhibit attached to the rebuttal testimony, and the one exhibit that was attached to the revised rebuttal testimony will be marked for identification purposes as prefiled.

MS. TOON: Thank you.

(WHEREUPON, Swez Exhibits 1-4 are marked for identification as prefiled.)

(WHEREUPON, the prefiled direct testimony of JOHN D. SWEZ is copied into the record as if given orally from the stand.)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1282

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of	)	
Application of Duke Energy Carolinas, LLC	)	**DIRECT TESTIMONY OF**
Pursuant to G.S. 62-133.2 and NCUC Rule	)	**JOHN D. SWEZ**
R8-55 Relating to Fuel and Fuel-Related	)	**DUKE ENERGY CAROLINAS, LLC**
Charge Adjustments for Electric Utilities	)	

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John D. Swez, and my business address is 526 S. Church Street, Charlotte, North Carolina 28202.

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

A. I am employed as Managing Director, Trading and Dispatch, by Duke Energy Carolinas, LLC ("Duke Energy Carolinas," "DEC," or the "Company"). In that capacity, I lead the organization responsible for Power Trading on behalf of Duke Energy's regulated utilities including DEC and Duke Energy Progress, LLC ("DEP") (collectively, the "Companies"), as well as generation dispatch on behalf of Duke Energy's regulated utilities in Indiana, Ohio, and Kentucky.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL EXPERIENCE.

A. I received a Bachelor of Science degree in Mechanical Engineering from Purdue University in 1992. I received a Master of Business Administration degree from the University of Indianapolis in 1995. I joined PSI Energy, Inc. in 1992 and have held various engineering positions with the Company or its affiliates in the generation dispatch or power trading departments. In 2003, I assumed the position of Manager, Real-Time Operations. On January 1, 2006, I became the Director of Generation Dispatch and Operations with responsibility for (i) generation dispatch; (ii) unit commitment; (iii) 24-hour real-time operations; and (iv) plant communications related to short-term generation maintenance planning for Duke Energy's regulated utilities in Indiana, Ohio, and Kentucky. During the period 2010-2017, I also managed the DEC Generation Dispatch function. I assumed my current role on November 1, 2019. Finally, I am

a registered Professional Engineer licensed in the States of North Carolina and Indiana.

Q. HAVE YOU TESTIFIED BEFORE THIS COMMISSION IN ANY PRIOR PROCEEDING?

A. Yes. I testified in support of DEP's 2021 fuel and fuel-related cost recovery application in Docket No. E-2, Sub 1272.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to describe DEC's fossil fuel purchasing practices, provide actual fossil fuel costs for the period January 1, 2022 through December 31, 2022 ("test period") versus the period January 1, 2021 through December 31, 2021 ("prior test period"), and describe changes projected for the billing period of September 1, 2023 through August 31, 2024 ("billing period"). Additionally, I will discuss the proposed changes to the fuel cost proxy percentage calculation used to approximate the actual fuel cost component of a power purchase when the actual fuel cost component is unavailable or unidentified as a component of the price paid for energy under a power purchase contract.

Q. PLEASE EXPLAIN WHY THE COMPANY IS PROPOSING A CHANGE TO THE FUEL COST PROXY PERCENTANGE CALCULATION.

A. The most recent proxy percentage was established during the 2008 fuel proceeding, through an analysis of off-system sales from calendar year 2007. Since the 2008 fuel proceeding, the proxy has not been updated. Due to increasing fuel commodity prices and a changing resource mix, the Company and the Public Staff have agreed that the fuel proxy established in the 2008 fuel proceeding no

longer represents a reasonable approximation of the fuel cost portion of power purchases 14 years later. Furthermore, both the Company and the Public Staff consider it reasonable to continue to use the accepted methodology of using the fuel component of the Companies' off-system sales as a reasonable basis for approximating fuel costs associated with power purchases when actual fuel costs are unavailable or unidentified as a component of the price paid for energy under a power purchase contract. Therefore, the Company and the Public Staff have reached agreement that, per the attached Stipulation (Swez Exhibit 4), for future fuel proceedings starting with the Company's 2023 annual fuel rider proceeding, 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 basis 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.

Q. PLEASE EXPLAIN THE CHANGE IN THE FUEL COST PROXY PERCENTAGE CALCULATION

A. For the Company's annual fuel rider proceedings filed during 2023 through 2027, if actual fuel cost for a power purchase is unavailable or the fuel cost component is unidentified under a power purchase contract, the Company shall assume that the fuel cost was in a range between 75% to 85%, the exact percentage to be determined by the parties beginning with a composite calendar year 2022 review of short-term off-system sales, inclusive of Southeast Energy Exchange Market ("SEEM") sales (applied to the test year purchases under review in 2023 fuel proceedings) through a composite calendar year 2026 review of short-term off-

system sales (applied to the test year purchases under review in 2027 fuel proceedings). The Company will propose a composite total fuel cost to total energy cost ratio, based on DEC's and DEP's combined short-term off-system sales for the calendar year. Such composite, in accordance with the terms of the Stipulation, shall be no greater than 85%, but no less than 75%. For each of the above-specified fuel proceeding test years, the Company will assess the prior calendar year composite proxy percentage to be used by both DEC and DEP, consistently for the full test periods of the subsequent annual fuel rider proceeding, despite the three-month difference in end date between DEC's and DEP's twelve-month test periods. To the extent that the analysis of annual composite short-term off-system sales indicates that the actual fuel and fuel-related component of such sales revenue falls outside the range of 75% to 85%, the composite proxy percentage will be adjusted accordingly to reflect either the minimum or maximum of the range.

Q. HAS THE COMPANY AND THE PUBLIC STAFF REACHED A STIPULATION IN THIS MATTER?

A. Yes, as of January 5, 2023, the Company and the Public Staff entered into a Stipulation Regarding the Proper Methodology for Determining the Fuel Costs Associated with Power Purchases from Power Marketers and Others. The executed Stipulation is attached as Swez Exhibit 4.

Q. YOUR TESTIMONY INCLUDES FOUR EXHIBITS. WERE THESE EXHIBITS PREPARED BY YOU OR AT YOUR DIRECTION AND UNDER YOUR SUPERVISION?

A. Yes. These exhibits were prepared at my direction and under my supervision, and consist of Swez Exhibit 1, which summarizes the Company's Fossil Fuel Procurement Practices, Swez Exhibit 2, which summarizes total monthly natural gas purchases and monthly contract and spot coal purchases for the test period and prior test period, and Swez Confidential Exhibit 3, which summarizes the annual fuels related transactional activity between DEC and Piedmont Natural Gas Company, Inc. ("Piedmont") for spot commodity transactions during the test period, as required by the Merger Agreement between Duke Energy and Piedmont. Swez Exhibit 4 sets out the executed Stipulation between the Public Staff and the Company entered into January 5, 2023.

Q. PLEASE PROVIDE A SUMMARY OF DEC'S FOSSIL FUEL PROCUREMENT PRACTICES.

A. A summary of DEC's fossil fuel procurement practices is set out in Swez Exhibit 1.

Q. PLEASE DESCRIBE THE COMPANY'S APPROACH TO UNIT COMMITMENT AND DISPATCH OF ITS GENERATION ASSETS TO RELIABLY AND ECONOMICALLY SERVE ITS CUSTOMERS.

A. Both DEC and DEP perform the same detailed daily process to determine the unit commitment plan that economically and reliably meets the Company's projected system needs over the next seven days. The Company utilizes a production cost model to determine an optimal unit commitment plan to economically and reliably meet system requirements. The model minimizes the production costs needed to serve the projected customer demand within reliability and other system constraints over a period of time. Inputs to the model include, but are not limited

to, the following: (1) forecasted customer energy demand; (2) the latest forecasted fuel prices, reflective of market supply chain dynamics; (3) variable transportation rates; (4) planned maintenance and refueling outages at the generating units; (5) generating unit performance parameters; (6) reliability constraints such as units run to maintain day-ahead planning reserves or units required to run for transmission or voltage support; (7) expected market conditions associated with power purchases and off-system sales opportunities; and (8) projected variable renewable resource contributions (i.e. solar). The production cost model produces the optimized hourly unit commitment plan for the 7-day forecast period. This unit commitment plan also provides the starting point for dispatch, but dispatch is then also subject to real time adjustments due to changing system conditions, including management of natural gas transportation constraints. The unit commitment plan is prepared daily and adjusted, as needed, throughout any given day to respond to changing real time system conditions.

Q. PLEASE DESCRIBE THE COMPANY'S DELIVERED COST OF COAL AND NATURAL GAS DURING THE TEST PERIOD.

A. The Company's average delivered cost of coal per ton for the test period was $99.86 per ton, compared to $78.22 per ton in the prior test period, representing an increase of approximately 28%. The cost of delivered coal includes an average transportation cost of $33.65 per ton in the test period, compared to $31.68 per ton in the prior test period, representing an increase of approximately 6%. The Company's average price of gas purchased for the test period was $6.94 per Million British Thermal Units ("MMBtu"), compared to $4.22 per MMBtu in the prior test period, representing an increase of approximately 65%. The cost of gas

is inclusive of gas supply, transportation, storage and financial hedging.

DEC's coal burn for the test period was 3.2 million tons, compared to a coal burn of 5.3 million tons in the prior test period, representing a decrease of 40%. The Company's natural gas burn for the test period was 253.5 million MBtu, compared to a gas burn of 189.6 million MBtu in the prior test period, representing an increase of approximately 34%.

Changes in coal and natural gas burns were primarily driven by the relationship of coal commodity prices during 2022 relative to natural gas prices in the same period, as record high coal commodity prices off-set higher natural gas costs, reducing gas to coal generation switching especially at the Company's dual fuel operating ("DFO") stations.

Q. PLEASE DESCRIBE THE LATEST TRENDS IN COAL AND NATURAL GAS MARKET CONDITIONS.

A. Coal markets continue to experience a high degree of market volatility due to a number of factors, including: (1) the inability of coal suppliers to respond to increasing demand over 2021 and 2022, following the prior years of steep declines in coal generation demand; (2) natural gas price volatility; (3) continued uncertainty regarding proposed and imposed U.S. Environmental Protection Agency ("EPA") regulations for power plants; (4) increased demand in global markets for both steam and metallurgical coal; (5) tightened access to investor financing; (6) continued shifts in production from thermal to metallurgical coal as producers move away from supplying declining electric generation to take advantage of increasing demand from industry; and, (7) continued labor and resource constraints further limiting suppliers' operational

flexibility. In addition, the coal supply chain experienced significant challenges throughout 2021 and 2022 as historically low utility stockpiles combined with rapidly increasing demand for coal, both domestically and internationally, made procuring additional coal supply increasingly challenging. Producers were largely unable to respond to this rapid rise in demand due to capacity constraints resulting from labor and resource shortages. These factors combined to drive both domestic and export coal prices to record levels by late 2021 and limited coal supply availability. Continued labor and resource constraints, including the on-going threat of a rail strike in Q4 2022, caused prices to remain elevated over the course of 2022. Going into winter 2022 (Dec '22-Feb '23), coal commodity costs remained at historically high levels as rising production costs and expectations of continued short-term domestic and foreign demand from higher natural gas prices continue to put pressure on coal production. Despite current market conditions, coal producers are seeing the inflationary impacts of rising costs associated with mining operations including, but not limited to, labor and equipment costs putting additional pressure on their ability to respond to changes in market demand.

Long-term declines in demand for coal in the utility sector has also driven rail transportation providers to modify their business models to be less dependent on coal related transportation revenues. Although rail transportation providers are required to provide rail service, the Company's rail transportation providers have limited resources to adapt to significant changes in scheduling demand resulting from the Company's burn volatility, specifically in higher than forecasted coal burn scenarios. In 2021 and 2022, the Company experienced

escalated delivery delays created by rail transportation labor and resource shortages, increasing the average cycle time from mine to plant and decreasing actual rail deliveries versus scheduled deliveries by approximently 30%.

With respect to natural gas, the nation's natural gas supply has grown significantly over the last several years as producers enhanced production techniques, enhanced efficiencies, and lowered production costs. Natural gas prices are reflective of the dynamics between supply and demand factors, and in 2021 and 2022, such dynamics were influenced primarily by growth in export demand, stable production, lower than average storage inventory balances and seasonal weather demand. Gas production's slow response to rising prices and the uncertainty of future coal deliveries placed continued stress on gas storage replenishment through much of 2022, keeping upward pressure on gas prices into the latter half of 2022. However, beginning in January 2023, moderate weather, increasing inventory storage balances and growing production have caused natural gas prices to sharply decline.

There is a growing need for natural gas pipeline infrastructure, as gas production—particularly in low-cost regions such as Appalachia—is constrained as pipeline infrastructure permitting and regulatory process approval efforts are increasingly challenged, delaying planned pipeline construction and commissioning timing.

Over the longer-term planning horizon, natural gas supply has the ability to respond to changing demand while the pipeline infrastructure needed to move the growing supply to meet demand related to power generation, liquefied natural gas exports and pipeline exports to Mexico is highly uncertain.

Q. WHAT ARE THE PROJECTED COAL AND NATURAL GAS CONSUMPTIONS AND COSTS FOR THE BILLING PERIOD?

A. Based on the most recently completed forecast for use in this filing, which used market prices as of January 12, 2023, DEC's coal burn projection for the billing period is 3.7 million tons, compared to 3.2 million tons consumed during the test period. DEC's billing period projections for coal generation may be impacted due to changes from, but not limited to, the following factors: (1) delivered natural gas prices versus the average delivered cost of coal; (2) volatile power prices; and (3) electric demand. Combining coal and transportation costs, DEC projects average delivered coal costs of approximately $105.86 per ton for the billing period compared to $99.86 per ton in the test period. This increase in delivered costs is primarily driven by increased coal commodity costs due to limited coal supply and increased domestic and international demand. This includes an average projected total transportation cost of $30.48 per ton for the billing period, compared to $33.65 per ton in the test period. This projected delivered cost, however, is subject to change based on, but not limited to, the following factors: (1) exposure to market prices and their impact on open coal positions; (2) the amount of Central Appalachian coal DEC is able to purchase and deliver and the non-Central Appalachian coal DEC is able to consume; (3) changes in transportation rates; (4) performance of contract deliveries by suppliers and railroads which may not occur despite DEC's strong contract compliance monitoring process; and (5) potential additional costs associated with suppliers' compliance with legal and statutory changes, the effects of which can be passed on through coal contracts.

DEC's current natural gas burn projection for the billing period is approximately 260.9 million MBtu, which is an increase from the 253.5 million MBtu consumed during the test period. The current average forward Henry Hub price for the billing period is $3.99 per MMBtu, compared to $6.64 per MMBtu in the test period. Projected natural gas burn volumes will vary on factors such as, but not limited to, changes in actual delivered fuel costs and weather driven demand.

The net increase in DEC's overall burn projections for the billing period versus the test period is primarily driven by increases in projected load over the period.

Q. WHAT STEPS IS DEC TAKING TO ENSURE A COST-EFFECTIVE RELIABLE FUEL SUPPLY?

A. The Company continues to maintain a comprehensive coal and natural gas procurement strategy that has proven successful over the years in limiting average annual fuel price changes while actively managing the dynamic demands of its fossil fuel generation fleet in a reliable and cost effective manner. With respect to coal procurement, the Company's procurement strategy includes: (1) having an appropriate mix of term contract and spot purchases for coal; (2) staggering coal contract expirations in order to limit exposure to forward market price changes; and (3) diversifying coal sourcing as economics warrant, as well as working with coal suppliers to incorporate additional flexibility into their supply contracts. The Company conducts spot market solicitations throughout the year to supplement term contract purchases, taking into account changes in projected coal burns and existing coal inventory levels. Additionally, the Company negotiates coal

transportation contracts that support secure, reliable deliveries. As of July 1, 2022, the Company has implemented the Fuels and Related Equipment and Services Management and Supply Agreement (the "DECFM Agreement") between DEC and DEP, meaning DEC is the commercial face to the market for coal, reagents, and related transportation in the Carolinas. This agreement provides for an increasingly flexible fuel procurement strategy along with increased real-time logistical flexibility resulting in increased operational and cost efficiencies for customers.[1]

The Company has implemented natural gas procurement practices that include periodic Request for Proposals and shorter-term market engagement activities to procure and actively manage a reliable, flexible, diverse, and competitively priced natural gas supply. These procurement practices include contracting for volumetric optionality in order to provide flexibility in responding to changes in forecasted fuel consumption. DEC continues to maintain a short-term financial natural gas hedging plan to manage fuel cost risk for customers via a disciplined, structured execution approach. DEC monitors and make adjustments as necessary to its natural gas hedging program to ensure it remains appropriate based on market conditions and the Company's fuel procurement strategy.

Lastly, DEC procures long-term firm interstate and intrastate transportation to provide natural gas to their generating facilities. Given the Company's limited amount of contracted firm interstate transportation, the

[1] North Carolina Utilities Commission Docket No. E-7, Sub 1258 & Docket No. E-2, Sub 1282 Order Accepting Affiliate Agreement issued January 24, 2022.

Company purchases shorter term firm interstate pipeline capacity as available from the capacity release market. The Company's firm transportation ("FT") provides the underlying framework for the Company to manage the natural gas supply needed for reliable cost-effective generation. First, it allows the Company access to lower cost natural gas supply from Transco Zone 3 and Zone 4 and the ability to transport gas to Zone 5 for delivery to the Carolinas' generation fleet. Second, the Company's FT allows it to manage intraday supply adjustments on the pipeline through injections or withdrawals of natural gas supply from storage, including on weekends and holidays when the gas markets are closed. Third, it allows the Company to mitigate imbalance penalties associated with Transco pipeline restrictions, which can be significant. The Company's customers receive the benefit of each of these aspects of the Company's FT: access to lower cost gas supply, intraday supply adjustments at minimal cost, and mitigation of punitive pipeline imbalance penalties.

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

A. Yes, it does.

(WHEREUPON, the prefiled supplemental testimony of JOHN D. SWEZ is copied into the record as if given orally from the stand.)

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John D. Swez. My business address is 526 S. Tryon Street, Charlotte, North Carolina.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING?

A. Yes, on March 1, 2023, I caused to be pre-filed with the Commission my direct testimony and 4 exhibits.

Q. WHAT IS THE PURPOSE OF YOUR SUPPLEMENTAL TESTIMONY IN THIS PROCEEDING?

A. The purpose of this filing is to inform the Commission of enhancements the Company is implementing to optimize the independent 3rd party spot market coal prices used in its daily economic unit commitment and dispatch process to better reflect the market replacement price of coal given the inelasticity of coal supply. The Company refers to this enhanced modeling approach as "dynamic dispatch" and has been in conversations with the Public Staff during its development. The Company is informing the Commission that we are ready to implement this enhancement into our routine Unit Commitment and Dispatch process.

Q. PLEASE DESCRIBE THE COMPANY'S APPROACH TO UNIT COMMITMENT AND DISPATCH OF ITS GENERATION ASSETS TO RELIABLY AND ECONOMICALLY SERVE ITS CUSTOMERS.

A. As discussed in my direct testimony, both DEC and DEP perform the same detailed daily process utilizing a production cost model to determine the unit commitment plan to economically and reliably meet the Company's projected system needs over the next

seven days. The model minimizes the production costs needed to serve the projected customer demand within reliability and other system constraints. Inputs to the model include, but are not limited to, the following: (1) forecasted customer energy demand; (2) the latest independent 3rd party spot fuel prices, reflective of market supply chain dynamics; (3) variable transportation rates; (4) planned maintenance and refueling outages at the generating units; (5) generating unit performance parameters; (6) reliability constraints such as units run to maintain day-ahead planning reserves or units required to run for transmission or voltage support; (7) expected market conditions associated with power purchases and off-system sales opportunities; and (8) projected variable renewable resource contributions (*i.e.* solar). The production cost model output produces the optimized hourly unit commitment plan for the 7-day forecast period. This unit commitment plan also provides the starting point for dispatch, but dispatch is then also subject to real time adjustments due to changing system conditions, including management of natural gas transportation constraints. The unit commitment plan is prepared daily and adjusted, as needed, throughout any given day to respond to changing real time system conditions.

Q. PLEASE EXPLAIN HOW THE COMPANY'S FORECASTED FUEL PRICES ARE REFLECTIVE OF MARKET SUPPLY CHAIN DYNAMICS.

A. Incremental fuel replacement prices are a key input in determining the unit commitment plan that economically and reliably meets the Company's projected system needs over the next seven days. To ensure that the rapidly rising cost and limited availability of incremental replacement coal was adequately reflected in the unit commitment model inputs, in late 2021, the Company began meeting weekly to review the independent 3rd party spot coal market price input against the next seven

and thirty day expected coal burns and deliveries to determine which input price, domestic bid, offer or export was the most reflective of the current market supply availability conditions.

Q. DOES THE COMPANY BELIEVE THIS MANUAL APPROACH TO REFLECTING MARKET SUPPLY CHAIN DYNAMICS IN THE FORECASTED FUEL PRICES IS THE BEST APPROACH OVER THE LONG TERM GIVEN THE INELASTICITY OF COAL SUPPLY?

A. No. The Company has been working on an updated model-driven approach that incorporates a coal price input that reflects the realities of the inelasticity of coal supply and the Company's need to manage within inventory bounds while minimizing customer costs and ensuring fuel security. Given the inability of the coal supply chain to respond timely to changes in demand, along with the transition of the domestic utility generation fleet away from coal as baseload generation, the Company recognized there was a need to enhance the existing unit commitment and dispatch coal price input process to reflect longer term coal market realities and operational risks over time. This enhanced approach—which the Company is calling "dynamic dispatch"—reflects an optimized coal price input approach that aligns spot coal market prices with longer term supply, delivery, and inventory planning to cost effectively reduce volatility in seasonal and annual fuel inventories. The dynamic dispatch process will generate an optimized coal price input for unit commitment and dispatch that minimizes system cost over the near-term fuel planning horizon while integrating the forward-looking forecasted coal delivery plan and inventory balances into the current coal price input process for updating weekly coal prices for unit commitment and dispatch.

Q. HOW DOES THE COMPANY DETERMINE THE OPTIMIZED COAL PRICE INPUT TO USE IN UNIT COMMITMENT AND DISPATCH?

A. To determine the optimized coal price input, the Company starts from the current stochastic fuel burn projection across a near-term fuel procurement horizon (typically 12 to 18 months ahead), that is based on current market pricing and is independent of station inventory considerations. From these initial coal burn scenarios, a mean optimized burn and inventory forecast is generated for each coal and dual fuel operating station based on 100 simulations of burn projections and the Companies' forecasted coal deliveries. If the stochastic simulations result in projected coal inventories which fall below station minimum or exceed maximum storage limits, a series of further optimization steps is performed. First, the model assesses whether contractual inventory management options (such as re-balancing deliveries between stations, exercising "flex" provisions in contracts, deferring a limited volume of contracted deliveries, or accelerating deliveries) can alleviate the inventory constraints. If those options are unable to alleviate the inventory constraints, then coal price inputs are optimized to bring projected inventories within limits at impacted coal plants.

Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF THE COMPANY'S STOCHATIC PRODUCTION COST MODEL.

A. The stochastic model uses historic weather information to simulate numerous scenarios of future weather and commodity prices. For each of these scenarios, system load and commodity prices (gas, coal, oil, and power) are all calculated in a correlated manner using historical correlations with each other and with weather. The resulting forecasts give the Company not only expected fuel burns, but also the range of fuel burns and the probability associated with each range.

Q. IS THE COMPANY CHANGING THE ECONOMIC UNIT COMMITMENT AND DISPATCH METHODOLOGY?

A. The unit commitment and dispatch process described above and in my direct testimony is not changing. The enhanced dynamic dispatch process is providing the economic unit commitment and dispatch production cost model with an optimized spot coal price input to use if needed to maintain projected inventories within limits at impacted coal plants. The use of this optimized spot coal price input maintains least cost economics by calculating incremental adjustments needed over a longer time horizon to maintain plant inventories within safety and reliability limits, while minimizing fuel security risk and total long term system costs for customers. The dynamic dispatch process also proactively reduces the need for more reactive approaches such as uneconomic unit commitment and dispatch and contractual buyouts.

Q. DOES DYNAMIC DISPATCH IMPACT THE COMPANY'S INTERGRATED RESOURCE PLANNING PROCESS?

A. No, dynamic dispatch is optimizing the spot coal price input for the existing fleet.

Q. WHEN DOES THE COMPANY EXPECT TO TRANSITION TO THIS DYNAMIC DISPATCH METHODOLOGY?

A. The Company is planning to implement this optimized coal input price process no later than May 31, 2023. The implementation of the coal price adjustment is timely, as current coal inventory projections are forecasted to exceed station capabilities due to a dramatic decline in coal burns resulting from a warmer than expected winter and low natural gas prices. The Company has utilized its available commercial options, and dynamic dispatch is now the most effective option to manage coal supply and coal

inventories within reliability and safety limits while maintaining longer term fuel security for customers.

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

A. Yes, it does.

(WHEREUPON, Swez Rebuttal Exhibit 1 is marked for identification as prefiled.)

(WHEREUPON, the prefiled rebuttal testimony of JOHN D. SWEZ is copied into the record as if given orally from the stand.)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1282

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of:	)	
	)	
Application of Duke Energy Carolinas, LLC	)	**REBUTTAL TESTIMONY**
Pursuant to G.S. 62-133.2 and NCUC Rule	)	**OF JOHN D. SWEZ FOR**
R8-55 Relating to Fuel and Fuel-Related	)	**DUKE ENERGY**
Charge Adjustments for Electric Utilities	)	**CAROLINAS, LLC**
	)	

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

A. My name is John D. Swez, and I am Managing Director, Trading and Dispatch, by Duke Energy Carolinas, LLC. My business address is 526 S. Tryon Street, Charlotte, North Carolina.

Q. DID YOU PREVIOUSLY FILE DIRECT TESTIMONY IN SUPPORT OF DEC'S APPLICATION IN THIS DOCKET?

A. Yes, on February 28, 2023, I caused to be pre-filed with the Commission my direct testimony and 4 exhibits and on May 5, 2023, I caused to be pre-filed with the Commission supplemental testimony.

Q. YOUR TESTIMONY INCLUDES ONE EXHIBIT. WAS THIS EXHIBIT PREPARED BY YOU OR AT YOUR DIRECTION AND UNDER YOUR SUPERVISION.

A. Yes, this exhibit was prepared at my direction and under my supervision, and consists of Swez Rebuttal Exhibit 1, which shows the calculation of the average forward NYMEX Henry Hub price for the billing period as of Close of Business ("COB") January 12, 2023 and COB April 13, 2023.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to update projected coal and natural gas burns and costs for the billing period based on the April 2023 fuels forecast in support of the recalculated prospective component of the fuel rate discussed in the Joint Rebuttal Testimony of Sigourney Clark and Chris Bauer and to update the Commission on the latest trends in coal and natural gas market conditions in support of the updated fuel costs the

Company expects in the estimated and forecasted periods for the period September 1, 2023, through August 31, 2024.

Q. PLEASE DESCRIBE THE CHANGES IN NATURAL GAS AND COAL MARKET CONDITIONS IMPACTING THE APRIL FORECAST.

A. Natural gas prices are dynamic, volatile and can change significantly based on market fundamental drivers including supply, demand and projected storage inventory balances. Since the January 2023 forecast—which was used to develop the February 28, 2023, fuel filing—there continues to be downward pressure on natural gas prices due to; 1) increased production; and 2) rapidly growing storage inventory as a result of moderate weather driven demand in the first quarter of 2023. Coal supply markets are seeing similar downward pressure on forward market prices due to decreasing electric generation demand as a result of declining natural gas prices as well as softening export demand. Despite current market conditions, however, coal producers are seeing the inflationary impacts of rising costs associated with mining operations including, but not limited to, labor and equipment costs putting additional pressure on their ability to respond to changes in market demand and putting upward pressure on contracted coal costs.

Q. WHAT ARE THE UPDATED PROJECTED COAL AND NATURAL GAS BURNS AND COSTS FOR THE BILLING PERIOD?

A. As of the April 2023 fuels forecast DEC's coal burn projection for the billing period remained 3.7 million tons compared to the January 2023 forecast of 3.7 million tons. DEC's billing period projections for coal generation will continue be impacted due to changes from, but not limited to, the following factors: (1) delivered natural gas prices versus the average delivered cost of coal; (2) volatile purchased power prices; and (3)

electric demand. Combining coal and transportation costs, the projected average delivered coal costs since January 2023 have increased from approximately $105.86 per ton to $111.63 per ton for the billing period. This includes an average total projected transportation cost of $34.53 per ton for the billing period, compared to $30.48 per ton from the January forecast. The change in the delivered coal costs is driven by increased commodity and transportation costs over the billing period.

The projected average delivered coal cost, however, remains subject to change based on, but not limited to, the following factors: (1) exposure to market prices and their impact on open coal positions; (2) the amount of Central Appalachian coal DEC is able to purchase and deliver and the non-Central Appalachian coal DEC is able to consume; (3) changes in transportation rates; (4) performance of contract deliveries by suppliers and railroads, which may not occur despite DEC's strong contract compliance monitoring process; and (5) potential additional costs associated with suppliers' compliance with legal and statutory changes.

DEC's natural gas burn projection for the billing period has decreased from 260.9 million MBtu to 254.7 million MBtu in the April 2023 forecast. The average forward Henry Hub price for the billing period from the April 2023 forecast is $3.14 per million MBtu, compared to $3.99 per million MBtu from the January 2023 forecast. Projected burn volumes will continue to vary based on factors such as, but not limited to, changes in commodity prices and weather driven demand.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

(WHEREUPON, Swez Revised Rebuttal Exhibit 1 is marked for identification as prefiled.)

(WHEREUPON, the prefiled revised rebuttal testimony of JOHN D. SWEZ is copied into the record as if given orally from the stand.)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1282

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of:	)	
	)	
Application of Duke Energy Carolinas, LLC	)	**REVISED REBUTTAL**
Pursuant to G.S. 62-133.2 and NCUC Rule	)	**TESTIMONY OF JOHN D.**
R8-55 Relating to Fuel and Fuel-Related	)	**SWEZ FOR DUKE**
Charge Adjustments for Electric Utilities	)	**ENERGY CAROLINAS,**
	)	**LLC**

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

A. My name is John D. Swez, and I am Managing Director, Trading and Dispatch, by Duke Energy Carolinas, LLC. My business address is 526 S. Tryon Street, Charlotte, North Carolina.

Q. DID YOU PREVIOUSLY FILE DIRECT TESTIMONY IN SUPPORT OF DEC'S APPLICATION IN THIS DOCKET?

A. Yes, on February 28, 2023, I caused to be pre-filed with the Commission my direct testimony and 4 exhibits. On May 5, 2023, I caused to be pre-filed with the Commission supplemental testimony. On May 18, 2023, I caused to be pre-filed with the Commission rebuttal testimony, including 1 exhibit.

Q. YOUR REVISED REBUTTAL TESTIMONY INCLUDES ONE EXHIBIT. WAS THIS EXHIBIT PREPARED BY YOU OR AT YOUR DIRECTION AND UNDER YOUR SUPERVISION?

A. Yes, this exhibit was prepared at my direction and under my supervision, and consists of Swez Rebuttal First Revised Exhibit 1, which shows the calculation of the average forward NYMEX Henry Hub price for the billing period as of Close of Business ("COB") January 12, 2023.

Q. WHAT IS THE PURPOSE OF YOUR REVISED REBUTTAL TESTIMONY?

A. The purpose of my revised rebuttal testimony is to redirect the Commission to the described changes for the billing period of September 1, 2023 through August 31, 2024 based on the original fuel forecast with commodity prices as of January 12, 2023 used in the Company's direct filing made February 28, 2023. This revision is

due to the Company no longer proposing this option to mitigate the fuel rates for the billing period as discussed in witness Clark's revised rebuttal testimony.

Q. DOES THIS CONCLUDE YOUR REVISED REBUTTAL TESTIMONY?

A. Yes, it does.

BY MS. TOON:

Q Mr. Swez, did you prepare a summary of your testimonies?

A I did.

MS. TOON: And Commissioner Kemerait, if there are no objections, I ask that Mr. Swez' summary of his testimonies be copied into the record as if given orally from the stand.

COMMISSIONER KEMERAIT: Yes. The summary of his testimony will be copied into the record as if given orally from the stand.

MS. TOON: Thank you.

(WHEREUPON, the summary of the direct, supplemental, rebuttal, and revised rebuttal testimony of JOHN D. SWEZ is copied into the record as if given orally from the stand.)

DUKE ENERGY CAROLINAS, LLC
JOHN D. SWEZ 'S DIRECT, SUPPLEMENTAL, REBUTTAL AND REVISED REBUTTAL TESTIMONY SUMMARY
DOCKET NO. E-7, SUB 1282

In my direct testimony I described DEC's fossil fuel purchasing practices, provided actual fossil fuel costs for the period January 1, 2022 through December 31, 2022 ("test period") versus the period January 1, 2021 through December 31, 2021 ("prior test period"), and described changes projected for the billing period of September 1, 2023 through August 31, 2024 ("billing period"). No party to this proceeding has filed testimony recommending a disallowance of any costs incurred by DEC.

In my supplemental testimony, I describe enhancements the Company is implementing to optimize the independent 3rd party spot market coal prices used in its daily economic unit commitment and dispatch process to better reflect the market replacement price of coal given the inelasticity of coal supply. The Company refers to this enhanced modeling approach as "dynamic dispatch".

DEC and DEP preform the same detailed daily process utilizing a production cost model to determine the unit commitment plan to economically and reliably meet the Company's projected system needs over the next seven days. A key input in determining the unit commitment plan that economically and reliably meets the Company's projected system needs over the next seven days is the incremental fuel replacement price. Given the inability of the coal supply chain to respond timely to changes in demand, along with the transition of the domestic utility generation fleet away from coal as baseload generation, the Company recognized there was a need to enhance the existing unit commitment and dispatch coal price input process to reflect longer term coal market realities and operational risks over time.

This enhanced approach—which the Company is calling "dynamic dispatch"—reflects an optimized coal price input approach that aligns spot coal market prices with longer term supply,

delivery, and inventory planning to cost effectively reduce volatility in seasonal and annual fuel inventories. The dynamic dispatch process will generate an optimized coal price input for unit commitment and dispatch that minimizes system cost over the near-term fuel planning horizon while integrating the forward-looking forecasted coal delivery plan and inventory balances into the current coal price input process for updating weekly coal prices for unit commitment and dispatch.

The unit commitment and dispatch process is not changing. The enhanced dynamic dispatch process is providing the economic unit commitment and dispatch production cost model with an optimized spot coal price input to use if needed to maintain projected inventories within limits at impacted coal plants. The use of this optimized spot coal price input maintains least cost economics by calculating incremental adjustments needed over a longer time horizon to maintain plant inventories within safety and reliability limits, while minimizing fuel security risk and total long term system costs for customers.

The Company is planning to implement this optimized coal input price process no later than May 31, 2023.

In my rebuttal testimony, I described changes projected for the billing period of September 1, 2023 through August 31, 2024 ("billing period") based on the Company's proposed update to the prospective component of the proposed fuel rate using the Company's latest fuel forecast with commodity prices as of April 13, 2023. In my revised rebuttal, I redirect the Commission to my described changes for the billing period of September 1, 2023 through August 31, 2024 based on the original fuel forecast with commodity prices as of January 12, 2023 used in the Company's direct filing made February 28, 2023. As the Company is no longer proposing this option to mitigate the fuel rates for the billing period as discussed in witness Clark's revised rebuttal testimony.

This concludes my direct, supplemental, rebuttal and revised rebuttal testimony summary.

MS. TOON: Mr. Swez is available for questions.

MR. FREEMAN: No questions from the Public Staff. Thank you.

MR. MAGARIRA: SACE has a couple of questions for Witness Swez, if I may.

CROSS EXAMINATION BY MR. MAGARIRA:

Q Good afternoon, Mr. Swez, Munashe Magarira appearing on behalf of SACE. I just have a couple of questions for you today.

Mr. Swez, as you note in your direct testimony, the coal and natural gas markets experienced a significant degree of volatility during the test period; isn't that right?

A That's correct?

Q Indeed, the increase in coal and natural gas fuel commodity prices was one of the primary drivers of the 998 million under-recovery at issue in this proceeding?

A I can't speak to any calculations done that say how much of the recovery was due to the increased fuel prices but I suspect a large portion of it was.

Q And referring to pages 8 and 9 of your direct testimony, you would agree -- and I'll wait until you get there.
A I'm there.
Q Again, referring to pages 8 and 9 of your direct testimony, you would agree that much of the increase in coal commodity prices during the test period was due to, let's say, supply and demand dynamics?
A That's fair. Yes.
Q And indeed you list some of those dynamics -- I'm not going to go through all of them but suffice it to say some of them include inability of coal suppliers to respond to increase in demand. Increased demand in the global markets for both steam and metallurgical coal and labor and resource constraints limiting suppliers operational flexibility; is that right?
A That's correct.
Q Okay. Referring now to page 9, lines 10 through 13 of your direct testimony, and are you there?
A I am there.
Q Okay. You note that going into winter 2022, since this is December 2022 through

February 2023, coal commodity prices remain at historically high levels in part because of the rise in production cost and, I'm paraphrasing here, continued projections of high, short-term domestic informed demand as a result of higher natural gas prices; is that right?

A That's correct.

Q And with respect to natural gas, and I'm referring here to page 10, lines 6 through 7 of your direct testimony, and I'll wait until you're there.

A I'm there.

Q You state and I quote, "natural gas prices are reflective of the dynamics between supply and demand factors", correct?

A That's correct.

Q So not to put too fine a point on this, but coal and natural gas prices, they fluctuate in large part because of, let's say, fundamental supply and demand dynamics; is that right?

A That's fair. Yes.

Q And as a general proposition, would you agree that as a result of these dynamics, coal and natural gas prices are frequently volatile?

A Yes, I would agree with that.
Q And, ultimately, customers are on the hook for that fuel price volatility as they're responsible for paying for any fuel and fuel-related costs that the Commission ultimately determines were reasonably and prudently incurred?
A The Company works very hard to minimize fuel costs within our ability, including a lot of the stuff I described in my testimony. Ultimately, to some degree yes, we are a price taker effectively of what the markets are, but we do our best to maintain as lowest cost as possible within a reliability, recognizing the fact that we need the reliability of the fuel security as well.
Q So you mention on, I think, the beginning of page 12, and this kind of relates to what you just said in your response. This is page 12 of your direct testimony. Some of the steps that DEC is taking to ensure a cost-effective, reliable fuel supply. And I think with respect to coal procurement, again this is not an inclusive or completely inclusive comprehensive list, but those steps include but are not limited to a mix

of term contract and spot purchase of coal, staggering coal contract expirations, and diversifying coal sourcing, right?

A That's correct.

Q And with respect to natural gas those steps include periodic requests for proposals, shorter term market engagement activities, financial natural gas hedging, and the Company's firm transportation?

A That's correct.

Q Okay. But notwithstanding these steps, DEC ultimately experienced a $998 million under-recovery in the test period.

A Again, I can't attest to what all the under-recovery was for but, as I said, I suspect that much of it was due to the fuel price increase during 2022.

Q Okay. Now, in your supplemental testimony of course you note certain steps DEC is taking to optimize its coal spot market purchases, I think specifically for the purpose of making sure that its unit commitment and dispatch policies sort of incorporate sort of the best sort of pricing. Is that a fair summation?

A So I would -- basically, this is -- the dynamic dispatch is what we're calling it. It really incorporates more about the price input -- the coal price input, it goes into our models that we use for the unit commitment and dispatch purposes.

Q Okay. But a part from sort of that recommendation in your supplemental testimony, you propose no sort of specific additional steps or modifications to the Company's, excuse me, current practices to ensure a cost-effective, reliable fuel supply?

A I'd say this is a pretty big, not big, but it's a proactive improvement to how we manage our unit commitment and dispatch process and it's not reactionary or proactive meant to incorporate kind of a way to make sure that we're doing the right thing for the customer and ensuring a minimal cost but at the same time ensuring that we have reliable fuel supply to our plants.

Q Okay. Moving on, are you aware of the Commission's Order in the Carbon Plan docket? Just generally aware of it.

A Not -- it depends on what in particular we're

talking about, but probably not as aware. So, I don't know. What was -- was there a specific question?

Q Yes. And it's just one question. Subject to check, at least, would you agree that the Commission obviously subject to future CPCN proceedings accepted for planning purposes an additional 800 megawatts of CT capacity and 1200 megawatts of combined cycle capacity?

A Yeah, I'm sorry I wasn't really involved in that. I'm not aware of that so I can't really -- I don't know anything about it. I'm sure we can check and find out but I can't really say. I don't know.

Q Okay. Would you say subject to check that the Commission at least approved for planning purposes additional or incremental natural gas capacity?

A Again, I'm just not familiar enough with it to --

Q Moving on and just to close here. All things being equal, increasing the level of natural gas-fired resources on the system would increase customers' potential exposure to natural gas price volatility?

A I think if you burn more natural gas you're naturally going to increase the exposure to the volatile -- to a volatile price. Yes. And we're doing -- like I mentioned in my testimony, we have steps in place to minimize that. But ultimately, if you burn more gas I don't see how you can't decrease the -- you would increase the volatility, not decrease it.

Q And renewables are fuel-free resources, correct?

A They are certainly fuel free. Obviously, the sun and the wind don't have a cost to it but, obviously, if you have a PPA there is a cost to it. Then there's a cost to build the resource. But the fuel itself, of course, ultimately is free, yes.

Q Meaning that they don't have fuel price volatility?

A That's fair.

Q So and all things being equal, increasing the levels of renewables I should say on the system would decrease customers' exposure to fuel price volatility?

A I never really thought about it that way. I'm not sure if I agree on just the premise.

Possibly but I -- because I haven't really thought through that as much as I probably should have so I don't do that.

MR. MAGARIRA: No further questions.

CROSS EXAMINATION BY MR. TRATHEN:

Q Mr. Swez, I'm Marcus Trathen. I'm here on behalf of CUCA. Just a technical question here.

Duke has filed a fuel procurement practices report in Docket E-100, Sub 47A. Are you familiar with that?

A I am not.

Q Okay. It's a report that purports as it says in the title to describe DEC's fuel procurement practices. You're not familiar with this report?

A Are you referring to one of the exhibits in my testimony or is this -- I didn't understand when you said 47.

Q I was referring to a docket number.

A It's not this case?

Q This was filed, the last report I have is from December 22nd, 2014. So the first question is are you familiar with the report that's titled "Fuel Procurement Practices Report".

A So the only thing I can say is my Exhibit 1, the

title is the same. It's "Duke Energy Carolinas Fossil Fuel Procurement Practices" so it's similar but if it's not this, no, I'm not familiar with that.

Q Okay. And are you -- I assume that you would not know whether or not the December 22nd, 2014 report is the latest report?

A I would not know.

Q Thank you.

MR. CONANT: CIGFUR III has no questions for this witness.

COMMISSIONER KEMERAIT: Redirect?

MS. TOON: No redirect. Thank you.

COMMISSIONER KEMERAIT: Commission's questions, beginning with Chair Mitchell.

(No response)

EXAMINATION BY COMMISSIONER KEMERAIT:

Q Mr. Swez, I just have one clarifying question about the Stipulation with the Public Staff and I believe it's your Exhibit 4, and in the Stipulation DEC has proposed change to the methodology for determining the total fuel cost to total energy cost from the 61 percent to the 75 to 85 percent ratio. Can you explain how that

ratio works when the system sales fall outside of the 75 percent to 85 percent?

A Sure. Excuse me, sure. So obviously the fuel proxy cost is meant to calculate what the fuel cost of a power purchase is based on the sales that we've made since we know the components of the sale. If we that calculation results in say a number below 75 percent, then the ultimate fuel cost proxy for that period is raised to 75 percent. And likewise, if the calculation results in a number greater than 85 percent it's lowered back to 85 percent. If it's inside the range between 75 and 85, it just remains that calculation.

COMMISSIONER KEMERAIT: Thank you. Any questions?

(No response)

Questions on Commission questions? DEC?

MS. TOON: No questions.

COMMISSIONER KEMERAIT: Mr. Swez, thank you very much and you may be excused.

MS. TOON: Commissioner Kemerait, at this time, I'd ask that Mr. Swez' exhibits that were previously marked and filed with his testimony to be

moved into the record or accepted.

COMMISSIONER KEMERAIT: Your motion is granted and the exhibits will be admitted into the evidence.

MS. TOON: Thank you.

(WHEREUPON, Swez Exhibits 1-4, Swez Rebuttal Exhibit 1, and Swez Revised Rebuttal Exhibit 1 are received into evidence.)

MS. TOON: At this time, the Company would call Mr. Flanagan to the stand.

COMMISSIONER KEMERAIT: Good afternoon, Mr. Flanagan.

MR. FLANAGAN: Good afternoon.

COMMISSIONER KEMERAIT: So I'll go ahead and swear you in. Will you place your left hand on the Bible and raise your right hand.

JEFFREY FLANAGAN;

having been duly sworn,

testified as follows:

DIRECT EXAMINATION BY MS. TOON:

Q Good morning, Mr. Flanagan.

A Good afternoon.

Q Good afternoon. I am sorry. I'll get it right eventually. When you're ready, Mr. Flanagan, will you please state your name and business address for the record?

A My name is Jeff Flanagan. I'm at 8320 North Carolina Highway 150 in Terrell, North Carolina.

Q By whom are you employed and in what capacity?

A Employed by Duke Energy and I'm the General Manager of Carolinas Dispatchable Generation, the West Zone. I have responsibility for Marshall and Allen Steam Stations as well as W.S. Lee, and Asheville Combined Cycle, and the Clemson CHP.

Q Thank you. Did you cause to be prefiled in this docket on February 28th, 2023, 11 pages of direct testimony?

A Yes.

Q Did you have any changes or corrections to your direct testimony?

A No, I do not.

Q If I were to ask you the same questions in your direct testimony today, would your answers still be the same?

A Yes.

Q Mr. Flanagan, did you also cause to be prefiled

in this docket on May 19th, 2023, 13 pages of rebuttal testimony?

A Yes.

Q Do you have any changes or corrections to your rebuttal testimony?

A We did file on, I believe, May 26th to re-mark for confidentiality.

Q And if I were to ask you the same questions that appear in your rebuttal testimony today, would your answers still be the same?

A Yes.

Q As you noted, Mr. Flanagan, did you cause to be prefiled in this docket on May 26th, 2023, 13 pages of revised rebuttal testimony to re-mark for confidentiality?

A Yes, that's correct.

Q And do you have any changes or corrections to your revised rebuttal testimony?

A No, I do not.

Q If I were to ask you the same questions that appear in your revised rebuttal testimony today, would your answers be the same?

A Yes.

MS. TOON: Commissioner Kemerait, at this

time, I move that the prefiled direct testimony, rebuttal testimony, and revised rebuttal testimony of Mr. Flanagan be copied into the record as if orally given from the stand.

COMMISSIONER KEMERAIT: Mr. Flanagan's direct testimony filed on February 28th of 2023 consisting of 11 pages, his rebuttal testimony filed on May 18th of 2023 consisting of 13 pages, and his revised rebuttal testimony filed on May 26th of 2023 that contains confidential portions consisting of 13 pages will be copied into the record as if given orally from the stand.

MS. TOON: Thank you.

(WHEREUPON, the prefiled direct testimony of JEFFREY FLANAGAN is copied into the record as if given orally from the stand.)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1282

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

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

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jeffrey Flanagan and my business address is 8320 East Highway 150, Terrell, North Carolina.

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

A. I am employed by Duke Energy and am the General Manager III of the Carolinas Dispatchable Generation - West Zone including Marshall, Allen, Asheville, WS Lee stations.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I graduated from NC State University with a Bachelor's Degree in Paper Science & Engineering and a Bachelor's Degree in Chemistry. I also graduated from The University of South Carolina with a Master's Degree in Business Administration. I am a registered Professional Engineer in the state of South Carolina. My career began with Duke Energy as an FGD Scrubber Engineer at Progress Energy. Since that time, I have held various roles of increasing responsibility in generation projects, engineering and operations areas, including Operations and Maintenance Superintendent at Marshall Station and Station Manager at Smith Energy Complex. I was named General Manager of Marshall and Allen Stations in July of 2021. I assumed my current role in February of 2023.

Q. WHAT ARE YOUR CURRENT DUTIES AS GENERAL MANAGER III OF THE CAROLINAS DISPATCHABLE GENERATION?

A. I am responsible for the overall direction and management for over 4,000 megawatts of Carolina's Dispatchable Generation coal, combined cycle and peaking generation,

providing strategic direction and leadership to station general managers including day to day operations, business analysis, process development, O&M and capital budget allocation and implementation and outage performance. I am also responsible for operational excellence at all levels of the organization including continuous improvement and competitive benchmarking. I interact with the public and private sector to manage the overall business to maintain profitable and publicly positive stations.

Q. HAVE YOU TESTIFIED BEFORE THIS COMMISSION IN ANY PRIOR PROCEEDINGS?

A. No. I have not.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to (1) describe DEC's Traditional/Renewable (formerly described as Fossil/Hydro/Solar) generation portfolio and changes made since the 2022 fuel and fuel-related cost recovery proceeding, as well as those expected in the near term, (2) discuss the performance of DEC's Traditional/Renewable facilities during the test period of January 1, 2022 through December 31, 2022 (the "test period"), (3) provide information on significant Traditional/Renewable outages that occurred during the test period, and (4) provide information concerning environmental compliance efforts.

Q. PLEASE DESCRIBE DEC'S TRADITIONAL/RENEWABLE GENERATION PORTFOLIO.

A. The Company's Traditional/Renewable generation portfolio consists of

approximately 14,332 megawatts ("MWs") of generating capacity, made up as follows:

Coal-fired -	6,087 MWs
Hydro -	3,357 MWs
Combustion Turbines ("CT") -	2,646 MWs
Combined Cycle Turbines ("CC")-	2,110 MWs
Solar -	119 MWs
Combined Heat and Power ("CHP") -	13 MWs

The coal-fired assets consist of four generating stations with a total of 10 units. These units are equipped with emissions control equipment, including selective catalytic or selective non-catalytic reduction ("SCR" or "SNCR") equipment for removing nitrogen oxides ("NO_x"), and flue gas desulfurization ("FGD" or "scrubber") equipment for removing sulfur dioxide ("SO_2"). In addition, all 10 coal-fired units are equipped with low NO_x burners.

The Company has a total of 31 simple cycle CT units, of which 29 are considered the larger group providing approximately 2,549 MWs of capacity. These 29 units are located at Lincoln, Mill Creek, and Rockingham Stations, and are equipped with water injection systems that reduce NO_x and/or have low NO_x burner equipment in use. The Lee CT facility includes two units with a total capacity of 84 MWs equipped with fast-start ability in support of DEC's Oconee Nuclear Station. The Company has 2,110 MWs of CC turbines, comprised of the Buck CC, Dan River CC and W.S. Lee CC facilities. These facilities are equipped with technology for emissions control, including SCRs, low NO_x burners, and carbon monoxide/volatile

organic compounds catalysts. The Company's hydro fleet includes two pumped storage facilities with four units each that provide a total capacity of 2,300 MWs, along with conventional hydro assets consisting of 59 units providing approximately 1,057 MWs of capacity. The 178 MWs of solar capacity are made up of 17 rooftop solar sites providing 119 MWs of relative summer dependable capacity, the Mocksville solar facility providing 10 MWs of relative summer dependable capacity, the Monroe solar facility providing 37 MWs of relative summer dependable capacity, Woodleaf solar facility providing 4 MWs of relative summer dependable capacity, Gaston solar facility providing 17 MW of relative summer dependable capacity and Maiden Creek solar facility providing 46 MW of relative summer dependable capacity. Finally, the Company has the Clemson CHP that provides 13 MW of capacity.

Q. WHAT CHANGES HAVE OCCURRED WITHIN THE TRADITIONAL/RENEWABLE PORTFOLIO SINCE DEC'S 2022 FUEL AND FUEL-RELATED COST RECOVERY PROCEEDING?

A. The solar Contribution to Peak percentages increased from 40% to 67% for DEC, resulting in a 48MW increase in capacity. The increase was based on the updated ELCC ("Effective Load Carrying Capability") results.

Q. WHAT ARE DEC'S OBJECTIVES IN THE OPERATION OF ITS TRADITIONAL/RENEWABLES FACILITIES?

A. The primary objective of DEC's Traditional/Renewable generation department is to provide safe, reliable and cost-effective electricity to DEC's customers. Operations personnel and other station employees are well-trained and execute their responsibilities to the highest standards in accordance with procedures, guidelines,

and a standard operating model.

The Company complies with all applicable environmental regulations and maintains station equipment and systems in a cost-effective manner to ensure reliability for customers. The Company also takes action in a timely manner to implement work plans and projects that enhance the safety and performance of systems, equipment, and personnel, consistent with providing low-cost power options for DEC's customers. Equipment inspection and maintenance outages are generally scheduled during the spring and fall months when customer demand is reduced due to milder temperatures. These outages are well-planned and executed in order to prepare the units for reliable operation until the next planned outage in order to maximize value for customers.

Q. WHAT IS HEAT RATE, AND WHAT WAS THE HEAT RATE FOR DEC'S COAL-FIRED AND COMBINED CYCLE UNITS DURING THE REVIEW PERIOD?

A. Heat rate is a measure of the amount of thermal energy needed to generate a given amount of electric energy and is expressed as British thermal units ("Btu") per kilowatt-hour ("kWh"). A low heat rate indicates an efficient fleet that uses less heat energy from fuel to generate electrical energy. Over the review period, the Company's ten coal units produced 56% of the Traditional/Renewable generation, with the average heat rate for the coal-fired units being 9,778 Btu/kWh. The most active station during this period was Belews Creek, providing 43% of the coal generation for the DEC fleet with a heat rate of 9,333 Btu/kWh. During the review period, the

Company's three combined cycle power blocks produced 35% of the Traditional/Renewable generation, with an average heat rate of 7,110 Btu/kWh.

Q. HOW MUCH GENERATION DID EACH TYPE OF TRADITIONAL/RENEWABLE GENERATING FACILITY PROVIDE FOR THE TEST PERIOD?

A. The Company's system generation was approximately 98 million MW hours ("MWhs") for the test period. The Traditional/Renewable fleet provided 39 million MWhs, or approximately 39% of the total generation. As a percentage of the total system generation, 22% was produced from coal-fired stations and approximately 14% from CC operations, 2% from CTs, 1% from hydro facilities, and 0.5% from solar.

Q. HOW DID DEC COST EFFECTIVELY DISPATCH ITS DIVERSE MIX OF GENERATING UNITS DURING THE TEST PERIOD?

A. The Company's portfolio includes a diverse mix of units that, along with additional nuclear capacity, allows DEC to meet the dynamics of customer load requirements in a cost-effective manner. Additionally, DEC has utilized the Joint Dispatch Agreement, which allows generating resources for DEC and DEP to be dispatched as a single system to enhance dispatching by allowing DEC customers to benefit from the lowest cost resources available. The cost and operational characteristics of each unit generally determine the type of customer load situation (*e.g.,* base and peak load requirements) that a unit would be called upon, or dispatched, to support.

At Belews Creek, Cliffside, and Marshall, dual fuel capabilities also promote efficiency, fuel flexibility and reduced cost. The units equipped with dual fuel

capability can be economically dispatched based on need and cost, and the ability to switch fuels can allow the units to avoid forced outages if there is an issue with a fuel system or supply.

Q. PLEASE DISCUSS THE OPERATIONAL RESULTS FOR DEC'S TRADITIONAL/RENEWABLES FLEET DURING THE TEST PERIOD.

A. The Company's generating units operated efficiently and reliably during the test period. The following key measures are used to evaluate the operational performance depending on the generator type: (1) equivalent availability factor ("EAF"), which refers to the percent of a given time period a facility was available to operate at full power, if needed (EAF is not affected by the manner in which the unit is dispatched or by the system demands; it is impacted, however, by planned and unplanned (*i.e.*, forced) outage time); (2) net capacity factor ("NCF"), which measures the generation that a facility actually produces against the amount of generation that theoretically could be produced in a given time period, based upon its maximum dependable capacity (NCF *is* affected by the dispatch of the unit to serve customer needs); (3) equivalent forced outage rate ("EFOR"), which represents the percentage of unit failure (unplanned outage hours and equivalent unplanned derated[1] hours); a low EFOR represents fewer unplanned outages and derated hours, which equates to a higher reliability measure; (4) starting reliability ("SR"), which represents the percentage of successful starts; and (5) equivalent forced outage factor ("EFOF")—which quantifies the number of period hours in a year during which the unit is unavailable because of forced outages and forced deratings.

[1] Derated hours are hours the unit operation was less than full capacity.

Q. PLEASE DISCUSS SIGNIFICANT OUTAGES OCCURRING AT DEC'S TRADITIONAL/RENEWABLE FACILITIES DURING THE TEST PERIOD.

A. In general, planned maintenance outages for all fossil and larger hydro units are scheduled for the spring and fall to maximize unit availability during periods of peak demand. Most of these units had at least one small planned outage during this test period to inspect and maintain plant equipment.

In the spring of 2022, Marshall 4 completed an outage to rebuild major turbine valves, repair condenser valves and steam piping, and replace step up transformer oil coolers and pumps. Cliffside 6 completed an outage to inspect and test the generator, rebuild turbine valves, and replace the A Induced Fan rotor and six boiler coal burners. Buck CC performed an outage to conduct a turbine inspection and balance of plant maintenance, hotwell cleaning and condenser inspection. Dan River CC completed an outage to inspect the steam turbine, generator, and high energy piping and replace the cooling tower fill and natural gas valve. Lincoln CT 3 and 4 performed an outage to replace Generator Step Up relays. W.S. Lee CC completed an outage to perform pressure wave cleaning and do general inspection and maintenance activities. In the fall of 2022, outages included an outage at Mill Creek CT-1 and Mill Creek CT-2 to inspect CT Combustion hardware and stacks, and outages at Mill Creek CT-3 and Mill Creek CT-4 to inspect CT combustion hardware and replace compressor blades. Rockingham CT-3 performed an outage to complete a CT Hot Gas Path Inspection and parts replacement. Marshall 1 completed an outage to replace lower slope boiler tubes, inspect and test CT & Aux transformers, replace the main stop valve and booster

fan rotor, and perform BOP maintenance. W.S. Lee CC1-10 completed an outage to inspect the generator and replace the turbine valve. W.S. Lee CC1-11 completed an outage to perform a GT11 medium generator inspection. W.S. Lee CC1-12 completed an outage to perform CT Hot Gas Path Inspection and parts replacement, DCS Evergreen, SCR Catalyst replacement, HEP Inspection, and GT12 medium inspection.

Major forced outages during the test period included Belews Creek U2, which experienced an unexpected failure of the main turbine side crossover piping balance-end expansion joint tie rods, Marshall U2, which was forced offline due to the failure of a wall bushing which supplies auxiliary power to the unit. The failed bushing caused damage to the auxiliary buss and switchgear.

During startup at Cliffside U5 the station was investigating issues related to elevated mercury readings, and when testing the 'A' forced draft, (FD) fan developed a significant vibration requiring the unit to be shutdown for repairs to the fan housing foundation. WS Lee CT11 was forced offline due to a combustion turbine failure. The root cause was found to be a failure of the thermal barrier coating on the Row 1 vanes.

Q. HOW DOES DEC ENSURE EMISSIONS REDUCTIONS FOR ENVIRONMENTAL COMPLIANCE?

A. The Company has installed pollution control equipment in order to meet various current federal, state, and local reduction requirements for NO_x and SO_2 emissions. The SCR technology that DEC currently operates on the coal-fired units uses ammonia or urea for NO_x removal. The SNCR technology employed at Allen Station and Marshall Units 1, 2 and 4 injects urea into the boiler for NO_x removal. All DEC

coal units have wet scrubbers installed that use crushed limestone for SO_2 removal. Cliffside Unit 6 has a state-of-the-art SO_2 reduction system that couples a wet scrubber (*e.g.*, limestone) and dry scrubber (*e.g.*, quicklime). SCR equipment is also an integral part of the design of the Buck, Dan River and Lee CC Stations in which aqueous ammonia is introduced for NO_x removal.

Overall, the type and quantity of chemicals used to reduce emissions at the plants varies depending on the generation output of the unit, the chemical constituents in the fuel burned, and/or the level of emissions reduction required. The Company is managing the impacts, favorable or unfavorable, as a result of changes to the fuel mix and/or changes in coal burn due to competing fuels and utilization of non-traditional coals. Overall, the goal is to effectively comply with emissions regulations and provide the optimal total-cost solution for the operation of the unit. The Company will continue to leverage new technologies and chemicals to meet both present and future state and federal emission requirements including the MATS rule. MATS chemicals that DEC uses when required to reduce emissions include, but may not be limited to, activated carbon, mercury oxidation chemicals, and mercury re-emission prevention chemicals. Company witness Clark provides the cost information for DEC's chemical use and forecast.

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

A. Yes, it does.

(WHEREUPON, the prefiled rebuttal testimony of JEFFREY FLANAGAN is copied into the record as if given orally from the stand.)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1282

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of	)	
Application of Duke Energy Carolinas, LLC	)	**REBUTTAL TESTIMONY OF**
Pursuant to G.S. 62-133.2 and NCUC Rule	)	**JEFFREY FLANAGAN**
R8-55 Relating to Fuel and Fuel-Related	)	**DUKE ENERGY CAROLINAS, LLC**
Charge Adjustments for Electric Utilities	)	

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION WITH THE COMPANY.

A. My name is Jeffrey Flanagan and my business address is 8320 East Highway 150, Terrell, North Carolina. I am employed by Duke Energy and am the General Manager III of the Carolinas Dispatchable Generation - West Zone including Marshall, Allen, Asheville, and W.S. Lee stations.

Q. DID YOU PREVIOUSLY FILE DIRECT TESTIMONY IN SUPPORT OF THE COMPANY'S APPLICATION IN THIS DOCKET?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to: (1) respond to Public Staff Witness Evan Lawrence's testimony that certain outages that occurred at Duke Energy Carolina, LLC's ("DEC" or the "Company") Belews Creek Steam Station Unit 2 and W.S. Lee Combined Cycle Plant during the test-period were preventable; (2) Witness Lawrence's suggestion that the Company has not been responsive to Public Staff's Fossil-Hydro Semi-Annual Data Request; and (3) Mr. Lawrence's request to keep the above-mentioned outages, and corresponding replacement power costs, open beyond the test-period.

Q. WAS THE COMPANY'S MANAGEMENT OF ITS FOSSIL FLEET DURING THE TEST-PERIOD PRUDENT?

A. Yes, the Company's management of its fossil fleet during the test-period was reasonable and prudent, as demonstrated by its longstanding history of executing outages in a prudent manner, following prescribed processes and operating experience to maintain its fleet reliably for DEC's customers.

Q. WHAT IS THE STANDARD OF REVIEW FOR DETERMINING THE PRUDENCE OF THE COMPANY'S MANAGEMENT OF ITS FLEET?

A. While I am not an attorney, it is my understanding that the Commission has determined that the appropriate standard for prudence turns on the question whether management decisions were made in a reasonable manner and at an appropriate time on the basis of what was known or reasonably should have been known at the time.[1] The Commission further determined that "this standard is one of reasonableness that must be based on a contemporaneous view of the action or decision under question. Perfection is not required. Hindsight analysis -- the judging of events based on subsequent developments -- is not permitted."[2] Contrary to witness Lawrence's testimony, the question in fuel cases is not whether an outage was or was not "preventable" but instead whether the Company's decisions in connection with such outage were prudent.

Q. THE PUBLIC STAFF ASSERTS THAT CERTAIN OUTAGES, IDENTIFIED BELOW, WERE PREVENTABLE EQUIPMENT FAILURES. DO YOU AGREE WITH THAT ASSERTION?

A. No. The Public Staff reviewed post-outage documentation to make their determination that these outages were preventable. Hindsight information, i.e., post-outage documentation, does not give an accurate view of whether an outage was preventable. None of the outages discussed later in this testimony presented pre-outage indicators that there were problems that would have caused forced outages and required immediate attention. Witness Lawrence has failed to offer

[1] North Carolina Utilities Commission *Order Approving Fuel Charge Adjustment* at 24, Docket No. E-7, Sub 1163 (August 20, 2018)
[2] Id.

evidence sufficient to establish that management decisions concerning pre-outage activities were unreasonable given what was known at the time. Therefore, the Public Staff's assertions that these outages were preventable are unfounded.

Q. DO YOU AGREE WITH WITNESS LAWRENCE'S CONTENTION THAT THE BELEWS CREEK UNIT 2 OUTAGE EXTENSION THAT BEGAN ON APRIL 22, 2022, "WAS PREVENTABLE AND LIKELY CAUSED BECAUSE SOMEONE WORKING ON THE TURBINE DID NOT FOLLOW PROPER PROCEDURES?

A. No, I do not believe that the Belews Creek Unit 2 outage extension that began on April 22, 2022, was preventable. By way of background, the March 17th planned outage was scheduled to perform boiler maintenance, technology updates, and turbine valve work. Part of the planned scope also included a routine borescope inspection of the intermediate pressure (IP) turbine to inspect general condition and look for any issues that may need to be addressed in future planned maintenance. **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]** routine borescope inspection performed on April 1, 2022 during the planned outage.

[BEGIN CONFIDENTIAL] [redacted] **[END CONFIDENTIAL]**. The scope of work to disassemble and reassemble the IP turbine extended the outage end date from April 22, 2022 to May 8, 2022 (16 days).

The Company believes that the **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]** (FME) prevention during turbine maintenance work. **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]**

It is believed that the **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]** Turbine inspection during the 2018 turbine outage by error while performing final inspection prior to reassembly. There were no operational problems or other indicators of the foreign material in the IP turbine prior to discovery from the borescope inspection in the 2022 planned outage.

In conclusion, Mr. Lawrence has presented no evidence to identify specific imprudent actions or inactions but has simply made the conclusory allegation that the outage was "preventable" (which is not the Commission's prudence standard) and was "likely caused" by someone "not follow[ing] proper procedures." This is an insufficient basis for disallowance.

Q. DO YOU AGREE WITH MR. LAWRENCE'S ASSERTION THAT THE BELEWS CREEK UNIT 2 OUTAGE THAT BEGAN ON AUGUST 31, 2022, WAS PREVENTABLE?

A. No, I do not agree. A review of the events that led up to this outage show the Company responded and took prudent actions. In 2018 Fall Unit 2 outage the low

pressure (LP) turbine crossovers were sent offsite to a specialty vendor for expansion joint replacement. The crossovers are shipped to the vendor fully assembled and return fully assembled. The turbine was reassembled, and no problems were noted until September 4, 2019 **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]**. The crossover presented no other abnormal indications until returning to service after a brief outage on August 31, 2022 **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]** Throughout the events **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]** the Company consulted with subject matter experts and took the recommended steps. **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]**, was the design and associated margin fully understood. **[BEGIN CONFIDENTIAL]** [redacted]

[redacted]

[redacted] [END CONFIDENTIAL] This was not apparent or preventable at the time decisions were made on the actions to take.

Q. DO YOU AGREE WITH MR. LAWRENCE'S CONCLUSION THAT THE W.S. LEE OUTAGE THAT BEGAN ON DECEMBER 11, 2022, WAS PREVENTABLE?

A. No, I do not agree. **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]**. There were no indications of a problem with the **[BEGIN CONFIDENTIAL]** [redacted] [END CONFIDENTIAL]. There is nothing the Company did to cause this and no indications that could have been acted on to prevent it. This was not a preventable event.

Q. PLEASE COMMENT GENERALLY ON WITNESS LAWRENCE'S RECOMMENDATION TO DEFER COMMISSION DETERMINATION ON OUTAGES THAT OCCURRED IN THE TEST-PERIOD.

A The Company emphatically disagrees with witness Lawrence's recommendation to defer consideration of outages that occurred in the test period to the next fuel case proceeding. First, this recommendation is inconsistent the fuel cost recovery construct in North Carolina and introduces

uncertainty and delay to a process that is designed to be predictable and timely. Second, the reasons given to justify the deferred consideration are insufficient.

Q. DID THE COMPANY PROVIDE THE REQUISITE SEMI-ANNUAL OUTAGE INFORMATION TO THE PUBLIC STAFF FOR TEST-PERIOD 2022?

A. Yes. As background, the semi-annual provision of outage information is in itself an accommodation agreed to by the Company that provides Public Staff with information outside and in advance of the cadence of the actual fuel cost proceedings. In this particular case, the Company did in fact provide all of responsive information for the outages in question. Witness Lawrence identifies a vague and unspecified "concern" that the documents provide by the Company "do not satisfy the intent of this agreement as understood by the Public Staff." The Company believes that it did provide all required information and moreover, Public Staff has had ample time to issue further discovery or engage the Company if it believed more information was needed. The Company is certainly willing to discuss whether any changes are needed to this particular agreement but any difference of opinion on this matter is an insufficient basis to defer outages that occurred in this test period from this case to the next.

For all outages, the Company has provided any available outage reports. Consistent with past practice, the Company provides the requested outage reports, if the Company has created one. Where the Company has not created an outage report, the Company indicates as such and instead provides a summary of the outage. It should be noted that both DEC and DEP responded to the exact same semi-annual data request, in the same manner, for completed

outages for calendar years 2020 through 2022. There have been no objections to the data provided over the past three years until now.

Once again, Public Staff should not be permitted to hold over any test-period outages or corresponding replacement power costs. Public Staff has had numerous opportunities to raise its concern and subsequently revise its own data request, considering the number of years the semi-annual request has been in place. As the Company has indicated on many occasions, the Company is available to meet (and will make every reasonable effort to accommodate Public Staff's schedule) to discuss the Company's outage process and documentation it now seeks to receive as part of its semi-annual data request going forward.

Certainly, the Public Staff is not limited to the semi-annual data request. The Commission issued a scheduling order in this Docket wherein the Commission establishes the discovery period. Separate and apart from the semi-annual data request or in response thereto, the Public Staff could have issued discovery for additional outage documentation, explanation, and further clarification to complete its investigation of test -period outages, and in fact, Public Staff did issue substantial discovery regarding test-period outages, as further detailed below.

Q. SHOULD THE PUBLIC STAFF BE ALLOWED TO KEEP ITS INVESTIGATION OF OUTAGES OPEN BEYOND THE TEST PERIOD?

A. No. Company maintains that it was responsive to the semi-annual outage request and subsequent- discovery, as the Public Staff was provided all outage information it asked for within the discovery period. Public Staff propounded extensive outage discovery including a request for *outage report, root cause analysis, contributory*

cause analysis, internal memos, vendor OEM findings or other like/similar documentation that provides context to the underpinnings of the outage/event for eleven outages between Belews Creek and W.S. Lee. The Company provided requested documentation and detailed narratives. More specifically, during the discovery period for this fuel case, the Company provided the following information regarding outages to the Public Staff:

Public Staff Data Request **("PSDR") Set No. 7**, served on DEC 3/27; DEC responded on 4/7. Initial information on 11 outages at Belews Creek and W.S. Lee.

PSDR Set No. 8, served on DEC 3/27; DEC responded on 4/6. Standard outage information on all DEC outages for the test-period.

PSDR Set No. 21, served on DEC 4/20; DEC responded on 4/27. Detailed information on the Belews Creek 2 outage that began on 4/22/22.

PSDR Set No. 22, served on DEC 4/21; DEC responded on 4/28. Detailed information on the Belews Creek 2 outage that began on 5/8/22.

PSDR Set No. 23, served on DEC 4/24; DEC responded on 5/1. Detailed information on the Belews Creek 2 outage that began on 8/31/22.

There is no basis for the Public Staff to keep outages open beyond the test-period when the Company has responded to all requests presented. All test-period outages should be considered reviewed and complete at the end of this proceeding. Accordingly, the Company's position is that Public Staff should not be allowed to extend its investigation.

Q. DID THE COMPANY PROVIDE ALL REQUESTED INFORMATION TO THE PUBLIC STAFF AND MADE ITSELF AVAILABLE FOR FOLLOW UP CONVERSATIONS FOR ISSUES?

A. Yes. The Company provided all requested information, as listed above in the testimony, and made itself available for follow up discussions as requested. As Mr. Lawrence states in his testimony on page 16, the Company had to reschedule the April 14, 2023, phone call. The Company requested to reschedule that call because a key subject matter expert was unavailable, in response to such request, the Public Staff stated that they were "just too busy" to meet. The Public Staff did not indicate that April 14, 2023, was the only time Public Staff would be available to meet, nor did it provide alternative dates or times. The Company would suggest that in lieu of a meeting, the Public Staff issued the additional discovery, which again the Company responded to further explain the facts and circumstances regarding test period outages in question.

Q. WHAT OTHER REASONS WERE PROVIDED BY WITNESS LAWRENCE FOR THE DEFERRAL OF CONSIDERATION?

A Witness Lawrence also refers to the ongoing investigation in Docket M-100 Sub 163 and the fact that one of the outages in question extended outside of the test period.

Q. PLEASE COMMENT ON THESE ADDITIONAL REASONS.

A. While it is true that the Commission's cold weather investigation in Docket M-100 Sub 163 remains open, that fact in itself does not alter the fuel recovery construct in North Carolina, nor has the Commission provided any indication in Docket M-100 Sub 163 that any further investigation in that docket obviates or

alters the scope of the annal fuel cost proceedings. Furthermore, while one of the outages did extend beyond the test period, the Company does not agree that this fact justifies deferral of consideration. The outage commenced in the test period, and the full replacement power cost have been determined and Public Staff has had a full opportunity to investigate the causes of that particular outage.

Q. PLEASE SUMMARIZE YOUR TESTIMONY REGARDING THE PROVISION OF OUTAGE INFORMATION AND PUBLIC STAFF'S DISCOVERY OPPORTUNITIES.

A. The Company has been fully responsive to all data requests and has made itself available to Public Staff to answer any outstanding questions, including through in-person meetings regarding outages occurring in the test period. The fuel cost recovery construct in North Carolina establishes a timely process for the consideration of fuel costs and it is the responsibility of Public Staff and intervenors to conduct any necessary audit within the time parameters established under law as administered by this Commission. Absent any unusual circumstances or the agreement of the Company, it is not appropriate to defer consideration of outages occurring in the test period to a future case. Such a deferral is harmful to the Company and undermines the intended certainty of the process. Public Staff's vague concerns regarding information provided and meeting schedules are an insufficient basis to warrant departure from the well-established practices on these issues.

Q. IS THERE ANYTHING ELSE YOU WOULD LIKE TO ADD CONCERNING THE COMPANY'S EXECUTION AND REPORTING OF OUTAGES?

A. Yes. Public Staff's findings rely heavily on outage documentation, which by design is hindsight-based and self-critical in nature and are intended to identify every direct and contributing cause of an incident, along with all potential avenues for improvement. The reports are not designed to assess whether the actions of management were reasonable and prudent given what was known at the time, which is exactly what Public Staff is doing. As the Commission has determined, hindsight analysis is not permitted when assessing prudency. Outside of hindsight analysis, no evidence has been presented which supports Mr. Lawrence's claim that these outages were preventable-i.e., the Company's actions or inactions were imprudent. No evidence has been presented which supports leaving any test-period outages open for further scrutiny after this case is litigated. The Public Staff's hindsight conclusions are not reason enough to leave these outages, or any outages, open beyond the test period. Regarding the Company's outage reporting, we have provided all requested outage information to Public Staff, consistent with recent practice, and provided extensive documentation and detailed responses to all discovery issued in this proceeding.

Finally, overall, DEC has a long history of operating its fleet prudently to provide safe and reliable service for the benefit of DEC's customers. We continue to improve our processes and believe strongly in using lessons learned to improve our operations going forward.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

(WHEREUPON, the prefiled revised rebuttal testimony of JEFFREY FLANAGAN is copied into the record as if given orally from the stand?)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1282

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	)))))	**REVISED REBUTTAL TESTIMONY OF JEFFREY FLANAGAN** **DUKE ENERGY CAROLINAS, LLC**

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION WITH THE COMPANY.

A. My name is Jeffrey Flanagan and my business address is 8320 East Highway 150, Terrell, North Carolina. I am employed by Duke Energy and am the General Manager III of the Carolinas Dispatchable Generation - West Zone including Marshall, Allen, Asheville, and W.S. Lee stations.

Q. DID YOU PREVIOUSLY FILE DIRECT TESTIMONY IN SUPPORT OF THE COMPANY'S APPLICATION IN THIS DOCKET?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. The purpose of my rebuttal testimony is to: (1) respond to Public Staff Witness Evan Lawrence's testimony that certain outages that occurred at Duke Energy Carolina, LLC's ("DEC" or the "Company") Belews Creek Steam Station Unit 2 and W.S. Lee Combined Cycle Plant during the test-period were preventable; (2) Witness Lawrence's suggestion that the Company has not been responsive to Public Staff's Fossil-Hydro Semi-Annual Data Request; and (3) Mr. Lawrence's request to keep the above-mentioned outages, and corresponding replacement power costs, open beyond the test-period.

Q. WAS THE COMPANY'S MANAGEMENT OF ITS FOSSIL FLEET DURING THE TEST-PERIOD PRUDENT?

A. Yes, the Company's management of its fossil fleet during the test-period was reasonable and prudent, as demonstrated by its longstanding history of executing outages in a prudent manner, following prescribed processes and operating experience to maintain its fleet reliably for DEC's customers.

Q. WHAT IS THE STANDARD OF REVIEW FOR DETERMINING THE PRUDENCE OF THE COMPANY'S MANAGEMENT OF ITS FLEET?

A. While I am not an attorney, it is my understanding that the Commission has determined that the appropriate standard for prudence turns on the question whether management decisions were made in a reasonable manner and at an appropriate time on the basis of what was known or reasonably should have been known at the time.[1] The Commission further determined that "this standard is one of reasonableness that must be based on a contemporaneous view of the action or decision under question. Perfection is not required. Hindsight analysis -- the judging of events based on subsequent developments -- is not permitted."[2] Contrary to witness Lawrence's testimony, the question in fuel cases is not whether an outage was or was not "preventable" but instead whether the Company's decisions in connection with such outage were prudent.

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A. No. The Public Staff reviewed post-outage documentation to make their determination that these outages were preventable. Hindsight information, i.e., post-outage documentation, does not give an accurate view of whether an outage was preventable. None of the outages discussed later in this testimony presented pre-outage indicators that there were problems that would have caused forced outages and required immediate attention. Witness Lawrence has failed to offer

[1] North Carolina Utilities Commission *Order Approving Fuel Charge Adjustment* at 24, Docket No. E-7, Sub 1163 (August 20, 2018)
[2] Id.

evidence sufficient to establish that management decisions concerning pre-outage activities were unreasonable given what was known at the time. Therefore, the Public Staff's assertions that these outages were preventable are unfounded. **DO**

Q. YOU AGREE WITH WITNESS LAWRENCE'S CONTENTION THAT THE BELEWS CREEK UNIT 2 OUTAGE EXTENSION THAT BEGAN ON APRIL 22, 2022, "WAS PREVENTABLE AND LIKELY CAUSED BECAUSE SOMEONE WORKING ON THE TURBINE DID NOT FOLLOW PROPER PROCEDURES?

A. No, I do not believe that the Belews Creek Unit 2 outage extension that began on April 22, 2022, was preventable. By way of background, the March 17th planned outage was scheduled to perform boiler maintenance, technology updates, and turbine valve work. Part of the planned scope also included a routine borescope inspection of the intermediate pressure (IP) turbine to inspect general condition and look for any issues that may need to be addressed in future planned maintenance. Unexpected foreign material was found in the IP turbine blade path during the routine borescope inspection performed on April 1, 2022 during the planned outage.

The Company considered the risk of potentially catastrophic damage to the turbine blade path and a possible future forced outage and made a prudent and reasonable decision to remove the foreign material from the IP turbine. The scope of work to disassemble and reassemble the IP turbine extended the outage end date from April 22, 2022 to May 8, 2022 (16 days).

The Company believes that the material removed was the metal valve from an inflatable bladder used for foreign material exclusion (FME) prevention during turbine maintenance work. The metal bladder valve was the only component that survived the high temperature steam during turbine operation. The rubber bladder had disintegrated from the high temperature steam exposure.

It is believed that the inflatable bladder was left in the double flow IP turbine inlet piping during the Unit 2 Intermediate Pressure Turbine inspection during the 2018 turbine outage by error while performing final inspection prior to reassembly. There were no operational problems or other indicators of the foreign material in the IP turbine prior to discovery from the borescope inspection in the 2022 planned outage.

In conclusion, Mr. Lawrence has presented no evidence to identify specific imprudent actions or inactions but has simply made the conclusory allegation that the outage was "preventable" (which is not the Commission's prudence standard) and was "likely caused" by someone "not follow[ing] proper procedures." This is an insufficient basis for disallowance.

Q. DO YOU AGREE WITH MR. LAWRENCE'S ASSERTION THAT THE BELEWS CREEK UNIT 2 OUTAGE THAT BEGAN ON AUGUST 31, 2022, WAS PREVENTABLE?

A. No, I do not agree. A review of the events that led up to this outage show the Company responded and took prudent actions. In 2018 Fall Unit 2 outage the low

pressure (LP) turbine crossovers were sent offsite to a specialty vendor for expansion joint replacement. The crossovers are shipped to the vendor fully assembled and return fully assembled. The turbine was reassembled, and no problems were noted until September 4, 2019 when a tie rod nut was observed loosened by an operator during normal operator rounds. The Company consulted the specialty vendor and was provided guidance on how to retighten the loose nut with Loctite Threadlocker 272. Additionally, the Company took the prudent step to conduct an inspection of all tie rods during the 2019 Fall Unit 2 outage on October 10, 2019. The inspection revealed one tie rod with a cracked circumferential weld and loose spherical fasteners on another tie rod. The station performed a weld repair on the cracked weld and followed vendor guidance to tighten the loosened fastener securing the nuts with Loctite. The crossover presented no other abnormal indications until returning to service after a brief outage on August 31, 2022 when an operator noticed another loose tie rod nut and created a work order to have it retorqued during the next unit outage. **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]** the Company consulted with subject matter experts and took the recommended steps. With no original design criteria available from the OEM, only during the post event investigation using destructive testing and finite element analysis, was the design and associated margin fully understood. The analysis showed the design

margin was inadequate to handle the loading condition that results from a loose fastener. The failure of the vendor to use Loctite Threadlocker, lack of original design margins, and understanding of subject matter experts lead to the failure. This was not apparent or preventable at the time decisions were made on the actions to take.

Q. DO YOU AGREE WITH MR. LAWRENCE'S CONCLUSION THAT THE W.S. LEE OUTAGE THAT BEGAN ON DECEMBER 11, 2022, WAS PREVENTABLE?

A. No, I do not agree. **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]**. There were no indications of a problem with the turning gear unit prior to the outage and no work was performed on the turning gear unit as part of the outage. The failure occurred due to a malfunction causing the turning gear not to disengage properly during turbine startup. There is nothing the Company did to cause this and no indications that could have been acted on to prevent it. This was not a preventable event.

Q. PLEASE COMMENT GENERALLY ON WITNESS LAWRENCE'S RECOMMENDATION TO DEFER COMMISSION DETERMINATION ON OUTAGES THAT OCCURRED IN THE TEST-PERIOD.

A The Company emphatically disagrees with witness Lawrence's recommendation to defer consideration of outages that occurred in the test period to the next fuel case proceeding. First, this recommendation is inconsistent the fuel cost recovery construct in North Carolina and introduces

uncertainty and delay to a process that is designed to be predictable and timely. Second, the reasons given to justify the deferred consideration are insufficient.

Q. DID THE COMPANY PROVIDE THE REQUISITE SEMI-ANNUAL OUTAGE INFORMATION TO THE PUBLIC STAFF FOR TEST-PERIOD 2022?

A. Yes. As background, the semi-annual provision of outage information is in itself an accommodation agreed to by the Company that provides Public Staff with information outside and in advance of the cadence of the actual fuel cost proceedings. In this particular case, the Company did in fact provide all of responsive information for the outages in question. Witness Lawrence identifies a vague and unspecified "concern" that the documents provide by the Company "do not satisfy the intent of this agreement as understood by the Public Staff." The Company believes that it did provide all required information and moreover, Public Staff has had ample time to issue further discovery or engage the Company if it believed more information was needed. The Company is certainly willing to discuss whether any changes are needed to this particular agreement but any difference of opinion on this matter is an insufficient basis to defer outages that occurred in this test period from this case to the next.

For all outages, the Company has provided any available outage reports. Consistent with past practice, the Company provides the requested outage reports, if the Company has created one. Where the Company has not created an outage report, the Company indicates as such and instead provides a summary of the outage. It should be noted that both DEC and DEP responded to the exact same semi-annual data request, in the same manner, for completed

outages for calendar years 2020 through 2022. There have been no objections to the data provided over the past three years until now.

Once again, Public Staff should not be permitted to hold over any test-period outages or corresponding replacement power costs. Public Staff has had numerous opportunities to raise its concern and subsequently revise its own data request, considering the number of years the semi-annual request has been in place. As the Company has indicated on many occasions, the Company is available to meet (and will make every reasonable effort to accommodate Public Staff's schedule) to discuss the Company's outage process and documentation it now seeks to receive as part of its semi-annual data request going forward.

Certainly, the Public Staff is not limited to the semi-annual data request. The Commission issued a scheduling order in this Docket wherein the Commission establishes the discovery period. Separate and apart from the semi-annual data request or in response thereto, the Public Staff could have issued discovery for additional outage documentation, explanation, and further clarification to complete its investigation of test -period outages, and in fact, Public Staff did issue substantial discovery regarding test-period outages, as further detailed below.

Q. SHOULD THE PUBLIC STAFF BE ALLOWED TO KEEP ITS INVESTIGATION OF OUTAGES OPEN BEYOND THE TEST PERIOD?

A. No. Company maintains that it was responsive to the semi-annual outage request and subsequent- discovery, as the Public Staff was provided all outage information it asked for within the discovery period. Public Staff propounded extensive outage discovery including a request for *outage report, root cause analysis, contributory*

cause analysis, internal memos, vendor OEM findings or other like/similar documentation that provides context to the underpinnings of the outage/event for eleven outages between Belews Creek and W.S. Lee. The Company provided requested documentation and detailed narratives. More specifically, during the discovery period for this fuel case, the Company provided the following information regarding outages to the Public Staff:

Public Staff Data Request **("PSDR") Set No. 7**, served on DEC 3/27; DEC responded on 4/7. Initial information on 11 outages at Belews Creek and W.S. Lee.

PSDR Set No. 8, served on DEC 3/27; DEC responded on 4/6. Standard outage information on all DEC outages for the test-period.

PSDR Set No. 21, served on DEC 4/20; DEC responded on 4/27. Detailed information on the Belews Creek 2 outage that began on 4/22/22.

PSDR Set No. 22, served on DEC 4/21; DEC responded on 4/28. Detailed information on the Belews Creek 2 outage that began on 5/8/22.

PSDR Set No. 23, served on DEC 4/24; DEC responded on 5/1. Detailed information on the Belews Creek 2 outage that began on 8/31/22.

There is no basis for the Public Staff to keep outages open beyond the test-period when the Company has responded to all requests presented. All test-period outages should be considered reviewed and complete at the end of this proceeding. Accordingly, the Company's position is that Public Staff should not be allowed to extend its investigation.

Q. DID THE COMPANY PROVIDE ALL REQUESTED INFORMATION TO THE PUBLIC STAFF AND MADE ITSELF AVAILABLE FOR FOLLOW UP CONVERSATIONS FOR ISSUES?

A. Yes. The Company provided all requested information, as listed above in the testimony, and made itself available for follow up discussions as requested. As Mr. Lawrence states in his testimony on page 16, the Company had to reschedule the April 14, 2023, phone call. The Company requested to reschedule that call because a key subject matter expert was unavailable, in response to such request, the Public Staff stated that they were "just too busy" to meet. The Public Staff did not indicate that April 14, 2023, was the only time Public Staff would be available to meet, nor did it provide alternative dates or times. The Company would suggest that in lieu of a meeting, the Public Staff issued the additional discovery, which again the Company responded to further explain the facts and circumstances regarding test period outages in question.

Q. WHAT OTHER REASONS WERE PROVIDED BY WITNESS LAWRENCE FOR THE DEFERRAL OF CONSIDERATION?

A Witness Lawrence also refers to the ongoing investigation in Docket M-100 Sub 163 and the fact that one of the outages in question extended outside of the test period.

Q. PLEASE COMMENT ON THESE ADDITIONAL REASONS.

A. While it is true that the Commission's cold weather investigation in Docket M-100 Sub 163 remains open, that fact in itself does not alter the fuel recovery construct in North Carolina, nor has the Commission provided any indication in Docket M-100 Sub 163 that any further investigation in that docket obviates or

alters the scope of the annal fuel cost proceedings. Furthermore, while one of the outages did extend beyond the test period, the Company does not agree that this fact justifies deferral of consideration. The outage commenced in the test period, and the full replacement power cost have been determined and Public Staff has had a full opportunity to investigate the causes of that particular outage.

Q. PLEASE SUMMARIZE YOUR TESTIMONY REGARDING THE PROVISION OF OUTAGE INFORMATION AND PUBLIC STAFF'S DISCOVERY OPPORTUNITIES.

A. The Company has been fully responsive to all data requests and has made itself available to Public Staff to answer any outstanding questions, including through in-person meetings regarding outages occurring in the test period. The fuel cost recovery construct in North Carolina establishes a timely process for the consideration of fuel costs and it is the responsibility of Public Staff and intervenors to conduct any necessary audit within the time parameters established under law as administered by this Commission. Absent any unusual circumstances or the agreement of the Company, it is not appropriate to defer consideration of outages occurring in the test period to a future case. Such a deferral is harmful to the Company and undermines the intended certainty of the process. Public Staff's vague concerns regarding information provided and meeting schedules are an insufficient basis to warrant departure from the well-established practices on these issues.

Q. IS THERE ANYTHING ELSE YOU WOULD LIKE TO ADD CONCERNING THE COMPANY'S EXECUTION AND REPORTING OF OUTAGES?

A. Yes. Public Staff's findings rely heavily on outage documentation, which by design is hindsight-based and self-critical in nature and are intended to identify every direct and contributing cause of an incident, along with all potential avenues for improvement. The reports are not designed to assess whether the actions of management were reasonable and prudent given what was known at the time, which is exactly what Public Staff is doing. As the Commission has determined, hindsight analysis is not permitted when assessing prudency. Outside of hindsight analysis, no evidence has been presented which supports Mr. Lawrence's claim that these outages were preventable-i.e., the Company's actions or inactions were imprudent. No evidence has been presented which supports leaving any test-period outages open for further scrutiny after this case is litigated. The Public Staff's hindsight conclusions are not reason enough to leave these outages, or any outages, open beyond the test period. Regarding the Company's outage reporting, we have provided all requested outage information to Public Staff, consistent with recent practice, and provided extensive documentation and detailed responses to all discovery issued in this proceeding.

Finally, overall, DEC has a long history of operating its fleet prudently to provide safe and reliable service for the benefit of DEC's customers. We continue to improve our processes and believe strongly in using lessons learned to improve our operations going forward.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

BY MS. TOON:

Q And, Mr. Flanagan, did you prepare a summary of your testimony?

A Yes, I did.

MS. TOON: Commissioner Kemerait, if there are no objections, I ask that Mr. Flanagan's summary of his testimonies be copied into the record as if orally given from the stand.

COMMISSIONER KEMERAIT: Seeing no objection, the summary of Mr. Flanagan's testimony will be copied into the record as if given orally from the stand.

MS. TOON: Thank you.

(WHEREUPON, the summary of direct, rebuttal, and revised rebuttal testimony of JEFFREY FLANAGAN is copied into the record as if given orally from the stand.)

DUKE ENERGY CAROLINAS, LLC
JEFFREY FLANAGAN'S DIRECT AND REBUTTAL TESTIMONY SUMMARY
DOCKET NO. E-7, SUB 1282

In my direct testimony, I discuss Duke Energy Carolinas (DEC) Traditional and Renewable generation portfolio, formerly known as the Fossil-Hydro fleet, in terms of changes since the 2022 DEC fuel hearing, the performance of the generating assets during the test period, significant outages that occurred during the period, and information concerning environmental compliance. The DEC Traditional and Renewable generating portfolio is approximately 14.3 thousand MW, providing 39% of total DEC generation for the test period. No new generation has been added to the portfolio since the 2022 fuel hearing. As in past years, DEC utilized the Joint Dispatch Agreement to allow customers to benefit from the lowest cost resources available. The units operated efficiently and reliably, producing heat rates of 9,778 Btu/kWh for the coal fleet and 7,110 Btu/kWh for the combined cycle power blocks. A number of outages that occurred during the test period are outlined in my direct testimony, including descriptions of large work undertaken during each outage. Last, I describe environmental compliance equipment and chemicals used at our units.

In my rebuttal testimony, I discuss Public Staff Witness Evan Lawrence's testimony that certain outages that occurred at DEC's Belews Creek Steam Station Unit 2 and W.S. Lee Combined Cycle Plant during the test-period were preventable; (2) Witness Lawrence's suggestion that the Company has not been responsive to Public Staff's Fossil-Hydro Semi-Annual Data Request; and (3) Witness Lawrence's request to keep the above-mentioned outages, and corresponding replacement power costs, open beyond the test period. I disagree with all three of Witness Lawrence's assertions, and describe in detail

why his positions are unfounded. In regards to the discussed outages, I also note the definition of prudency, which the Commission has determined turns on the question whether management decisions were made in a reasonable manner and at an appropriate time on the basis of what was known or reasonably should have been known at the time.[1] My rebuttal testimony also discusses DEC's ongoing responsiveness to Public Staff requests for data, both within the discovery period of this fuel hearing, and during non-hearing periods.

This concludes my direct and rebuttal testimony summary.

[1] North Carolina Utilities Commission *Order Approving Fuel Charge Adjustment* at 24, Docket No. E-7, Sub 1163 (August 20, 2018)

MS. TOON: Mr. Flanagan is available for questionings.

MR. CONANT: CIGFUR III has no questions for this witness.

MR. TRATHEN: I have no questions.

MR. MAGARIRA: SACE has no questions for this witness.

MR. FREEMAN: Thank you.

CROSS EXAMINATION BY MR. FREEMAN:

Q Mr. Flanagan, would you agree with me that the W.S. Lee Plant was not operational during Winter Storm Elliott?

A That is correct.

Q And the case we're here about is the fuel expenditures for calendar year 2022, correct?

A Correct.

Q So next years fuel will be filed in early 2024 for the 2023 year.

A Correct.

Q And so would you agree with me that W.S. Lee's non-operational status extended beyond December 31st of 2022?

A Yes, that's correct. I believe it went through mid-January.

Q And mid-January of 2023 will be addressed in the fuel case that will be filed in early 2024?
A I would think the 2023 portion of that would be part of the 2023 fuels case, correct.
Q I understand. I'd like to address just some of the scheduling issues that arose here.

MR. FREEMAN: And if I could, Commissioner, I would propose to mark an exhibit as Public Staff Flanagan Cross Exhibit 1.

COMMISSIONER KEMERAIT: It shall be marked.

(WHEREUPON, Public Staff Flanagan Cross Exhibit 1 is marked for identification.)

MR. FREEMAN: May I approach?

COMMISSIONER KEMERAIT: Yes, you may.

(Counsel passes out an exhibit)

BY MR. FREEMAN:
Q Thank you. I think you now have a document in front of you marked Exhibit 1 with nine pages.
A Yes, that's correct.
Q And let me just back up a little bit. You filed direct testimony in this case on February 28th.
A I believe that's correct.
Q I did the same thing you're doing right now, so.

A Yes.
Q February 28th?
A Yes.
Q And then the Public Staff filed testimony on May 9th.
A Yes, that's correct.
Q That is 10 weeks; 70 days. I counted.
A Okay.
Q Does that sound about right?
A Yes, sir.
Q And you might agree with me that in those 10 weeks some other things were going on involving the Public Staff and Duke Energy?
A Duke Energy I can definitely say yes. I don't know about the Public Staff, but yes.
Q I can say yes but I'm not allowed to testify. This data request here is dated March 27th? Exhibit 1.
A Yes, that's correct.
Q I've got it if you need it.
A Yes, March 27th. I've got it.
Q And it's called "Outages". You'll see on the first page.
A Correct.

Q And if you'll look with me on page 5 of 9.
A Okay.
Q Public Staff asked for a meeting. And on page six of nine is the response from the Company. Glad to have a meeting. Scheduled for April 14th at 11:00 a.m.
A Yes, that's correct.
Q And we can skip ahead to page 9 and see that the subject of this meeting is going to be regarding Belews Creek and W.S. Lee.
A Yes, that's correct.
Q Technical SME discussion only.
A Yes.
Q That means no lawyers, correct?
A Yes, that's my understanding.
Q And if you'll look at page 8 of 9, you'll see that on April 12th that meeting was canceled with a request to reschedule for the next week.
A Yes, I believe the request was to reschedule. Correct.
Q And then just for completeness, if we'll look at page 7 of 9, in your rebuttal testimony you noted that the Public Staff said they were just too busy. And if you'll look sort of three-fourths

of the way down you'll see that single sentence from the Public Staff, "sorry for the delay in responding. At this time we are just too busy to have this meeting"?

A Yes, I see that.

Q That was sent in response to the request for a rescheduling of the meeting that was supposed to happen on April 14th?

A Correct.

Q And this is the email that you are referencing in your testimony?

A Yes.

Q Okay. If you'll see, and I don't know how to tell you, but it's in the paragraph at the bottom of page 7, the Public Staff says that they would have expected to also have information on those. Do you see that sentence? If you'll just want to count the number of lines. Six, seven --

A Yeah. *And states that reports were not created for those*. Is that -- I'm not sure.

Q Yep, you're there.

A Okay. Yes.

Q So, you will see -- you will agree with me that the Public Staff here is telling Duke that

there's some information that they haven't received that they thought they would have received?

A I believe that's correct. And, I mean, I can't speak to what you're saying. I mean, I see what you say, but I guess I can't speak to the intent.

Q Thank you. I understand.

If I could have one moment.

(Discussion at counsel table)

MR. FREEMAN: Thank you. I don't have any more questions, Mr. Flanagan.

MS. TOON: Just a few redirect questions if I may.

REDIRECT EXAMINATION BY MS. TOON:

Q Mr. Flanagan, in response to Mr. Freeman's questions regarding discovery the Company provided. In your opinion did the Company provide -- was the Company responsive?

A Yes, I believe over the course of the data request period we received, related to these three outages specifically that they're talking about here, W.S. Lee and two at Belews Creek, five separate data requests with upwards of 150 questions that were answered. Yeah. Over the

course of the about two-week period, towards the end of April.

Q And Mr. Freeman pointed you to, this is Public Staff's Data Request 7. If you recall, did Public Staff issue follow-up data requests in respect to our answers, the Company's answers to Public Staff's DR?

A Yes, that's correct. Data Request 8 specifically on all outages; 21 and 22 were also, and 2023, concern Belews Creek; and there was actually a follow-up Data Request 30 that was submitted last week that I believe we responded Friday.

Q And with regards to Mr. Will's question -- excuse me, Mr. Freeman's question about their concern they didn't receive certain information. Could you give some background on the semi-annual data request?

A Yes. And it's my understanding that the Company, what we are always asked to give in data requests is outage reports or whenever we do not have outage reports a summary of the outage. That's been a longstanding history. We looked back the last few years and it's the same data that we've always supplied.

Q And the semi-annual data request, is that issued before the start of the fuel discovery period?
A That's my understanding. Yes, before.
Q And as far as a -- in regards to DEC, for the last three test periods, has that been the practice between Public Staff and the Company?
A Yes, that's correct. We've given them the same data - outage reports or summaries of outages where there's no report available.
Q And so, just for clarity of record, when they ask for an outage report, does the Company provide an outage report?
A That's correct.
Q And where an outage report has not been created what does the Company do?
A We summarize the outage and respond, usually in an Excel file.
Q And by nature of the fact that a semi-annual data request, we do this twice for each test year?
A Yes, that's correct?
Q And have done so for DEC for test year -- this current test year? 2022?
A Correct.
Q And for 2021 as well?

A Yes.
Q And for 2020?
A Yes.
Q And if you know, does the Public Staff ask the exact same question for Duke Energy Progress?
A I believe so. Yes.
Q And has the Company responded consistently with the practice which you have just outlined?
A Yes, that's correct. Same response.
Q And if the Commission establishes a discovery period as part of this, part of the fuel proceeding, is that correct?
A Yes, that's right.
Q And did the Company respond to formal discovery within the discovery period?
A Yes. We responded, you know, based on the date received, we submitted back in the required period. Yes.
Q And did the Company make itself available for discussions with the Public Staff as it relates to the fuel proceeding?
A Yes. And it's one thing I wanted to point out with the rescheduling of the meeting. The meeting wasn't canceled. We asked for a

reschedule and, I believe, provided my information, contact information so that they could reach out to me independently if they needed to.

Q Did the Public Staff respond with a different date they might be available?

A No.

Q And did the Public Staff respond indicating that April 14th was the only day they were available?

A The email is all that I've seen.

Q And, if you recall, any discussions with respect to the three outages in question that you may have had with Public Staff outside of discovery or --

A Specifically, I mean, I know we had a -- I believe it was a DEP rate case call concerning Asheville Station and during that call we talked about W.S. Lee's, the issues going on there, just because I had a responsibility for W.S. Lee, so the conversation kind of went in that direction.

Q Thank you, Mr. Flanagan.

MS. TOON: I have no further questions.

COMMISSIONER KEMERAIT: I'll begin with a couple of questions from the Commission.

EXAMINATION BY COMMISSIONER KEMERAIT:

Q Talking about the outage reports, I think you just testified and then you talked in your rebuttal testimony that if the Company has not prepared an outage report that it will prepare a summary instead. Can you help us understand the reasons that DEC would not prepare an actual report for outages?

A Yes. So our outage reports are -- we have planned outages. If you look at kind of how we're structured, we have outage managers that manage certain larger, longer term outages. And outage reports are generally prepared for those planned outages that are planned well in advance. So a year in advance we have planned outages. Those outage reports are prepared for those outages - the detail, the scope of work, and any other findings during the outage.

Q And for the unplanned outages, some of which occurred during the test year, do you -- does the Company prepare outage reports after the fact, so actual reports as opposed to just summaries of what had happened?

A No. So we don't -- it depends on what the

outage, kind of how the outage goes. So W.S. Lee, as an example, I believe there was an outage summary of the work that went on after the turning gear failure, as an example. Generally, depending on the type of failure, if it's a less common more technical failure, we'll do a root cause. It may be internal. We may involve SMEs. We may involve OEMs, like Siemens or Gen and a gas turbine to provide a report. But they're more hind-sight reports on technical issues that happened and not outage reports like would be prepared in planned outages.

Q And so just for clarification, which of the outages during the test year did DEC not prepare or have an actual outage report for?

A I can verify, subject to check, but there are probably several, you know, forced outages, maintenance outages where we would not have done that.

Q Okay. And then I'll be asking the Public Staff the same question, but the Public Staff believes that they did not or do not have the information and documentation that they need in order to have completed their investigation about the outages

and then provide a recommendation to the Commission.

Can you give the Company's position about whether you provided the information that the Public Staff needed and they had what they needed in order to complete their investigation and prepare a recommendation? And I'll be asking the same question of the Public Staff.

A Okay. Yes. I mean, I feel with the data that has been submitted, and it goes back to the five, really six now, data requests, a 150 questions, that we answered in the time allotted to get back to them, several follow-up questions, even up to the most recent data request that was submitted last week and returned last week, we've provided everything that we can possibly provide to the Public staff to make a determination on those outages.

Q So you believe that you have fully answered and complied with their request for information?

A Yes, that's correct.

Q Except for actually having an in-person meeting?

A Correct. Yes.

Q And then a question about the W.S. Lee outage. That outage occurred during December of 2022 and extended into 2023. And I think I heard that your position is, is that deferral from that outage should on -- deferral to the next fuel proceeding, should only be the portion of the outage that occurred in calendar year 2023 as opposed to the entire outage. Is that the Company's position?

A Yes, that's correct.

Q So the Company does not believe that because the outage extended into 2023 that there's a basis for deferring it into the next fuel proceeding?

A Correct.

COMMISSIONER KEMERAIT: Any further questions from the Commission, beginning with the Chair?

CHAIR MITCHELL: (Shakes head no).

COMMISSIONER KEMERAIT: Commissioner Clodfelter?

EXAMINATION BY COMMISSIONER CLODFELTER:

Q Mr. Flanagan, just curious, the discovery request you responded to last week, what was the subject matter of that request?

A They were additional questions related to two Belews Creek outages. One in the spring and in the fall, both on Belews Creek Unit 2.

Q On Unit 2? And they did not -- did that discovery request address the outage at W.S. Lee between December and January?

A I don't believe there were any questions related to W.S. Lee. I think they were all Belews Creek.

COMMISSIONER CLODFELTER: Okay. Thank you, sir.

COMMISSIONER KEMERAIT: Commissioner Brown-Bland?

COMMISSIONER BROWN-BLAND: Yes.

EXAMINATION BY COMMISSIONER BROWN-BLAND:

Q Just to clarify, with the Public Staff Flanagan Cross Examination Exhibit 1, page 7, there at the bottom, so -- and you can take a minute to look at it so you don't have to go with my short summary. But as I read that it's an indication that the Company had provided the Public Staff with a list of outages, and the summaries of the work, and indicated that the reports had not been prepared or created for those. And then the engineer for the Public Staff, Evan Lawrence,

indicates that there were other outages and that he would have expected to receive information on. On did the Company not -- did the Company understand that before seeing this from him, that he was looking for other?

A No, I don't believe so. My understanding from the request for outage reports -- you know, we feel like we submitted outage reports and summaries of outages. I think the -- one of their data request, we submitted the root cause for one of the outages, and I think they were taking that as an outage report even though it was a hindsight analysis for a technical response for what happened. We don't consider that an outage report.

Q And then having received this statement from him, what was the response? Did you indicate or have further conversations letting them know that you didn't think he had asked, because he indicates here that maybe they need to revise the data request. Is that what the Company was thinking, too? Did you communicate that?

A I think at the time we thought and still believe that we had given them all the information that

we could on the outages which was why, you know, if they had questions on some of the data, I hate to assume, my assumption on the further questions were that they had some technical questions about what they had seen in the data request that we had already provided and not so much have additional questions new. We thought it was just a technical explanation which would be common with some of the other meetings that we had had.

Q Did you take this response as being somehow they weren't satisfied with what they had received, the Public Staff?

A I don't know that I thought about what their intent was at the time. Yes.

COMMISSIONER BROWN-BLAND: Okay. Thank you.

COMMISSIONER KEMERAIT: Questions on Commission questions?

Oh, excuse me, Commissioner McKissick has a question.

COMMISSIONER McKISSICK: Just one or two quick questions.

EXAMINATION BY COMMISSIONER McKISSICK:

Q There has been some discussion about a root cause analysis report that was previously done and one

not being done in connection with this other incident; is that correct?

A For the three outages in question, the first outage in the spring of 2022, there was not a root cause. We did some internal investigating just to look for best practices and make sure that we did not have an issue repeat itself. For the fall of 2022, there was a root cause. It was very technical. The W.S. Lee outage, the root case is still ongoing with the OEM.

Q Still ongoing?

A Yes.

Q And the one -- I'm looking at the one here that was dated August 31st, I guess of '22, Belews Creek Unit 2, crossover failure.

A Yes, sir.

Q And when I go back to a summary of root cause, it says, *based on the overall analysis, the root cause of the incident was the vendor's failure to apply loc-crite* --

A Loctite.

Q Loctite.

A Yes, sir.

Q That's the way it's pronounced. Yes.

Threadlocker on the threaded rod and the tie rod end fasteners during the Belews Creek 2 LP Crossover Expansion Joint Replacement Project during the Fall of 2018 Outage. And the lack of Threadlockers is evident.

Was this basically the summary that they reached?

A Yes, sir. That's the summary of the root cause that was done actually by a third party, Metallurgical Lab, following the outage. Yes.

Q And did you accept that conclusion as being an accurate assessment of what occurred or did you have reservations that it may not have been at that time or that there were other causes?

A Yes. It's -- when you look at the outage and some of the other explanation in the root cause report, I think the first thing to point out is it goes back to a 2018 outage when the Company replaced an expansion joint on that crossover. So it was actually shipped offsite and rebuilt by a third-party vendor and then shipped back reassembled. The design had not changed prior to 1974 when the station was designed, so there was no change in design. And the tie rods that

failed, when you look at the root cause, were original. They were tested and reused. I think once you understand that it helps you better understand why the Loctite Threadlocker was the root cause.

So you can't see that, right, the third-party vendor sends it back to us. There's multiple kinds of lubricant that can be used to install, you know, in this case it's a nut on a bolt. For all intense, it's just big. It's about 6 inches in diameter. So when that's reinstalled, there's different types of lubricant that can be used. You can't see what's Loctite verses what's a different lubricant. And without destructive examination, which is what we did after the failure, you wouldn't know that there was a design flaw. You wouldn't know that Threadlocker, Loctite Threadlocker wasn't used.

So I think having that background, once we understood how we got there, it's easy to understand the root cause and how they ended up with the lack of Threadlocker being the root cause.

Q And with that information, has it caused you to

reassess using the third party who did the work on that particular occasion, or either to provide greater specificity in connection with the way they might conduct repairs in the future, or even maintenance if they were involved in that type of activity?

A Yes. And we have -- this was a very special -- so the 2018 outage was actually to replace the expansion joint on the crossover. So the crossover is, just to kind of put a visual on it, I'm going to say 20-feet long, 5-foot diameter. It's a large pipe that has an expansion joint so that when the unit is online and shuts down it can allow for thermal expansion. There's an expansion joint in that system. So a 5-foot diameter expansion joint. All of this is held together to keep it rigid but allow for expansion by these tie rods and fasteners.

And the expansion joint isn't something you can really replace in house so it had to be shipped off and performed by a third party. You know, we have -- we verified that the specification that was listed said that this is what needs to be used, the Loctite Threadlocker.

You know, part of follow up for this was making sure the vendor contact, that we ensure they're following the processes and procedures that we supply them, but we have to rely on the expertise of some of the third-party vendors. This isn't something we could handle in house. So, we feel like we were prudent in the way we managed that, especially knowing that it was the original design from the tie rod fastener standpoint.

Q Well, that's helpful to understand. So you-all actually did specify use the Loctite but the third party didn't use it.

A Yeah. The specification was sent. And yes. And they actually NDE tested the tie rods to ensure that they were sufficient before sending it back, to verify that they were in good shape.

Q Got it. And I guess the thing, moving forward, I guess, are there any actions that you would anticipate taking that would mitigate this kind of problem or would you still use this same third party? I don't think how many other companies are out there capable of doing the work or providing this service that third party provided.

A I don't know specifically on this instance. I'm -- you know, this is 2018. I'm not even sure they're still around to be honest. I think we do still rely on third-party vendors to make repairs. We did follow with the lessons learned. We looked across the fleet to ensure that -- at least for this specific instance, you know, ensured that there were no other units that had this type configuration. But specific to this vendor, I don't know of any follow-up action has been taken.

COMMISSIONER McKISSICK: Thank you.

COMMISSIONER KEMERAIT: Questions on Commission questions?

MR. FREEMAN: Thank you.

EXAMINATION BY MR. FREEMAN:

Q You would agree with me that the W.S. Lee Outage Report was provided to the Public Staff on April 10th, and that was in response to Public Staff Data Request 7.

A April 10th, that's correct.

Q Thank you so much.

(Discussion at counsel table)

MR. FREEMAN: Thank you. I don't have any

more questions.

Commissioners, we do have -- and I don't know if the Commissioners just received them -- copies of the filed copies of the Stipulation?

COMMISSIONER KEMERAIT: We did and we'll move to that in just a minute.

Questions from DEC on Commission questions?

MR. FREEMAN: Oh, I apologize.

COMMISSIONER KEMERAIT: Yes.

MS. TOON: Thank you. No questions.

COMMISSIONER KEMERAIT: And before we move to the Stipulation, I believe that DEC has already made its motions in regard to this witness. But Public Staff, do you have a motion you would like to make in regard to the exhibit that you introduced?

MR. FREEMAN: Yes, we do. Thank you. Public Staff moves that the document marked for identification as Flanagan Cross Exhibit 1 be moved into evidence.

COMMISSIONER KEMERAIT: And seeing no objection, Public Staff Flanagan Cross Exhibit 1 is admitted into the record.

(WHEREUPON, Public Staff Flanagan Cross Exhibit 1 is

received into evidence.)

COMMISSIONER KEMERAIT: Mr. Flanagan, thank you for your testimony and you may be excused.

THE WITNESS: Thank you.

COMMISSIONER KEMERAIT: So I believe that the next panel that will be called is going to be talking about the Stipulation, is that correct?

MS. TOON: That is correct.

COMMISSIONER KEMERAIT: Has the Stipulation been provided to all of the parties at this point?

MR. FREEMAN: Does the Commission have a copy?

COMMISSIONER KEMERAIT: Yes, we have copies.

MS. TOON: I believe they are being -- as far as I know I believe that everybody has received a copy or is receiving it.

COMMISSIONER KEMERAIT: Okay. Then you may go ahead and call your next witnesses.

MS. TOON: Okay. I appreciate it. Thank you. At this time, the Company will call Ms. Clark and Mr. Bauer as a panel, please, to the stand.

COMMISSIONER KEMERAIT: Ms. Clark, before we begin I have to apologize for mispronouncing your name yesterday.

MS. CLARK: That's okay. It happens.

COMMISSIONER KEMERAIT: So please place your left hand on the Bible and raise your right hands.

SIGOURNEY CLARK and CHRIS BAUER;

having been duly sworn,

testified as follows:

COMMISSIONER KEMERAIT: Thank you.

MS. TOON: Commissioner Kemerait, if I -- with your permission, I would like to introduce their various testimonies that have been prefiled and then we'll ask for their testimonies, et cetera, to be moved into the docket at the end.

COMMISSIONER KEMERAIT: Okay. Please proceed.

MS. TOON: Starting with you, Ms. Clark.

DIRECT EXAMINATION BY MS. TOON:

Q Will you please state your name and business address for the record?

A (Ms. Clark) Yes. Good afternoon, members of the Commission. My name is Sigourney Clark and 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.

Q Did you cause to be prefiled in this docket on February 28th, 2023, 16 pages of direct testimony, six exhibits and 13 workpapers?

A Yes.

Q Do you have any changes or corrections to your direct testimony or exhibits?

A I did and I addressed those revisions in my May 4th supplemental testimony where I also filed revised exhibits and workpapers.

Q And if I were to ask you the same questions that appear in your direct testimony today, would your answers be the same?

A Yes, they would when read in conjunction with my May 4th supplemental revised exhibits and workpapers.

Q And as you indicated, Ms. Clark, did you also cause to be prefiled in this docket on May 4th, 2023, four pages of supplemental testimony and three revised exhibits?

A Yes.

Q Do you have any changes or corrections to your supplemental testimony or exhibits?

A No, I do not.

Q If I were to ask you the same questions that appear in your supplemental testimony today, would your answers be the same?
A Yes, they would.
Q Ms. Clark, did you also cause to be prefiled in this docket on May 18th, 2023, 21 pages of rebuttal joint testimony which you co-sponsored with Mr. Bauer and two exhibits?
A I did, however, I address those corrections in my May 19th corrected exhibits and workpapers.
Q So, just for clarity of record, you had some changes or corrections to your May 18th rebuttal testimony; is that correct?
A Correct.
Q Okay. And if I were to ask you the same questions that appear in your rebuttal testimony today, with those corrections in mind, would you -- would your answers still be the same?
A Yes, when read in conjunction with my May 19th corrected exhibits and workpapers.
Q Did you also cause to be prefiled in this docket on May 26th, 2023, five pages of revised rebuttal testimony and three second revised exhibits including workpapers?

A Yes.
Q Do you have any changes or corrections to your revised rebuttal testimony or exhibits?
A No, I do not.
Q If I were to ask you the same questions that appear in your revised rebuttal testimony today, would your answers be the same?
A Yes, they would.
Q And Mr. Bauer.
A (Mr. Bauer) Hello.
Q Good afternoon.
A Good afternoon.
Q Would you please state your name and business address for the record?
A Sure. My name is Chris R. Bauer. My business address is 525 South Tryon Street, Charlotte, North Carolina 28202.
Q By whom are you employed and in what capacity?
A I'm employed by Duke Energy Business Services. The capacity is I am the Director of Corporate Finance and the Assistant Treasurer of the Company.
Q Did you cause to be prefiled in this docket on May 18th, 2023, 21 pages of joint rebuttal

testimony, which you co-sponsored with Ms. Clark, and four exhibits?

A Yes.

Q Do you have any changes or corrections to your joint rebuttal testimony or exhibits?

A No, I do not.

Q If I were to ask you the same questions that appear in your joint rebuttal testimony today, would your answers remain the same?

A Yes.

MS. TOON: And at this time, Commissioner Kemerait, I ask that -- I move that Ms. Clark's direct testimony, supplemental testimony, rebuttal testimony, corrected rebuttal testimony and revised rebuttal testimony, and the exhibits as they are premarked be moved -- would be entered into the record as if orally given from the stand?

COMMISSIONER KEMERAIT: Your motion is allowed. So Ms. Clark's direct testimony that I believe contains confidential portions as well, so I'll make that note, filed on February 28th, 2023 consisting of 16 pages with six exhibits and 13 workpapers; supplemental testimony filed on May 4th, 2023, consisting of four pages with three revised

exhibits; and then rebuttal testimony filed on May 18th, 2023 consisting of 21 pages and two exhibits and I believe 10 workpapers.

MS. TOON: That is correct.

COMMISSIONER KEMERAIT: And corrected rebuttal testimony and then joint revised rebuttal testimony filed on May 26th consisting of five pages, will be copied into the record as if given orally from the stand.

MS. TOON: Thank you.

(WHEREUPON, the prefiled direct testimony of SIGOURNEY CLARK is copied into the record as if given orally from the stand.)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1282

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

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

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. No. I have not.

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 6, along with supporting work papers. The test period used in supplying this information and data is the twelve months ended December 31, 2022 ("test period"), and the billing period is September 1, 2023 through August 31, 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 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 6 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 93.52% proposed nuclear capacity factor and projected megawatt hour ("MWh") sales.

Schedule 2: Fuel and Fuel-Related Costs Factors - reflecting a 93.52% nuclear capacity factor and normalized test period sales.

Schedule 3: Fuel and Fuel-Related Costs Factors - reflecting a 91.87% 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 2022 Monthly Fuel Reports.

1) December 2022 Monthly Fuel Report required by NCUC Rule R8-52.

2) December 2022 Monthly Base Load Power Plant

Performance Report required by NCUC Rule R8-53.

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 4.3770¢, 3.9202¢, and 3.4394¢ per kWh, respectively, to be reflected in rates during the billing period. The factors DEC proposes in this proceeding incorporate a 93.52% 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 Houston, 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	2.7126	2.2553	1.7127	2.3202
EMF Increment (Decrement)	1.6644	1.6649	1.7267	1.6774
EMF Interest (Decrement)	-	-	-	-
Net Fuel and Fuel Related Costs Factors	4.3770	3.9202	3.4394	3.9976

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

A. The proposed fuel and fuel-related costs factors will result in a 17.99% increase on customers' bills. 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	4.3770	3.9202	3.4394	3.9976
Existing Total Fuel Factor	2.4866	2.4471	2.4122	2.4607
Increase in Fuel Factor	1.8904	1.4731	1.0272	1.5369

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

A. The increase in the proposed net fuel and fuel-related costs factors is primarily driven by a $999 million under-recovery in the current test period compared to a $327 million under-recovery included in current rates. The Company typically experiences some amount of over or under recovered 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. Fuel revenues collected by the Company were materially less than the fuel costs incurred for the test period. Witness Swez describes the trend of increasing fuel commodity prices that continued throughout 2022, which led to the $999 million under-recovery experienced during the test period reflected in DEC's proposed EMF rates. In addition to the material under-recovery, estimated system fuel costs in the billing period are higher due to an expected increase in customer load.

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

A. For this filing, DEC 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 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 93.52% 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 1281.

Schedule 2 also uses the proposed capacity factor of 93.52% 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 91.87%. This capacity factor is based on the 2017 through 2021 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 the allocation of renewable and cogeneration power capacity costs by customer class on the basis of the final 2021 cost of service production plant allocators since the 2022 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.

Page 3 of Exhibit 2, Schedules 1, 2, and 3 shows the allocation of system fuel costs to the North Carolina retail jurisdiction, and the calculation of DEC's proposed fuel and fuel-related costs factors for the residential, general service/lighting and industrial classes, exclusive of regulatory fee, using the uniform percentage average bill adjustment method.

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 91.87% NERC nuclear capacity factor compared to the proposed 93.52% 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 $381 million, $407 million and $211 million respectively. There is one adjustment included in the calculation of the under-recovery balance at December 31, 2022. This adjustment relates to the month of January 2022, which was included in the fuel rate approved in the last fuel and fuel-related cost recovery proceeding and is included for Commission review in

the current proceeding. The Company has excluded the amount of under-recovery for January 2022 that was included in the EMF approved in Docket E-7, Sub 1263 when computing the proposed EMF factors.

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.

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. Throughout the entirety of 2022, fuel revenues collected by the Company were materially less than the fuel costs incurred for the test period. Witness Swez describes the trend of increasing fuel commodity prices that continued throughout 2022, driving the under-recovery experienced during

the test period. In addition to the material under-recovery, estimated system fuel costs are higher in the billing period due to an expected increase in customer load.

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 1214) 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, 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 3.5402¢ 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 Houston discusses DEC's nuclear fuel costs and procurement strategies.

Q. HAS THE COMPANY REVIEWED ITS FUEL COST PROXY PERCENTAGE CALCULATION FOR 2022?

A. Yes, based on the analysis of the composite (i.e., DEC and DEP combined) 2022 short-term off-system sales, the actual fuel and fuel-related ratio of such sales was 87.9% of total sales revenues. Given that the results of the analysis fall outside the range of 75% to 85%, the ratio will be adjusted down to the maximum of the range as in accordance with the Stipulation Regarding the Proper Methodology for Determining the Fuel Costs Associated with Power Purchases from Power Marketers and Others (Swez Exhibit 4). Accordingly, the Company proposes setting fuel costs associated with power purchases made

by the Company in calendar year 2022 at a level equal to 85% of the total energy cost as reflected in Clark Exhibit 6 Schedule 3, Page 3 of 5.

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 final 2021 cost of service production plant allocators since the 2022 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 plant allocator from the 2022 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, using a uniform percentage average bill adjustment method.

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 uniform percentage average bill adjustment methodology in setting fuel rates in this fuel proceeding. DEC proposes to use the same uniform percentage average bill adjustment methodology to adjust its fuel rates to reflect a proposed increase in fuel and fuel-related costs as it did in its 2022 fuel and fuel-related cost recovery proceeding in Docket No. E-7, Sub 1263.

Q. PLEASE EXPLAIN THE CALCULATION OF THE UNIFORM PERCENTAGE AVERAGE BILL ADJUSTMENT METHOD SHOWN ON CLARK EXHIBIT 2, PAGE 3 OF SCHEDULES 1, 2, AND 3.

A. Clark Exhibit 2, Page 3 of Schedule 1, shows DEC's proposed fuel and fuel-related cost factors for the residential, general service/lighting and industrial classes, exclusive of regulatory fee. The uniform bill percentage change of 17.99% was calculated by dividing the fuel and fuel-related cost increase of $934,815,271 for North Carolina retail by the normalized annual North Carolina retail revenues at current rates of $5,195,519,969. The cost increase of $934,815,271 was determined by comparing the total proposed fuel rate per kWh to the total fuel rate per kWh currently being collected from customers and multiplying the resulting increase in fuel rate per kWh by projected North Carolina

retail kWh sales for the billing period. The proposed fuel rate per kWh represents the rate necessary to recover projected period fuel costs for the billing period (as computed on Clark Exhibit 2, Schedule 1) and the proposed composite EMF increment rate (as computed on Clark Exhibit 3, page 1). This results in a uniform bill percentage change of 17.99% Clark Exhibit 2, Page 3 of Schedules 2 and 3 uses the same calculation, but with the methodology as prescribed by NCUC Rule R8-55(e)(3) and NCUC Rule R8-55(d)(1), respectively.

Q. HOW ARE SPECIFIC FUEL AND FUEL-RELATED COSTS FACTORS FOR EACH CUSTOMER CLASS DERIVED FROM THE UNIFORM PERCENT ADJUSTMENT COMPUTED ON CLARK EXHIBIT 2, PAGE 3 OF SCHEDULES 1, 2, AND 3?

A. Clark Exhibit 2, Page 3 of Schedules 1, 2, and 3 uses the same calculation, but with the methodology as prescribed by NCUC Rule R8-55(e)(3) and NCUC Rule R8-55 (d)(1), respectively, with the breakdown shown on Clark Exhibit 2, Page 2 of Schedules 2 and 3. The equal percent increase or decrease for each customer class is applied to current annual revenues by customer class to determine a dollar amount of increase or decrease for each customer class. The dollar increase or decrease is divided by the period sales for each class (either projected billing period or adjusted test period) to derive a cents per kWh increase or decrease. The current total fuel and fuel-related cost factors for each class are increased or decreased by the proposed cents per kWh increases or decreases to get the proposed total fuel and fuel-related cost factors. The proposed total factors are then separated into the prospective and EMF components by subtracting the EMF

components for each customer class (as computed on Clark Exhibit 3, Page 2, 3, and 4) to derive the prospective component for each customer class. This breakdown is shown on Clark Exhibit 2, Page 2 of Schedules 1, 2, and 3.

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.

(WHEREUPON, the prefiled supplemental testimony of SIGOURNEY CLARK is copied into the record as if given orally from the stand.)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1282

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of	)	
Application of Duke Energy Carolinas, LLC	)	**SUPPLEMENTAL TESTIMONY**
Pursuant to G.S. 62-133.2 and NCUC Rule	)	**OF SIGOURNEY CLARK FOR**
R8-55 Relating to Fuel and Fuel-Related	)	**DUKE ENERGY CAROLINAS, LLC**
Charge Adjustments for Electric Utilities	)	

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. HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING?

A. Yes, on March 1, 2023, I caused to be pre-filed with the Commission my direct testimony and 6 exhibits and 13 supporting workpapers.

Q. YOUR SUPPLEMENTAL TESTIMONY INCLUDES THREE (3) REVISED EXHIBITS. WERE THESE SUPPLEMENTAL EXHIBITS PREPARED BY YOU OR AT YOUR DIRECTION AND UNDER YOUR SUPERVISION?

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

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

Clark Revised Exhibit 2: Calculation of the Proposed Fuel and Fuel-Related Cost Factors.

Clark Revised Exhibit 3: Calculation of the Proposed Experience Modification Factor ("EMF") rate.

Q. WHAT IS THE PURPOSE OF YOUR SUPPLEMENTAL TESTIMONY IN THIS PROCEEDING?

A. The purpose of my supplemental testimony is to present revised rates reflecting impacts of revised net gains on the sale of by-products, which are used to reduce the cost of fuel and fuel-related costs that customers pay. During the discovery

process in Docket No. E-7, Sub 1263 (the Company's 2022 annual fuel filing), the Company became aware it had incorrectly calculated steam revenues associated with the Clemson Combined Heat & Power facility. The Company billed and collected those steam revenues from Clemson University during the current proceeding's test period. The steam revenues were recorded to an account that was not included in the Company's direct filing in this proceeding. Therefore, the Company is including the steam revenues in this supplemental filing to ensure its proposed fuel rates reflect the net gains on the sale of this by-product. The Company has updated its procedures to ensure any steam revenue adjustments will be recorded to the appropriate fuel account going forward.

Q. WHAT IS THE TOTAL RATE IMPACT OF THESE UPDATES?

A. The Company's aggregate "Adjusted (Over)/Under Recovery" amount for North Carolina Retail was decreased by $613,775 from the amount filed in my direct Exhibit 3, Page 1. In addition, each customer class' proposed EMF rate was decreased by each class' allocation of the $613,775. The components of the proposed fuel and fuel-related cost factors by customer class, as shown on Clark Revised 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	2.7123	2.2554	1.7131	2.3202
EMF Increment (Decrement)	1.6635	1.6638	1.7256	1.6764
EMF Interest (Decrement)	-	-	-	-
Net Fuel and Fuel Related Costs Factors	4.3758	3.9192	3.4387	3.9966

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

A. The revised proposed fuel and fuel-related costs factors will result in a 17.98% increase on customers' bills, as compared to the previously filed increase of 17.99%.

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

A. Yes, it does.

MS. TOON: And Commissioner Kemerait at this time I'd also move that Mr. Bauer's rebuttal testimony and exhibits be entered into the record as if orally given from the stand.

COMMISSIONER KEMERAIT: And your motion is allowed. Mr. Bauer's joint rebuttal testimony filed on May 18th consisting of 21 pages and the joint revised rebuttal testimony filed on May 26th, 2023 consisting of five pages will be copied into the record as if given orally from the stand.

MS. TOON: Thank you.

(WHEREUPON, the prefiled joint rebuttal testimony of SIGOURNEY CLARK and CHRIS BAUER is copied into the record as if given orally from the stand.)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1282

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	))))))	**REBUTTAL TESTIMONY OF SIGOURNEY CLARK AND CHRIS BAUER FOR DUKE ENERGY CAROLINAS, LLC**

Q. MRS. CLARK PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND CURRENT POSITION.

A. My name is Sigourney Clark. My business address is 5413 Shearon Harris Road, New Hill, North Carolina. I am a Rates and Regulatory Strategy Manager for Duke Energy Carolinas, LLC ("DEC" or the "Company").

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 FILED TESTIMONY IN THIS PROCEEDING?

A. Yes, on February 28, 2023, I caused to be pre-filed with the Commission my direct testimony and 6 exhibits and 13 supporting workpapers. On May 4, 2023, I caused to be pre-filed with the Commission supplemental testimony and 3 revised exhibits.

Q. YOUR REBUTTAL TESTIMONY INCLUDES TWO REVISED EXHIBITS AND NINE SUPPORTING WORKPAPERS. WERE THESE SUPPLEMENTAL EXHIBITS AND WORKPAPERS PREPARED BY YOU OR AT YOUR DIRECTION AND UNDER YOUR SUPERVISION?

A. Yes. These exhibits and workpapers were prepared by me and consist of the following:

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

Clark Rebuttal Revised Exhibit 2:

Schedule 1: Fuel and Fuel-Related Costs Factors - reflecting a 93.60% proposed nuclear capacity factor and projected megawatt hour ("MWh") sales.

Schedule 2: Fuel and Fuel-Related Costs Factors - reflecting a 93.60% nuclear capacity factor and normalized test period sales.

Schedule 3: Fuel and Fuel-Related Costs Factors - reflecting a 91.87% North American Electric Reliability Corporation ("NERC") five-year national weighted average nuclear capacity factor for pressurized water reactors and projected billing period MWh sales.

Q. MR. BAUER, PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Chris R. Bauer and my business address is 525 South Tryon Street, Charlotte, North Carolina 28202.

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

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

Q. PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL QUALIFICATIONS.

A. I received a Bachelor of Arts degree from Flagler College in 2003 and an MBA degree from the University of North Florida in 2004. I am a licensed Certified Public Accountant in the state of Florida. From 2004 to 2010, I worked in Deloitte's Audit and Enterprise Risk Services unit, providing financial statement and internal control services across various industries. In 2010, I joined Duke Energy as a Lead Audit Consultant in the Internal Audit Department. In 2015, I moved to Duke Energy's Investor Relations group where I served as a manager responsible for communicating the Company's strategic, operating and financing plan to debt and equity investors and external stakeholders. In 2017, I moved to the Treasury department and served as both a Treasury Director and the Director of Credit & Capital Markets before assuming my current role in early 2021.

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

A. No.

Q. DID YOU PREVIOUSLY FILE DIRECT TESTIMONY IN SUPPORT OF THE COMPANY'S APPLICATION IN THIS DOCKET?

A. No.

Q. YOUR TESTIMONY INCLUDES FOUR EXHIBITS. WERE THESE EXHIBITS PREPARED BY YOU OR AT YOUR DIRECTION AND UNDER YOUR SUPERVISION?

A. Yes. My exhibits consist of: Bauer Rebuttal Exhibit 1: Moody's November 1, 2022, Sector In-Depth: Delays in fuel cost recovery pressuring utility credit quality, Bauer Rebuttal Exhibit 2: Moody's May 11, 2023, Credit Opinion: Duke Energy Carolinas, LLC Update to credit analysis, Bauer Rebuttal Exhibit 3: Moody's November 10, 2022, Outlook: 2023 outlook negative due to higher natural gas prices, inflation and rising interest rates, and Bauer Rebuttal Exhibit 4: Moody's April 24, 2023, Rate Action: Moody's affirms Duke Energy and subsidiary ratings; changes outlook of Duke Energy Kentucky to negative.

Q. WHAT IS THE PURPOSE OF THIS JOINT REBUTTAL TESTIMONY?

A. The purpose of this rebuttal testimony is to respond to Public Staff Witness Evan D. Lawrence regarding (1) the forecast used to propose fuel rates, and (2) the differentiation between the intent of concurrent filings before the Commission. Additionally, the purpose of this joint rebuttal testimony is to respond to both

Public Staff Witness Lawrence and Carolina Industrial Group for Fair Utility Rates III Witness Brian C. Collins as their direct testimonies refer to (3) deferring cost recovery beyond the twelve-month period specified in the North Carolina fuel statute and the assertion that deferring the fuel balance would not impact the Company's credit metrics. Finally, the purpose of this testimony is to (4) describe mitigation options proposed by the Company to reduce the proposed fuel rate increase.

Q. IN HIS DIRECT TESTIMONY, PUBLIC STAFF WITNESS LAWRENCE REFERS TO THE COMPANY'S ABILITY TO WAIT UNTIL MID-JANUARY TO PRODUCE A TIMELY FUEL COST FORECAST FOR ITS LATE FEBRUARY APPLICATION FILING. PLEASE DESCRIBE THE ELEMENTS OF THE FORECAST INCORPORATED IN THE COMPANY'S PROPOSED PROSPECTIVE BILLING RATE.

A. North Carolina Utilities Commission Rule R8-55(f) requires: "The electric public utility shall file the information required under this rule, accompanied by workpapers and direct testimony and exhibits of expert witnesses supporting the information filed herein, and any changes in rates proposed by the electric public utility (if any), according to the following schedule: Duke Energy Carolinas, LLC, and Progress Energy Carolinas, Inc., not less than 90 days prior to the hearing". For this proceeding, 90 days prior to the hearing, was March 1, 2023. The Company complied with this requirement by filing the annual Application Relating to Fuel and Fuel-Related Charge Adjustments under this docket on

February 28, 2023.

The Company's practice is to produce quarterly forecasts for multiple internal purposes including corporate planning, budgeting, fuel procurement, and ratemaking. The Company's Fuels & Fleet Analytics team produces a monthly commodity generation volumetric forecast (resulting information in coal tons, oil gallons, gas MBTUs, etc.) for the Fuel Procurement team mid-month each month for subsequent calendar month gas scheduling and coal transportation planning. The optimal way to utilize the most current forecast data for North Carolina annual fuel rate-making, in compliance with the filing requirements set forth in R8-55 (b) and (f), is to adopt the timing of the mid-month forecast currently in place for fuel procurement, then refresh the fixed costs and weighted average cost of inventory closer to the annual fuel filing deadlines. In other words, based on the timing of the Company's forecasting process, DEC's February 28, application included the most updated information possible.

Q. PUBLIC STAFF WITNESS LAWRENCE FURTHER REQUESTS THE COMMISSION "REQUIRE THE COMPANY TO RE-CALCULATE THE PROSPECTIVE RATE IN THIS CASE BASED ON CURRENT COMMODITY COSTS AND REFILE THESE RATES AND EXHIBITS AS SOON AS POSSIBLE FOR REVIEW BY THE PUBLIC STAFF AND OTHER INTERVENORS AND FOR CONSIDERATION BY THE COMMISSION." IS THE COMPANY ABLE TO RECALCULATE THE PROSPECTIVE RATE IN THIS CASE BASED ON INFORMATION MORE CURRENT THAN THAT WHICH WAS AVAILABLE FOR USE

TO MEET THE COMPANY'S FILING DEADLINE?

A. Yes. Once again, the forecast used for the application was the most current available. However, the Company has updated its fuel cost forecast to refine its estimate of costs to be incurred during the billing period and has recalculated the prospective rate component of the fuel rate. The Company utilized the most recent Spring 2023 load forecast, which was issued April 10, 2023, and the most recent generation and fuel cost forecast, with a close of business date of April 13, 2023, which was issued on May 3, 2023. This update differs from typical fuel proceeding practice but given the magnitude of the overall customer rate impact and at the request of Public Staff, the Company calculated this impact of updating the forecast. The results of such update are discussed further in this rebuttal testimony.

Q. HOW HAS THE COMPANY ALREADY BEEN IMPACTED BY THE UNDER-RECOVERED FUEL BALANCE?

A. The Company must finance the cost of the under-recovered fuel balance on behalf of customers but has not requested recovery of these financing costs from customer. Because the under-recovered fuel balance is significant, the Company has incurred substantial unrecovered financing costs and will continue to incur these financing costs until the amounts are recovered. Even with a 12-month recovery of the balance as specified in the statute, the average time between the test period, when the costs are incurred, and the billing period, when the under-recovered balance is recovered, is 20 months. The length of this period combined with the magnitude of the under-recovered balance leads to significant financing

costs for which the Company has not requested recovery.

Q. IN HIS DIRECT TESTIMONY, WITNESS LAWRENCE REFERS TO THE PROPOSED FUEL RATE INCREASE AS "RATE SHOCK", WHICH IN HIS OPINION IS EXACERBATED BY INCREASES PROPOSED BY THE COMPANY IN ITS CURRENT APPLICATION TO ADJUST RETAIL BASE RATES IN DOCKET NO. E-7, SUB 1276. PLEASE COMMENT ON THIS ISSUE

A. The Company is well aware of the challenges faced by many of its customers and further understands the critical importance of maintaining competitive and affordable rates (which the Company has a long history of accomplishing). However, it also critical that the Company maintain its financial strength and be allowed to recover its prudent and reasonable costs in accordance with the regulatory structures established under North Carolina law.

Q. IN LIGHT OF THE MAGNITUDE OF THE INCREASE, HAS THE COMPANY IDENTIFIED MITIGATION OPTIONS THAT ARE CONSISTENT WITH THE 12 MONTH STATUTORY RECOVERY PERIOD THAT WILL EASE THE IMPACT ON CUSTOMERS WHILE STILL MAINTAINING FINANCIAL STRENGTH OF THE COMPANY?

A. Yes. The Company has thoroughly evaluated all options available to mitigate the impact of these increases on customers. Based on such evaluation, Company has identified three options to mitigate the impact on customer bills that should accomplish that aim without serious detrimental impacts to the Company's credit rating as further discussed in this rebuttal testimony.

Q. WITNESS LAWRENCE INCLUDED A QUOTE FROM A MOODY'S INVESTOR SERVICE ("MOODY'S") REPORT STATING THAT "MORE REGULATORS ARE LIKELY TO EXTEND FUEL COST RECOVERY PERIODS TO BETWEEN 18 AND 36 MONTHS…TO EASE THE IMPACT ON CUSTOMER ELECTRICITY RATES." COULD YOU PLEASE PROVIDE ADDITIONAL CONTEXT AROUND THIS QUOTE AND THE REPORT IN GENERAL?

A. Yes. I have included as Bauer Rebuttal Exhibit 1, the full Moody's report, titled *Delays in fuel cost recovery pressuring utility credit quality*, which witness Lawrence fails to include in his testimony. While Moody's acknowledges that regulators may seek to extend fuel cost recovery, Moody's also states that "[c]ompanies need to finance under-recovered fuel costs, leading to incremental debt and pressuring financial metrics and liquidity positions at a time when there are other cost pressures facing these organizations" and "…the incremental debt would be credit negative if it is in place for a longer period of time." Moody's clearly understands that some regulators may extend the recovery period for the collection of deferred fuel. However, it is the Company's opinion that there is the strong potential for long-term negative credit implications from delaying recovery over an extended period.

Q. WHAT IS THE COMPANY'S UNDERSTANDING OF MOODY'S EXPECTATION FOR THE RECOVERY OF DEFERRED FUEL IN THE CURRENT DUKE ENERGY CAROLINAS, LLC'S FUEL APPLICATION?

A. On May 11, 2023, Moody's published an updated Credit Opinion on DEC, which is filed as Bauer Rebuttal Exhibit 2, and cites weakened financial metrics as a credit challenge. On page 4 of the same report, Moody's notes that "[t]he [C]ompany's 2022 credit metrics were particularly weak, including a ratio of CFO pre-WC/debt (Cash flow from operations pre working capital / debt) of 17%...primarily due to significant deferred fuel costs…, substantially all which we expect to be recovered by the end of 2024."

Q. WHAT CONTRIBUTION HAS DEFERRED FUEL COSTS HAD ON MOODY'S OUTLOOK FOR THE UTILITY SECTOR AND WHAT DOES THAT MEAN FOR UTILITIES?

A. Bauer Rebuttal Exhibit 3 is Moody's Regulated Electric and Gas Utilities Outlook piece, published on November 10, 2022, in which they revised their outlook on the entire utility sector to "negative" from "stable" citing "increasingly challenging business and financial conditions stemming from higher natural gas prices, inflation and rising interest rates." Moody's also states for the sector that "financial metrics [are] already under pressure with little cushion entering 2023" and that "[h]igh natural gas prices and inflation may persist into 2023, which could hurt cash flow recovery should regulators seek to limit the impact to customer bills by delaying recovery or approving lower rate increases."

Moody's change in the industry outlook to "negative" is a signal to investors that future downgrades may be forthcoming. These external factors included in Moody's sector outlook report certainly impact a utility's financial

wherewithal, as well as customer bills, but are largely beyond the Company's control. Without continued support from regulatory commissions, the financial impacts to a utility's credit metrics will be challenged and could lead to a further downward revision in a utility's rating outlook, and ultimately, a downgrade if the issue is not cured timely or compounding issues arise. If recovery of deferred fuel is delayed, natural gas prices spike again, or severe storms impact DEC's service territory, then compounding issues such as these would negatively impact DEC's credit metrics. This pancaking effect is a real risk to the longer-term financial health of the utility. Furthermore, recovering carrying costs on a deferred balance does not resolve the negative consequences to the Company's credit quality from delaying recovery.

Q. PLEASE EXPLAIN CREDIT QUALITY AND CREDIT RATINGS, AND HOW THEY ARE DETERMINED.

A. Credit quality (or creditworthiness) is a term used to describe a company's overall financial health and its ability to repay all financial obligations in full and on time. An assessment of DEC's creditworthiness is performed by two major credit rating agencies, Standard & Poor's ("S&P") and Moody's, and results in DEC's credit ratings.

Many qualitative and quantitative factors go into this assessment. Qualitative aspects include DEC's regulatory climate, its track record for delivering on its commitments, the strength of its management team, its operating performance, and the economic vitality and customer profile of its service area. The primary quantitative metric the rating agencies use to assess

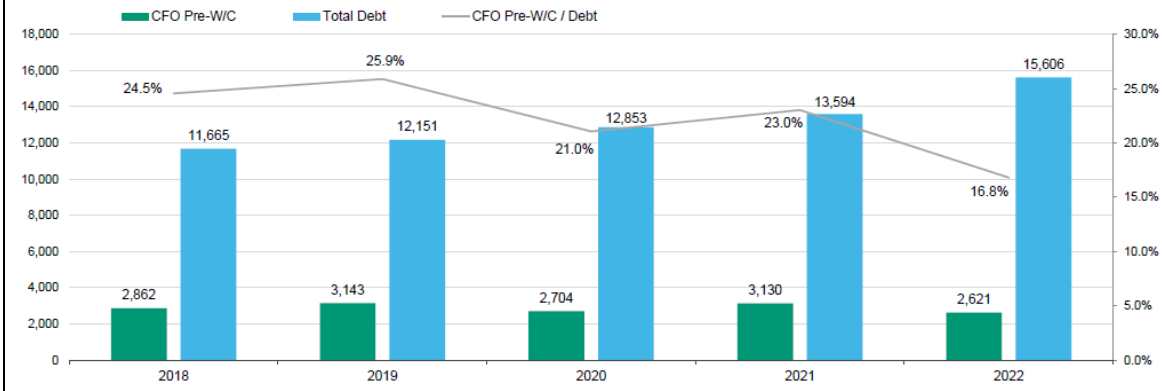
DEC's creditworthiness is Funds from Operations/Debt ("FFO/Debt"), also referred to as CFO pre-WC/debt by Moody's. FFO/Debt is primarily based on operating cash flows and focuses on the level at which DEC maintains debt leverage in relation to its generation of cash. The percentage of debt to total capital is another example of a quantitative measure. Creditors and credit rating agencies view both qualitative and quantitative factors in aggregate when assessing the credit quality of a company.

Q. YOU HAVE CITED MOODY'S CONCERNS FOR THE SECTOR. HAS MOODY'S CHANGED ANYTHING SPECIFIC TO HOW THEY VIEW DEC'S CREDIT PROFILE GOING FORWARD?

A. Yes. Bauer Rebuttal Exhibit4 is Moody's press release issued on April 24, 2023, affirming the ratings of Duke Energy and its subsidiaries, including DEC. However, within this same report, Moody's increased DEC's and Duke Energy Progress, LLC's ("DEP") FFO/Debt downgrade threshold by 100 basis points from 20% to 21%. This upward revision represents a tightening of credit, or a stricter threshold for DEC to maintain its current credit ratings. As noted previously, DEC ended 2022 with an FFO/Debt, as calculated by Moody's, of 17%, 400 basis points below the Company's increased downgrade threshold of 21%.

Q. HOW DOES DEC'S HISTORICAL FFO/DEBT COMPARE TO THE NEW 21% MOODY'S DOWNGRADE THRESHOLD, AND WHAT IS MOODY'S EXPECTATION OF DEC'S FFO/DEBT FOR 2023?

A. The chart below is included on page one of Moody's most recent DEC credit opinion, attached hereto as Bauer Rebuttal Exhibit2.



Note: The 2022 CFO pre-WC to debt ratio, excluding the financial impact of storm cost securitization and the cash flow impact of deferred fuel costs which we expect to be recovered by the end of 2024, would have been 21.3%, see Exhibit 3 for details.
Source: Moody's Financial Metrics™

On page 4 of the same DEC credit opinion, Moody's states that "Duke Carolinas' historically strong financial coverage metrics have declined materially in recent years, including CFO pre-WC to debt falling from 25% in 2018 and 2019 to around 22% in 2020 and 2021 and 17% in 2023[2022]." Moody's notes that the drivers of this decline include "spending for coal ash remediation, new generation and grid modernization, as well as the negative cash flow impact of tax reform, the coronavirus pandemic and unusually severe storms."

As noted on page 7 of Bauer Rebuttal Exhibit 2, Moody's expects DEC's FFO/Debt to be within a range of 20% to 22% over the next 12 to 18 months. In order to meet Moody's expectation, the Company would need to recover the deferred fuel filed in this proceeding by the end of 2024 at the latest.

Q. WHAT WOULD BE THE IMPACT TO DEC'S CREDIT METRICS OF EXTENDING DEC'S RECOVERY OF 2022 DEFERRED FUEL BALANCE BY AN ADDITIONAL 12 MONTHS?

A. Extending the recovery of DEC's $998 million deferred fuel balance over 24 months versus the 12 months statutory allowance in North Carolina, would lower DEC's 2023 FFO by approximately $333 million. As shown in Table 1 below, this is the amount that per Generally Accepted Accounting Principles would be recorded as a non-current regulatory asset, which means it would be included as a use of cash in Moody's calculation of FFO.

Table 1: 2022 Deferred Fuel Balance as of 12/31/23 with Different Recovery Scenarios

($ in millions)	12-Month Recovery	24-Month Recovery	Difference
Non-current Regulatory Asset	$0	$333	$333
Current Regulatory Asset	$665	$499	($166)
Total 2022 Deferred Fuel Balance	$665	$832	$166

All else being equal, a reduction of $333 million to DEC's FFO would result in more than a 200 basis point decline to the Company's FFO/Debt metric for 2023. In a year when the Company's downgrade threshold at Moody's was increased to 21%, this would almost certainly result in DEC being under its downgrade threshold for a second consecutive year. As I mentioned before, this impact is before any possible but unmeasurable compounding issues may further impact 2023's metrics. If the Company were to be below its downgrade threshold for two years in a row, Moody's would most likely consider revising the ratings outlook on DEC to "negative." If that were to occur, 2024 would be

a consequential year for achieving an FFO/Debt metric above the 21% downgrade threshold to hold the Company's current credit ratings.

Q. PLEASE SUMMARIZE YOUR TESTIMONY ON THESE CREDIT ISSUES.

A. As described above, the Company's need to recover these prudent costs over 12 months is not only required under North Carolina law but is essential from a credit and financial strength perspective. And the ability of the Company to maintain financial health, in turn, provides direct benefits to customers.

Q. WITNESS LAWRENCE DISCUSSES OTHER DUKE ENERGY REGULATORY JURISDICTIONS THAT HAVE EXTENDED THE RECOVERY OF DEFERRED FUEL BALANCES LONGER THAN 12 MONTHS. PLEASE COMMENT ON THESE DECISIONS BY REGULATORS IN OTHER DUKE ENERGY JURISDICTIONS.

A. In Docket No. 20230001, Duke Energy Florida, LLC ("DEF") requested 12-month recovery of its 2022 deferred fuel balance as allowed by the regulatory recovery mechanism available to the utility. The Florida Public Service Commission ordered DEF to extend the recovery of deferred fuel and carrying costs over 21 months, with rates being effective in April 2023. As a result of the 21-month recovery beginning in April 2023, DEF will recover the full amount of its deferred fuel balance by year-end 2024. Full recovery of deferred fuel costs by the end of 2024 is important as it aligns with Moody's recovery expectations, as mentioned above. The distinction with DEF is that the 21-month recovery period will eliminate the negative impact of the under-

recovered fuel on DEF's 2023 FFO/Debt metric. At the end of 2023, the remaining uncollected deferred fuel balance would be considered short-term and reflected in a current regulatory asset account (working capital). Moody's excludes changes in working capital from its calculation of Cash Flow from Operations pre-working capital ("CFO pre-WC"), which is also referred to as FFO.

In Docket No. 2022-3-E, DEC agreed to a settlement which was approved by the South Carolina Public Service Commission to recover 2021 deferred fuel balances and carrying costs over 24 months, with rates effective in October 2022. The deferred amount was $73 million, considerably less than the $998 million of deferred fuel contemplated in this case. As noted above, the magnitude of the balance in this proceeding has a material negative impact on DEC's cash flows and financial metrics. Further delaying recovery will continue to perpetuate those metrics lower for longer.

Q. IS THE COMPANY PROPOSING ANY ALTERNATE MEANS OF REDUCING THE PROPOSED FUEL RATE INCREASE ON CUSTOMERS' BILLS?

A. Yes. The Company is proposing three means of reducing the overall increase. First, the Company has recalculated the prospective component of the fuel rate using load, generation, and pricing forecasts made available after the Company's initial rate application. This update is reducing the equal percent rate increase for all customer classes from 17.98% to 17.10%. It is important to note that updating forecasted fuel prices results in the reordering of units being dispatched which, in

turn, prompts changes in the volumes of natural gas being hedged and restatements of natural gas transportation costs respective to changes in volume. Thus, although natural gas spot prices have declined since the original rate application in this proceeding, the update to the proposed fuel rates using the most recent forecast is not as dramatic as might have been assumed.

Second, although the Company is allowed to update its under-recovery or over-recovery of fuel and fuel-related costs up to 30 days prior to the hearing date, according to Rule 8-55(d)(3), the Company elected to forego making this update to incorporate an additional under-recovery of approximately $120 million in fuel costs experienced during the months of January through March of 2023.

Third, the Company is proposing an expedited return of the EDIT Rider Credit balance as further described below.

Q. PLEASE PROVIDE BACKGROUND ON THE EDIT RIDER CREDIT BALANCE AND THE COMPANY'S PROPOSAL.

A. Independent of the fuel rider, the Company is returning $211,488,000 annually to North Carolina retail customers by way of the EDIT Rider Credit as ordered in Docket No. E-7, Sub 1214. This credit was the result of a stipulation between the Company and Public Staff that stated unprotected EDIT would be returned to customers through a levelized rider methodology and amortized over a period of five years. This decrement rider is scheduled to expire May 31, 2026. As of August 31, 2023 the remaining balance pending to be returned is $534,886,169.

Given these extraordinary circumstances, the Company believes it would be appropriate to consider expediting this return in order to offset the requested

fuel increase with the remaining EDIT Rider Credit balance as shown on Clark Rebuttal Revised Exhibit 2, Schedule 1, Page 3. The impact of the EDIT mitigation further reduces the equal percent rate impact for all customer classes from 17.10% to 6.80%. Additionally, the expiration of the $211,488,000 EDIT Rider Credit increases customer bill impacts by 4.07%, for a net increase from all updates to approximately 10.87%.

Q. WHAT ARE THE REVISED PROPOSED FUEL AND FUEL-RELATED COSTS FACTORS AFTER THE FORECAST AND EDIT MITIGATION UPDATES?

A. The revised proposed fuel and fuel-related cost factors by customer class, as shown on Clark Rebuttal Revised Exhibit 1, are as follows:

	Residential	General	Industrial	Composite
Description	cents/kWh	cents/kWh	cents/kWh	cents/kWh
Total adjusted Fuel and Fuel Related Costs	1.5429	1.3224	1.1108	2.2566
EMF Increment (Decrement)	1.6635	1.6638	1.7256	1.6764
EMF Interest (Decrement)	-	-	-	-
Net Fuel and Fuel Related Costs Factors	3.2064	2.9862	2.8364	3.9330

Q. IS THE COMPANY REQUESTING COMMISSION APPROVAL TO TERMINATE THE EDIT RIDER AS OF AUGUST 31, 2023 UNDER THE CONDITION THAT THE COMMISSION ACCEPTS THE COMPANY'S PROPOSED REVISED FUEL RATES?

A. No. The Company has proposed additional amounts be included in the EDIT rider in Docket E-7 Sub 1276 beginning with new rates in that case. The Company requests to recover the EMF balance over the prescribed 12-month billing period. However, given the magnitude of the increase on customers, the Company would be willing to net the remaining EDIT balance as of August 31, 2023, against the

fuel increase. This mitigation would lower the net impact on customers by 6.22% while lessening the negative impact on the Company's credit metrics. Since the EDIT rider was part of a settlement with the Public Staff in the most recently approved rate case, the Public Staff's consent may be required to implement this mitigation measure.

Q. WHAT WOULD BE THE IMPACT TO THE COMPANY IF THE COMMISSION WERE TO PARTIALLY OFFSET THE REQUESTED FUEL INCREASE WITH THE ACCELERATED RETURN OF THE REMAINING UNPROTECTED EDIT BALANCE OVER 12 MONTHS BEGINNING SEPTEMBER 2023?

A. As shown in Table 2 below, accelerating the return of EDIT to partially offset the impact to customer rates over the same 12-month period used to recover deferred fuel, would increase the return of EDIT available to customers by $108 million in 2023 and $145 million in 2024. The incremental EDIT return available to customers would directly reduce DEC's 2023 and 2024 cash flow from operations by the same amounts.

Table 2: Incremental Return of EDIT in 2023 and 2024

Periods	Return under Current Stipulation*	Accelerated return proposed	Total Return
9/1/23 - 12/31/23	($70)	($108)	($178)
1/1/24 - 12/31/24	($211)	($145)	($357)
Total			($535)

*Docket No. E-7, Sub 1214

As a result of the lower cash flows, DEC's FFO/Debt metrics would be reduced by approximately 80 basis points in 2023 and 100 basis points in 2024, which

compares favorably to a reduction of greater than 200 basis points in 2023 if the Company were ordered to delay recovery beyond 2024. Simply stated, the Company's EDIT proposal strikes the right balance, providing benefits to customers that is commensurate with delayed recovery (which the Company opposes for the reasons discussed above) but in a manner that has only moderate and manageable impacts on the Company's credit metrics.

As demonstrated above, partially offsetting the recovery of deferred fuel with the accelerated return of the remaining EDIT balance over 12 months significantly mitigates the impact to customer rates, while also mitigating the impact to DEC's credit metrics from extending recovery beyond 2024. Furthermore, this proposal will allow the Company the opportunity to achieve an FFO/Debt measure within the 20% to 22% range that Moody's expects.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

(WHEREUPON, the prefiled revised joint rebuttal testimony of SIGOURNEY CLARK and CHRIS BAUER is copied into the record as if given orally from the stand.)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1282

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	))))))	**REVISED REBUTTAL TESTIMONY OF SIGOURNEY CLARK AND CHRIS BAUER FOR DUKE ENERGY CAROLINAS, LLC**

Q. WHAT IS THE PURPOSE OF YOUR REVISED REBUTTAL TESTIMONY?

A. The purpose of our revised rebuttal testimony is (1) to revise the proposed fuel and fuel-related costs factors related to the Company's proposed EDIT mitigation and (2) to correct a statement in our rebuttal testimony filed on May 18, 2023 related to updating the prospective component of the proposed fuel rate using the Company's latest fuel forecast with commodity prices as of April 13, 2023.

Q. YOUR REVISED REBUTTAL TESTIMONY INCLUDES THREE SECOND REVISED EXHIBITS AND THIRTEEN SUPPORTING WORKPAPERS. WERE THESE SUPPLEMENTAL EXHIBITS AND WORKPAPERS PREPARED BY YOU OR AT YOUR DIRECTION AND UNDER YOUR SUPERVISION?

A. Yes. These exhibits and workpapers were prepared by me and consist of the following:

Clark Rebuttal Second Revised Exhibit 1: Summary Comparison of Fuel and Fuel-Related Costs Factors.

Clark Rebuttal Second Revised Exhibit 2:

Schedule 1: Fuel and Fuel-Related Costs Factors - reflecting a 93.52% proposed nuclear capacity factor and projected megawatt hour ("MWh") sales.

Schedule 2: Fuel and Fuel-Related Costs Factors - reflecting a 93.52% nuclear capacity factor and normalized

test period sales.

Schedule 3: Fuel and Fuel-Related Costs Factors - reflecting a 91.87% North American Electric Reliability Corporation ("NERC") five-year national weighted average nuclear capacity factor for pressurized water reactors and projected billing period MWh sales.

Clark Rebuttal Second Revised 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.

Q. WHAT IS THE PURPOSE OF YOUR REVISED REBUTTAL TESTIMONY?

A. The purpose of our revised rebuttal testimony is (1) to revise the proposed fuel and fuel-related costs factors related to the Company's proposed EDIT mitigation and (2) to correct a statement in our rebuttal testimony filed on May 18, 2023 related to updating the prospective component of the proposed fuel rate using the Company's latest fuel forecast with commodity prices as of April 13, 2023.

Q. WHY IS THE COMPANY REVISING ITS PROPOSED FUEL AND FUEL-RELATED COST FACTORS FOR THE PROPOSED EDIT MITIGATION UPDATE?

A. After filing rebuttal testimony on May 18, 2023, the Company realized it had applied the proposed EDIT mitigant to the prospective component of the proposed fuel rate. However, in order to effectuate the desired outcome of offsetting the significant under-recovery of fuel in this proceeding, the Company has now applied the proposed EDIT mitigant against the under-recovered balance of $998 million. As such, the Company is requesting the following fuel and fuel-related cost factors for Commission approval, as shown on Clark Rebuttal Second Revised Exhibit 1:

Description	Residential cents/kWh	General cents/kWh	Industrial cents/kWh	Composite cents/kWh
Total adjusted Fuel and Fuel Related Costs	2.5057	2.2927	2.0110	2.3202
EMF Increment (Decrement)	0.7654	0.7657	0.8275	0.7783
EMF Interest (Decrement)	-	-	-	-
Net Fuel and Fuel Related Costs Factors	3.2711	3.0584	2.8385	3.0985

Q. WHAT STATEMENT ARE YOU CORRECTING FROM YOUR REBUTTAL TESTIMONY?

A. In our rebuttal testimony, The Company stated that it was proposing three potential mitigants to reduce the overall increase to customer bills. The first of these means was to propose a new prospective component of the fuel rate using our latest fuel forecast dated April 13, 2023, and that the use of this forecast would reduce the equal percent increase for all customer classes from 17.98% to 17.10%.

After filing rebuttal testimony on May 18, 2023, the Company realized it had an error in its calculation. As the Company has re-calculated, the proposed fuel rates with this forecast actually would have slightly increased from the rates proposed in the Company's direct filing made on February 28, 2023. Therefore, this is no longer a potential option to mitigate the fuel increase, and the Company has revised the fuel rates to reflect the original forecast.

Q. PLEASE EXPLAIN THE IMPACT OF THE POTENTIAL EDIT MITIGANT GIVEN THAT THE COPMANY'S PROPOSED RATES ARE NOW BASED ON THE JANUARY 12, 2023 FORECAST.

A. Utilizing the January 12, 2023 forecast, the potential EDIT mitigant would reduce the equal percent rate impact for all customer classes from 17.98% to 7.47%. Additionally, the expiration of the $211,488,000 EDIT Rider Credit increases customer bill impacts by 4.07%, for a net increase from all updates to approximately 11.54%. This mitigation would lower customer impacts by a net 6.44% while lessening the negative impact on the Company's credit metrics. The table below shows both the proposed and existing fuel and fuel-related cost factors.

Description	Residential cents/kWh	General cents/kWh	Industrial cents/kWh	Composite cents/kWh
Proposed Total Fuel Factor	3.2711	3.0584	2.8385	3.0985
Existing Total Fuel Factor	2.4866	2.4471	2.4122	2.4607
Increase in Fuel Factor	0.7845	0.6113	0.4263	0.6378

Q. DOES THIS CONCLUDE YOUR REVISED REBUTTAL TESTIMONY?

A. Yes.

BY MS. TOON:

Q And Ms. Clark, did you prepare a summary of your testimonies including a summary of your joint testimony which you co-sponsored with Mr. Bauer?

A Yes.

MS. TOON: Commissioner Kemerait, if there are no objections, I ask that Ms. Clark's summary of her testimonies be copied into the record as if orally given from the stand.

COMMISSIONER KEMERAIT: And seeing no objection, the summaries of the testimony will be copied into the record as if given orally from the stand.

MS. TOON: Thank you.

(WHEREUPON, the prefiled summary of testimony for Witnesses SIGOURNEY CLARK and CHRIS BAUER is copied into the record as if given orally from the stand.)

DUKE ENERGY CAROLINAS, LLC
SIGOURNEY CLARK DIRECT,
SUPPLEMENTAL AND SIGOURNEY CLARK AND CHRIS BAUER
REBUTTAL TESTIMONY SUMMARY
DOCKET NO. E-7, SUB 1282

The purpose of this testimony is to present the information and data required by North Carolina General Statutes § 62-133.2(c) and (d) and Commission Rule R8-55, as set forth in Clark Exhibits 1 through 6, along with supporting work papers. The test period used in supplying this information and data is the twelve months ended December 31, 2022 ("test period"), and the billing period is September 1, 2023 through August 31, 2024 ("billing period").

On February 28, 2023, the Company filed direct testimony to propose fuel rates by customer class to become effective September 1, 2023 for DEC's North Carolina retail customers. The NC retail total fuel cost increase of $934,815,271 was calculated for the both the billing period and prospective period, which will result in a 17.99% increase on customers' bills. The increase in the proposed net fuel and fuel-related costs factors is primarily driven by a $999 million under-recovery in the current test period compared to a $327 million under-recovery included in current rates.

In Supplemental testimony, the Company present rates reflecting the impact related to one update to numbers presented in my direct exhibits. This update relates to revising net gains on the sale of by-products, which are used to reduce the cost of fuel and fuel-related costs that customers pay. This update decreased total fuel and fuel-related costs by $613,775 and decreased the overall increase to customers' bills to 17.98%

In addition, the Company filed rebuttal testimony on May 18, 2023 and subsequently revised rebuttal on May 19, 2023. Rebuttal testimony was issued in response to Public Staff Witness Evan D. Lawrence regarding (1) the forecast used to propose fuel rates, and (2) the differentiation between the intent of concurrent filings before the Commission. Additionally, the purpose of this joint rebuttal testimony was to respond to both Public Staff Witness Lawrence and

Carolina Industrial Group for Fair Utility Rates III Witness Brian C. Collins as their direct testimonies refer to deferring cost recovery beyond the twelve-month period specified in the North Carolina fuel statute and the assertion that deferring the fuel balance would not impact the Company's credit metrics. We further described mitigation options to reduce the overall increase to customer bills: (1) utilizing a new forecast, (2) forgoing any update to incorporate additional under-recovery experienced through March 2023, and (3) tendering expedited return of the EDIT Rider Credit balance to offset overall fuel under-recoveries.

We discussed the negative credit implications and potential negative rating action as a result of delaying recovery of DEC's deferred fuel balance by an additional 12 months. The Company also presented Moody's expectation that substantially all of DEC's deferred fuel balance will be recovered by the end of 2024 as cited in Moody's most recent DEC credit opinion published on May 11, 2023. In addition, Moody's changed its outlook on the utility sector to "negative" from "stable" and cited high natural gas prices as a contributing factor given the risk of persistent negative impacts to cash flows if regulators were to delay recovery. The issue of delaying recovery is particularly consequential for DEC's credit metrics as Moody's recently revised the Company's FFO/Debt downgrade threshold from 20% to 21%, effectively tightening DEC's credit requirements.

We thoroughly discuss the impact to DEC's 2023 and 2024 credit metrics of the Company's proposed mitigation of returning the remaining unprotected EDIT balance over the same 12-month recovery period requested for DEC's deferred fuel balance. This would significantly reduce the negative impact to the Company's 2023 credit metrics with manageable impacts to 2024. DEC's EDIT proposal strikes the right balance by reducing the increase to customer rates while limiting the downside risk to DEC's credit metrics.

On May 26, 2023 the Company filed a second revised rebuttal in which we (1) revised the proposed fuel and fuel-related cost factors related to the Company's potential EDIT mitigation and

(2) corrected a statement in our rebuttal testimony regarding updating our fuel forecast with commodity prices as of April 13, 2023. As the Company has re-calculated, the proposed fuel rates with this forecast would have slightly increased from the rates proposed in the Company's direct filing made on February 28, 2023. Therefore, this is no longer a potential option to mitigate the fuel increase, and the Company has revised the fuel rates to reflect the original forecast.

In its direct filing, the Company sought recovery of $934,815,271 beyond what is currently being recovered through fuel rates today. The impact of all updates and mitigants made through supplemental, rebuttal, revised rebuttal, and second revised rebuttal testimony reduced that increase to $359,858,245 (including EDIT Mitigation) for the billing period. This amount is primarily driven by the large under-recovery experienced during the 2022 test period.

Following these updates, the net proposed fuel and fuel-related costs factors by customer class are: 3.2711 cents/kWh for Residential customers, 3.0584 cents/kWh for General Service and Lighting customers and 2.8385 cents/kWh for Industrial customers.

This concludes a summary of my testimony and our joint rebuttal.

MS. TOON: Ms. Clark and Mr. Bauer are available for questions.

COMMISSIONER KEMERAIT: First, would you like to ask that the exhibits and workpapers be marked for identification purposes?

MS. TOON: I would and I appreciate your help.

COMMISSIONER KEMERAIT: And so the exhibits and workpapers that we just discussed will be marked for identification purposes as prefiled.

(WHEREUPON, Clark Direct Exhibits 1-6, Clark Direct Workpapers 1-13; Clark Revised Exhibits 1-3, Clark Revised Exhibits 4-6, and Clark Revised Workpapers 1-13; Bauer Rebuttal Exhibits 1-4; Clark Rebuttal Revision Exhibit 1, Clark Revised Exhibit 2, Clark Rebuttal Revised Workpapers 1-7 and 9-10; and Clark Second Revised Exhibits 1-6 and Clark

Second Revised Workpapers 1-13 are marked for identification as prefiled.)

COMMISSIONER KEMERAIT: We'll move to cross examination.

MR. TRATHEN: Yes. I believe I'll start from this side if that's okay.

Good afternoon. Marcus Trathen for CUCA. Just a few questions really and I believe they are all for Ms. Clark but, Mr. Bauer feel free to jump in if the spirit moves.

CROSS EXAMINATION BY MR. TRATHEN:

Q I'd like to just start with making sure I understand this exhibit correctly. I'm at Exhibit 6. I'm in your direct testimony. I don't know that it matters which version but I'm in your direct testimony at Exhibit 6, Schedule 4, page 2.

A Just a moment. Schedule 4, page 2?

Q That's correct.

A I'm sorry. Was that Exhibit 3?

Q Six.

A Exhibit 6?

Q Exhibit 6.
A Okay.
Q Jumping right into the haystack.
A Exhibit 6, page 4?
Q Schedule 4, page 2.
A Sorry. Schedule 4, page 2. Okay. I'm here.
Q And so as I understand this schedule, this shows the calculation of under-recovery based on the test year; is that accurate?
A That is correct.
Q Okay. And I'm just focusing on this page 2 allocation where you're allocating the under-recovery among classes and it looks like -- I'll focus my questions on industrial, the industrial class since that's who I represent, but just focusing on that column it looks like the under-recovery is roughly 230 million of the total? Am I reading that correctly?
A That's correct.
Q So the portion -- the portion of the roughly, a billion dollars of under-collection that would be allocated to the industrial class is roughly 21 percent; is that right?
A That sounds about right.

Q Okay. All right. Thank you. So if you could turn to page 6 of your testimony.
A And is that my direct testimony?
Q I'm looking at your direct. I don't know that it matters.
A Okay. Okay. I'm there.
Q Okay. So up at the top you showed -- and again this is the original proposal which is roughly 18 percent increase on customer bills based on the Duke's original proposal, correct?
A That's correct.
Q And this is the impact, impact on the average bill across all customer types after factoring in the proposed Fuel Rider increase, correct?
A That's correct.
Q And in the table down below you are breaking down the fuel factors which are proposed. You've got a column or, excuse me, a row for the proposed fuel factor, and again this is the original proposal, and you compare that to the existing fuel factor. Do you see that for the industrial column?
A I do.
Q Okay. So comparing the proposed to the existing

you've got roughly 3.4 cents per kilowatt hour against the existing which is roughly 2.4 kilowatt -- cents per kilowatt hour. So just focusing on that increase over the existing Fuel Rider, that's about a 43 percent increase in just the fuel component, correct?

A That sounds correct.

Q So if you just -- all I'm trying to do is isolate the fuel increase component of the overall rate. And just looking at the fuel component, what was originally proposed was basically a 43 percent rate increase for industrials?

A I can understand how you form that conclusion.

Q Okay. Now, with respect to the overall perspective in viewing the proposal here, we've talked about this being an average 18 percent increase in bills. Given that it's an average, the experience for individual consumers will obviously differ based on the consumption of electricity, correct?

A Correct.

Q So, for -- for example, a high load factor customer which is energy intensive, their actual experience with respect to the increase will be

higher than 18 percent?
A Can you repeat that?
Q Yes. So just thinking again with my industrial consumer hat on, if you're a high load factor industrial consumer, you're kind of maxing out your peak usage, you would expect that the actual increase on the bottom line rates which are paid is going to be higher than 18 percent, correct?
A Yes, that's correct.
Q Because you're using more power?
A That's right.
Q Okay. And did you do any -- did Duke do any economic impact analysis of kind of the effect on jobs investment of the magnitude of the increases that it sought for industrials?
A As far as the specific analysis we have not. We did maintain a position where we kept the equal percent increase across the board this year --
Q Yes.
A -- but as far as a separate calculation, I have not and I'm not familiar with one.
Q Okay. Now, the proposed Fuel Rider increase is actually -- it's -- there's two separate components. There's a base component and then

there is an experience modification component, correct?
A That's correct.
Q And the EMF component is what's used to recapture the under-collection, the roughly billion dollars under-collection from the test year, correct?
A That's correct.
Q This may be outside your purview. Just feel free to tell me if it is. But help me understand the relationship between the proposed base rate element and the current rate case which is pending before the Commission. Are they going to be one and the same or what happens there?
A Like you alluded to that is not in my view. I'm strictly focusing on the fuel case. So, I'm sorry I don't have an answer for you on that.
Q Okay. That's okay. Thank you. And this also may be outside your purview, but with respect to -- I did not see an exhibit, an actual calculation of, assuming that the proposal was adopted by the Commission, what the revised Rider would look like. I know that's typically a step which takes place after the Order comes out. Am I correct that I didn't miss that in the filings

anywhere? You did not actually propose what the Rider would look like?

A So in my second revised rebuttal I actually do propose what the rates would look like if we utilize this EDIT mitigation option.

Q Okay. And I'm actually talking about the Rider itself, the new Rider itself.

A The new Rider, no.

Q Yeah, okay. And would you calculate the new Rider by essentially taking the two factors -- the sum of the two factors -- I know that there's a regulatory fee issue but just setting that aside -- take the two factors, sum them up, and then you subtract the base element in rates. Is that how you -- just roughly speaking, is that how you calculate what's in the Rider?

A Can you repeat that?

Q So you're comparing the adjustment from the fuel case to the element which is embedded in rates going forward, the base element that's going in rates. You'd net that out and that's --

A That's right. An increment or a decrement. Yes.

Q Okay. All right. So if you would look at Exhibit 2. And again I'm in your direct

testimony. Schedule 1. So I think the second page in in your exhibits.

A Okay.

Q So, I'm seeing here on row three -- this exhibit is showing, I believe it is test year expenses; is that correct?

A Are we looking at -- am I looking at the right thing? Line 3?

Q Right. Clark Exhibit 2, Schedule 1, page 1 of 3.

A Page 1 of 3. I'm sorry. Page 1 of 3. Okay, go ahead.

Q Yes. And so I'm looking at line 3 which is as I understand it basically the fuel cost associated with your gas units for the test year; is that correct?

A That is correct.

Q So that's about a billion dollars.

A Yes.

Q Okay. So just comparing that to the magnitude of the under-collection, I mean, Duke missed in its under-collection by pretty much the entire year's worth of fuel cost for its gas units.

A I understand what you're saying but I will say that the way the period is calculated in order

for us to recoup our costs we're always forward looking. There's a projected prospective period and an EMF for true-up. So, I can understand your assumption that -- or I can understand why you're saying that we missed but that is a portion that's built into recovering our fuel costs. Looking back at the EMF and seeing what we missed.

Q Yeah. Okay. I'm just looking at the figures here and you're recovering, basically you're seeking to recover basically a billion dollars through the EMF and it looks like that's pretty much the gas spend for a year. I mean, that's a pretty big miss, isn't it?

A I would say that during the 2022 period you'll see in Swez's testimony he talks about the volatility that we experienced so that is one of the components. It's also, when you look at 2022 about eight months of that was from a fuel filing that was approved in 2021. The remaining four months were approved -- the rates were approved in 2022 filing.

Q Okay. Looking at the Agreement and Stipulation which was just handed out and I'm just looking at

this now? So --

COMMISSIONER KEMERAIT: Mr. Trathen, can you speak into the microphone a little bit more?

MR. TRATHEN: Thank you. I'll try to do that.

BY MR. TRATHEN:

Q So I'm looking at the Stipulation which was just handed out and I see on paragraph one that there's a calculation for the impact for residential customers using 1000 kilowatts. I don't see a similar calculation for industrial customers. Have you got a similar calculation for the net effect for industrial customers.

A Subject to check on this new stipulation that was just given, but I would anticipate it's about a $30,000 increase for industrial customers per impact.

Q So that's -- do you know what the -- what size of customer that you're modeling the $30,000 impact on?

A Give me just a moment. That would be on a typical kilowatt-hour sales of about five million.

Q Okay. And that's -- we're talking kilowatt

hours.

A Correct.

Q And in your -- so I've read the Stipulation and I understand that Duke and the Public Staff have agreed to a longer recovery period for the under-collection. And I believe it was your rebuttal testimony, Ms. Clark, there was another opposite that was proposed which was to use EDIT, to offset some of the under-collection. Am I correct?

A That's correct.

Q Okay. And is that still a viable option for the Commission to consider from Duke's perspective?

A I think as you'll see in my exhibits, it was really important for the Company to show kind of what that impact would be if we were to offset it from the EMF that we have currently in our exhibits. But it's also important to note that this is a settlement that we entered in with Public Staff and we do value settlements and so we understand that in order for this to kind of become unraveled and be applied to this fuel EMF, we would have to gain alignment, and at this time we do not have that.

Q So from -- what I hear you saying is from Duke's perspective it's still an option but the Public Staff would not agree to use of the EDIT for this purpose and that's why it's not in the Settlement Agreement. Am I hearing you correctly?

A That's correct.

MR. TRATHEN: That's all I have. Thank you.

MR. CONANT: Good afternoon. DC Conant appearing on behalf of CIGFUR III.

CROSS EXAMINATION BY MR. CONANT:

Q Has the Company calculated what the rate impact would be if it were to use the EDIT mitigation proposal it recommended in rebuttal in addition to the 16-month recovery period stipulated by the Company and the Public Staff?

A As far as the equal percent method is concerned, we have not grouped EDIT and the 16-month together. But if you look at just using EDIT to offset the EMF, the total -- the increase across customer classes kind of decreases from 17.98, which I lay out in my settlement, to 11.54, which I discuss in my rebuttal.

Q And has the Company calculated what the rate impact would be if it were to extend the 16-month

recovery period stipulated to between the Company and the Public Staff to 24 months instead?

A We have not. We have not entertained that. The Company has credit metrics that we need to uphold.

And Chris, I would probably open that up in case you have anything else to add as far as why we've only looked at the 16-month ending in recovering by 2024, December of 2024.

A (Mr. Bauer) You know extending beyond twenty -- you know, out to twenty -- through 24 months, it's got a pretty detrimental impact to the Company's FFO to debt credit metrics. I lay out in my rebuttal testimony the importance of trying to recover this full balance by the end of 2024, as a very important date for the measurement of that calculation. So I'm happy to answer questions about why that's so important. But the fact remains that, you know, the billion dollars, the $998 million that we have on our balance sheet today had detrimental impacts to our credit metrics at the end of 2022. Moving beyond 2024 as a recovery period perpetuates that issue to

the end of 2023 and potentially beyond. And that's a position that the Company can't entertain.

Q Thank you for that. I know that CUCA's counsel had asked --

COMMISSIONER KEMERAIT: Excuse me for a minute. Is your microphone on? We're having a little trouble hearing you.

MR. CONANT: Is that better?

COMMISSIONER KEMERAIT: Yes, that's better. Thank you.

MR. CONANT: Sorry.

BY MR. CONANT:

Q I know CUCA's counsel had asked about applying the EDIT balance to the settlement as discussed, you had answered that the Company and the Public Staff had a settlement already for EDIT funds, correct, for how the EDIT funds were to be used and that's why it wasn't included in the settlement in this proceeding?

A I'm sorry. Can you repeat that?

Q Sorry. Let me say this a different way. There is nothing in this Stipulation that would prevent or preclude the Commission from ordering that the

EDIT proposal contained in the Company's rebuttal testimony be utilized as an additional mitigation strategy on top of the 16-month mitigant stipulated between the Company and the Public Staff, correct?

A That's correct.

MR. CONANT: No further questions.

MR. MAGARIRA: Just a couple of questions for me. And I'm going to be focusing primarily or exclusively I should say on the Partial Stipulation and Settlement.

CROSS EXAMINATION BY MR. MAGARIRA:

Q So as you note previously per the Partial Stipulation and Settlement recoupment of EMF balance for under-recovery would be done over 16 months as opposed to the statutory 12 months; is that right?

A That's correct.

Q And I think you stated this on the stand earlier which was helpful, this 16-month period would span from September 1st, 2023 through December 31st, 2024; is that right?

A That's correct?

Q So at this point the parties have not filed any

information in this docket at least that directly shows the bill impact of the Settlement Agreement if it were to be approved by the Commission?

A That is correct.

Q Okay. And, of course, the Settlement Agreement is not going to address any potential future under-recoveries in any future proceedings; is that right?

A That's correct.

Q So it's possible that customers could still be paying for the under-recovery from this proceeding and then be required, if there were an under-recovery, to pay for that under-recovery as well?

A Can you repeat that?

Q Yeah, sure. So it's possible that customers could still be paying for the under-recovery that's resolved by this Settlement and then be required to at the same time pay for a potential future under-recovery in, let's say, next year's DEC Fuel Rider proceeding?

A That is correct.

MR. MAGARIRA: No further questions.

MR. FREEMAN: No questions. Thank you.

COMMISSIONER KEMERAIT: Redirect from DEC?

MS. TOON: No redirect. Thank you.

COMMISSIONER KEMERAIT: So I have one question in regard to the Partial Stipulation.

EXAMINATION BY COMMISSIONER KEMERAIT:

Q And on page 1 of the transmittal letter dated May 31st, 2023, the very last sentence states, *the Application of interest in this matter effectively serves as a proxy for the additional financing costs that the Company will incur as a result of the extended recovery period, though this does not necessarily reflect the Company's actual additional financing costs.*

In the rebuttal testimony, I believe you stated that DEC was not seeking recovery of the financing costs. Can you explain whether that is still the same under the Stipulation as well?

A So under rebuttal testimony we were laying out the EDIT offsetting EMF so we were not seeking anything additional from customers as far as an interest component goes. But as the Settlement evolved, delaying the recovery to 16 months, the Company felt it necessary to kind of recoup a

portion of the costs that we've been holding on our balance sheet.

And Chris, I'll open that up in case you have anything else that you want like to add?

A (Mr. Bauer) No, I don't think so. I think, you know, the only thing that I would add there is the 4 percent, that's part of the Settlement. That's not our actual true financing cost. That's a settled number.

So we use the word -- it's a proxy for, but it's -- you know, holding a billion dollars right now is substantial to the Company. There is a burden there that over the course of the year -- I mean, we started accumulating these costs in 2022. Here we are now at the end of May of 2023, we're still incurring those financing costs to date. But over the 12-month period we were not seeking recovery of a substantial burden that we're carrying today. If we were to extend it for 16 months, we thought it fair to try to just get some carrying costs for that incremental period.

Q The incremental period meaning that additional

the four months; is that correct? Or for the entire 16 months?

A (Ms. Clark) So the way we've laid out the interest component is we've laid out the EMF over 12 months and what we would normally recover straight line versus what we would recover spanning it out 16 months. And every month there is a difference of what we collect and that difference has interest applied to it.

COMMISSIONER KEMERAIT: Okay. Thank you for the clarification.

Questions from the Commission? Commissioner McKissick?

COMMISSIONER McKISSICK: Yes, following up with Commissioner Kemerait's question.

EXAMINATION BY COMMISSIONER McKISSICK:

Q The way I read the Settlement Agreement there's this $6.65 million in financing costs, I'll refer to it as or the interest that's the 4 percent. Is that the totality of what you would seek to recover? Or, as I heard it testifying and it's, of course, in the Settlement, the true financing cost is a number that's greater? Am I understanding that Duke is not going to seek to

recover the difference between that $6.65 million and the true financing cost at some point in the future?

A That is the true -- that is exactly the intent of this, is that it would be -- that was an estimate of when we laid out the 12 versus the 16 month, and at the end of that period it will be what it is, and yes.

Q Okay. I just wanted to clarify to make sure that was what I was hearing and reading. And in terms of bill impacts, I mean it would be great to know what bill impacts might likely be. I mean, do you have any numbers that you can share with us that are projected at this time?

A Yes, I do. So for our -- I actually have the exhibits and workpapers that I used to produce this settlement and --

Q That would be excellent if you could share that information. I think it's highly pertinent.

A Yep. So we would -- for residential customers, our rate would be 3.8950. For our general service -- making sure you're ready -- would be 3.5020. And for our industrial, 3.2422.

Q And how does compare to what it is currently? I

mean, in terms of the --

A Yep. So in my settlement I layout that the increase shakes out to be about 17.98 percent. When you look equally across all customer classes, this impact from the Settlement Agreement would yield a 13.31 percent increase.

Q Thank you.

A Yep.

COMMISSIONER KEMERAIT: Questions on Commission questions?

MR. FREEMAN: No questions from the Public Staff.

COMMISSIONER KEMERAIT: Looks like no questions on that side of the room. Questions from DEC?

MS. TOON: Commissioner, no questions but would like to make sure that Ms. Clark speaks to the Settlement Agreement so that we can lay the proper foundation to move it into the record.

COMMISSIONER KEMERAIT: Please go ahead.

MS. TOON: Okay.

EXAMINATION BY MS. TOON:

Q Ms. Clark, do you have a copy of the Stipulation which you just spoke with about to the

Commission?
A Yes.
Q Can you do me a favor and look through all the pages of the Settlement Agreement?
A Okay. Just look through --
Q Yep.
A -- for validation.
Q Yes. Confirm it is the complete Partial Settlement Agreement.
(Witness peruses document)
Q Without focusing on the cover letter, just the body of the Partial Settlement Agreement.
A Yes and I did take a look at this.
Q Okay. So you're familiar with that Settlement Agreement?
A I am. Uh-huh (yes).
Q And were you involved in preparing --
A Yes, I was.
Q -- the Settlement Agreement? And is there anything that, from based off of what you're reviewing does it appear to be the Settlement Agreement which we entered into with Public Staff?
A Yes. Absolutely.

Q Okay.

MS. TOON: At this time, Commissioner Kemerait, I'd ask that the Partial Settlement Agreement be marked as Special Exhibit 1. Special Exhibit 1 if that's okay.

COMMISSIONER KEMERAIT: It shall be marked as DEC Special Exhibit 1.

(WHEREUPON, DEC Special Exhibit 1 is marked for identification.)

MS. TOON: And at this time, I'd also ask that we would introduce Special Exhibit 1 into evidence, if there's no objection?

COMMISSIONER KEMERAIT: Seeing no objection, DEC Special Exhibit 1 is admitted into the record.

(WHEREUPON, DEC Special Exhibit 1 is received into evidence.)

COMMISSIONER KEMERAIT: And I believe that DEC has some additional motions to make for these witnesses.

MS. TOON: Yes. At this time, I would move that Ms. Clark's direct, supplemental, rebuttal, corrected rebuttal, and revised rebuttal exhibits and

workpapers be moved into evidence.

COMMISSIONER KEMERAIT: Seeing no objection, they are admitted into the record.

(WHEREUPON, Witness Clark's Exhibits as previously identified on Page 189 are received into evidence.)

MS. TOON: And I'd also ask that the Company's Application be moved into the evidence, if there's no objection.

COMMISSIONER KEMERAIT: Seeing no objection, the Application of Duke Energy Carolinas, LLC, pursuant to G.S. § 62-133.2 and North Carolina Utilities Commission Rule R8-55 Relating to Fuel and Fuel-Related Charge Adjustments for Electric Utilities filed with the Commission on March 1st, 2023 is admitted into the record.

(WHEREUPON, Application of Duke Energy Carolinas, LLC, is received into evidence.)

MS. TOON: Thank you. And I'd also ask, Commissioner Kemerait, that Mr. Bauer's rebuttal testimony and exhibits be moved into evidence.

COMMISSIONER KEMERAIT: Seeing no objection, they are admitted into the record.

(WHEREUPON, Bauer Rebuttal Exhibits 1-4 are received into evidence.)

(COURT REPORTER NOTE: Per Commission Order dated May 26, 2023, the testimony and exhibits of Duke Energy Carolinas, LLC's, excused witnesses will be included in the transcript.)

(WHEREUPON, the prefiled direct testimony of DAVID B. JOHNSON is copied into the record as if given orally from the stand.)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1282

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of	)	
Application of Duke Energy Carolinas, LLC	)	**DIRECT TESTIMONY**
Pursuant to G.S. 62-133.2 and NCUC Rule	)	**OF DAVID B. JOHNSON FOR**
R8-55 Relating to Fuel and Fuel-Related	)	**DUKE ENERGY CAROLINAS, LLC**
Charge Adjustments for Electric Utilities	)	

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is David B. Johnson. My business address is 400 South Tryon Street, Charlotte, North Carolina 28202.

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

A. I am employed by Duke Energy Corporation ("Duke Energy") as Director of Business Development and Compliance.

Q. PLEASE SUMMARIZE YOUR EDUCATION AND PROFESSIONAL QUALIFICATIONS.

A. My educational background includes a Bachelor of Science in Civil Engineering from the University of Tennessee. With respect to professional experience, I have been in the utility industry for over 42 years. I started as an associate Design Engineer in the Design Engineering Department at Duke Power in 1980. From 1991-1995, I worked for Duke Energy's affiliate companies Duke/Fluor Daniel and Duke Engineering & Services, Inc. In 1996, I worked in the initial Duke Power Trading Group in Charlotte, North Carolina, where I focused on marketing and business development and management until 2006. From 2006 to 2017, I worked as a Business Development Manager and Director in the Duke Energy wholesale and renewable energy areas. I began my current role in late 2017.

Q. PLEASE DESCRIBE YOUR CURRENT RESPONSIBILITIES IN YOUR POSITION WITH DUKE ENERGY.

A. I am responsible for wholesale Power Purchase Agreements ("PPA") that Duke Energy enters into with third party suppliers. These include PPAs that Duke

Energy Carolinas, LLC ("DEC") and Duke Energy Progress ("DEP") enter into with Qualifying Facilities ("QFs"), renewable PPAs to comply with North Carolina's Renewable Energy Efficiency Portfolio ("REPS") standard, Competitive Procurement of Renewable Energy ("CPRE") PPAs, and conventional (non-renewable) PPAs. I have responsibility for the negotiation and execution of these PPAs, as well as the on-going management of all executed PPAs. In addition, I am responsible for Duke Energy's compliance with the REPS and the CPRE Program.

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

A. Yes. I provided testimony in the 2018 Avoided Cost proceeding (Docket No. E-100, Sub 158) for DEC and DEP. I also provided testimony in DEP's and DEC's 2022 fuel rider proceedings under Docket Nos. E-2, SUB 1292 and E-7, Sub 1263, respectively.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to present information and data required by the NCUC in accordance with the "Order Approving SISC Avoidance Requirements and Addressing Solar-Plus-Storage Qualifying Facility Installations (Docket No. E-100, Sub 101 and E-100, Sub 158 – dated August 17, 2021). In this Order, the Commission directed DEC and DEP, in future fuel and fuel-related charge adjustment proceedings conducted pursuant to N.C. Gen. Stat. 62-133.2, to address the SISC avoidance process in their prefiled direct testimony, identify the specific facility(ies) and amount of SISC avoided in supporting exhibits and work

papers, and the results of any audits performed on QFs seeking to avoid the SISC.

Q. DO YOU HAVE ANY INFORMATION TO REPORT AT THIS TIME?

A. No. There are currently no operating solar QF facilities at this time that contain energy storage systems. There are also currently no executed PPAs that contain SISC (Sub 158 and later) that also include an energy storage system.

There were two (2) solar facility bids in Tranche 1 of CPRE that contained energy storage. However, these PPAs did not include SISC and, therefore, did not include an option for the QF to avoid the SISC.

Duke will continue to monitor future solar QF PPAs with SISC and energy storage that provide notice to Duke that they intend to avoid some or all of the SISC. Duke will provide any data on the ability of these future QF facilities to avoid the SISC in future fuel proceedings for DEC and DEP.

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

A. Yes, it does.

(WHEREUPON, Houston Exhibits 1 and 2 are marked for identification as prefiled and received into evidence.)

(WHEREUPON, the prefiled direct testimony of KEVIN Y. HOUSTON is copied into the record as if given orally from the stand.)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1282

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** **KEVIN Y. HOUSTON FOR** **DUKE ENERGY CAROLINAS, LLC**

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Kevin Y. Houston and my business address is 526 South Church Street, Charlotte, North Carolina.

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

A. I am the Director of Nuclear Fuel Management and Design for Duke Energy Progress, LLC ("DEP" or the "Company") and Duke Energy Carolinas, LLC ("DEC").

Q. WHAT ARE YOUR PRESENT RESPONSIBILITIES AT DEC?

A. I am responsible for nuclear fuel procurement, spent fuel management and dry storage, and reactor core design for the nuclear units owned and operated by DEC and DEP.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I graduated from the University of Florida with a Bachelor of Science degree in Nuclear Engineering, and from North Carolina State University with a Master's degree in Nuclear Engineering. I began my career with the Company in 1992 as an engineer and worked in Duke Energy's nuclear design group where I performed nuclear physics roles related to reload licensing analyses, reactivity predictions, and special neutronics projects. I transitioned from technical roles to fuel fabrication and enrichment procurement in 1999 and assumed managerial responsibility for purchasing uranium, conversion services, enrichment services, and fuel fabrication services in 2012. I assumed responsibility for the spent fuel management and dry fuel storage functions in 2018. I assumed my current role in March 2022, where I oversee all of the fuel supply and storage and reactor core

design functions for DEC and DEP. I served as Chairman of the Nuclear Energy Institute's Utility Fuel Committee, an association aimed at improving the economics and reliability of nuclear fuel supply and use. I became a registered professional engineer in the state of North Carolina in 2003.

Q. HAVE YOU FILED TESTIMONY OR TESTIFIED BEFORE THIS COMMISSION IN ANY PRIOR PROCEEDING?

A. Yes. I filed testimony in the DEC fuel and fuel-related cost recovery proceedings in Docket E-7, Sub 1263.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to (1) provide information regarding DEC's nuclear fuel purchasing practices, (2) provide costs for the January 1, 2022 through December 31, 2022 test period ("test period"), and (3) describe changes forthcoming for the September 1, 2023 through August 31, 2024 billing period ("billing period").

Q. YOUR TESTIMONY INCLUDES TWO EXHIBITS. WERE THESE EXHIBITS PREPARED BY YOU OR AT YOUR DIRECTION AND UNDER YOUR SUPERVISION?

A. Yes. These exhibits were prepared at my direction and under my supervision, and consist of Houston Exhibit 1, which is a Graphical Representation of the Nuclear Fuel Cycle, and Houston Exhibit 2, which sets forth the Company's Nuclear Fuel Procurement Practices.

Q. PLEASE DESCRIBE THE COMPONENTS THAT MAKE UP NUCLEAR FUEL.

A. In order to prepare uranium for use in a nuclear reactor, it must be processed from an ore to a ceramic fuel pellet. This process is commonly broken into four distinct industrial stages: (1) mining and milling; (2) conversion; (3) enrichment; and (4) fabrication. This process is illustrated graphically in Houston Exhibit 1.

Uranium is often mined by either surface (*i.e.*, open cut) or underground mining techniques, depending on the depth of the ore deposit. The ore is then sent to a mill where it is crushed and ground-up before the uranium is extracted by leaching, the process in which either a strong acid or alkaline solution is used to dissolve the uranium. Once dried, the uranium oxide ("U_3O_8") concentrate – often referred to as yellowcake – is packed in drums for transport to a conversion facility. Alternatively, uranium may be mined by in situ leach ("ISL") in which oxygenated groundwater is circulated through a very porous ore body to dissolve the uranium and bring it to the surface. ISL may also use slightly acidic or alkaline solutions to keep the uranium in solution. The uranium is then recovered from the solution in a mill to produce U_3O_8.

After milling, the U_3O_8 must be chemically converted into uranium hexafluoride ("UF_6"). This intermediate stage is known as conversion and produces the feedstock required in the isotopic separation process.

Naturally occurring uranium primarily consists of two isotopes, 0.7% Uranium-235 ("U-235") and 99.3% Uranium-238. Most of this country's nuclear reactors (including those of the Company) require U-235 concentrations in the 3-5% range to operate a complete cycle of 18 to 24 months between refueling outages. The process of increasing the concentration of U-235 is known as enrichment. Gas centrifuge is the primary technology used by the commercial

enrichment suppliers. This process first applies heat to the UF_6 to create a gas. Then, using the mass differences between the uranium isotopes, the natural uranium is separated into two gas streams, one being enriched to the desired level of U-235, known as low enriched uranium, and the other being depleted in U-235, known as tails.

Once the UF_6 is enriched to the desired level, it is converted to uranium dioxide powder and formed into pellets. This process and subsequent steps of inserting the fuel pellets into fuel rods and bundling the rods into fuel assemblies for use in nuclear reactors is referred to as fabrication.

Q. PLEASE PROVIDE A SUMMARY OF DEC'S NUCLEAR FUEL PROCUREMENT PRACTICES.

A. As set forth in Houston Exhibit 2, DEC's nuclear fuel procurement practices involve computing near and long-term consumption forecasts, establishing nuclear system inventory levels, projecting required annual fuel purchases, requesting proposals from qualified suppliers, negotiating a portfolio of long-term contracts from diverse sources of supply, and monitoring deliveries against contract commitments.

For uranium concentrates, conversion, and enrichment services, long-term contracts are used extensively in the industry to cover forward requirements and ensure security of supply. Throughout the industry, the initial delivery under new long-term contracts commonly occurs several years after contract execution. DEC relies extensively on long-term contracts to cover the largest portion of its forward requirements. By staggering long-term contracts over time for these components of the nuclear fuel cycle, DEC's purchases within a given year consist

of a blend of contract prices negotiated at many different periods in the markets, which has the effect of smoothing out DEC's exposure to price volatility. Diversifying fuel suppliers reduces DEC's exposure to possible disruptions from any single source of supply. Due to the technical complexities of changing fabrication services suppliers, DEC generally sources these services to a single domestic supplier on a plant-by-plant basis using multi-year contracts.

Q. PLEASE DESCRIBE DEC'S DELIVERED COST OF NUCLEAR FUEL DURING THE TEST PERIOD.

A. Staggering long-term contracts over time for each of the components of the nuclear fuel cycle means DEC's purchases within a given year consist of a blend of contract prices negotiated at many different periods in the markets. DEC mitigates the impact of market volatility on the portfolio of supply contracts by using a mixture of pricing mechanisms. Consistent with its portfolio approach to contracting, DEC entered into several long-term contracts during the test period.

DEC's portfolio of diversified contract pricing yielded an average unit cost of $38.93 per pound for uranium concentrates during the test period, representing a 1.4% decrease from the prior test period.

A majority of DEC's enrichment purchases during the test period were delivered under long-term contracts negotiated prior to the test period. The staggered portfolio approach has the effect of smoothing out DEC's exposure to price volatility. The average unit cost of DEC's purchases of enrichment services during the test period decreased 36% to $74.61 per Separative Work Unit.

Delivered costs for fabrication and conversion services have a limited impact on the overall fuel expense rate given that the dollar amounts for these

purchases represent a substantially smaller percentage – approximately 18% and 6%, respectively, for the fuel batches recently loaded into DEC's reactors – of DEC's total direct fuel cost relative to uranium concentrates or enrichment, which are approximately 45% and 30%, respectively.

Q. PLEASE DESCRIBE THE LATEST TRENDS IN NUCLEAR FUEL MARKET CONDITIONS.

A. Prices in the uranium concentrate markets have increased due to production cutbacks, activity from financial investors, and a sudden increase in demand caused by geopolitical events. Industry consultants believe that market prices need to further increase in the longer term to provide the economic incentive for the exploration, mine construction, and production necessary to support future industry uranium requirements.

Market prices for conversion services have recently increased due to a sudden increase in demand caused by geopolitical events.

Market prices for enrichment services have recently increased primarily due to a sudden increase in demand, particularly for European and US supply, caused by geopolitical events.

Fabrication is not a service for which prices are published; however, industry consultants expect fabrication prices will continue to generally trend upward.

Q. WHAT CHANGES DO YOU SEE IN DEC'S NUCLEAR FUEL COST IN THE BILLING PERIOD?

A. Because fuel is typically expensed over two to three operating cycles (roughly three to six years), DEC's nuclear fuel expense in the upcoming billing

period will be determined by the cost of fuel assemblies loaded into the reactors during the test period, as well as prior periods. The fuel residing in the reactors during the billing period will have been obtained under historical contracts negotiated in various market conditions. Each of these contracts contributes to a portion of the uranium, conversion, enrichment, and fabrication costs reflected in the total fuel expense.

The average fuel expense is expected to remain relatively flat, from 0.5674 cents per kWh incurred in the test period, to approximately 0.5613 cents per kWh in the billing period.

Q. WHAT STEPS IS DEC TAKING TO PROVIDE STABILITY IN ITS NUCLEAR FUEL COSTS AND TO MITIGATE PRICE INCREASES IN THE VARIOUS COMPONENTS OF NUCLEAR FUEL?

A. As I discussed earlier and as described in Houston Exhibit 2, for uranium concentrates, conversion, and enrichment services, DEC relies extensively on staggered long-term contracts to cover the largest portion of its forward requirements. By staggering long-term contracts over time and incorporating a range of pricing mechanisms, DEC's purchases within a given year consist of a blend of contract prices negotiated at many different periods in the markets, which has the effect of smoothing out DEC's exposure to price volatility.

Although costs of certain components of nuclear fuel are expected to increase in future years, nuclear fuel costs on a cents per kWh basis will likely continue to be a fraction of the cents per kWh cost of fossil fuel. Therefore, customers will continue to benefit from DEC's diverse generation mix and the strong performance of its nuclear fleet through lower fuel costs than would

otherwise result absent the significant contribution of nuclear generation to meeting customers' demands.

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

A. Yes, it does.

(WHEREUPON, Capps Confidential Exhibit 1 is marked for identification as prefiled and received into evidence.)

(WHEREUPON, the prefiled direct testimony of STEVEN D. CAPPS is copied into the record as if given orally from the stand.)

STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-7, SUB 1282

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** **STEVEN D. CAPPS FOR** **DUKE ENERGY CAROLINAS, LLC**

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Steven D. Capps and my business address is 13225 Hagers Ferry Road, Huntersville, North Carolina.

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

A. I am Senior Vice President of Nuclear Operations for Duke Energy Corporation ("Duke Energy") with direct executive accountability for Duke Energy's South Carolina nuclear plants, including Duke Energy Carolinas, LLC's ("DEC" or the "Company") Catawba Nuclear Station ("Catawba") in York County, South Carolina, the Oconee Nuclear Station ("Oconee") in Oconee County, South Carolina, and Duke Energy Progress, LLC's ("DEP") Robinson Nuclear Plant, located in Darlington County, South Carolina.

Q. WHAT ARE YOUR PRESENT RESPONSIBILITIES AS SENIOR VICE PRESIDENT OF NUCLEAR OPERATIONS?

A. As Senior Vice President of Nuclear Operations, I am responsible for providing executive oversight for the safe and reliable operation of Duke Energy's three South Carolina operating nuclear stations. I am also involved in the operations of Duke Energy's other nuclear stations, including DEC's McGuire Nuclear Station ("McGuire") located in Mecklenburg County, North Carolina.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I hold a B.S. in Mechanical Engineering from Clemson University and have over 35 years of experience in the nuclear field in various roles with increasing responsibilities. I joined Duke Energy in 1987 as a field engineer at Oconee. During my time at Oconee, I served in a variety of leadership positions at the

station, including Senior Reactor Operator, Shift Technical Advisor, and Mechanical and Civil Engineering Manager. In 2008, I transitioned to McGuire as the Engineering Manager. I later became plant manager and was named Vice President of McGuire in 2012. In December 2017, I was named Senior Vice President of Nuclear Corporate for Duke with direct executive accountability for Duke Energy's nuclear corporate functions, including nuclear corporate engineering, nuclear major projects, corporate governance and operation support and organizational effectiveness. I assumed my current role in October 2018.

Q. HAVE YOU TESTIFIED OR SUBMITTED TESTIMONY BEFORE THIS COMMISSION IN ANY PRIOR PROCEEDINGS?

A. Yes. I provided testimony and appeared before the Commission in DEC's fuel and fuel related cost recovery proceeding in Docket No. E-7, Sub 1163 and provided testimony in DEC's fuel and fuel related cost recovery proceedings in Docket No. E-7, Sub 1190, Docket No. E-7, Sub 1228, Docket No. E-7, Sub 1250, and Docket No. E-7, Sub 1263.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to describe and discuss the performance of DEC's nuclear fleet during the period of January 1, 2022 through December 31, 2022 ("test period"). I provide information about refueling outages completed during the period and also discuss the nuclear capacity factor being proposed by DEC for use in this proceeding in determining the fuel factor to be reflected in rates during the billing period of September 1, 2023 through August 31, 2024 ("billing period").

Q. PLEASE DESCRIBE EXHIBIT 1 INCLUDED WITH YOUR TESTIMONY.

A. Exhibit 1 is a confidential exhibit outlining the planned schedule for refueling outages for DEC's nuclear units through the billing period. This exhibit represents DEC's current plan, which is subject to adjustment due to changes in operational and maintenance requirements.

Q. PLEASE DESCRIBE DEC'S NUCLEAR GENERATION PORTFOLIO.

A. The Company's nuclear generation portfolio consists of approximately 5,389 megawatts ("MWs") of generating capacity, made up as follows:

Oconee - 2,554 MWs

McGuire - 2,316 MWs

Catawba - 519 MWs

The three generating stations summarized above are comprised of a total of seven units. Oconee began commercial operation in 1973 and was the first nuclear station designed, built, and operated by DEC. It has the distinction of being the second nuclear station in the country to have its license, originally issued for 40 years, renewed for up to an additional 20 years by the NRC. The license renewal, which was obtained in 2000, extends operations to 2033, 2033, and 2034 for Oconee Units 1, 2, and 3, respectively. The Company submitted a subsequent license renewal (SLR) application for the Oconee units in June 2021, and the application is currently under review by the Nuclear Regulatory Commission. If approved, the Oconee units would be licensed to operate for an additional 20 years. In 2019, the Company publicly announced intention to seek SLR for all 11 units operated by Duke Energy.

McGuire began commercial operation in 1981, and Catawba began commercial operation in 1985. In 2003, the NRC renewed the licenses for McGuire and Catawba for up to an additional 20 years each. This renewal extends operations until 2041 for McGuire Unit 1, and 2043 for McGuire Unit 2 and Catawba Units 1 and 2. The Company jointly owns Catawba with North Carolina Municipal Power Agency Number One, North Carolina Electric Membership Corporation, and Piedmont Municipal Power Agency.

Q. WHAT ARE DEC'S OBJECTIVES IN THE OPERATION OF ITS NUCLEAR GENERATION ASSETS?

A. The primary objective of DEC's nuclear generation department is to safely provide reliable and cost-effective electricity to DEC's customers in North and South Carolina. The Company achieves this objective by focusing on a number of key areas. Operations personnel and other station employees receive extensive, comprehensive training and execute their responsibilities to the highest standards in accordance with detailed procedures that are continually updated to ensure best practices. The Company maintains station equipment and systems reliably, and ensures timely implementation of work plans and projects that enhance the performance of systems, equipment, and personnel. Station refueling and maintenance outages are conducted through the execution of well-planned, well-executed, and high-quality work activities, which ensure that the plant is prepared for operation until the next planned outage.

Q. PLEASE DISCUSS THE PERFORMANCE OF DEC'S NUCLEAR FLEET DURING THE TEST PERIOD.

A. The Company operated its nuclear stations in a reasonable and prudent manner during the test period, providing approximately 61% of the total power generated by DEC. During 2022, DEC's seven nuclear units collectively achieved a fleet capacity factor of 94.66%, marking the 23rd consecutive year in which DEC's nuclear fleet exceeded a system capacity factor of 90%. Catawba Unit 1 established a new annual net generation record during the year, and McGuire Unit 1 and Oconee Units 1 and 3 entered their 2022 refueling outages after completing breaker-to-breaker continuous cycle runs. The Oconee Unit 3 continuous cycle run of 727.1 days, established a new record for the fleet.

Q. HOW DOES DEC'S NUCLEAR FLEET COMPARE TO INDUSTRY AVERAGES?

A. The Company's nuclear fleet has a history of performance that consistently exceeds industry averages. The most recently published North American Electric Reliability Council's ("NERC") Generating Unit Statistical Brochure ("NERC Brochure") indicates an average capacity factor of 91.87% for the period 2017 through 2021 for comparable units. The Company's 2022 capacity factor of 94.66% and 2-year average[1] of 95.39% both exceed the NERC average of 91.87%.

Industry benchmarking efforts are a principal technique used by the Company to ensure best practices and cost performance. For 2022, Catawba, McGuire, and Oconee nuclear plants ranked in the top quartile in total operating

[1] This represents the simple average for the current and prior 12-month test periods.

cost per kWh among the 55 U.S. operating nuclear plants[2]. By continually assessing the Company's performance as compared with industry benchmarks, the Company continues to ensure the overall safety, reliability and cost-effectiveness of DEC's nuclear units.

The superior performance of DEC's nuclear fleet has resulted in substantial benefits to customers. DEC's nuclear fleet has produced approximately 53.9 million MWhs of additional, emissions-free generation over the past 23 years (as compared with production at a capacity factor of 90%), which is equivalent to an additional 11.1 months of output from DEC's nuclear fleet (based on DEC's average annual generation for the same 23-year period). These performance results demonstrate DEC's continuing success in achieving high performance without compromising safety and reliability.

Q. WHAT IMPACTS A UNIT'S AVAILABILITY AND WHAT IS DEC'S PHILOSOPHY FOR SCHEDULING REFUELING AND MAINTENANCE OUTAGES?

A. In general, refueling, maintenance, and NRC required testing and inspections impact the availability of DEC's nuclear system.

Prior to a planned outage, DEC develops a detailed schedule for the outage and for major tasks to be performed, including sub-schedules for particular activities. The Company's scheduling philosophy is to strive for the best possible outcome for each outage activity within the outage plan. For example, if the "best ever" time an outage task was performed is 12 hours, then 12 hours becomes the goal for that task in each subsequent outage. Those individual aspirational goals

[2] Based on benchmarking data from the Electric Utility Cost Group ("EUCG").

are incorporated into an overall outage schedule. The Company then aggressively works to meet, and measures itself against, that aspirational schedule. To minimize potential impacts to outage schedules due to unforeseen maintenance requirements, "discovery activities" (walk-downs, inspections, etc.) are scheduled at the earliest opportunities so that any maintenance or repairs identified through those activities can be promptly incorporated into the outage plan.

As noted, the schedule is utilized for measuring outage preparation and execution and driving continuous improvement efforts. However, for planning purposes, particularly with the dispatch and system operating center functions, DEC also develops an allocation of outage time that incorporates reasonable schedule losses. The development of each outage allocation is dependent on maintenance and repair activities included in the outage, as well as major projects to be implemented during the outage. Both schedule and allocation are set aggressively to drive continuous improvement in outage planning and execution.

Q. HOW DOES DEC HANDLE OUTAGE EXTENSIONS AND FORCED OUTAGES?

A. If an unanticipated issue that has the potential to become an on-line reliability challenge is discovered while a unit is off-line for a scheduled outage and repair cannot be completed within the planned work window, the outage is extended when in the best interest of customers to perform necessary maintenance or repairs prior to returning the unit to service. The decision to extend an outage is based on numerous factors, including reliability risk assessments, system power demands, and the availability of resources to address the emergent challenge. In general, if an issue poses a credible risk to reliable operations until the next scheduled outage,

the issue is repaired prior to returning the unit to service. This approach enhances reliability and results in longer continuous run times and fewer forced outages, thereby reducing fuel costs for customers in the long run. In the event that a unit is forced off-line, every effort is made to safely perform the repair and return the unit to service as quickly as possible.

Q. DOES DEC PERFORM POST OUTAGE CRITIQUES AND CAUSE ANALYSES FOR INTERNAL IMPROVEMENT EFFORTS?

A. Yes. DEC applies self-critical analysis to each outage and, using the benefit of hindsight, identifies every potential cause of an outage delay or event resulting in a forced or extended outage, and applies lessons learned to drive continuous improvement. The Company also evaluates the performance of each function and discipline involved in outage planning and execution to identify areas in which it can utilize self-critical observation for improvement efforts.

Q. IS SUCH ANALYSES INTENDED TO ASSESS OR MAKE A DETERMINATION REGARDING THE PRUDENCE OR REASONABLENESS OF A PARTICULAR ACTION OR DECISION?

A. No. Given this focus on identifying opportunities for improvement, these critiques and cause analyses are not intended to document the broader context of the outage nor do they make any attempt to assess whether the actions taken were reasonable in light of what was known at the time of the events in question. Instead, the reports utilize hindsight (*e.g.*, subsequent developments or information not known at the time) to identify every potential cause of the incident in question. However, such a review is quite different from evaluating whether the actions or decisions in question were reasonable given the circumstances that existed at that time.

Q. WHAT OUTAGES WERE REQUIRED FOR REFUELING AT DEC'S NUCLEAR FACILITIES DURING THE TEST PERIOD?

A. There were four refueling outages completed during the test period: McGuire Unit 1 and Oconee Unit 3 in the spring of 2022, followed by Catawba Unit 2 and Oconee Unit 1 in the fall. Both the Oconee Unit 1 and Unit 3 refueling outages were completed under the scheduled allocation. McGuire Unit 1 extended beyond the scheduled allocation due to an emergent challenge associated with the main generator hydrogen seal and Catawba Unit 2 extended beyond the scheduled allocation due primarily to vendor equipment and tooling challenges during the reactor vessel closure head cavitation peening project.

Following a unit record 528-day continuous cycle run, McGuire Unit 1 was removed from service on April 2, 2022, for refueling. In addition to refueling, safety and reliability enhancing maintenance, inspections, and testing was completed. Reliability enhancements included the replacement of the '1B' reactor coolant pump seal, '1A' and '1D' lower containment cooling air handling unit cooling coil replacements, and digital rod position indication cable replacements. Tests and inspections completed during the outage included steam generator Eddy Current testing, control rod drive mechanism gripper inspections, main generator teardown and coupling rotor bore inspection, and '1A' steam generator moisture separator inspection. Additionally, preparation activities were performed to ensure the reactor head peening work can be completed in the next refueling outage in Fall 2023. Challenges with the main generator seals resulted in an outage extension of 8.2 days beyond the scheduled allocation. After refueling,

maintenance, inspections, and testing were completed, the unit returned to service on May 9, 2022, for a total outage duration of 37.2 days.

After completing a unit, and nuclear fleet, record 727.1-day continuous cycle run, Oconee Unit 3 was removed from service on May 6, 2022, for refueling. In addition to refueling, safety and reliability enhancing maintenance, inspections, and testing was completed. The unit replaced reactor coolant system nozzles that were susceptible to primary water stress corrosion cracking. The unit also replaced the 3A2 and 3B1 high pressure feedwater heater and completed preventive maintenance activities on the 3A and 3B feedwater pump turbine. Additionally, multiple large pump and motor reliability enhancements including replacement of the 3B1 reactor coolant pump motor, 3A1 reactor coolant pump seal replacement, the 3B hotwell pump and motor replacement, and the 3A generator stator coolant motor replacement. Multiple preventive maintenance activities and inspections were performed for electrical equipment including preventive maintenance on the Unit 3 main transformer, 3TB switchgear and breaker preventive maintenance, and preventive maintenance on multiple motor control centers. Inspections and tests completed during the outage included the upper core barrel bolts inspection, steam generator Eddy Current testing, 3TD switchgear train rotation inspection, and 3T 4160V normal bus inspection. After refueling, maintenance, and inspections and testing was completed the unit returned to service on May 30, 2022, for a total outage duration of 23.6 days, which was 1.4 days under the 25-day allocated outage duration.

Catawba Unit 2 was removed from service on September 10, 2022, for refueling. In addition to refueling, safety and reliability enhancing maintenance,

inspections and testing were completed. The unit's reactor vessel closure head ("RVCH") was peened to mitigate the risk of the unit experiencing future issues related to components susceptible to primary water stress corrosion cracking. The unit also replaced the '2B' main step-up transformer as part of the fleet's strategy to replace large oil-filled transformers to ensure continued reliability. The outage extended 4.3 days beyond allocation due to delays associated with the reactor head peening work and a loss of the '2B' main feedwater pump turbine during startup. After refueling, maintenance, and inspections and testing were completed, the unit returned to service on October 26, 2022, for a total outage duration of 46.3 days.

After completing a unit record 709.8-day continuous cycle run, Oconee Unit 1 was removed from service on October 28, 2022 for refueling. The unit replaced reactor coolant system nozzles that were susceptible to primary water stress corrosion cracking. Large pump and motor reliability enhancements completed during the refueling outage included the 1A high pressure injection pump and motor replacement, the 1C high pressure injection motor replacement, 1A2 reactor coolant pump motor replacement, 1D2 feedwater heater drain pump motor replacement, and the 1A generator stator coolant motor replacement. Preventive maintenance activities were also executed on multiple pieces of equipment including the 1A feedwater pump/turbine and rotor, the Unit 1 main transformer, and multiple motor control centers. Inspections and tests were completed including 1B2 reactor coolant pump bearing inspection, reactor vessel and core barrel inspection, steam generator Eddy Current testing, condenser circulating water system waterbox and discharge piping inspections, and the electrical generator rotor inspection. After refueling, maintenance activities,

inspections and testing were completed the unit returned to service on November 24, 2022, for a total outage duration of 26.8 days, which was 1.2 days under the 28-day allocated outage duration.

Q. WHAT OTHER OUTAGES OCCURRED DURING THE TEST PERIOD?

A. Oconee Unit 2 was offline in February when the unit's reactor coolant pumps lost power due to a failed 7kV sensing circuit fuse and when a main feedwater control valve positioner failed. McGuire Unit 2 was also offline in February associated with a failed capacitor that impacted the unit's turbine control system. During control rod testing in April, Catawba Unit 2 was taken offline when 2 control rods partially dropped.

Q. WHAT CAPACITY FACTOR DOES DEC PROPOSE TO USE IN DETERMINING THE FUEL FACTOR FOR THE BILLING PERIOD?

A. The Company proposes to use a 93.52% capacity factor, which is a reasonable value for use in this proceeding based upon the operational history of DEC's nuclear units and the number of planned outage days scheduled during the billing period. This proposed percentage is reflected in the testimony and exhibits of Company witness Clark and exceeds the five-year industry weighted average capacity factor of 91.87% for comparable units as reported in the NERC Brochure during the period of 2017 to 2021.

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

A. Yes, it does.

MS. TOON: At this time, we conclude the Company's direct case. Thank you.

COMMISSIONER KEMERAIT: Thank you. I believe that the only additional witnesses that we have are for the Public Staff; is that correct?

MR. FREEMAN: Correct.

COMMISSIONER KEMERAIT: Mr. Freeman, you may proceed.

MR. FREEMAN: Thank you. The Public Staff would call Ms. Zhang, Mr. Brown, and Mr. Lawrence, please.

COMMISSIONER KEMERAIT: Good afternoon. I'll begin by swearing you in. And if you can place your left hands on the Bible and raise your right hands.

FENGE ZHANG, DARRELL BROWN and EVAN D. LAWRENCE;
having been duly sworn,
testified as follows:

COMMISSIONER KEMERAIT: Thank you. Please proceed.

MR. FREEMAN: Thank you.

DIRECT EXAMINATION BY MR. FREEMAN:

Q Ms. Zhang, if you could please state your name and business address and who you are employed by.

A (Ms. Zhang) My name is Fenge Zhang. I am a Public Utility Regulatory Manager in the Electric Section of the Public Staff, Accounting Division. My business address will be 430 North Salisbury Street, Raleigh, North Carolina.

Q Mr. Brown, if you could provide the same information.

A (Mr. Brown) Sure. Darrell Brown. My business address is 430 North Salisbury Street, Raleigh, North Carolina. I'm a Public Utility Regulatory Analyst with the Accounting Division of the Public Staff.

Q Mr. Lawrence, if you could do the same.

A (Mr. Lawrence) My name is Evan Lawrence. I am a Public Utilities Engineer with the Public Staff's Energy Division. My business address is 430 North Salisbury Street, Raleigh, North Carolina.

Q Thank you. Ms. Zhang and Mr. Brown, just pull it right up to y'all so everybody can hear you. Don't be shy.

On May 9th, did you cause to be filed joint testimony consisting of seven pages and Appendices A and B?

A (Mr. Brown) Yes.

A (Ms. Zhang) Yes, we did.
Q And do you have any corrections to your testimony?
A (Mr. Brown) No.
A No, we don't.
Q If you were asked the same questions as set forth in your prefiled testimony, would your answers be the same today?
A (Ms. Zhang) Yes.
A (Mr. Brown) Yes.
Q Mr. Lawrence, on May 9th, 2023, did you cause to be filed testimony consisting of 29 pages, Appendix A, and four exhibits?
A (Mr. Lawrence) Yes.
Q And some of that information is correct -- confidential, correct?
A Correct.
(Laughter)
Q Do you have any corrections to your testimony?
A I do have one correction to make. On page 4 of my testimony, beginning on line 17, I erroneously included W.S. Lee Combined Cycle Plant as one of the plants where there was what I considered to be a preventable failure at. So my correction

would read, beginning on line 16, that sentence should be, however, for the test period McGuire Nuclear Station and Belews Creek Steam Station had outages caused by preventable equipment failures.

Q Thank you. If you were asked the same questions as set forth in your prefiled testimony with that correction, would your answers be the same?

A Yes.

Q Pull the microphone up close.

A Yes, with one exception. After reviewing responses to the data requests received on the Company's rebuttal testimony, which I received late Friday evening, I do have enough information to make a recommendation on the Belews Creek outage discussed in my testimony which began on April 22nd, 2022. I do recognize that parties would not have had a chance to review and respond to this so I plan to, as I stated in my initial testimony, I still plan to file supplemental testimony on this issue as soon as possible.

Q Thank you.

MR. FREEMAN: Presiding Commissioner, at this time, I move that the prefiled joint direct

testimony of Ms. Zhang and Mr. Brown be entered into the record as if given orally from the stand. And I further move that Appendices A and B of the joint testimony be marked for identification in the same manner as they were when prefiled.

I also move at this time that the prefiled direct testimony and Appendix -- prefiled direct testimony and correction of Mr. Lawrence be entered into the record as if given orally from the stand. And I further move that Mr. Lawrence's Appendix A and Exhibits 1 through 4 be marked for identification in the same manner as they were when prefiled. And I would note that some of his testimony is confidential.

COMMISSIONER KEMERAIT: Your motion is allowed. The joint direct testimony of Ms. Zhang and Mr. Brown filed on May 9th, 2023, consisting of seven pages and Appendices A and B will be copied into the record as if marked orally from the stand. The direct testimony of Mr. Lawrence that contains confidential portions that was filed on May 9th, 2023, consisting of 29 pages and one Appendix will also be with copied into the record as if given orally from the stand.

MR. FREEMAN: Thank you.

COMMISSIONER KEMERAIT: And in regard to the

exhibits, I'll go ahead and state that the exhibits of 1 through 4 of Mr. Lawrence's testimony will be marked for identification purposes as prefiled.

MR. FREEMAN: Thank you.

(WHEREUPON, the prefiled joint direct testimony and Appendices A and B of FENGE ZHANG and DARRELL BROWN is copied into the record as if given orally from the stand.)

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-7, SUB 1282

In the Matter of Application of Duke Energy Carolinas, LLC, Pursuant to N.C.G.S. § 62-133.2 and Commission Rule R8-55 Relating to Fuel and Fuel-Related Charge Adjustments for Electric Utilities	)	**JOINT TESTIMONY OF DARRELL BROWN AND FENGE ZHANG PUBLIC STAFF – NORTH CAROLINA UTILITIES COMMISSION**

May 9, 2023

Q. Mr. Brown, please state your name, business address, and present position.

A. My name is Darrell Brown. My business address is 430 North Salisbury Street, Raleigh, North Carolina. I am a Public Utility Regulatory Analyst with the Accounting Division of the Public Staff – North Carolina Utilities Commission (Public Staff). A summary of my duties, education, and experience is attached to this testimony as Appendix A.

Q. Ms. Zhang, please state your name, business address, and present position.

A. My name is Fenge Zhang. My business address is 430 North Salisbury Street, Raleigh, North Carolina. I am the Public Utility Regulatory Manager - Electric Section with the Accounting Division of the Public Staff. A summary of my duties, education, and experience is attached to this testimony as Appendix B.

Q. Mr. Brown and Ms. Zhang, what is the purpose of your testimony in this proceeding?

A. The purpose of our testimony is to present the results of the Public Staff's investigation of the Experience Modification Factor (EMF) riders proposed by Duke Energy Carolinas, LLC (DEC or the

Company) in this proceeding. The EMF riders are utilized to "true-up," by customer class, the recovery of fuel and fuel-related costs incurred during the test year. DEC's test year in this fuel proceeding is the twelve months ending December 31, 2022. Additionally, the Company excluded the amount of under-recovery for January 2022 as the amount was included in the EMF factors approved in Docket E-7, Sub 1263.

Q. What are the incremental EMF riders proposed by the Company in this proceeding?

A. In its application, filed with supporting testimony and exhibits on February 28, 2023, DEC proposed EMF increment riders in cents per kilowatt-hour (kWh), excluding the North Carolina regulatory fee, for each North Carolina retail customer class, as follows:

Residential	1.6644 cents per kWh
General Service/Lighting	1.6649 cents per kWh
Industrial	1.7267 cents per kWh

Company witness Clark's Exhibit 3 details DEC's proposed under-recovery of fuel and fuel-related costs for each of the North Carolina retail customer classes is as follows:

Residential	$381,027,497
General Service/Lighting	$407,032,042
Industrial	$210,983,421

On May 04, 2023, DEC filed the Supplemental Testimony of Sigourney Clark with Revised Exhibits and supporting workpapers. Witness Clark's supplemental testimony and revised exhibits reflect the impact of a $613,775 reduction to the numbers presented in the direct exhibits and workpapers. Clark Revised Exhibit 1 sets forth the Company's revised proposed EMF increment riders in cents per kWh, excluding the North Carolina regulatory fee, for each North Carolina retail customer class, as follows:

Residential	1.6635 cents per kWh
General Service/Lighting	1.6638 cents per kWh
Industrial	1.7256 cents per kWh

In witness Clark's Revised Exhibits, DEC's proposed revised under-recovery of fuel for each of the North Carolina retail customer classes is as follows:

Residential	$380,810,058

General Service/Lighting	$406,768,116
Industrial	$210,851,011

The riders were calculated by dividing the fuel cost under-recovery amounts for each customer class by DEC's normalized test year North Carolina retail sales, being 22,892,401 megawatt-hours (MWh) for the residential class, 24,448,017 for the general service/lighting class, and 12,219,040 MWh for the industrial class.

Q. Please describe the scope of your investigation.

A. The Public Staff's investigation included evaluating whether the Company properly determined its per books fuel and fuel-related costs and revenues during the test period. These procedures included a review of the Company's filing, prior Commission orders, the Monthly Fuel Reports filed by the Company with the Commission, and other Company data provided to the Public Staff. The Public Staff also reviewed specific types of expenditures impacting the Company's test year fuel and fuel-related costs, including reagents (limestone, ammonia, urea, etc.), renewable energy, and purchased power, as well as reviews of source documentation of fuel and fuel-related costs for certain selected Company generation resources. Performing the Public Staff's investigation required the review of

numerous responses to written and verbal data requests, and several telephone conferences with Company representatives.

Q. What updated EMF riders does the Public Staff propose for this proceeding?

A. As a result of the Public Staff's investigation, we recommend that DEC's EMF riders for each customer class be based on net fuel and fuel-related cost under-recoveries of $380,810,058 for the residential class, $406,768,116 for the general service/lighting class, and $210,851,011 for the industrial class, and normalized North Carolina retail sales of 22,892,401 MWh for the residential class, 24,448,017 MWh for the general service/lighting class, and 12,219,040 MWh for the industrial class, as proposed by the Company in the supplemental filing. These amounts produce EMF increment riders for each North Carolina retail customer class as follows, excluding the regulatory fee:

Residential	1.6635cents per kWh
General Service/Lighting	1.6638 cents per kWh
Industrial	1.7256 cents per kWh

We have provided the recommended EMF rider amounts to Public Staff witness Lawrence for incorporation into his recommended final fuel factors.

Q. Are your numbers final?

A. Our calculations are subject to revision depending upon the Public Staff's investigation of outages as referenced in witness Lawrence's testimony.

Q. Do you have any other concerns that you want to bring to the Commission's attention?

A. Yes. As stated in Public Staff witness Lawrence's testimony, the Public Staff has concerns regarding rate shock to the customers due to the magnitude of the under recovery of fuel costs incurred in the test period. The Public Staff recommends the Company look into all possible mitigation options that reduce rate shock to the customers.

Q. Does this conclude your testimony?

A. Yes, it does.

APPENDIX A

QUALIFICATIONS AND EXPERIENCE

DARRELL BROWN

I graduated from North Carolina State University with a Bachelor of Science degree in Accounting.

Prior to joining the Public Staff, I was employed by Lumen (FKA CenturyLink, Inc.), as a Regulatory Operations Manager. My duties included preparation and review of federal and state regulatory financial and compliance report filings; analyzing and interpreting federal and state commission and legislative policies, rulemakings, and statutes; providing analytical support and guidance necessary for federal and state regulatory policy development, investigations, and internal and external audit requests; coordination of regulated accounting and reporting policy changes; and managing accounting and pricing functions.

I joined the Public Staff in May 2021 as a Public Staff Accountant. Since joining the Public Staff, I have performed investigations and prepared testimony and exhibits in support of natural gas and water utilities rate cases and performed various other investigations and compliance reviews related to electric, gas, telecommunications, and water utilities.

APPENDIX B

QUALIFICATIONS AND EXPERIENCE

FENGE ZHANG

I graduated from North Carolina State University with a Bachelor of Science degree and a Master's degree in Accounting. I am a Certified Public Accountant. I am the Public Utility Manager – Electric Section of the Accounting Division with the Public Staff – North Carolina Utilities Commission.

As the Utility Manager – Electric Section of the Accounting Division with the Public Staff, I am responsible for the performance, supervision, and management of the following activities: (1) the examination and analysis of testimony, exhibits, books and records, and other data presented by utilities and other parties under the jurisdiction of the Commission or involved in Commission proceedings; and (2) the preparation and presentation to the Commission of testimony, exhibits, and other documents in those proceedings.

I was first employed by the Public Staff in March 2012. In 2016, I worked for the Commission until I returned to Public Staff in May 2022. Throughout this time, I have been involved in audit and review of various topics related to the regulated telephone, water, sewer, electric, and natural gas industries, including the 2022 general rate cases for Carolina Water Service, Inc. of North Carolina and Aqua North Carolina, Inc. I have also filed and assisted with the Demand Side Management and Energy Efficiency riders, electric fuel rider cases, gas annual

reviews, and lead lag studies. Most recently, I filed an affidavit on Duke Energy Progress, LLC's 2022 fuel proceeding in Docket No. E-2, Sub 1292.

(WHEREUPON, Lawrence Exhibits 1-4 are marked for identification as prefiled.)

(WHEREUPON, the prefiled direct testimony and Appendix A of EVAN D. LAWRENCE is copied into the record as if given orally from the stand.)

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-7, SUB 1282

In the Matter of Application of Duke Energy Carolinas, LLC, Pursuant to N.C.G.S. § 62-133.2 and Commission Rule R8-55 Relating to Fuel and Fuel-Related Charge Adjustments for Electric Utilities	))))))	**TESTIMONY OF** **EVAN D. LAWRENCE** **PUBLIC STAFF –** **NORTH CAROLINA** **UTILITIES COMMISSION**

May 9, 2023

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

A. My name is Evan D. Lawrence. My business address is 430 North Salisbury Street, Dobbs Building, Raleigh, North Carolina. I am an engineer with the Energy Division of the Public Staff – North Carolina Utilities Commission.

Q. Briefly state your qualifications and duties.

A. My qualifications and duties are attached as Appendix A.

Q. What is the mission of the Public Staff?

A. The Public Staff represents the concerns of the using and consuming public in all public utility matters that come before the North Carolina Utilities Commission. Pursuant to N.C. Gen. Stat. § 62-15(d), it is the Public Staff's duty and responsibility to review, investigate, and make appropriate recommendations to the Commission with respect to the following utility matters: (1) retail rates charged, service furnished, and complaints filed, regardless of retail customer class; (2) applications for certificates of public convenience and necessity; (3) transfers of franchises, mergers, consolidations, and combinations of public utilities; and (4) contracts of public utilities with affiliates or subsidiaries. The Public Staff is also responsible for appearing before State and federal courts and agencies in matters affecting public utility service.

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

A. The purpose of my testimony is to present the results of my investigation and recommendations regarding the proposed fuel and fuel-related cost factors for the residential, general service/lighting, and industrial customers of Duke Energy Carolinas, LLC (DEC or the Company), as set forth in the Company's February 28, 2023 application and testimony, correction filed on March 1, 2023, and supplemental testimony of DEC witness Sigourney Clark filed on May 4, 2023.

Q. Please describe the scope of your investigation.

A. My investigation included a review of the Company's test period and projected fuel and fuel-related costs, and the factors that determine these costs. I reviewed the following: (1) the Company's application, testimony,[1] and responses to Public Staff data requests; (2) documents related to the operation and performance of the Company's power plants, including the performance of the Company's nuclear facilities; (3) the cost of renewable energy and associated fuel prices; and (4) the Company's coal, natural gas, nuclear, and reagent procurement practices and contracts. I also participated in numerous meetings with the Company.

[1] In addition to the previously listed filings, I have also reviewed the Supplemental Testimony of John D. Swez, filed on May 5, 2023.

Q. Are you providing any exhibits with your testimony?

A. Yes. I am including four exhibits, identified below:

Lawrence Exhibit 1. Public Staff's Outage Investigations.

Lawrence Exhibit 2. CONFIDENTIAL Belews Creek Steam Station Root Cause Analysis.

Lawrence Exhibit 3. Rate Mitigation Scenarios.

Lawrence Exhibit 4. DEC Response to PS DR 6-8.

Q. What are the dates of the test period and billing period for this proceeding?

A. For this proceeding, the test period is January 1, 2022, through December 31, 2022. The billing period is September 1, 2023, through August 31, 2024.

Q. Please summarize the results of your investigation and your recommendations.

A. The Company appropriately calculated the proposed system average fuel factor for the billing period. However, for the test period, the McGuire Nuclear Station, Belews Creek Steam Station, and W.S. Lee Combined Cycle Plant had outages caused by preventable equipment failures. In addition, several factors greatly increased the price of fuels in the test year, which resulted in an approximately $1 billion (NC Retail) under-collection of fuel costs.

Q. Did the Company achieve the standards of Commission Rule R8-55(k) for the test year?

A. Yes. For the test year, the Company achieved the standards of Commission Rule R8-55(k) by achieving an actual system-wide nuclear capacity factor that exceeded the NERC (North American Electric Reliability Corporation) weighted average nuclear capacity factor. Additionally, the Company's two-year simple average of its system-wide nuclear capacity factor exceeded the NERC weighted average nuclear capacity factor.[2]

Q. Did the Public Staff review the billing period or projected fuel and fuel-related costs as set forth by the Company in this filing?

A. Yes. The projected fuel and reagent costs for the billing period are reasonable; however as I discuss below, I am recommending the Company re-calculate projected fuel costs due to fuel commodity cost changes since the Company filed its application. The projected fuel and fuel-related costs are impacted by fluctuations in the costs of nuclear fuel, coal, and natural gas. DEC based its proposed fuel and fuel-related costs on a projected 93.52% system nuclear capacity factor, which the Company anticipates for the billing period.

[2] The Company calculated a system nuclear capacity factor for the test period of 94.66%. By comparison, the most recent NERC five-year average weighted for the size and type of reactors in DEC's nuclear fleet is 91.87%.

Q. Please explain further why you consider the prospective costs to be reasonable.

A. As part of my investigation, I reviewed the Company's projected fuel consumption for the billing period. While I did not complete an independent analysis of fuel costs, I reviewed the methodology the Company used to determine its projected fuel costs and consumption, along with the supporting information. I discuss and make a recommendation on these projected commodity costs below.

Q. Please describe the natural gas prices the Company used in its filing.

A. The Company used a projection of $4.52 per MMBtu[3] in its filing for the cost of natural gas burned in the billing period.[4] DEC witness John Swez indicates that the Henry Hub natural gas forward price at the time of writing his testimony was $3.99 per MMBtu (Swez Direct Testimony at 12, line 4). I calculated this natural gas price to be $3.20 per MMBtu as of the close of business on May 5, 2023, using a simple average of the natural gas forward prices.[5]

[3] Million British Thermal Units.

[4] The Company's natural gas projection takes into account the Company's hedging practices, projected delivered cost of the natural gas, and projected volumes burned in the billing period.

[5] https://www.cmegroup.com/markets/energy/natural-gas/natural-gas.quotes.html

This decrease in the natural gas prices is good news for DEC's customers. The 2022-2023 winter was warmer than expected both in the United States and Europe, leading to lower natural gas usage, while natural gas production increased. This lower usage and higher production allowed natural gas storage to return to more normal levels.

I. Plant Performance

Q. Please describe your review of plant performance.

A. The Public Staff has a standing agreement with the Company by which the Company provides outage-related documents on a semiannual basis for the first six-month period (January – June) and then for the second six-month period (July – December) of the test year. I reviewed these and other data request responses, along with the Company's Monthly Power Plant Performance Reports[6] filed in Docket No. E-7, Sub 1260. In addition to reviewing these documents, the Public Staff also had discussions with the Company. The Public Staff is concerned that the documents we have received for the fossil plant outages do not satisfy the intent of this agreement as understood by the Public Staff because the Company did not indicate whether it had provided all outage reports; instead, it provided a

[6] Filed in accordance with Commission Rule R8-53.

summary of the outages for all outages for which there was no outage report. As such, we are working with the Company to ensure that we receive all documents necessary to complete future investigations in a timely manner.

Q. Please provide a description of the outages you investigated.

A. As previously stated, DEC had outages at the McGuire Nuclear Station Unit 2, Belews Creek Steam Station Unit 2, and W.S. Lee Combined Cycle Plant during the test year. Below, I discuss the circumstances that led to these outages and why I believe the Company could have reasonably prevented them. My Exhibit 1 is a table summarizing the outage dates, duration, and causes as stated in the Company's Monthly Power Plant Performance Reports.

Q. Please discuss your findings related to the McGuire Unit 2 outage, which began on February 21, 2022.

A. DEC control room operators initiated a manual reactor shutdown due to an unanticipated equipment malfunction. **[BEGIN CONFIDENTIAL]** [redacted]

[redacted]

[redacted] **[END CONFIDENTIAL]**

Q. Please describe your concerns regarding the equipment malfunction.

A. **[BEGIN CONFIDENTIAL]** [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[END CONFIDENTIAL]

Based on these facts, I believe the Company could have reasonably avoided this outage. **[BEGIN CONFIDENTIAL]** [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted] **[END CONFIDENTIAL]**

[7] **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]**

Q. Are you recommending any adjustments for replacement power costs for this outage?

A. No. Given the dollar amount of the adjustment that would be made, combined with the history of operational performance of this plant/unit, the fact that this type of failure at DEC plants has not been routine, and the fact this outage appears to be an isolated event, I do not recommend a disallowance. In addition, it is my understanding that the Company is taking corrective actions to prevent recurrence.

Q. Please describe the Belews Creek Unit 2 outage that began on April 22, 2022.

A. From March 17, 2022, through April 22, 2022, Belews Creek 2 was in a planned outage, as listed in my Exhibit 1. On April 22, 2022, DEC was unable to restart Belews Creek Unit 2 due to foreign material found in the intermediate pressure (IP) turbine, which required removal of the IP turbine shell according to DEC's April 2022 Power Plant Performance Report. The foreign material discovered was a bladder valve, which is a type of balloon that is inflated inside of a pipe to close the pipe and prevent foreign material ingress while work is performed.

In response to discovery, the Company stated that it believes that the bladder valve, an inflation tube, and the metal fitting were left in inlet piping during a 2018 turbine outage, but it could find no records

indicating when or where this occurred.[8] This foreign material forced a removal of the turbine shell and the unit[9] to be removed from service for 16 days. Based on the Company's discovery responses, it appears that the temperature associated with the high-pressure steam where the bladder valve was originally located would have destroyed both the bladder valve and inflation tube; thus, it is unclear whether a full or partial bladder was left in the inlet piping. I believe that this outage was preventable and was likely caused because someone working on the turbine did not follow proper procedures for using and removing a bladder valve. I am not making a recommendation at this time for the reasons that I discuss below.

Q. Please describe the Belews Creek Unit 2 outage that began on August 31, 2022.

A. On August 31, 2022, the 2-LP2 turbine crossover pipe failed upon restart after a maintenance outage. The 2-LP2 turbine crossover pipe transfers high pressure steam from the IP turbine to the low pressure (LP) turbine. This piping contains expansion joints to allow for thermal expansion created by steam transfer.

At approximately 0300, on August 31, 2022, a station technician performing standard rounds (i.e., equipment inspections typical for a

[8] Reference Company response to PS DR 21-3.

[9] Belews Creek 2 has a winter capacity rating of 1,110 MW.

routine workday) observed a loose fastener on a tie rod which helped support this piping. The threaded diameter of this tie rod is 3.25 inches and the fastener used to hold the tie rod in place is approximately six inches wide. The plant staff created a work order to repair the loose fastener during a future outage. Approximately 15 hours after unit start up, and 13.5 hours after the technician noticed the loose fastener on or at the tie rod, the piping failed catastrophically when **[BEGIN CONFIDENTIAL]** [redacted]

[redacted]

[END CONFIDENTIAL]

Q. What concerns do you have regarding this outage?

A. The failure of the crossover pipe could have resulted in a longer plant outage, severe damage to critical plant equipment, and challenges to daily reliability and economic dispatch. The Company has the responsibility to ensure that the crossover pipe is adequately designed and properly assembled and installed by its employees or vendors. I am not making a recommendation at this time for the reasons that I discuss below.

Q. Did you complete your investigation into the turbine damage and turbine fire at the W.S. Lee Steam Station?

A. No, I did not. This fire resulted from a failed turning gear on unit startup. Due to time constraints, I have not completed my investigation of this incident and therefore cannot testify to the prudency of this outage at this time. The Public Staff requested that the Company agree that the Public Staff be allowed to continue its investigation of this outage and that any resulting recommendations or adjustments be considered in the next fuel case, but the Company did not consent. As the Commission may be aware, this unit outage occurred prior to, but continued through the 2022 Christmas Eve rolling outages across North Carolina and into 2023.

Q. Are you recommending any adjustments for replacement power costs for the Belews Creek and W.S. Lee outages you describe above?

A. No. The Public Staff has been unable to complete its investigation into the outages and cannot make recommendations at this time. To further understand the issues surrounding the Belews Creek and W.S. Lee outages, the Public Staff requested conference calls with Company personnel in late March 2023. A meeting was scheduled for April 14, but on the afternoon of April 12, the Company requested the meeting be delayed until the following week and the Public Staff was unable to accommodate this request due to other scheduling conflicts. The Public Staff and the Company attempted, but were unable, to find a mutually compatible time when required personnel were available, in part due to other matters pending before the Commission. Furthermore, the outage caused by the turbine fire at the W.S. Lee plant is subject to an ongoing investigation in Docket No. M-100, Sub 163 (Winter Storm Elliott), and extended into 2023, which is outside of the test year for this proceeding.

For these reasons, the Public Staff will continue to investigate these outages and provide the results of its investigation in a supplemental filing. Further, the Public Staff will make any recommendations

regarding incurred capital costs in the Company's current rate case as appropriate.[10]

II. Clemson University CHP Billing

Q. Was there a billing error associated with the Clemson University Combined Heat and Power (CHP) facility?

A. Yes.

Q. Please describe this error.

A. During the Company's 2022 fuel case (Docket No. E-7, Sub 1263), I discovered an error with the calculations used for the determination of the rate Clemson University was to be billed for the sale of steam from the Clemson CHP facility. This error was brought to the attention of the Company, and it agreed to hold the issue open in the 2022 fuel case and make the adjustment in this case.

Q. Did the Company appropriately account for this adjustment?

A. During a meeting on April 20, 2023, the Company notified the Public Staff that this adjustment was booked to an incorrect account and was not reflected in the initial filing in this case, as it should have been. The Company's supplemental filing addresses this error and

[10] Docket No. E-7, Sub 1276

includes a reduction in total reagent costs equal to the NC retail portion of this bill correction.

III. Fuel Rates

Q. What is DEC's total requested rate increase in this fuel proceeding?

A. The total fuel rate increase for the residential class is 1.8892 cents per kWh, resulting in an increase of $18.92 (when accounting for the reg fee) to a residential customer's monthly bill for 1,000 kWh usage compared to rates currently in effect. The proposed EMF rate is 1.6635 cents per kWh (compared to 0.4863 cents per kWh currently in effect), and the proposed prospective rate is 2.7123 cents per kWh (compared to 2.0003 cents per kWh currently in effect). Thus under DEC's proposed fuel rates, the total bill for a customer taking service under Schedule RS would increase by 16.5%.[11]

Q. Does the proposed fuel rate increase constitute rate shock?

A. While the Public Staff does not have specific "bright line" thresholds to determine what constitutes rate shock, it is my opinion that a one-time increase of 16.5% does constitute rate shock. When considering the Company's proposed base rate increase along with

[11] DEC's proposed annual fuel rider increase in this case does not reflect the bill impact of other pending riders or the pending DEC general rate case, Docket No. E-7 Sub 1276.

the proposed Multi-Year Rate Plan (MYRP) Rate Years 1 through 3 increases that will overlap the fuel increase, my concerns of rate shock are further exacerbated. Below is a table found on page 26 of the Company's Application to Adjust Retail Base Rates and for Performance-Based Regulation, and Request for an Accounting Order filed on January 23, 2023, in Docket No. E-7, Sub 1276, which shows the Company's requested percentage bill increases for each year of the MYRP that would be in addition to those sought in the fuel case.

Customer Class	Present Base Rate Revenues	Present Total Revenues, Including Riders	Base Case	MYRP Year 1	Total Year 1 Increase	MYRP Year 2	MYRP Year 3	Total Increase
Total Base Rate Revenue	$4,994M	$5,255M	$361M	$140M	$501M	$172M	$150M	$823M
Average % Increase on Total Bill			6.9%	2.6%	9.5%	3.3%	2.9%	15.7%
Residential	$2,486M	$2,549M	7.5%	3.0%	10.5%	3.8%	3.6%	17.9%
General Service	$855M	$944M	5.7%	2.5%	8.2%	3.3%	3.1%	14.6%
Industrial	$154M	$168M	7.0%	2.6%	9.6%	3.2%	2.8%	15.6%
OPT	$1,365M	$1,465M	5.2%	1.9%	7.1%	2.0%	1.5%	10.6%
Lighting	$134M	$129M	22.4%	5.6%	28.0%	5.2%	3.1%	36.3%

Therefore, by December 2023, residential customers could see 24% increases in their bills if the Company's MYRP is allowed. Taken together, the proposed increases in the fuel rider rates and the MYRP rates are enormous, and the Public Staff believes reasonable mitigation for ratepayers is a necessity.

Q. Do you know of other utilities that have mitigated rate increases due to the recent fuel costs?

A. Yes. Listed below are the results of my initial research on steps taken by other utilities to mitigate impacts to customers in similar situations of sudden, dramatic increases in rates, and specifically recent increases due to significant fuel costs.

The Florida Public Service Commission recently approved[12] Duke Energy Florida's (DEF) rate increase mitigation strategy, in which DEF lowered the projected fuel costs after the initial filing and agreed to spread the EMF balance over two years. These two actions helped reduce the bill for a residential customer using 1,000 kWh per month by $27.21 compared to the initial filing, which would have resulted in a 16.83% increase, but instead DEF was able to limit the increase to just 3.65%.

In March of this year, the Virginia State Corporation Commission approved a mitigation proposal by Appalachian Power Company,[13] which spread the recovery of the EMF balance over two years,

[12] https://www.prnewswire.com/news-releases/regulators-approve-duke-energy-floridas-fuel-capacity-and-storm-restoration-costs-easing-customer-bill-impacts-301764880.html

[13] https://www.scc.virginia.gov/newsreleases/release/SCC-Approves-Mitigation-Proposal-for-APCO-Fuel-Inc

reducing the resulting monthly residential bill increase by approximately $13 per month.

Also in Virginia, Dominion Energy Virginia agreed in its 2022 fuel case to spread its deferred balance of $1.02 billion over three years and waived its right to recover half of the interest from carrying costs, approximately $27.5 million.[14]

In its 2022 fuel case,[15] Dominion Energy North Carolina agreed to the same terms for its North Carolina customers as it provided in Virginia (a three-year EMF recovery, with collection of half of the carrying costs), or, optionally, a two-year EMF recovery with no carrying costs along with a "stepped rate," which I will discuss in more detail below. Ultimately, all parties agreed that the two-year recovery was the best option for North Carolina customers.

In Docket No. E-2, Sub 929, Carolina Power & Light, now Duke Energy Progress, entered into a comprehensive settlement agreement in which it agreed, among other things, to spread recovery of the EMF balance over three years. The Commission

[14] https://scc.virginia.gov/newsreleases/release/SCC-OKs-Dominion-Fuel-Rate-Increase

[15] Docket No. E-22, Sub 644.

accepted this settlement in its November 14, 2008, Order Approving Fuel Charge Adjustment.

In Docket No. 2022-3-E (Order issued October 11, 2022), DEC agreed in South Carolina to spread recovery of its fuel costs over 24 months.

Moody's Investors Service released a sector in-depth publication on November 11, 2022,[16] in which it noted at page 3: "More regulators are likely to extend fuel cost recovery periods to between 18 and 36 months, up from the typical 12 months, to ease the impact on customer electricity rates."

It is important to note that my research is not exhaustive, nor does it list all instances of fuel related increases and mitigation strategies.

Q. Could the Company help mitigate rate shock in this case?

A. Yes, by consenting to mitigation measures like those described above. In PS DR 6-8, I requested the Company's opinion on which rate recovery option it preferred, and if it preferred the "as filed" option, its second most desirable option. The Company responded by citing N.C. Gen. Stat. § 62-133.2(d), which does not require the

[16] https://www.moodys.com/research/Regulated-Electric-and-Gas-Utilities-US-Delays-in-fuel-cost--PBC_1346562

Company to offer any mitigation. I have attached this response as Lawrence Exhibit 4.

Q. In your opinion, does the Commission have authority to mitigate rate shock?

A. Yes. While not a lawyer, it is my understanding that the Commission must consider "any and all competent evidence that may assist the Commission". N.C.G.S. § 62-133.2(d). Further, rates can only be implemented if they are "just and reasonable" as follows:

> To the extent that the Commission determines that an increment or decrement to the rates of the utility due to changes in the cost of fuel and fuel-related costs over or under base fuel costs established in the preceding general rate case is just and reasonable, the Commission shall order that the increment or decrement become effective for all sales of electricity and remain in effect until changed in a subsequent general rate case or annual proceeding under this section.

Id. This echoes the obligation that "[t]he Commission shall consider all other material facts of record that will enable it to determine what are reasonable and just rates." N.C.G.S. § 62-133(d).

Q. What rate mitigation options do you believe the Company should consider?

A. While it is appropriate for the Company to collect its reasonably and prudently incurred costs, I urge the Company to allow the spreading of the recovery of these costs over more than 12 months to mitigate

the impact to ratepayers. I developed five different rate mitigation options, which I have included in Lawrence Exhibit 3.

I describe each of these rate mitigation options below, including the impact to the residential class. There are significant rate increases for the commercial and industrial classes as well, but the residential class has the most customers, most usage of any class, and the simplest rate structure for illustrative purposes.

Industrial customers will, however, see significant impacts from the Company's proposed rate increase as well; by definition, at least 50% of the class's energy usage is related to manufacturing. While true for all industrial customers, their energy usage can differ by tens of thousands of kWh due to usage characteristics.

Commercial customers have similar usage disparities, ranging from auxiliary accounts that may use a few kWh each month to large office buildings.

For each option, I took similar steps in determining the rate. I used the Company's EMF balance by customer class, and the Company's provided energy sales per class. I held the class energy sales constant and modified the EMF balance as needed. For any recovery scenario that extends beyond the 12-month billing period, I assumed an interest component of 10%, in the same manner as provided by

the Company in response to PS DR 6. Finally, to mitigate the fuel cost rate increase over two six-month periods, I multiplied the resulting 12-month rate by an "adjustment factor", which is subtracted from the rate for the first six months of the billing period and added to the rate for the second six months of the billing period as described more fully below.

Option 1 includes the EMF rates as filed. Currently, a customer under schedule RS pays approximately $114.59 for 1,000 kWh usage. With DEC's proposed fuel rate, the same customer will pay $133.45 (16.5% increase) with $7.12 (6.2%) being DEC's proposed prospective rate increase, and $11.77 (10.3%) the result of the EMF increase.

Option 2 represents a full EMF recovery in the billing period, using a stepped approach. The increase for the EMF portion at the start of the billing period is half of the as-filed EMF rate. To recover the full EMF balance during the billing period, the second step results in a rate that is 150% of the as-filed rate. To recover the EMF balance in a single 12-month period, the average rate paid would be equal to the rates as filed. Ideally, the total EMF balance would be recovered in the billing period; however, there is no way to adjust only the EMF rate and arrive at a rate that does not result in rate shock at some point over the billing period.

Option 3 is my preferred approach. Here, I show the recovery of two-thirds of the EMF balance during the billing period, which produces a similar result to using an 18-month billing period, resulting in an average EMF rate of 1.1090 cents per kWh plus an interest component of 0.0901 cents per kWh for a total rate of 1.1991 cents per kWh. To help mitigate the rate shock of the total increase, the proposed increase for the first step is 0.26920 cents per kWh, and 0.8872 cents per kWh for the second step. In calculating these rates, I kept the interest component constant across the entire billing period. Then, to help smooth the overall increase, I used an adjustment factor of 40%, which results in a bill increase of $9.86 (8.6%) in the first six-month period, and an additional $8.88 (7.1%) increase in the second six-month period.

Option 3 is my preferred approach for three reasons. First, it results in stepped increases that should be more manageable for customers than one single, large increase as proposed by the Company. Second, it provides the Company with the majority of the EMF balance to which it is entitled during the prospective period. Third, the amount of interest that customers would pay is lower than if the EMF balance were spread over an even longer period of time.

Option 4 presents the rates with the EMF balance being recovered over two years, with half of the balance to be recovered in each year.

The average resulting rate is 0.8322 cents per kWh, with an interest component of 0.1352 cents per kWh. The bill increase for the first step is $6.46, with an additional $8.33 increase with the second step.

Finally, Option 5 shows the rates and resulting bill if the EMF balance were to be recovered over three years. This method results in the lowest initial rate increase; however, the interest component paid by customers is the largest by far. Additionally, the Company could under-recover its fuel costs in these future years, resulting in pancaking of the EMF from this case along with the additional EMF.

Q. Given the circumstances you have discussed above, should the Commission consider an adjustment to the prospective component of the billing rate?

A. Yes. Because the Company has indicated that it prefers to recover the entire EMF balance during the upcoming billing period, the Public Staff proposes that the Commission consider modification of the prospective rate.

Per Commission Rule R8-55 and N.C.G.S. § 62-133.2, the Commission has considerable flexibility to establish the prospective fuel rate for the billing period so long as the methods and costs used appear reasonable. As I discussed above, the Company's proposed costs appear reasonable at this time, but, as natural gas prices have decreased since the Company filed its schedules and exhibits, it now

appears that DEC may over-collect fuel costs during the billing period.

In the 2022 DEC fuel rider proceeding, Public Staff witness Dustin Metz and I testified to the difficulties in creating the forecast.[17] We noted the "potential magnitude" of price increases and explained that if then current rates were used, "the cost impact to ratepayers would have been well north of 10 percent." *Id.* at 175.

In summary, DEC must project the billing period fuel prices, usually determined in December, to prepare its fuel rider application for filing in late February/early March of each year. This year, DEC was able to wait until mid-January to calculate its fuel rates. However, since DEC calculated its rates, natural gas prices have decreased. Because of this decrease in natural gas prices and the under-recovered EMF balance of nearly $1 billion, I recommend that the Commission require the Company to re-calculate the prospective rate in this case based on current commodity costs and refile these rates and exhibits as soon as possible for review by the Public Staff and other intervenors and for consideration by the Commission. The

[17] See Transcript of June 7 hearing in Docket No. E-7, Sub 1263, beginning on page 171. https://starw1.ncuc.gov/NCUC/ViewFile.aspx?Id=a6870a0d-9b6b-4b4e-ad50-991de7951498

Company should indicate in its rebuttal testimony when it would be able to provide these calculations.

Q. Does this conclude your testimony?

A. Yes.

APPENDIX A

QUALIFICATIONS AND EXPERIENCE

EVAN D. LAWRENCE

I graduated from East Carolina University in Greenville, North Carolina in May 2016, earning a Bachelor of Science degree in Engineering with a concentration in Electrical Engineering. I started my current position with the Public Staff in September 2016. Since that time, my duties and responsibilities have focused on reviewing renewable energy projects, rate design, and renewable energy portfolio standards (REPS) compliance. I have filed an affidavit or testimony in DENC, DEP, and DEC REPS and fuel proceedings, testimony in New River Light and Power's 2017 rate case proceeding, testimony in Western Carolina University's 2020 rate case proceeding, and testimony in multiple dockets for requests for CPCNs. Additionally, I previously served as a co-chair of the National Association of State Utility and Consumer Advocates' Distributed Energy Resources and Energy Efficiency Committee from 2019 to 2021.

MR. FREEMAN: Presiding Commissioner, these witnesses are available for examination.

MR. CONANT: CIGFUR III has no questions.

MR. TRATHEN: May I approach with an exhibit?

COMMISSIONER KEMERAIT: Yes.

(Counsel passes out an exhibit)

MR. TRATHEN: Good afternoon, Panel. I am Marcus Trathen representing CUCA. I handed out to you what is intended to be a demonstrative exhibit I'd liked to mark as CUCA Public Panel Cross Exhibit Number 1?

COMMISSIONER KEMERAIT: The document shall be so marked as CUCA Public Staff Panel Cross Exhibit 1.

(WHEREUPON, CUCA Public Staff Panel Cross Exhibit 1 is marked for identification.)

CROSS EXAMINATION BY MR. TRATHEN:

Q So what I'm trying to illustrate here is an historic review of Fuel Rider cases for DEC going back 17 years. I've provided the docket numbers and the years and a summary of the

over-collections and under-collections and then total them up at the bottom. Do you see that.

A (Ms. Zhang) Yes.

A (Mr. Brown) Yes.

Q I'm not sure who I'm asking so feel free to whoever should best respond.

A (Ms. Zhang) Yes, we saw it.

Q Okay. Thank you. And I have provided the panel back up for all of these numbers and so I have them annotated with exhibits and highlighted the relevant numbers from each of the orders corresponding with these entries. I'm happy for you to look through that if you wish. But if, otherwise, I would just ask you to take these numbers subject to check.

A (Ms. Zhang) Yes, subject to check, it appears that's the number.

A (Mr. Lawrence) If I may ask a question about this. I see on this front page, each different case is labeled 1 through 17 and we've got 1 through 17 numbers, tabs within this. I'm assuming the tabs are with that order for that case.

Q Correct. Yes. Yes. Yes. So, if you want to

look at Tab 17, you should be able -- you should go directly to the $327 million number. Do you want to do that and just verify?

It's probably on page 5 or 6.

A (Mr. Brown) Yes, we see it.

Q Okay. Thank you. But you're willing to accept these numbers subject to check? It's all in the dockets.

A (Mr. Lawrence) Yes.

Q So, what this illustrates again, subject to check, that over the last 17 years the total under-collection reported by DEC has been $797 million. Will you accept that subject to check?

A (Ms. Zhang) Yes. Yes, we see it. We saw some years with over-collection and some years with under-collection.

Q Yes. And the magnitude of the single year of under-collection sought is roughly a billion dollars in this case, correct?

A Yes, that's correct.

A (Mr. Brown) Yes.

Q So wouldn't you agree that the magnitude of the under-collection here substantially exceeds

magnitude of any prior year, according to this table?

A (Ms. Zhang) Based on the table, yes, but given the portfolio of the fuel costs as well as the price on the natural gas, I think we'll see the up and downs each year. So it depends.

Q So yes, I see that there is obviously volatility and sometimes we're over-collecting and sometimes we're under-collecting, but there's nothing close to a billion dollars on this table of under-collection, is there?

A Yeah. Based on the table, yes. It looks -- it appears this year will be the biggest number over this 17 years.

Q Now, the Public Staff has conducted an investigation in this docket, correct?

A (Mr. Brown) That is correct.

Q Okay. Are you aware of any prior year with an under-collection which is approaching a billion dollars?

A No, I'm not.

A (Mr. Lawrence) And I will add to that. This -- while, you know, I in no way like this and we've worked --

COMMISSIONER KEMERAIT: Let me interrupt for a minute. Can everyone pull the microphones a little bit closer to them because we're having some trouble hearing back here?

MR. FREEMAN: Even closer. Just right up to you.

COMMISSIONER KEMERAIT: Thank you.

A (Mr. Lawrence) I will add that in the 2022 DEC fuel case, last year, I was up on the stand with Dustin Metz who is also -- we filed joint testimony in that case, and we did -- we have talked about specifically in that case but in previous cases, fuel cases, that this was coming. And we had kind of a perfect storm of events happen for the DEC case between when that case was filed and when and how much the prices increased. So, you know, we -- I think I have in my testimony in this case a quote from last year's fuel case where we were saying that we could see increases upwards of 10 percent or impacts upwards of 10 percent. So I do agree that this is a substantial under-recovery.

Q Okay. And Mr. Brown and Ms. Zhang, in your testimony you recommend that the Company look

into all possible mitigation options. I assume that you're also encouraging the Commission to consider all possible mitigation options to ease the burden and the shock on customers of this under-collection?

A (Mr. Brown) Yes, we would.

Q Okay.

A Subject to any given parameters that we -- where their -- our settlement is service is already in place, we're not encouraging the Commission or the Company to pursue those because those agreements have already been stipulated, if you're referring to the EDIT.

Q Okay.

(Court reporter requested that the witness speak into the microphone.)

THE WITNESS: (Mr. Brown) I'm sorry. Can everyone hear me now? Okay. Thank you.

COMMISSIONER KEMERAIT: Can you repeat your response. We had trouble hearing it, for the Commission, as well.

THE WITNESS: (Mr. Brown) If you could repeat your question.

BY MR. TRATHEN:

Q Yes. So I was referencing your testimony at page 7 where you recommended the Company to look into all possible mitigation options, and my question was would you also recommend that the Commission consider all possible mitigation options to ease the burden of this under-collection in terms of rate shock on consumers?

A (Mr. Brown) Yes.

Q And I want to ask you some similar questions that I just asked the Duke panel so you probably heard those questions before with regards to impacts on specific customers. Again, I'm representing industrial consumers so that's the focus of my questions. But as regards to settlement, I understand the anticipated average increase under the settlement would be a 13 percent rate increase; is that correct?

A That is correct.

Q And would you agree that a customer's actual experience in terms of the overall rate increase would depend on how much energy they consume?

A (Mr. Lawrence) I would agree with that. This is a -- the charge is based on a per-kilowatt-hour

basis. And I discuss that in my testimony somewhat on page 24, the difference between rate classes and even customers within those rate classes, how large a disparity there can be between the individual customers.

Q So the example I gave before in the industrial setting, a high-load factor industrial customer would expect to -- would experience under the Settlement a higher rate increase than the 13 percent, correct?

A On a total bill amount but not on a per-kilowatt-hour charge.

Q Okay. So, just to take some numbers, if you've got an industrial customer that's paying a million dollars a month to Duke, the extra 13 percent, just using -- to say that they're an average customer, it would be an extra $130,000 per month that they would have to pay under the Settlement Agreement; is that correct?

A That sounds correct.

Q So that's over -- it's about a $1.5 million a year under the Settlement, if you've got a million dollar a month customer.

A That does sound correct. Yes.

Q Now, in Duke's rebuttal testimony they had offered a mitigation option of offsetting with EDIT funds, correct? That was an option they put out there?

A (Ms. Zhang) The Company, yes, in the supplemental rebuttal testimony they offer the EDIT. Yes, that's correct.

Q So if the Commission were to combine Duke's proposal with the Public Staff Settlement that would be less of a rate shock than under the Settlement, correct?

A I don't think we would take it that way because the Settlement is a settlement. It involves a negotiation and a different perspective, a different issue, combine them together, so you just -- what you're trying to do is just reopen the Settlement and then to ask for the EDIT to be included, so that's not a settlement. At least not at this point.

Q No, it's not the Settlement. I understand that. My question was if the Commission were to issue an Order which essentially combined the two, it would be a better result for consumers, would it not? It would be less of a rate shock for

consumers?

A No. Remember the EDIT is part of the Settlement in the last rate case. It's already the known refund to the customer on the four years. So you can't just get one piece from elsewhere and then put it on here as considered in mitigation. So those are the known to the customer and settled on the Settlement. And the Settlement at that time is the give and take on many issues so you can't just peel one piece and then reopen that settlement.

A (Mr. Lawrence) And to add to that there, at this time the EDIT Rider is in effect. It's currently suppressing rates. That money is being flowed back to customers. And so if you offset it to fuel, there's still -- there's going to be an increase to other costs elsewhere. When you silo it out like that, there -- you know, it can make it look good but you have to consider the other resulting impacts that are being experienced as well. I'm not sure at this time if -- I know I haven't but I'm not sure if either Witness Zhang or Brown has really looked at the resulting impacts to base rates that would come in. They

might be able to add more context to that.

A (Ms. Zhang) As I said before -- I want to add on -- just as I said before, remember the EDIT is a give and take as part of the Settlement in the last rate case so it is already a known refund to the customer. And you bring that into this fuel that means that you are -- you need to open, reopen the Settlement. But remember, the Settlement is a give and take on many issues so you just peel one piece that means you just complicate everything going forward.

Q So I hear what you're saying that the Public Staff doesn't want the Commission to do that. Do I hear you saying that you do not believe the Commission has the authority to offset the under-collection with EDIT?

A I'm not a lawyer so I would refer to our legal team to answer your question on that one.

Q That's perfectly fair. Yeah. Perfectly fair. I just want to be clear as to the limit of what you're saying.

So that's one option at least from our perspective. Another option would be in terms of mitigating impacts on consumers would be

to extend the repayment period.

Now I understand you've got a Stipulation with Duke. I'm not asking you to testify contrary to what's in the Stipulation. But just in terms of the theoretical world, that is one lever that could be employed to mitigate impacts would be to have a longer payback period, wouldn't it?

A (Mr. Lawrence) Yes. And I discuss that in my testimony at some length.

Q And Mr. Lawrence, this may be your question because it's in your testimony, but are you familiar with the Dominion fuel proceeding from 2014 where the Commission approved the two-year payback period?

A I am not.

Q Okay.

MR. TRATHEN: If I could approach?

COMMISSIONER KEMERAIT: Yes, you may.

(Passing out exhibits)

MR. TRATHEN: So I'd just ask if the Commission would take Judicial Notice of this Order from Docket E-22, Sub 515, Dominion proceeding?

COMMISSIONER KEMERAIT: Mr. Trathen, can you

state that again. Judicial notice of --

MR. TRATHEN: This is an Order Approving Fuel Charge Adjustment, Docket Number E-22, Sub 515, dated December 18, 2014.

COMMISSIONER KEMERAIT: The Commission will take judicial notice of that Order.

MR. TRATHEN: Thank you.

BY MR. TRATHEN:

Q Mr. Lawrence, if you will turn to page 5 of that Order, and you'll see Paragraphs 15 and 16 of the Findings of Fact.

A (Mr. Lawrence) I see that, yes.

Q Do you see a $16 million under-collection in Finding of Fact 15? And then Finding of Fact -- I may have said 16. Finding of Fact 15. And then Finding of fact 16, it's appropriate to accept the Company's mitigation proposal to have rates established to recover 50 percent in 2015, 50 percent in 2016. Do you see that?

A I do see that.

Q And did I understand that you don't have any independent knowledge of this proceeding?

A I do not.

Q All right. And do you have any knowledge of a

Duke Energy Progress fuel proceeding from 2018, or excuse me, 2008?

A Very limited knowledge of that case.

MR. TRATHEN: If I could approach?

COMMISSIONER KEMERAIT: Yes, you may.

(Hands document to witness)

MR. TRATHEN: I would ask that the Commission take Judicial Notice of an Order Approving Fuel Charge Adjustment, Docket E-2, Sub 929, dated November 14, 2008.

COMMISSIONER KEMERAIT: The Commission will take Judicial Notice of the order in Docket Number E-2, Sub 929, dated November 14th, 2018 (sic).

MR. TRATHEN: Thank you.

BY MR. TRATHEN:

Q Mr. Lawrence, is this the proceeding that you're familiar with?

A (Mr. Lawrence) I have very limited knowledge of this proceeding.

Q Okay. If you look to -- on page 3, Finding of Fact 7, in this case it looks like there's a $203 million under-collection. Do you see that?

A I do.

COURT REPORTER: Would you repeat the amount

again?

MR. TRATHEN: $203 million.

COURT REPORTER: Thank you.

BY MR. TRATHEN:

Q And if you would just flip to the next page. Do you see reference to a Settlement Agreement which would extend repayment over three years?

A (Mr. Lawrence) I do see that.

Q The Order will speak for itself but there is precedent in North Carolina for a longer payback period for fuel under-collections, is there not?

A It has been done. I will say that, while I don't have the Settlement Agreement in front of me on this case, typically when the Public Staff enters into Settlement Agreements, it's my understanding that part of it is that they don't set precedent because we can see that single three-year recovery period there that we've agreed to but I don't have the other parts of the Settlement in front of me to see. I'm not sure what may have happened there so.

Q Sure. Understood. Fair point.

A I will agree it's happened before. Yes.

Q Yes. Okay.

MR. TRATHEN: That's all I have. Thank you.

MR. MAGARIRA: No cross from SACE.

COMMISSIONER KEMERAIT: From DEC?

MR. KAYLOR: Yes, Chair.

CROSS EXAMINATION BY MR. KAYLOR:

Q Good afternoon, Mr. Lawrence. I just have some questions for you. I note from your qualifications and experience that you're an East Carolina graduate. Congratulations. I'm a graduate there but I think our degrees are 50 years apart. So I want to be careful with questions. I note that you graduated in 2016 and then you came to work with the Public Staff in the same year; is that correct?

A (Mr. Lawrence) That's correct.

Q And would it be safe to assume that you have never worked for a utility at a power plant of any type?

A That is correct.

Q So have you ever worked or been -- have you ever observed an outage at a major coal-fired power plant with regard to the turbine work on a -- at a power plant?

A I -- sorry, I'm trying to think. I know the

Public Staff does site visits to different areas, one of them being the power plants. And we do like to go during outages to see that type of information but that would be the extent of my experience there.

Q Have you ever observed an outage on a turbine at any of the major power plants on the Duke system?

A Yes.

Q Which one?

A At the, I believe, the Wayne CC I believe it is.

Q That would be DEP, I believe.

A We were there fairly recently. There was an outage there where there was a turbine removed. I believe there were others but right now that's the only one I can think of.

Q Okay. So in your testimony with regard to the outage of Belews Creek 2, which that outage started I believe on March 17th, 2022; is that correct?

A Yes. That's what I have in my Exhibit 1.

Q And that was a planned outage as far as you know; is that correct?

A Yes, that's correct.

Q And you've taken issue with the fact that that

outage was extended by 16 days; is that correct?
A Yes.
Q So, first of all, it relates to some foreign material that was discovered inside the turbine; is that correct?
A Yes, that's correct.
Q And do you know when that material was discovered? What date?
A I believe I have the specific date in front of me but I know it was during that planned outage that began on March 17th.
Q Would that discovery have been on April 1st, 2022? Does that sound correct?
A Are you referencing the discovery response -- or the discovery we --
Q Yes.
A -- sent to -- for that response? That seems correct.
Q Okay. So at that time, the Company had made a decision that they would have to remove the shell that protects the turbine; is that correct?
A At which time? I'm sorry.
Q When the foreign material was detected?
A Yes, that is correct. They found -- through a

routine inspection found the foreign material lodged in the turbine and made the decision then that it needed to be removed.

Q How long did it take to remove the shell?

A To remove the shell itself?

Q Yes, so they could start working on correcting the problem.

A Let me see if I have that in my discovery responses. But if you know of a discovery response that it was you can point me there but, if not, I'll look.

Q Yeah, I don't have a reference to a discovery response. But I do believe it took at least one month to remove the shell. Does that sound correct for you?

A Subject to check, I would accept that.

Q And the outage was originally contemplated to end on April 24th; is that correct?

A I believe, subject to check, I would accept that.

Q And as a result of the discovery of the foreign material and the correction of that, the outage actually was completed on May 8th, which would be the 16 days that you reference in your testimony?

A Well, so this unit -- May 8th -- it came online

for about two hours. So similar to how there was a planned outage and then an issue discovered after that outage, then once -- during start up there was another issue discovered. So it looks like that, you know, there was a string of outages that ended May 12th for a few issues.

Q And that's the 16 days that you reference in your testimony?

A The 16 days is the I believe April 22nd through May 8th for that one instance --

Q Yeah, right.

A -- not the preceding outage, either the outage before or after.

Q Okay. So do I understand that you've been critical of the Company not providing adequate and timely responses to the data requests that were submitted by the Public Staff and presumably by you since you were working on this investigation?

A I wouldn't characterize it that way. I believe the data requests that were submitted in this case, the Company has been responsive to the -- you know, one of the concerns I have is about a standing, I believe it's been characterized as a

standing agreement that the Company has with the Public Staff. We have that same agreement or at least a very similar agreement with this Company, DEC, Duke Energy Progress, and Dominion Energy to provide documentation related to outages because of the amount of time and complexity that outages involve for investigation.

Q Was there anything different about this test year compared to previous test years with regard to that information?

A No. But I am not sure that that is not part of the problem. I can't testify as to what was not received. I know that I did not get outage documentation in some cases the past few years. I do remember I looked back and last year at least there was nothing provided but I can't say that nothing should have been provided.

Q Have you ever complained to the Company about the lack of receiving information in prior cases?

A I believe this agreement has had a few iterations, is my understanding, and so me personally I would say no. But I would also say that the Public Staff has had conversations with the Company to adjust the documentation given as

necessary and I believe that this may be one of the cases that it is necessary.

Q Do you recognize that there's a difference in the manner in which the Company reports outages with regard to the nuclear units compared with the fossil units?

A I do realize that, yes.

Q So looking very quickly at the timing of some of your data requests with regard to the outages or the data requests that you submitted, DR-7 related to the Belews Creek outage; is that correct?

A It was related to -- Belews Creek outage was discussed in that DR as well as W.S. Lee.

Q Yes. And you submitted that -- or the Company received that on March 27th and provide answers on, I believe, April 10th; is that correct?

A Yes, that is correct.

Q And then you also had some follow up in your data request on April 20th with regard to Unit 2 at Belews Creek, and the Company actually responded -- and there were 34 different data requests. The Company actually responded in seven days; is that not correct?

A I believe that is correct.
Q And then you also followed up with a data request 23 which was submitted on April 24th. The Company responded on May 2nd which is seven work days; is that correct?
A Yes, I believe that's correct. And I appreciate the Company's responses on those. And we were at that time -- you know, the dates you gave -- our testimony was due on May 9th, so we were trying to, really trying to finish our investigation into those outages at that time and trying to get information that we needed to come to a conclusion.
Q And I gather there's some concern about the fact that you weren't able to get some meetings with the Company personnel SMEs to talk about these, which in the past the Company and the Public Staff have engaged in; is that correct?
A Yes, that's correct. And I did discuss that in my testimony and I realize that there were scheduling conflicts which do occur.
Q And the Company did attempt to offer times when they were available to have those informal discussions which are not actually formal data

requests under the discovery process; is that correct?

A That is correct. Yes.

Q You did follow up with the Company's rebuttal, the last rebuttal filed by Witness Flanagan with your Data Request Number 30, and at least six of those related to the Belews Creek outage; is that correct?

A I believe that is correct. Yes. About the number is what I am not sure but subject to check on the six.

Q And did you learn anything different in those responses that you didn't have before with regard to the previous data requests?

A So those responses and those questions were asked to give insight as to the Company's procedures and their -- excuse me. Let me look just to make sure I'm getting this correct here. The short answer is, yes, I do believe that I've learned information.

Q Okay.

A I did learn information through that response.

Q So you were asked some questions by counsel for CUCA with regard to settlements in other dockets.

You were referenced the Dominion Energy North Carolina Settlement. And that particular Docket E-22, Sub 515, would you agree with me that the Company actually agreed to a settlement. That was a settlement. That was not a Commission Order dictating that the Company should recover the fuel period longer than the statutory period set forth in G.S. § 62-133.2; is that correct?

A So again, I don't have any more knowledge of this case than what I have read right here. But in that Order, Ordering Paragraph 16 it says that it is appropriate to accept the Company's mitigation proposal to have rates established in this proceeding to recover 50 percent of the test period fuel expense under-collection of the 2015 fuel year and 50 percent in the 2016 fuel year without interest.

I don't see in here that there is mention of a settlement.

Q So that's a proposal that the Company set forth. That was not ordered that the Company have to do that the way you read that; is that correct?

A That is correct that it does appear that the Commission accepted the Company's proposal.

Q Yes.
A And the Company in that case --
Q As the Commission might do with the Stipulation in this case.
A Yes.
Q And also mention was made of the Duke Energy Progress Docket E-2, Sub 929, 2008, and that was represented as a settlement over a three-year period; was it not?
A That one I do know was part of a settlement that was reached between the Company and the Public Staff. I'm not sure - I do see that there were a number of other parties included in that settlement.
Q You'll probably see my name on that Order, too, if you look at it. I was there.

MR. KAYLOR: No further questions.

COMMISSIONER KEMERAIT: And Mr. Freeman, before we begin, how long do you think your redirect will be?

MR. FREEMAN: A few minutes. Twenty. Fifteen.

COMMISSIONER KEMERAIT: Okay. We have -- we'll go ahead and take a short break. We have

scheduling constraints because some of the Commissioners need to be at a hearing this evening. So we are going to try to get through the hearing today. But let's take -- let's be back at 3:25. And we'll move through as quickly as we can and try to get this done so the Commissioners can get to their hearing.

(A recess was taken from 3:12 p.m. to 3:25 p.m.)

COMMISSIONER KEMERAIT: Let's go back on the record. Before we begin Mr. Freeman with your redirect examination, I want to talk a little bit about the plans for the rest of the afternoon and the scheduling.

We have two Commissioners that have a scheduling conflict that are going to have to be leaving. And so I first want to check to see if any of the parties will object to the Commissioners who have to leave reading the transcript of the proceeding in which they are not present for.

MR. KAYLOR: No objection from Duke.

MR. FREEMAN: No objection from the Public Staff.

MR. MAGARIRA: No objection from SACE.

MR. TRATHEN: No objection.

MR. CONANT: No objection from CIGFUR III.

COMMISSIONER KEMERAIT: Okay. Thank you. Seeing no objection from any of the parties, we'll proceed in that way.

Also, we are not planning to go into tomorrow so we are planning to continue with the hearing and let's be very -- let's work hard to ask the questions that need to be asked, but we are wanting to finish up by 5:00 today. So we will be done this afternoon and we are not going to be going into the hearing tomorrow.

With that, Mr. Freeman, you may begin.

MR. FREEMAN: Thank you, Commissioner.

REDIRECT EXAMINATION BY MR. FREEMAN:

Q Mr. Lawrence, you were asked about some outage reports. And I believe that you received an outage report about the W.S. Lee out, correct?

A (Mr. Lawrence) Yes, that's correct.

Q And you received one about the Belews Creek outage?

A I received a Root Cause Analysis Report for the Belews Creek outage.

Q Did you receive those from the standing agreement?

A No, I did not.
Q How did you receive them?
A In the Public Staff Data Request 7, I had requested a number of documents or types of documents relating to those outages and I had asked that question as a check. I had believed that I would have received outage reports in response to the standing agreement we have which asks for outage reports. So I was honestly a little surprised to receive the documents in response to that question.
Q Is that when you first you had an inkling that the standing agreement wasn't capturing all the information you thought it was?
A Yes, that's correct. I didn't know before then that the question needed to be asked or that we were not receiving, or may not be receiving what we had been expecting through that agreement.
Q And that was in April?
A I asked -- the data request was sent in April. Yes.
Q Okay. Y'all were asked several questions about EDIT mitigation. If we took the EDIT money that is currently being flowed back to customers, we

took it out of the settlement, the settlement out of the rate case and put it into fuel, what would happen to the fuel -- to the base case the minute that happened?

A (Mr. Brown) Base rates would increase.

Q Right away?

A Right away. As soon as it's implemented. As soon as it's implemented base rates would increase.

Q Okay. And in the future, what would happen to rates when the EDIT is no longer available to suppress rates?

A Rates would increase.

Q Was EDIT an obligation that existed before this fuel case was filed?

A Yes, it was.

Q And if EDIT is pulled out of the Settlement and into the fuel case, would it skew how it's allocated versus in the base case now versus how it would allocated under this equal percentage in the fuel case?

A Yes. The flow back would be skewed because of the equal percentage allocation methodology as opposed to how it's allocated in the base case --

rate case.
Q Thank you. Do we support the Settlement in 20 -- the Settlement that caused EDIT to exist? Do we support that?
A Yes, we do.
Q Do we support the Settlement in this case.
A Yes, we do.
Q Are we in favor of reopening old settlements or this settlement?
A We are not.

MR. FREEMAN: One moment please.

(Discussion at counsel table)

MR. FREEMAN: Thank you. I don't have any more questions. And I apologize, we narrowed it down after I told you that.

COMMISSIONER KEMERAIT: Mr. Freeman, you narrowed it down significantly.

MR. FREEMAN: Thank you.

(Laughter)

COMMISSIONER KEMERAIT: So I'll begin with a few questions and I think my fellow Commissioners have some questions as well, and all of my questions are going to be directed to you, Mr. Lawrence, and they are not related to the specifics about the outages

that I think Mr. Kaylor asked you questions about. It's more about what you thought you would be receiving and didn't receive. So that's kind of the focus of what I'm going to be asking.

EXAMINATION BY COMMISSIONER KEMERAIT:

Q And you talked about the agreement between the Public Staff and DEC related to the monthly power plant performance reports. Is that what the agreement relates to?

A I am not completely sure that it's in relation to that specific requirement. It may be specifically for fuel to receive those outage reports, because as I said earlier these outages take a long time to review. They can be very complex. And it can be receiving the information, the outage reports, and the information we expect at the beginning of the case, we can still have issues to be able to complete our investigation and our testimony within the confines of the case.

Q And can you be very specific about what you and the Public Staff believed you should be receiving or would be entitled to receive under that agreement that you did not receive? So what

specifically did you expect to receive pursuant to that agreement?

A So, as Mr. Kaylor asked about before, they're -- I realize there is a difference between nuclear documentation and everything else. Nuclear has stricter standards and more reports are provided. So I'm not expecting -- I wouldn't expect an outage report to be provided for every single outage.

In our DR-8, Public Staff Data Request 8, we asked about how many outages there were, duration, what plant. The response they gave us in the test year, there were over 420 outages. So I absolutely don't expect a document for every one of those.

However, for the nuclear outages, we do receive what are called either "Root Cause Analysis" or "Root Cause Evaluation Reports". So if the plant goes offline, there is a report, there's an investigation completed, and there's a report completed for that investigation. We receive that documentation.

In this case, in the Data Request 7, you know, there has been talk of the

W.S. Lee outage report. That one -- the standing agreement asks for outage reports specifically. That one the title of the document is an "Outage Report". That is completely one that I would have expected to be provided.

The Root Cause Analysis Reports or Root Cause Evaluations, or RCA or RCE, those I could see that the Company would believe that they may not be just giving the benefit of the doubt there. However, I don't see how an outage report, a document titled "Outage Report" could not be in response to an agreement asking for outage reports.

Q So that's helpful. And just to make sure that I'm clear on which investigations the Public Staff hasn't completed or provided a recommendation for, it looks like from your -- please tell me if I'm correct -- it's for three, the Belews Creek Unit 2 outage on April 22nd, 2022, and then the following outage on August 31st, 2022, and then the W.S. Lee outage. Are those the only three that you have not completed your investigation and provided a recommendation?

A That is correct. Or there are some -- some outages we don't look at. These are the ones that I've started an investigation into and, you know, really, really want to be able to complete that investigation and provide the Commission with those results.

Some of the outages we looked at, we didn't feel there was enough there to continue it. So, of course, I'm not asking for those to be left open. But those are the ones, the three you just mentioned are the three, especially the W.S. Lee outage, because it relates to -- you know, that plant was offline in two test years. It was offline during Winter Storm Elliott when we had significant issues with our power quality across the State and rolling blackouts. So, I would also caveat that by saying that I don't -- I also don't want this case to determine the outcome of our investigation into that, the M-100, Sub 163 Docket where we are investigating the events during of Winter Storm Elliott as well.

Q And then to make sure I understood your testimony about the supplemental filing that you talked

about that the Public Staff is going to be making, which outage would be the subject of the supplemental filing that you said that you, the Public Staff, would be able to complete the investigation as soon as possible and make a supplemental filing? Which one was that?

A So at this time, the April outage at Belews Creek -- let my check to make sure I get the dates correct here.

(Witness peruses documents)

A So the outage beginning at Belews Creek Unit 2 beginning April 22nd. At this time, based on information received on Friday, this past Friday, I would have enough information that I would be comfortable making the recommendation. And so that one I do plan to immediately start drafting and filing, to file testimony.

The Belews Creek Unit 2 outage in August, I am currently working on questions and drafting a request, if the Company would not object to the response at this time, to hopefully finish up my investigation of that very soon and be able to make a determination.

So the April outage, I am

ready to start drafting my testimony now. I have the information. The August outage, I am still getting what I believe to be the last bits of information that I need and would be filing testimony as soon as possible.

Does that answer your question?

Q And just to make sure that I'm clear about how it's going to work from a procedural standpoint. So the evidentiary hearing will presumably will be finished today and you will be providing a supplemental report or supplemental testimony. Are you asking that your recommendation to be deferred until the next fuel proceeding or to be incorporated so that your recommendations in regard to the April 22nd, 2022 outage and the August 2022 outage. What will you be asking the Commission to do? To consider it in this fuel proceeding or in the next?

A Well, I believe I would be, of course, open to whatever the Commission preferred that approach be.

Q Okay.

A I don't know exactly when I can have a -- my

investigation and testimony done for that second Belews Creek outage. And of course, for the W.S. Lee outage, that one has other events that are making it much more complicated than just an outage investigation would normally be.

So I believe for the April outage I could have something filed before the end of this month. And I realize that rates for this case, the rate period began September 1. So I believe beyond that we might be getting too late for this case and I'm not sure I could comply with that deadline in this case for that August outage.

Q Okay. Well --

MR. KAYLOR: Commissioner Kemerait?

COMMISSIONER KEMERAIT: Yes.

MR. KAYLOR: Could we reserve a right to object to any supplemental testimony til we see it. We're not aware that there's a procedure to allow supplemental testimony in this proceeding. So we would reserve the right to object to any offering of any supplemental testimony by this witness.

COMMISSIONER KEMERAIT: Yes. You may reserve the right to object.

MR. KAYLOR: Thank you.

BY COMMISSIONER KEMERAIT:

Q And one last question about -- I think DEC Witness Flanagan took some issue with the fact that the investigation and recommendation had not been completed and said that the Public Staff had had ample time to send additional discovery to obtain the information that you needed.

Can you just respond to that testimony and statement from Witness Flanagan?

A (Mr. Lawrence) Yes, I can. And I can -- from the outside looking in at what we do, I can absolutely see why that statement would be made. However, I believe that it is incorrect partly because of what I discussed earlier about the timing of receiving documents.

So I received the documents to this data request which I did not expect to even exist in mid-April and, let's see, the 10th I believe was when one of them -- there was an issue with one document for the Belews Creek outage, the RCA, so it was a few days later. And so the -- for those outages, they take three or four data requests to really understand the

issue, to really feel like we have an ability to make a recommendation to the Commission on those cases. And typically there's a 10-day window for responses. So we can be just waiting for 30 to 40-days in a case.

When I sent that DR in April, not expecting to receive that documentation, and we're already -- this case was filed in late February. We have a testimony deadline on May 9th. And one more data request, another 10 days on top of that, which I believe in this case it was actually seven which the Company complied with and agreed to, and I am very thankful that they did that, but even seven more days of just waiting here.

We can really quickly start to be pushing up against deadlines to be able to prepare and provide testimony. And that's why that standard agreement is in place. It's for this very purpose. And why we have the informal phone calls with the technical staff to receive information to really narrow down our scope, because those phone calls are immensely helpful. We have them every year with the nuclear staff

and it narrowed -- you know, in an hour and a half phone call we can narrow down our investigation and it takes away a hundred questions or more that we have to ask. And unfortunately, in this case, we weren't able to do that. We received information later than what we expected and we -- you know, this wasn't the only case, of course, that we're working on. As you guys are very well aware, we're all very busy otherwise on top of this so.

I don't feel in this case that even given the Company's responses to the data requests in the time that we asked for and the time they did that I was able to really complete my investigation.

COMMISSIONER KEMERAIT: Thank you, Mr. Lawrence. That's all the questions I have. Let me check with the other Commissioners to see if they have questions. Chair Mitchell?

CHAIR MITCHELL: Just a quick question for the Panel.

EXAMINATION BY CHAIR MITCHELL:

Q In the Stipulation, I'm looking at -- do y'all have the Stipulation in from of you? The

Settlement Agreement?

MR. FREEMAN: May I approach?

COMMISSIONER KEMERAIT: Yes, you may.

BY CHAIR MITCHELL:

Q So I'm looking at page 4, paragraph 3 in section 3. It's in the "Resolved Issues", discusses the April 2023 fuel forecast. What can you-all tell me about that issue?

There was testimony provided by the Company in rebuttal. It was actually revised rebuttal testimony explaining that an error had been found in its forecast and it had corrected that error. But can you help me understand, sort of, the impact of using that -- why did you-all settle on using the -- on the April 2023 fuel forecast? Let me just ask it that way.

A (Mr. Lawrence) I'm not really sure about the error, but there are advantages to using a more up-to-date forecast. Of course, the one that was filed and -- let's see.

Q Can you help me understand what those advantages are?

A I'm trying to make sure that this is -- actually

we had several discusses on which forecast to use. But I would just say in general I believe this is comparing to the as-filed forecast. So the difference between January versus May is this year they did their initial forecast a little bit later than normal to help with the maybe fuel volatility that may have occurred. We just have a five-month later forecast. So the billing period hasn't changed but we're five months closer to it. So it's just a better, a more accurate forecast at this point based on things that we -- maybe weather and customer growth changes that may have been made between, over the last five months so we just felt -- I believe it's just more, a little more accurate, so a little more appropriate to use for this case.

Q Okay.

CHAIR MITCHELL: That's all. Thank you.

COMMISSIONER KEMERAIT: Commissioner Clodfelter?

EXAMINATION BY COMMISSIONER CLODFELTER:

Q Mr. Lawrence, I want to be sure I understood the import of the correction you made to your

testimony, at the beginning of your direct testimony. If I understood the correction correctly, the import is to say, that we should take away from that, the Public Staff does not now take the position that the December outage at W.S. Lee was preventable. Is that correct?

A That it was preventable. That is correct. Because at this time I have not been able to complete enough of an investigation to make that statement. I am not recommending that any other part of my testimony be changed including where that that investigation be left open and that -- you know, I cannot say one way or the other for that outage at this time.

Q I'm glad I asked for the clarification. It's not that you're now taking a position that it was not preventable, it's that you're unable to take any position on the question.

A That's correct. Yes.

Q And that was the purpose of the clarification you made to your testimony.

A Yes.

Q Thank you.

COMMISSIONER KEMERAIT: Okay. It looks like no additional questions from the Commission. Questions on Commission questions?

MR. TRATHEN: None.

MR. CONANT: None from CIGFUR.

COMMISSIONER KEMERAIT: Okay.

MR. MAGARIRA: None.

COMMISSIONER KEMERAIT: DEC?

MR. KAYLOR: Just a couple.

EXAMINATION BY MR. KAYLOR:

Q You referenced a standing agreement that the Public Staff and the Company has; is that correct?

A (Mr. Lawrence) Yes.

Q And does that require a semi-annual type response from the Company?

A Yes.

Q And so with regard to W.S. Lee, you couldn't get any information on a semi-annual since an outage report takes place after the outage is finished; is that not correct?

A Correct.

Q And the semi-annual or the standing agreement, it's not part of the discovery process in this

docket, is it?
A No. My understanding is that we have that agreement to be able to get the information in a timely manner because if we would send this on the first day of discovery, 10 days later we'd receive those responses. And for the issues I discussed about how long it takes and the complexities of the outages. I think all companies that have a fuel case here in North Carolina have agreed to at least very similar terms.
Q And as I asked previously, there's nothing different in this case and previous cases that you've been involved in with the Company with regard to that agreement?
A That's my understanding. However, like I said before, I don't know though that that means that I've been getting the correct information in the past.
Q Thank you.
MR. KAYLOR: That's all I have.
EXAMINATION BY MR. FREEMAN:
Q Mr. Lawrence, are you aware of any other times when carry-over costs have gone from one Fuel

Rider to the next?

A Yes, that has happened in this case specifically. But in past cases, I can't think of a -- I can't tell you a specific time when it's happened. But when the Company has been able -- unable to create outage reports specifically for a nuclear outage which may have been late in the test year and the outage report may have not come available until late in our investigation period, they have agreed to leave that outage open for a future case or for the next case.

Q Did you say it happened in 1282?

A Yes. Last year, as I discussed in my testimony, Clemson CHP had -- there was a billing error associated with the steam host, Clemson University. The Company and the Public Staff agreed that when that issue was found last year it would be corrected and updated in this case. And that was for costs that were in last year's test year, last year's EMF which were carried over to be reflected in the current EMF period.

MR. FREEMAN: If I can have one moment.

(Discussion at counsel table)

MR. FREEMAN: Thank you. I don't have any

more -- the Public Staff doesn't have any more questions. Thank you.

COMMISSIONER KEMERAIT: Well, it comes to end of the questions for the Panel. Thank you for your testimony and may be excused.

THE WITNESS: (Ms. Zhang) Thank you.

COMMISSIONER KEMERAIT: Now, I think I will hear motions from the Public Staff and from CUCA.

MR. TRATHEN: CUCA would move admission of its cross examination exhibit for the Panel.

COMMISSIONER KEMERAIT: The motion is allowed.

(WHEREUPON, CUCA Public Staff Panel Cross Exhibit 1 is received into evidence.)

MR. FREEMAN: Public Staff would move into evidence the Exhibits 1 through 4 of Mr. Lawrence, some of which contain confidential information. And the Public Staff would move Appendices A and B from the prefiled joint testimony of Ms. Zhang and Mr. Brown, and Appendix A from Mr. Lawrence, also, into evidence.

COMMISSIONER KEMERAIT: Seeing no objection, the exhibits and the appendices will be admitted into

the record.

(WHEREUPON, Lawrence Exhibits 1-4 are received into evidence.)

COMMISSIONER KEMERAIT: And with that, I think that we have heard from all of the witnesses unless there are witnesses that I am not aware of. Okay.

MR. CONANT: Just -- Presiding Commissioner Kemerait, I believe you already addressed this at the beginning of the hearing, but just to confirm for the record, CIGFUR III wanted to make sure that testimony of Witness Brian C. Collins consisting of 10 pages and one Appendix filed in this docket on May 9th, 2023, is entered into the record as if given from the stand.

COMMISSIONER KEMERAIT: Yes. I believe that the Order has already addressed that and admitted his testimony and exhibits into the record. But in the event that it did not, I will grant your motion and allow the testimony into the record.

MR. CONANT: Thank you.

(WHEREUPON, the prefiled direct testimony and Appendix A of BRIAN C.

COLLINS is copied into the record as if given orally from the stand.)

STATE OF NORTH CAROLINA

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of:	)	
Application of Duke Energy Carolinas, LLC Pursuant to N.C.G.S. § 62-133.2 and Commission Rule R8-55 Regarding Fuel and Fuel-Related Cost Adjustments for Electric Utilities	)	**DOCKET NO. E-7, Sub 1282**

Direct Testimony of

Brian C. Collins

On behalf of

CIGFUR III

May 9, 2023

BRUBAKER & ASSOCIATES, INC.

Project 11478

STATE OF NORTH CAROLINA

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Table of Contents to the Direct Testimony of Brian C. Collins

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Direct Testimony of Brian C. Collins

I. INTRODUCTION AND SUMMARY

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A Brian C. Collins. My business address is 16690 Swingley Ridge Road, Suite 140, Chesterfield, MO 63017.

Q WHAT IS YOUR OCCUPATION?

A I am a consultant in the field of public utility regulation and a Managing Principal of Brubaker & Associates, Inc., energy, economic, and regulatory consultants. Our firm and its predecessor firms have been in this field since 1937 and have participated in more than 1,000 proceedings in 40 states and in various provinces in Canada. We have experience with more than 350 utilities, including many electric utilities, gas pipelines, and local distribution companies. I have testified in many electric, gas, and water rate

proceedings on various aspects of ratemaking. More details are provided in Appendix A of this testimony.

Q ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?

A I am testifying on behalf of a group of intervenors designated as the Carolina Industrial Group for Fair Utility Rates III ("CIGFUR III"), a group of large industrial customers that purchase power from Duke Energy Carolina ("DEC," "Duke," or "Company"). CIGFUR III's members receive electric service from Duke primarily under Rate Schedule OPT.

Q HAVE YOU FILED TESTIMONY IN A PRIOR PROCEEDING BEFORE THE NORTH CAROLINA UTILITIES COMMISSION ("COMMISSION")?

A Yes.

Q WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A I am filing testimony on behalf of CIGFUR III's member companies to urge the Commission to lessen the rate shock and mitigate the financial harm resulting from this extraordinary and abnormal increase in fuel and fuel-related costs filed in this proceeding.

Q DOES YOUR TESTIMONY ADDRESS DEC'S NEED FOR AN INCREASE IN FUEL RATES?

A No. In order to make my presentation consistent with the revenue levels requested by DEC, I have, in many instances, used the Company's proposed figures for fuel cost. Use of these numbers should not be interpreted as an endorsement of them for

purposes of determining the total dollar amount of fuel increase to which DEC may be entitled.

Q PLEASE DESCRIBE DEC'S PENDING FUEL APPLICATION.

A The Company requests an increase for the September 2023-August 2024 Billing Period of $934.2 million, which includes a fuel under-recovery of $998 million. As explained by DEC, the fuel under-recovery was largely driven by abnormal and unexpected commodity price increases that occurred in the previous period.

The increase in the fuel rate as proposed by DEC will result in an approximate 18% increase to total bills for all customers. This increase is significant and, if approved in its entirety, will have a detrimental impact on DEC's industrial customers.

Q WHAT IS RATE SHOCK AND WHY SHOULD IT BE AVOIDED?

A Rate shock refers to a large increase, particularly when it is unexpected.

Q HOW WILL THE REQUESTED INCREASE IMPACT DEC'S INDUSTRIAL CUSTOMERS?

A The Company serves major industrial facilities including CIGFUR III's members. Large industrial customers generally use power for around-the-clock manufacturing operations and operate at high load factors. A high load factor means a customer is using relatively more energy in relation to the demand for power. Energy usage is a much larger portion of the total bill for a large high load factor customer as compared to a smaller, lower load factor customer.

The proposed fuel increase will significantly increase the cost of energy for DEC's industrial base. Energy costs are essential to the manufacturing processes of

these customers. In addition, energy costs are one of the most important factors considered when manufacturers are making business decisions such as where to locate new facilities, expand existing facilities, or, where no longer competitive to operate, reduce operations or even close facilities. Along these lines, North Carolina has to compete not just regionally, but nationally and globally, for the siting or expansion of facilities that in turn employ North Carolinians, inject large revenues into the local tax base, and stimulate the local economy directly and indirectly through the economic multiplier effect. In my opinion, the proposed increase (1) will impose an undue burden on DEC's industrial customers; (2) clearly constitutes rate shock; (3) makes North Carolina a less competitive place to do business; and (4) would result in detrimental consequences for both the local economies where these industrial customers operate and the overall North Carolina economy.

Q WHY MUST THE ABOVE-STATED HARM TO NORTH CAROLINA'S INDUSTRIAL BASE BE AVOIDED?

A CIGFUR III's member companies constitute a significant portion of the industrial base of DEC's service area. CIGFUR III members are major employers in the counties where they have manufacturing plants, and the jobs they provide are vital to the local economies. Together, CIGFUR III members provide thousands of direct jobs in the DEC service area. The economic effect of these jobs is of course multiplied by other businesses and jobs indirectly created because of the existence of CIGFUR III members' manufacturing operations and workforce.

Q DO YOU HAVE A PROPOSED A SOLUTION TO MITIGATE THE IMPACT OF THE LARGE UNDER-RECOVERY ON ITS NORTH CAROLINA RATEPAYERS?

A Yes. I recommend a two-prong approach. First, any increase granted should continue to be spread to classes on an equal percentage basis, consistent with past practice. The increases in fuel costs are abnormal, and to a large extent due to an extension of the COVID-19 related supply chain issues and also in part caused by the energy crisis associated with the war in Europe. The fuel increase in this filing is more like a tax or surcharge than a normal increase in commodity costs. This type of abnormal increase is more appropriately reflected by an equal percentage increase to customer bills as proposed by DEC.

Both Duke Energy Progress, LLC (DEP) and DEC have used this approach for many years in North Carolina. This approach is inherently fair, particularly for these abnormal circumstances. The volatility of cost changes is "dampened" by this method and overly harsh increases are to some extent reduced.

It should be noted that while the high load factor customer class sees reduced impacts during times of fuel cost increases, these customers receive less of a reduction during times of fuel cost decreases, making the approach symmetrical and fair over time. Certainly, fuel costs are expected to return to normal in the future and should, in theory, be significantly lower as additional renewable generation is added to DEC's generation resource mix consistent with the policy goals set forth in House Bill 951 (HB 951).

Q WHAT IS THE SECOND PRONG OF YOUR RECOMMENDED APPROACH?

A An interest-free deferral or spreading out of the increase, particularly for the under-recovered amount from the previous period is warranted, at least for the industrial class of customers.

Q SHOULD THERE BE AN AVERSION TO A DEFERRAL TO A FUTURE PERIOD?

A No. Deferrals are often used. This Commission recently deferred the return of ratepayer money associated with the over-collection of federal taxes. The return of excess deferred income taxes ("EDIT") to ratepayers is currently included in DEC rates. These deferrals associated with the over-collection of federal taxes can last years before being returned to customers. The deferral of an abnormal cost in this fuel proceeding is appropriate and will to a certain extent lessen rate shock and help allow industrial customers continue to operate in North Carolina.

Q HAS THE COMMISSION PREVIOUSLY APPROVED THE DEFERRAL OF A LARGE FUEL EXPENSE FOR ANY UTILITY?

A Yes. In Dominion Energy North Carolina's ("DENC") 2014 fuel proceeding, Docket No. E-22, Sub 515, the Commission concluded that, in order to lessen rate shock to DENC's customers, it was appropriate to approve a mitigation proposal by the Company, which amortized an under-collection over two years without interest. In a similar situation to the large increase requested in the instant proceeding, DEP's predecessor company similarly assisted customers in 2008.

Q HAVE YOU CALCULATED A UNIFORM EQUAL PERCENTAGE AND DEFERRAL APPROACH FOR CONSIDERATION?

A Yes. Since the total increase proposed by DEC is approximately 18%, a uniform equal percentage approach combined with year 2- or 3-year deferral, amounts to a 9% or a 6% increase, respectively. This approach lessens rate shock and helps to manage this abnormal increase. In my view, all customers are better off with this approach.

Q HOW HAVE DEC AND DEP ALLOCATED ANNUAL FUEL AND FUEL-RELATED COST BETWEEN RATE CASES?

A Since approximately 2008, DEP and its predecessor company have implemented annual changes in fuel costs on a uniform bill increase or decrease methodology. This allocation methodology was borne from a Commission-approved settlement agreeing to this methodology between DEP's predecessor company, CUCA, CIGFUR II, and the Public Staff. To my knowledge, this methodology has been approved without objection by any party in every annual fuel charge adjustment proceeding since the order issued in 2008 which is approaching 15 years ago. The method has served ratepayers well and should be continued during this time of increased volatility in fuel prices and upward pressure on electric rates. This method worked so well upon its initial implementation by DEP's predecessor company in 2008 that a few years later, DEC similarly proposed, and the Commission similarly approved, this method for DEC, which has continued for many years. For the reasons previously described, this method is symmetrical and fair over time and should not be changed.

Q WHY SHOULD THIS UNIFORM BILL INCREASE (DECREASE) METHODOLOGY BE MAINTAINED IN THIS PROCEEDING?

A This method has withstood the test of time and changing it now when fuel costs are extremely volatile would be unfair, unreasonable, and disruptive, particularly to high load factor customers. The uniform bill methodology levelizes over time any harsh impacts and results in equal percentage increases or decreases to all customers, which are fair, just, and reasonable. While the high load factor customer classes see reduced impacts during times of fuel cost increases, these same customers receive less of a reduction during times of fuel cost decreases, thereby resulting in a fair and

symmetrical approach over time. Certainly, fuel costs are expected to return to normal in the future and should be significantly lower as additional renewable generation is added to the resource mix.

In addition, many years ago, the fuel adjustment only involved cost recovery for fuel and fuel-related costs. Over time, and pursuant to changes in applicable law, various non-fuel costs have been allowed to be recovered through the fuel rider. Many such costs are basically capital costs. For example, renewable costs, such as purchased power from solar or other renewable energy facilities, are not fuel expenses; yet such costs are allowed to be recovered through the fuel rider. To the extent these costs are included in the annual fuel adjustment, an equal percentage basis is appropriate.

Other things were allowed in the Rider such as chemical cost, transmission charges, power purchases, costs from renewable purchases including capital costs and profit, net gains and losses from sales of by-products including coal ash. These are not fuel costs and contain no btu or heat content. Recovering these costs disproportionately from industrial customers through energy charges collected through the fuel rider penalizes higher load factor customers, who in fact require less costs to serve per unit of energy. This would in turn create more subsidization between customers with varying load factors, thereby rewarding inefficient use of system resources.

Q PRIOR TO ANY POTENTIAL CHANGE IN THE CURRENT UNIFORM BILL INCREASE/DECREASE METHOD, SHOULD CERTAIN REASONABLE MEASURES BE ADOPTED?

A Yes. First, the subsidy paid by industrial customers in base rates should be eliminated. Second, all non-fuel costs should be removed from the fuel adjustment mechanism, including the various non-fuel costs described herein. If both two conditions were satisfied, then it may be appropriate to consider evaluating whether a change to the equal percentage approach is appropriate. Unless and until such time as both conditions are satisfied, however, it would be inappropriate, unreasonable, and unjust to change this methodology. It is important to note that the fuel rider is an annual abbreviated cost recovery mechanism to reflect changes in the base established in the base rate case. The base rate must be set at cost without subsidies before modifications to the annual rider which by its nature is subordinate to the base rate. The current subsidy paid by Rate OPT customers to other DEC customers is $85.4 million, as calculated by DEC in its filing in Docket E-7, Sub 1276, Beveridge Direct Exhibit No. 4_1, which I hereby incorporate by reference.

Q PLEASE ESTIMATE THE BILL IMPACT TO THE INDUSTRIAL CLASS OF A CHANGE FROM THE EQUAL PERCENTAGE APPROACH TO A UNIFORM CENTS PER KWH MECHANISM.

A The industrial class total bill increase would approach 27% if this Commission changed to a uniform cents per kWh mechanism rather than the current equal percentage approach. A customer with a higher-than-average load factor would see an even higher bill increase.

1 **Q DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

2 A Yes, it does.

Qualifications of Brian C. Collins

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A Brian C. Collins. My business address is 16690 Swingley Ridge Road, Suite 140, Chesterfield, MO 63017.

Q WHAT IS YOUR OCCUPATION AND BY WHOM ARE YOU EMPLOYED?

A I am a consultant in the field of public utility regulation and a Managing Principal with the firm of Brubaker & Associates, Inc. ("BAI"), energy, economic and regulatory consultants.

Q PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.

A I graduated from Southern Illinois University Carbondale with a Bachelor of Science degree in Electrical Engineering. I also graduated from the University of Illinois at Springfield with a Master of Business Administration degree. Prior to joining BAI, I was employed by the Illinois Commerce Commission and City Water Light & Power ("CWLP") in Springfield, Illinois.

My responsibilities at the Illinois Commerce Commission included the review of the prudence of utilities' fuel costs in fuel adjustment reconciliation cases before the Commission as well as the review of utilities' requests for certificates of public convenience and necessity for new electric transmission lines. My responsibilities at CWLP included generation and transmission system planning. While at CWLP, I completed several thermal and voltage studies in support of CWLP's operating and planning decisions. I also performed duties for CWLP's Operations Department,

including calculating CWLP's monthly cost of production. I also determined CWLP's allocation of wholesale purchased power costs to retail and wholesale customers for use in the monthly fuel adjustment.

In June 2001, I joined BAI as a Consultant. Since that time, I have participated in the analysis of various utility rate and other matters in several states and before the Federal Energy Regulatory Commission ("FERC"). I have filed or presented testimony before the Arkansas Public Service Commission, the California Public Utilities Commission, the Colorado Public Utilities Commission, the Delaware Public Service Commission, the Public Service Commission of the District of Columbia, the Florida Public Service Commission, the Georgia Public Service Commission, the Guam Public Utilities Commission, the Idaho Public Utilities Commission, the Illinois Commerce Commission, the Indiana Utility Regulatory Commission, the Kentucky Public Service Commission, the Public Utilities Board of Manitoba, the Minnesota Public Utilities Commission, the Mississippi Public Service Commission, the Missouri Public Service Commission, the Montana Public Service Commission, the North Carolina Utilities Commission, the North Dakota Public Service Commission, the Public Utilities Commission of Ohio, the Oklahoma Corporation Commission, the Oregon Public Utility Commission, the Rhode Island Public Utilities Commission, the Public Service Commission of Utah, the Virginia State Corporation Commission, the Washington Utilities and Transportation Commission, the Public Service Commission of Wisconsin, and the Wyoming Public Service Commission. I have also assisted in the analysis of transmission line routes proposed in certificate of convenience and necessity proceedings before the Public Utility Commission of Texas.

In 2009, I completed the University of Wisconsin – Madison High Voltage Direct Current ("HVDC") Transmission Course for Planners that was sponsored by the Midwest Independent Transmission System Operator, Inc. ("MISO").

BAI was formed in April 1995. BAI and its predecessor firm have participated in more than 1,000 regulatory proceedings in forty states and Canada.

BAI provides consulting services in the economic, technical, accounting, and financial aspects of public utility rates and in the acquisition of utility and energy services through RFPs and negotiations, in both regulated and unregulated markets. Our clients include large industrial and institutional customers, some utilities and, on occasion, state regulatory agencies. We also prepare special studies and reports, forecasts, surveys and siting studies, and present seminars on utility-related issues.

In general, we are engaged in energy and regulatory consulting, economic analysis and contract negotiation. In addition to our main office in St. Louis, the firm also has branch offices in Corpus Christi, Texas; Detroit, Michigan; Louisville, Kentucky and Phoenix, Arizona.

COMMISSIONER KEMERAIT: So I think we're at the end of the evidentiary hearing. Are there any additional motions or matters that we need to address before the hearing is adjourned; first, from the Applicant?

MS. TOON: No issues. Thank you.

COMMISSIONER KEMERAIT: From the Public Staff or any of the other parties?

MR. FREEMAN: Nothing from the Public Staff.

MR. TRATHEN: (Shakes head no).

MR. MAGARIRA: (Shakes head no).

MR. CONANT: (Shakes head no).

COMMISSIONER KEMERAIT: Okay. Seeing none, we will have proposed orders due 30 days from service of the transcript. And with that, we'll close the evidentiary hearing and go off the record. And thanks to everyone for your work in this case.

(The proceedings were adjourned)

C E R T I F I C A T E

I, KIM T. MITCHELL, do hereby certify that the Proceedings in the above-captioned matter were taken before me, that I did report in stenographic shorthand the Proceedings set forth herein, and the foregoing pages are a true and correct transcription to the best of my ability.

Kim T. Mitchell

Kim T. Mitchell