NORTH CAROLINA
PUBLIC STAFF
UTILITIES COMMISSION

May 9, 2023

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

Re: Docket No. E-7, Sub 1282 – 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

Dear Ms. Dunston:

Attached for filing on behalf of the Public Staff in the above-referenced docket is the public version of the testimony of Evan D. Lawrence, Engineer with the Energy Division of the Public Staff – North Carolina Utilities Commission.

By copy of this letter, we are forwarding a copy of the redacted version to all parties of record by electronic delivery. Confidential information is located on pages 8-10 and 13-14 of the testimony. Confidential Lawrence Exhibit 2 is confidential in its entirety. The confidential version of the testimony and Confidential Lawrence Exhibit 2 will be provided to those parties that have entered into a confidentiality agreement.

Sincerely,

Electronically submitted
/s/ William S.F. Freeman
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Attachments

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CERTIFICATE OF SERVICE

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

This the 9th day May, 2023.

Electronically submitted
/s/ William S.F. Freeman
Staff Attorney

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]

[END CONFIDENTIAL]

Based on these facts, I believe the Company could have reasonably avoided this outage. **[BEGIN CONFIDENTIAL]** [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.

_____ Exhibit 1: Outages investigated by the Public Staff

Plant	Unit	Start Date	End Date	Outage Duration (hours)	Scheduled/ Unscheduled	Cause
Oconee	2	2/5/2022	2/21/2022	396.12	Unscheduled	Due to loss of all unit 2 reactor coolant pumps, caused by a failed sensing circuit fuse
McGuire	2	2/21/2022	2/27/2022	127.38	Unscheduled	Due to a main feedwater control valve failing closed
WS Lee	CC GT 11	3/11/2022	3/31/2022	481.78	N/A	Turbine damage internally
Belews Creek	2	3/17/2022	4/22/2022	885.98	N/A	Unit 2 Planned Outage for Boiler Minor, ITOT Project, Turbine valve work, etc.
Belews Creek	2	4/22/2022	5/8/2022	396.58	N/A	Foreign material found in the IP turbine. Required removal of IP turbine shell to rem
Belews Creek	2	5/8/2022	5/8/2022	10.00	N/A	IP Turbine Vibration Troubleshoo ing
Belews Creek	2	5/9/2022	5/12/2022	76.00	N/A	Adjusted ground strap along wi h installing a balance shot for #5 bearing vibra ion.
Catawba	2	4/23/2022	4/28/2022	121.60	Unscheduled	Multiple dropped control rods during periodic control rod movement tes ing
McGuire	1	5/1/2022	5/9/2022	196.62	Unscheduled	Refueling outage extension due to main generator hydrogen seal leak
Belews Creek	1	8/12/2022	8/17/2022	116.00	N/A	1A SAH Plugged. Offline SAH wash.
Belews Creek	1	8/17/2022	8/22/2022	130.00	N/A	1-BU-207A Stem nut was stripped.
Belews Creek	2	8/31/2022	10/29/2022	1,409.50	N/A	Belews Creek 2 tripped offline. 2-LP2 Turbine crossover pipe damage.
Belews Creek	2	10/30/2022	11/7/2022	191.00	N/A	Belews Creek 2 manually tripped offline due to water leak in exciter.
Catawba	2	9/10/2022	10/22/2022	508.57	Scheduled	Refueling Outage
Catawba	2	10/22/2022	10/24/2022	104.03	Unscheduled	Extension to the planned refueling outage due to delays in head peening, and reactor SCRAM during startup due to loss of 2B main feedwater pump turbine
WS Lee	CC ST 10	11/3/2022	12/11/2022	911.55	N/A	Generator inspection.
WS Lee	CC ST 10	12/11/2022	12/31/2022*	500.87	N/A	Fire damage discovered in the ST compartment

* This outage extended in to January of 2023, which is not part of he test year in this case.

Lawrence Exhbit 2 is Confidential E-2, Sub 1282

Lawrence Exhibit X: Rate Mitigation Scenarios

Option 1: Rates as filed

	Residential			General Service/Lighting			Industrial		
	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024
EMF Rate (cents per kWh)	0.4863	1.6635	1.6635	0.6254	1.6638	1.6638	0.5726	1.7256	1.7256
EMF Interest Increment Rate (cents per kWh)	0	0	0	0	0	0	0	0	0
EMF Rate Total (cents per kWh)	0.4863	1.6635	1.6635	0.6254	1.6638	1.6638	0.5726	1.7256	1.7256
Increase from previous rate (cents per kWh)		1.1772	0		1.0384	0		1.1530	0
Total RES Bill	$114.56	$133.45	$133.45						

Residential 12-Month Average Rate: 1.6635 cents per kWh

General Service/Lighting 12-Month Average Rate: 1.6638 cents per kWh

Industrial 12-Month Average Rate: 1.7256 cents per kWh

Option 2:

	Residential			General Service/Lighting			Industrial		
	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024
EMF Rate (cents per kWh)	0.4863	0.8318	2.4953	0.6254	0.8319	2.4957	0.5726	0.8628	2.5884
EMF Interest Increment Rate (cents per kWh)	0	0.0000	0.0000	0	0.0000	0.0000	0.0000	0.0000	0.0000
EMF Rate Total (cents per kWh)	0.4863	0.8318	2.4953	0.6254	0.8319	2.4957	0.5726	0.8628	2.5884
Increase from previous rate (cents per kWh)		0.3455	1.6635		0.2065	1.6638		0.2902	1.7256
Total RES Bill	$114.56	$125.18	$144.98						

Residential 12-Month Average Rate: 1.6635 cents per kWh

General Service/Lighting 12-Month Average Rate: 1.6638 cents per kWh

Industrial 12-Month Average Rate: 1.7256 cents per kWh

Option 3:

	Residential			General Service/Lighting			Industrial		
	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024
EMF Rate (cents per kWh)	0.4863	0.6654	1.5526	0.6254	0.66552	1.55288	0.5726	0.6902	1.6106
EMF Interest Increment Rate (cents per kWh)	0	0.0901	0.0901	0	0.0901	0.0901	0.0000	0.0935	0.0935
EMF Rate Total (cents per kWh)	0.4863	0.7555	1.6427	0.6254	0.7556	1.6430	0.5726	0.7837	1.7041
Increase from previous rate (cents per kWh)		0.26920	0.88720		0.1302	0.8874		0.2111	0.9203
Total RES Bill	$114.56	$124.42	$133.30						

Residential 12-Month Average Rate: 1.1090 cents per kWh

General Service/Lighting 12-Month Average Rate: 1.1092 cents per kWh

Industrial 12-Month Average Rate: 1.1504 cents per kWh

Option 4:

	Residential			General Service/Lighting			Industrial		
	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024
EMF Rate (cents per kWh)	0.4863	0.41585	1.24755	0.6254	0.41595	1.24785	0.5726	0.4314	1.2942
EMF Interest Increment Rate (cents per kWh)	0	0.1352	0.1352	0	0.1352	0.1352	0.0000	0.1402	0.1402
EMF Rate Total (cents per kWh)	0.4863	0.5511	1.3828	0.6254	0.5512	1.3831	0.5726	0.5716	1.4344
Increase from previous rate (cents per kWh)		0.0648	0.8317		-0.0742	0.8319		-0.0010	0.8628
Total RES Bill	$114.56	$121.02	$129.34						

Residential 12-Month Average Rate: 0.8317 cents per kWh

General Service/Lighting 12-Month Average Rate: 0.8319 cents per kWh

Industrial 12-Month Average Rate: 0.8628 cents per kWh

Option 5:

	Residential			General Service/Lighting			Industrial		
	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024	Currently in effect	Period 1 September 1, 2023	Period 2 March 1, 2024
EMF Rate (cents per kWh)	0.4863	0.27725	0.8322	0.6254	0.2773	0.8319	0.5726	0.2876	0.8628
EMF Interest Increment Rate (cents per kWh)	0	0.4020	0.1006	0	0.4021	0.4021	0.0000	0.4170	0.4170
EMF Rate Total (cents per kWh)	0.4863	0.6793	0.9328	0.6254	0.6794	1.2340	0.5726	0.7046	1.2798
Increase from previous rate (cents per kWh)		0.1930	0.2536		0.0540	0.5546		0.1320	0.5752
Total RES Bill	$114.56	$121.02	$129.34						

Residential 12-Month Average Rate: 0.5545 cents per kWh

General Service/Lighting 12-Month Average Rate: 0.5546 cents per kWh

Industrial 12-Month Average Rate: 0.5752 cents per kWh

Public Staff
Docket No. E-7, Sub 1282
2023 DEC Fuel
Public Staff Data Request No. 6
Item No. 6-8
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DUKE ENERGY CAROLINAS, LLC

Request:

Please provide DEC's preferred EMF recovery option, along with an explanation of why it is the preferred option.

a. If DEC's preferred option is to proceed "as filed", please identify its second most desirable option, and explain why.

Response:

North Carolina General Statue 62.133-2(d) prescribes the parameters for fuel recovery, where "...The Commission shall incorporate in its cost of fuel and fuel-related costs determination under this subsection the experienced over-recovery or under-recovery of reasonable costs of fuel and fuel-related costs prudently incurred during the test period....in fixing an increment or decrement rider...and the over-recovery or under-recovery portion of the increment or decrement shall be reflected in rates for 12 months...".

The recovery method that is set forth by this statute is DEC's preferred EMF recovery option.

DEC would like to have a conference call with Public Staff to discuss data request 6. We will work with Public Staff technical contacts to get this conference call scheduled in the coming days.

Responder: Sigourney Clark, Rates & Reg. Strategy Manager