

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. E-7, SUB 1263

In the Matter of:)
Application of Duke Energy)
Carolinas, LLC Pursuant to N.C.) **POST HEARING BRIEF OF THE**
Gen. Stat. § 62-133.2 and) **SIERRA CLUB**
Commission Rule R8-55 Relating to)
Fuel and Fuel-Related Charge)
Adjustments for Electric Utilities)

PURSUANT to North Carolina Utilities Commission (“Commission” or “NCUC”) Rule R1-25 and the Commission’s *Notice of Due Date for Proposed Orders and/or Briefs*, issued June 24, 2022, in this docket, the Sierra Club respectfully submits this post-hearing brief in the above-captioned docket.

LEGAL STANDARD

In this annual fuel charge adjustment proceeding, the Commission establishes a rider to allow Duke Energy Carolinas, LLC (“DEC” or “the Company”) to recover certain fuel and fuel-related costs from its customers. N.C. Gen. Stat. § 62-133.2; NCUC Rule R8-55. Section 62-133.2(a1) of the North Carolina General Statutes identifies specific fuel and fuel-related costs that the Company may recover from ratepayers through this rider. Further, the rider must be based on the “reasonable cost of fuel- and fuel-related costs prudently incurred under efficient management and economic operations.” N.C.G.S. § 62-133.2(d). Only “reasonable and prudently incurred” costs are recoverable. NCUC Rule R8-55. Therefore, a thorough examination of DEC’s management and operations is a key part of the Commission’s review in this proceeding. *Id.*

Several guiding principles inform the Commission’s *prudency* review of DEC’s management and operations—and by extension—DEC’s incurred fuel and fuel-related

costs. The burden of proof as to the “correctness and reasonableness of charges” and whether the “cost of fuel and fuel-related costs were reasonably and prudently incurred” rests with the Company. N.C.G.S. § 62-133.2(d); NCUC Rule R8-55(k). NCUC Rule R8-55(e) specifies the minimum filings that DEC must submit for the Commission’s cost recovery determination. “In reaching its decision, the Commission shall consider all evidence required under subsection (c) of this section as well as any and all other competent evidence that may assist the Commission in reaching its decision” N.C.G.S. § 62-133.2(d). The Commission applies the following standard when considering the evidence in the record:

[W]hether management decisions were made in a reasonable manner and at an appropriate time on the basis of what was reasonably known or reasonably should have been known at that time. The Commission notes that this standard is one of reasonableness that must be based on a contemporaneous view of the action or decision under question.

Order Granting Partial Increase in Rates and Charges, Docket No. E-2, Sub 537, at 14 (Aug. 5, 1988), *rev'd in part on other grounds and remanded, Utils. Comm'n v. Thornburg*, 325 N.C. 484, 385 S.E.2d 463 (1989) (hereinafter, “Harris Order”). Ultimately, a “prudent utility strives to minimize its total cost of service.” *Order Approving Fuel Charge Adjustment*, Docket No. E-2, Sub 833, at 17 (Sept. 25, 2003) (hereinafter, “2003 Fuel Order”).

ARGUMENT

A. Gas Market Volatility and DEC’s Reliance on Gas Are Rapidly Increasing

Gas markets are inherently volatile.¹ The parties are largely in agreement about the drivers of this volatility, which include traditional supply and demand factors that affect

¹ Tr. 63:19, 64:21-65:11, 71:6-7, 82:8-10, 186:23-24.

gas prices over the *long term*. However, recent developments have elevated gas prices far above historical averages. Additionally, DEC has significantly increased its reliance on gas over the past two decades, which is contrary to its duty to minimize its total fuel costs. 2003 Fuel Order at 17.

Both domestic and international supply and demand factors have historically driven volatility in gas markets.² Domestically, gas demand is the key driver.³ Presently, there are few commercially viable substitutes for gas for generation other than renewable energy and storage.⁴ For instance, diesel oil, a traditional alternative, is no longer viable due to current market volatility. Furthermore, adoption of cost-effective substitutes for other gas end uses such as heating has been slow.⁵ Accordingly, demand for gas power generation is relatively inelastic.⁶ In addition, seasonal gas demand for heating and power generation is heavily weather dependent, which further exacerbates volatility.⁷ With regards to supply, gas reserves are highly constrained in the short term; the capital-intensiveness of the gas industry restricts suppliers from rapidly ramping up or scaling down production in response to market signals.⁸

While reflective of traditional supply and demand drivers, a few factors are primarily responsible for the current, substantial volatility in the gas market. First, as the U.S. economy began to recover from the COVID-19 economic downturn, pent up commercial and industrial demand exerted significant upward pressure on gas prices.⁹

² Tr. 186:6–8, 24.

³ Tr. 187:1.

⁴ Tr. 187:2–3.

⁵ Tr. 187:4–6.

⁶ Tr. 187:1–2.

⁷ Tr. 65:2–3, 187:7–10.

⁸ Tr. 187:10–12.

⁹ Tr. 63:6–8, 187:13–17.

Second, the U.S. is projected to become the world's largest exporter of liquefied natural gas ("LNG"); this development has spurred competition among domestic suppliers for limited export terminal capacity, which in turn has increased gas prices.¹⁰ Third, the Russia-Ukraine war and Europe's desire to reduce its Russian gas imports, in part, through U.S. produced LNG has further constrained supply.¹¹ In turn, financial markets have struggled to respond to these domestic and international developments, further exacerbating volatility.¹² Finally, given historically low gas prices, producers have been hesitant to respond by increasing gas production, as increased supply would further curtail profits.¹³ Collectively, these factors and others have generated high gas price volatility and high gas prices, which will likely continue for the next few years.¹⁴

While DEC has little to no control over the *factors* that drive gas market volatility, it does, as a DEC witness readily concedes, retain significant control over its plant operations.¹⁵ DEC "control[s] what resources it seeks to add to its system and the resources for which it seeks Commission approval."¹⁶ Conversely, subject to regulatory approval, DEC can retire existing resources. N.C.G.S. § 62-110.1; NCUC R8-60. DEC also controls "how it procures fuel."¹⁷ Furthermore, DEC, like other balancing authorities, determines which generating units should be operated and connected to the grid to satisfy demand or load, i.e., unit commitment, and what level of generation output from already committed units will most effectively reduce costs, i.e., economic dispatch.¹⁸ Subject to Commission

¹⁰ Tr. 187:17–188:3.

¹¹ Tr. 188:13-16.

¹² Tr. 188:3–5.

¹³ Tr. 65:1-3, 187:8-10, 188:18-189:2.

¹⁴ Tr. 121:10-14.

¹⁵ Tr. 142:11-15. *See also* Tr. 123:19-21.

¹⁶ Tr. 142:16-20.

¹⁷ Tr. 123:20.

¹⁸ Tr. 61:15-24; 62:1-13.

oversight, these decisions, which are largely within DEC's prerogative and discretion, contribute to the nature and scale of incurred fuel and fuel-related costs.

Despite its significant control, DEC continues to increase its reliance on more risky and costly gas resources;¹⁹ this is directly contrary to its obligation to minimize its total cost of service. 2003 Fuel Order at 17. When coupled with market volatility, more burned gas will likely increase DEC's total fuel costs.²⁰ During the last two decades, DEC has built four new gas plants providing 2,756 megawatts ("MW") of capacity: Mill Creek Combustion Turbine ("CT") Station, Buck Combined Cycle ("CC"), Dan River CC, and W.S. Lee CC.²¹ Gas co-firing upgrades to Belews Creek Steam Station, Marshall Steam Station, and Cliffside Steam Station during that same time period have also increased DEC's gas usage.²² This rapid gas buildout is reflected in DEC's estimated gas burn, which is projected to increase from less than 100 million MMBtu²³ in 2016 to an estimated 242 million MMBtu for the September 1, 2022 through August 31, 2023, billing period ("Billing Period").²⁴

Strikingly, this level of burn further increases under DEC's and Duke Energy Progress' proposed carbon plan ("Carbon Plan"), which proposes over 2,000 MW of new

¹⁹ Tr. 161:22-23; 162:1-8.

²⁰ See generally Tr. 66: 22-23 (noting that the Company's projected gas burn volumes will be "reduced based on delays in anticipated lower cost gas supply coming into the portfolio").

²¹ Tr. 32:15-17, 21-22; *Regulated Power Plants and Battery Storage Sites*, DUKE ENERGY, <https://www.duke-energy.com/our-company/about-us/power-plants> (last visited July 14, 2022). The Commission may take judicial notice of "generally recognized technical and scientific facts within the Commission's specialized knowledge, and such other facts and evidence as may be judicially noticed by justices and judges of the General Court of Justice." N.C.G.S. § 62-65(b).

²² *Regulated Power Plants and Battery Storage Sites*, DUKE ENERGY, <https://www.duke-energy.com/our-company/about-us/power-plants> (last visited July 14, 2022). Belews Creek Unit 2 and Marshall Units 3 and 4 were converted to burn both coal and gas in early 2021. Tr. 63:10-12.

²³ One million British Thermal Units.

²⁴ Tr. 162:1-8, Figure 1; 185:6-7. DEC witness John Verderame noted that DEC "expects projected natural gas burn volumes be reduced based on delays in anticipated lower cost gas supply coming into the portfolio," however, the Sierra Club is not aware of any updated gas burn projections. Tr. 66:22-23.

gas “combined . . . in each of the four . . . portfolios.”²⁵ It bears repeating that these are actions DEC is choosing when it has reason to know how volatile gas prices are. *See Harris Order* at 14. The magnitude of gas price volatility, along with DEC’s ongoing refusal to adjust its operations in response, has only increased in recent years. This increased volatility will likely continue absent market course correction.

B. Volatility and Suboptimal Plant Operations Will Result in Significant Rate Shock

Recent gas price volatility, along with DEC’s decision to increase its reliance on gas, will result in significant rate shock for DEC ratepayers. This increase in rates is directly attributable to an increase in DEC’s total costs, which DEC is obligated to minimize. 2003 Fuel Order at 17.

DEC’s fuel burn costs for the January 1, 2021, through December 31, 2021, test period (“Test Period”) skyrocketed. Approximately 15.84 million MW hours (“MWhs”) of energy was generated from DEC’s gas fired operations during the Test Period.²⁶ This correlated to a gas burn of 189.6 million MBtu, which, at present, is projected to grow to 242 million MBtu for the Billing Period.²⁷ At the same time, the average forward Henry Hub price, which was \$3.60/MMBtu for the Billing Period, increased to \$6.58/MMBtu as of May 16, 2022.²⁸ This increase is largely attributable to a significant “increase in fuel commodity costs” beginning in June 2021.²⁹ This fuel commodity cost increase was one of the primary drivers of DEC’s \$327 million under-recovery, \$81.99 million of which was

²⁵ Tr. 142:21-24; 143:1-3.

²⁶ *See* Tr. 35:4-5, 8.

²⁷ Tr. 66:14-16. Here, DEC witness Verderame’s testimony refers to the Test Period and Billing Period gas burn figures using MBtu, or thousand British Thermal units.

²⁸ Tr. 163:1-4. DEC’s average “price of gas purchased for the test period was [\$4.22/MMBtu] . . . , compared to \$2.94 per MMBtu, representing an increase of approximately 44%. [This] cost of gas is inclusive of gas supply, transportation, storage, and financial hedging.” Tr. 62:20-25.

²⁹ Tr. 93:8-10.

incurred in January 2022 alone.³⁰ With no indication that gas market volatility will subside in the short term, DEC currently projects there will be “approximately \$228 million in total calendar year 2022 under-recoveries.”³¹

Furthermore, absent disallowance or statutory language to the contrary, the fuel charge adjustment mechanism established pursuant to N.C.G.S. § 62-133.2 allows DEC to recover these costs from its customers. DEC is specifically authorized to “charge an increment or decrement as a rider to its rates [recovered from ratepayers] for changes in the cost of fuel and fuel-related costs used in providing its North Carolina customers with electricity.” N.C.G.S. § 62-133.2(a). In addition, the experience modification factor (“EMF”) allows DEC to reconcile the difference “between reasonable and prudently incurred cost of fuel and fuel-related costs and the fuel-related revenues that were actually realized during the test period under the cost of fuel and fuel-related cost components of rates then in effect,” and recover that difference from its ratepayers. NCUC Rule R8-55(d)(3). *See also* N.C.G.S. § 62-133.2(d). Absent disallowance, there is no cost sharing of *fuel burn* or *fuel transportation* costs between DEC shareholders and DEC ratepayers.³²

Due to recent, significant fuel commodity cost increases, and the Company’s increasing reliance on gas, DEC ratepayers’ monthly bills will rise dramatically.³³ On average, DEC customers will see a 9.94% increase in their monthly bills.³⁴ For comparison’s sake, the Commission approved an approximately 1.34% *decrease* in DEC’s

³⁰ Tr. 107:18-21; 114:12-13; 116:1; 117:1; 184:7-8, 10-11.

³¹ Tr. 115:1-2.

³² As set forth in N.C.G.S. § 62-133.2(a2), the “annual increase in the aggregate amount of [certain fuel and fuel-related costs] shall not exceed two and one-half percent (2.5%) of the electric public utility’s total North Carolina retail jurisdictional gross revenues for the preceding calendar year.” This restriction does not apply to fuel burn or fuel transportation costs. *Id.*

³³ Tr. 140:17-24; 141:1-2.

³⁴ Tr. 108:9-13.

last general rate case.³⁵ In this proceeding, a DEC residential customer “using 1,000 kWh [of energy] would see an approximate \$10.00 per month” increase in their electric bills.³⁶ More troubling, gas prices could remain high until 2026, as DEC acknowledges.³⁷ This volatility, along with DEC’s decision to increase its reliance on gas, could result in significant rate shock for DEC ratepayers for several years.

C. Physical Hedging Can Help Mitigate Rate Shock

Additional physical hedging through the construction or procurement of fuel-free, renewable energy resources can help mitigate rate shock by reducing ratepayers’ exposure to volatile gas price markets. Renewables are a prudent alternative to gas generation. Harris Order at 252.

For context, hedging generally refers to a series of investments designed to mitigate a party’s exposure to asset price volatility. Importantly, most hedging cannot eliminate volatility and can only reduce a party’s exposure to it.³⁸ Financial hedging often entails the purchase of “a financial instrument, such as a future on a regulated exchange.”³⁹ In the utility context, certain financial hedging products can “offer, for a limited portion of a utility’s purchases, a means of either fixing a utility’s purchased energy prices or offsetting the utility’s energy costs with revenue from the financial [hedging] product(s).”⁴⁰ Hence, a gas futures contract for example allows DEC to secure a fixed gas price.

³⁵ Tr. 139:24; 140:1-5. This was due to DEC refunding excess deferred income taxes (“EDIT”) that had previously been collected from its customers through rates prior to enactment of the 2017 Federal Tax Cuts and Job Act. *See* Tr. 140:6-10.

³⁶ Tr. 114:2-3.

³⁷ Tr. 136:24; 137:1-4.

³⁸ Tr. 193:6-8.

³⁹ Tr. 189:11.

⁴⁰ Tr. 189:13-15.

In contrast, physical hedging in the utility context often entails the procurement of a fuel commodity or generating asset. For example, DEC will “contract[] for optional physical natural gas supply through monthly calls and daily optimization of its physical gas storage.”⁴¹ This hedging strategy is intended to secure both the price and *supply* of gas. However, for example, there are limitations on how much DEC can rely on physical gas storage to respond to high seasonal demand.⁴²

One other way a utility can physically hedge is through the procurement of renewable energy resources. Indeed, the Commission has previously recognized that renewable energy resources can function as physical hedging products:

[R]enewable generation provides fuel price hedging benefits because a utility’s purchase of energy from a [Qualifying Facility] reduces the amount of fuel the utility otherwise would need to purchase. In doing so, the Commission acknowledged that purchasing solar power can be seen as the equivalent of buying natural gas forwards. . . . the Commission finds that the evidence in this proceeding demonstrates again that there are fuel price hedging benefits associated with renewable generation. Purchases from QFs are substitutes for the purchase of fuels and reduce the amount of fuel that must be purchased and, therefore, the costs that the utilities would incur toward fuel procurement. . . . The Commission agrees with Cube Yarkin that the value of the hedge is to insulate ratepayers from fuel volatility, and that the hedge value is appropriate for inclusion in avoided cost rates.

Order Establishing Standard Rates and Contract Terms for Qualifying Facilities, Docket No. E-100, Sub 158, at 61 (April 15, 2020). Wind, solar, and other renewables that are purchased on a fixed price basis or generated by utility-owned facilities can “fix the costs for a large portion of” a utility’s energy needs, mitigate the utility’s exposure to gas price

⁴¹ Tr. 75:9-10.

⁴² See Tr. 122:24; 123:1-4.

volatility, and provide capacity, energy, and ancillary services while emitting no greenhouse gases.⁴³ In addition, utility scale wind and solar are increasingly competitive with gas plants, with levelized costs of energy (“LCOE”) in the \$26/MWh range.⁴⁴ By comparison, the “average cost per MWh for gas-generated energy” is projected to be \$35.01/MWh between January 2023 to January 2033.⁴⁵ In sum, renewables provide optimal hedging value because they have no fuel price(s) and few variable costs and are therefore a prudent alternative to gas generation.⁴⁶

D. Additional Action Is Needed to Mitigate Future Rate Shock

Due to ongoing gas market volatility and DEC’s over-reliance on gas, additional measures such as better fuel price forecasting and increased renewable hedging will be necessary to mitigate future rate shock.

As detailed in Sierra Club expert Greg Lander’s testimony, improved forecasting would provide “a preview of the potential impact of such projected fuel price spike(s) and help inform the Company’s strategy to reduce or mitigate its customers’ exposures to future, projected price spikes.”⁴⁷ Such strategies should include increased renewable hedging. Relatedly, information derived from these forecasts could assist the Commission in reaching its decision on fuel cost recovery. *See* N.C.G.S. § 62-133.2(d).

DEC’s arguments to the contrary, specifically that prior Commission orders limit specific categories of inquiry into fuel charge adjustment applications and that the Commission’s approval of DEC’s 2020 review of its gas forecasting practices, are

⁴³ Tr. 196:10-14, 16-17.

⁴⁴ Tr. 194:1-3. These LCOE figures include tax credits.

⁴⁵ Tr. 194:7-9.

⁴⁶ Tr. 193:15-16, 17.

⁴⁷ Tr. 197:12-15.

unavailing. First, the recommendations Sierra Club expert John Rosenkranz proposed in Docket No. E-2, Sub 1250 concerned (1) separating transportation and storage costs from purchase and hedging costs in Duke Energy Progress fuel reports and (2) requiring supporting testimony regarding gas transportation and storage service changes and are therefore distinguishable from the proposals at issue in the instant case.⁴⁸

Moreover, the survey DEC conducted in Docket No. E-7 Sub 1228 endorsed “extending the hedging activity to years 4 and 5” specifically due to the Company’s “*growing natural gas usage*.”⁴⁹ This reflected DEC’s own recognition that new developments or material changes in its operations could necessitate additional measures to reduce fuel volatility risk. Indeed, DEC witness Phipps in that docket noted that “the Company continues to refine and add modeling capabilities that will provide the Company with additional information to help with analyzing fuel forecasts and needed procurement activities, and associated ranges of potential costs.”⁵⁰ Given current, rampant gas price volatility and the gas buildout envisioned in the Carbon Plan, there is nothing in DEC’s survey or the Commission’s order that would seem to preclude DEC from further *refining* its forecasting.⁵¹

Lastly, DEC has conceded that it has not solved how to “integrate the power of stochastics into that fuel forecast in terms of *rates*.”⁵² Therefore, it would not make sense

⁴⁸ *Direct Testimony of John A. Rosenkranz on Behalf of the Sierra Club*, Docket No. E-2, Sub 1250, at 3:15-19 (Aug. 27, 2020).

⁴⁹ *Direct Testimony of Brett Phipps for Duke Energy Carolinas*, Docket No. E-7, Sub 1228, Phipps Confidential Ex., at 8 (Feb. 25, 2020) (emphasis added). The information reproduced from that exhibit was derived from the public, redacted version.

⁵⁰ *Direct Testimony of Brett Phipps for Duke Energy Carolinas*, Docket No. E-7, Sub 1228, Phipps Confidential Ex., at 9:12-15 (Feb. 25, 2020).

⁵¹ *See Order Approving Fuel Charge Adjustment*, Docket No. E-7, Sub 1228, at 4, 12-13 (Aug. 19, 2020) (hereinafter, “2020 Fuel Order”).

⁵² Tr. 127:11-14 (emphasis added).

for the 2020 Fuel Order to preclude, let alone address some of witness Lander's specific *rate* and *bill* forecasting recommendations given that at least some of the requisite tools and expertise likely did not exist at the time of that order's issuance. In short, neither the 2020 Fuel Order nor prior Commission orders would prevent DEC from continuing to refine its forecasting practices to (1) determine the impact of future gas price swings on rates and bills and (2) inform the development of targeted renewable hedging strategies to mitigate ratepayers' exposure to future volatility. Additionally, increased physical renewable hedging would help secure fixed, stable energy pricing and a steady, reliable supply of energy, capacity, and ancillary services.

CONCLUSION

For the foregoing reasons, the Sierra Club respectfully requests that the Commission direct the Company to:

- (1) Provide a forecast in its fuel charge adjustment application next year of the percentage increase (or decrease) in 2024, 2025, and 2026 DEC retail rates due to projected, elevated gas prices. This forecast should include projections of the average increase (or decrease) in the monthly bill of a DEC residential customer using 1,000 kWh of energy a month.
- (2) Submit a filing with next year's fuel charge adjustment application that details any changes to the Company's renewable physical energy hedging program that could help mitigate DEC ratepayers' exposure to projected gas volatility in the 2023 through 2026 time period, the costs and benefits associated with such changes, including, where possible, the specific degree to which renewable hedging would relieve upward pressure on rates, whether the Company plans to adopt such changes, and, if not, why.

- (3) Beginning in 2024, submit a forecast of the impact of periodic deviations of at least 15% greater from average gas prices on customer bills, as set forth in greater detail expert Lander's pre-filed, direct testimony, and include such forecasts in its future fuel charge adjustment filings.
- (4) Detail the quantifiable benefits that accrue to DEC ratepayers as a result of DEC's renewable energy physical hedging in its periodic hedging reports going forward, and make these reports, or redacted versions if necessary, available to both the Commission and general public going forward.
- (5) Such further relief as the Commission may deem proper.

Respectfully submitted this the 25th day of July, 2022.

/s/ Munashe Magarira
Munashe Magarira
N.C. Bar No. 47904
mmagarira@selcnc.org

Gudrun Thompson
N.C. Bar No. 28829
gthompson@selcnc.org

Southern Environmental Law Center
601 West Rosemary Street, Suite 220
Chapel Hill, NC 27516
Telephone: (919) 967-1450
Fax: (919) 929-9421

Attorneys for the Sierra Club

CERTIFICATE OF SERVICE

I certify that all parties of record have been served with the foregoing Post Hearing Brief of the Sierra Club either by electronic mail or by deposit in the U.S. Mail, postage prepaid.

This the 25th day of July, 2022.

/s/ Munashe Magarira
Munashe Magarira