The North Carolina Sustainable Energy Association ("NCSEA") submits this
post-hearing brief in accordance with the 6 June 2014 Notice of Mailing of Transcript
issued by the North Carolina Utilities Commission ("Commission") in this docket.

NCSEA does not challenge herein as unreasonable or imprudently incurred any
costs Duke Energy Carolinas, LLC ("DEC") seeks to recover. NCSEA does, however,
seek to provide a temporal context for DEC's proposed fuel and fuel-related charges.

NCSEA also, ultimately, prays the Commission

(1) Authorize DEC to proceed with the shorter-term rolling 24-month hedging
portion of its filed strategy, subject to prudence and reasonableness review;

(2) Clarify that the review of the prudence of hedging decisions, including both
any hedging plan and any decision made during the implementation of such a
plan, will be conducted on the basis of facts known at the time each decision
to hedge (or not to hedge) was made and not on the basis of the outcome of
the hedging decisions;

(3) Direct DEC to report in next year's fuel rider application the results of its
evaluation, if any, of potential options for longer-term, risk-aware
opportunities such as investment in proven natural gas production and reserves; and, finally,

(4) Encourage DEC to continue to diversify its supply portfolio into clean energy resources, including solar, wind, hydro, biomass and DSM/EE.

DEC'S PROPOSED RIDER CHARGES IN CONTEXT

DEC has passed on to its North Carolina retail customers fuel and fuel-related costs that have fluctuated over the recent years. See graph infra. DEC’s fuel recovery riders for the residential class, applicable to billing years 2010 through 2014, have ranged between 1.9306¢/kWh and 2.1772¢/kWh. Over the same period, the general service/lighting class and industrial class rates have ranged between 1.9508¢/kWh and 2.2195¢/kWh and between 1.9801¢/kWh and 2.2470¢/kWh, respectively.

In this proceeding, under the Joint Agreement and Stipulation of DEC and the Public Staff, the stipulating parties agreed that the appropriate proposed fuel cost factors\(^1\) (including EMF) for each of DEC’s rate classes are 2.1513¢/kWh rate for residential, a 0.0259¢ decrement from the current rider; a 2.1998¢/kWh rate for general service/lighting, a 0.0197¢ decrement from the current rider; and a 2.2314¢/kWh rate for industrial, a 0.0156¢ decrement from the current rider. The graph below depicts the per-account kWh rates that have been approved in recent years and the per-account kWh rates being proposed in this proceeding.

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\(^1\) In DEC’s application for fuel and fuel-related charge adjustments filed on March 3, 2014, DEC requested that the Commission approve two sets of fuel factors, Version A and Version B. Version A reflected continuation of Department of Energy ("DOE") fees for disposal of nuclear waste and Version B reflected termination of DOE fees for disposal of nuclear waste. The per-kWh fee was discontinued by a federal court of appeals and the fee’s termination was made effective as of 16 May 2014.
Figure 1

Excluding GRT and regulatory fees

N.C. Gen. Stat. § 62-133.2 sets out the standard by which the Commission gauges whether to approve fuel and fuel-related charge adjustments, such as the adjustment being requested by DEC in this docket. The statute provides in pertinent part that

[the] Commission shall allow only that portion, if any, of a requested cost of fuel and fuel-related costs adjustment that is based on adjusted and reasonable cost of fuel and fuel-related costs prudently incurred under efficient management and economic operations.

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HEDGING AS PART OF A RISK-AWARE APPROACH

a. Recent Procedural History

In last year’s fuel rider proceeding, the Commission required DEC to “file an updated fuel procurement practices report in Docket No. E-100, Sub 47 that includes a natural gas hedging strategy no later than December 31, 2013.” Order Approving Fuel Charge Adjustment, p. 34, Commission Docket No. E-7, Sub 1033 (20 August 2013) (Ordering Paragraph No. 4).

On 31 January 2014, DEC filed a Natural Gas Hedging Report (“Report”) in Commission Docket No. E-100, Sub 47A. The Report proposes “a short-term natural gas hedging plan to manage fuel cost price risk and dampen price volatility for customers via a structured execution approach.” Specifically, DEC “is proposing to layer in financial fixed price swap and collar transactions for a percentage of its forecasted natural gas usage for a rolling 24-month forward time period . . . utilizing approved physical and financial fixed price agreements to lock in prices for approximately 50% of its forecasted natural gas burns for a rolling 1-year forward period (months 1 to 12) and approximately 30% of its forecasted natural gas usage for the rolling 2-year forward period (months 13-to 24).” DEC also proposes to “evaluate alternatives that can provide long-term price stability and protect customers from long-term natural gas price trends . . . [including] the potential purchase and investment in producing and proven natural gas production and reserves, as these alternatives could provide long-term price stability and protect customers from longer term market trends.” DEC “believe[s] there should be discussions about alternatives that may provide longer term structural alternatives and opportunities to provide customers with long-term price stability and protection from longer-term changes in natural gas prices and trends.”
b. Risk-Aware Regulation and Hedging

Of necessity, the Commission must concern itself not only with present costs and prices, but also future costs and prices. The uncertainty associated with future costs and prices introduces an element of risk. For a Commission that would like to provide certainty, risk is an enemy to be combatted and mitigated, if possible. The Commission and the utilities it regulates have weapons at their disposal to assist them in this endeavor.

NCSEA witness Dan Mullen provided a short definition of “risk-aware regulation.” Witness Mullen testified that

*[risk-aware regulation is an approach whereby regulators proactively seek to identify, understand and minimize the risks involved in a specific regulatory decision; and then to allocate fairly the remaining risk between the utility and customers. The goal of risk-aware regulation is to ensure that society’s limited resources are spent wisely, and to minimize overall costs over the long term.*

Tr. at p. 117. While there are “seven key strategies [or “weapons”] that Commissions can employ to minimize risk[.]” the two strategies or weapons that are most relevant in the context of this fuel proceeding include: “[d]iversify[ing] utility supply portfolios with an emphasis on low-carbon resources; . . . [and u]s[ing] financial and physical hedges, including long-term contracts[.]” Tr. at pp. 118-119 (NCSEA witness Mullen testimony citing the April 2012 Ceres report, entitled “Practicing Risk-Aware Electricity Regulation: What Every State Regulator Needs to Know,” and attached as Exhibit DM-1 to his pre-filed testimony).
c. **Given DEC's Increasing Consumption of Natural Gas, Shorter-Term Hedging (But Not Too Short!) Appears to be a Worthwhile Risk-Aware Approach**

"DEC’s overall gas burns have increased in recent years because of the addition of new combine cycle ("CC") generation[.]" Report, p. 1, Commission Docket No. E-100, Sub 47A (31 January 2014). DEC’s consumption of natural gas has increased from 10 billion cubic feet ("Bcf") in 2011, to 42 Bcf in 2012, to 63 in 2013. DEC’s consumption is estimated to continue to be ~60 Bcf in 2014. The increase in DEP’s natural gas consumption is depicted in the figure below:

**Figure 2**

![DEC's Natural Gas Consumption](image)

In proposing its shorter-term hedging strategy, DEC evaluated and considered using a shorter-term rolling 1-year forward period. Report at p. 2. DEC concluded, however, "that hedging at the proposed rolling 24-month time period versus a shorter

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time period is needed to have a consistent execution approach over multi-fuel periods to enable a greater degree of fuel cost certainty and to provide some smoothing of rates from one fuel rate period to another for customers.” Id. The Public Staff indicated it “see[s] no reason why [this portion of DEC’s strategy] should not be implemented as proposed.” Tr. at p. 179 (Public Staff witness Hoard’s testimony). NCSEA, similarly, sees no reason why this portion of DEC’s strategy should not be implemented as proposed.

While the Commission is unlikely to “pre-approve” the prudency and reasonableness of hedging costs, the Commission could afford interested parties, particularly DEC, greater clarity and certainty as to how the Commission will evaluate the prudency and reasonableness of hedging costs. The Commission has done this in the similar, but not identical, context of local distribution companies’ (“LDC”) hedging costs:

After concluding that hedging costs can and should be treated as gas costs, the Commission notes that G.S. 62-133.4(c) requires an annual review of the prudency of the gas costs incurred by an LDC in the preceding twelve months. The statute requires that the Commission compare “the utility’s prudently incurred costs with costs recovered from all the utility's customers that it served during the test period” in such an annual proceeding. Although LDCs argued that the Commission should pre-approve a hedging plan and that all costs incurred within the guidelines of that plan should be considered to be prudent, G.S. 62-133.4 provides for an analysis of the prudence of the utility’s gas costs during the annual review proceeding. This analysis must be based on evidence and subject to participation of intervenors. This analysis must be made on the basis of the information available to the utility at the time its decision to hedge was made. Nothing in G.S. 62-133.4 in any way suggests that any other option is available to permit Commission scrutiny of LDC gas costs for reasonableness and prudence. The Commission concludes that pre-approval of a hedging plan is inconsistent with the procedures decreed by G.S. 62-133.4. While the Commission cannot accept pre-approval, it acknowledges the LDCs’ concern over the fairness of hindsight reviews. Several parties commented that the prudence of hedging decisions should
be judged based on facts known at the time the hedging decision was made. NUI NC Gas stated that, "The prudence of actions taken and their costs should be judged based on the information available at the time the actions were taken, not based on hindsight." Frontier submitted similar comments, saying, "any regulation and oversight of . . . hedging . . . must be in light of the information known to the LDC at the time of the transaction, and without the benefit of the proverbial 20-20 hindsight at the time of the review." PSNC stated, "As is true of the evaluation of other gas purchases, the prudence of a hedging transaction must be judged in the context of the circumstances that existed when it was made, not on the basis of hindsight." The Commission emphatically agrees with those comments. The review of the prudence of hedging decisions, including both any hedging plan and any decision made during the implementation of such a plan, should be conducted on the basis of facts known at the time each decision to hedge (or not to hedge) was made and not on the basis of the outcome of the hedging decisions.

Order on Hedging, p. 9, Commission Docket No. G-100, Sub 84 (26 February 2002) (emphasis added). Articulation of a similar standard in the electric supplier context would provide greater certainty and clarity to DEC and, thus, better enable it and the Commission to practice risk-aware regulation by providing a better up-front understanding of how costs associated with shorter-term financial hedges will be reviewed for cost recovery purposes.

d. Given DEC’s Increasing Consumption of Natural Gas and the Likelihood of Increasing Natural Gas Prices, Long-TERM Hedging Merits Exploration as Part of a Worthwhile Risk-Aware Approach

At hearing, DEC witness Weintraub testified that he still holds the general opinion that

[a]s prices have dropped as much as they have dropped over the past couple of years, we’re now going to put on hedges that, I’ll call, are in the money. In other words, you’re now going to be putting on hedges, there really isn’t a much more downside that can occur with natural gas prices, you tend to be on a probability of where prices are going to go; they’re most likely to go up than, you know, go down.
Tr. at pp. 67-68 (emphasis added). Witness Weintraub went on to explain that “at some point you reach a bottom and prices really can’t continue to keep dropping because a producer would just stop to produce. So when you think about a probability curve around where prices to go, there’s a much higher probability of an upswing in gas prices than downswing just because of where they are.” Tr. at pp. 68-69.

DEC witness Weintraub’s testimony regarding a June 2014 natural gas forward price trend lends support to his general opinion that prices are most likely to go up in the future. Witness Weintraub indicated that if he were to update the *Natural Gas Forward Price Trends* graph, see infra, that was attached as an exhibit to the Report, he would insert a June 2014 forward price line approximately where the dotted green line has been added below. Tr. at pp. 70-72.

**Natural Gas Forward Price Trends**

![Graph](image)

Source: Internal curve history of NYMEX monthly natural gas contract settlement prices

The June 2014 “line” described in witness Weintraub’s testimony is the first line on the graph to reflect a higher forward price trend than all earlier forward price trends depicted. This may be an indication that, as witness Weintraub testified, “at some point
you reach a bottom” and we have seen (or are seeing) that bottom and, going forward, forward price trends will begin to reflect higher prices.

The foregoing is important to consider because, while shorter-term natural gas financial hedges can combat and mitigate, to an extent, the risk associated with the volatility of natural gas prices, DEC points out that it does “not believe the short-term plan provides any protection against long-term natural gas prices and trends.” Report at p. 3 (emphasis added). DEC goes on to state that

> given the anticipated growth in natural gas usage due to existing and potential new gas generation for DEC and DEP, the Utilities will evaluate potential options over time that include the potential purchase and investment in producing and proven natural gas production and reserves, as these alternatives could provide long-term price stability and protect customers from longer term market trends. . . . Therefore, the Utilities believe there should be discussions about alternatives that may provide longer term structural alternatives and opportunities to provide customers with long-term price stability and protection from longer-term changes in natural gas prices and trends.

*Id.* (emphasis added).

As already indicated, *supra*, a key risk-aware strategy or “weapon” that is available to this Commission and DEC (and other Commission-regulated electric suppliers) is the use of “financial and physical hedges, *including long-term contracts*[,]” *Tr. at pp. 118-119* (NCSEA witness Mullen testimony citing the April 2012 Ceres report, entitled “Practicing Risk-Aware Electricity Regulation: What Every State Regulator Needs to Know,” and attached as Exhibit DM-1 to his pre-filed testimony) (emphasis added). Given the Report, witness Weintraub’s testimony, and the availability of the longer-term contract “weapon,” NCSEA encourages DEC’s continued exploration of longer-term, risk-aware opportunities such as investment in proven natural gas production and reserves. In order to further the discussion about DEC’s evaluation of
such options, NCSEA believes the Commission should require DEC to report in next year’s fuel rider application the results of its evaluation, if any, of potential options over time.4

e. Given DEC’s Increasing Consumption of Natural Gas and the Likelihood of Increasing Natural Gas Prices, DEC Diversification of its Supply Portfolio into Fuel-less Resources Merits Exploration as Part of a Worthwhile Risk-Aware Approach

NCSEA witness Dan Mullen testified that financial hedging was a key strategy for implementing a risk-aware approach to natural gas shorter-term volatility and longer-term price trends; he also testified that a second key strategy to minimize the risks associated with a natural gas-heavy portfolio was “[d]iversify[ing the] utility supply portfolio[] with an emphasis on low-carbon resources[.]” Tr. at pp. 118-119. More specifically, witness Mullen opined that “the Commission should be mindful that enhancing resource diversity within DEC’s supply portfolio can [help] minimize the fuel cost risk associated with natural gas.” Tr. at p. 121. In other words, diversification is itself a kind of hedge:

Like traditional physical and financial hedges, diversifying into clean energy resources, including solar, wind, hydro, biomass and DSM/EE, offers an additional technique for hedging against the traditional (and recent “polar vortex”-related) volatility of natural gas prices.

Tr. at p. 124 (NCSEA witness Mullen testimony).

4 N.C. Gen. Stat. § 62-36 authorizes the Commission to “require any public utility to file annual reports in such form and of such content as the Commission may require and special reports concerning any matter about which the Commission is authorized to inquire or to keep informed, or which it is required to enforce.” Under its general oversight authority, see, e.g., N.C. Gen. Stat. §§ 62-33 and 62-34, the Commission is – at a minimum – authorized to inquire or keep informed about DEC’s evaluation of purchases, investments, and “longer term structural alternatives and opportunities” that would impact rates.
Witness Mullen’s opinion places him in good company. There is stakeholder consensus that diversity is a worthwhile goal. Witness Mullen pointed out that DEC’s own leadership has publicly recognized the value of portfolio diversity:

A recent quote from Duke Energy Vice President Rob Caldwell, in the Charlotte Business Journal, echoes this theme. Mr. Caldwell said, “I think you’re going to see us asking regulators, ‘Here’s our least-cost plan – today you know that’s going to be a gas plant – but we think there’s an opportunity for a more diversified portfolio so we don’t get all our eggs in one basket.’” The article is available online at http://www.bizjournals.com/charlotte/print-edition/2013/11/08/duke-mulls-adding-solar-to-utilities.html?page=all.

Tr. at p. 124. In this proceeding, DEC witness Weintraub testified similarly: “I do believe that the concept of having a diverse generation fleet has benefits compared to having all of your eggs in one basket, so to speak. And there [are the] benefits of being able to point at a diverse fleet that allows you to generate electricity depending upon the lowest price of fuel.” Tr. at p. 73.5

5 While there is general agreement that diversity provides some amount of value-add, an all-in quantification of this value-add has proven elusive to date. As the Public Staff recently pointed out in their 2013 IRP comments:

A more diverse generation portfolio may mitigate future cost variability and the risk of relatively high energy prices in the future. However, the benefits of avoiding potentially high prices must be weighed against the known costs of building new generation, particularly nuclear. In recent IRPs, the IOUs have stressed the value of generation diversity, but generally have not provided a metric to quantify the value of diverse generation portfolios that they have selected as their preferred plan. Diverse generation portfolios should provide a reduction in future cost variability and risk of high cost futures due to uncertainty. This reduced risk and variability can be used to justify investments in higher cost alternatives, relative to a least-cost option under a base case scenario. Given the utilities’ stated desire to build diverse generation portfolios, demonstration and quantification of risk benefits and reduced variability would allow a more systematic comparison of investment options and portfolios that maintain or increase generation diversity relative to least cost options under a base case. This approach could be incorporated through different modeling approaches to risk and uncertainty, including consideration of alternative approaches such as consideration of least-risk or “no-regrets” analysis, real options analysis, expected value analysis using probabilities, and other stochastic...
Diversifying into fuel-less resources offers even more acute hedging value. In a proceeding last year, Public Staff witness Kennie Ellis stated that “[s]ince some [generators], such as solar photovoltaic and hydroelectric facilities, are not subject to the risks associated with changes in fossil fuel costs and uncertainty regarding emissions regulations, they can help provide some cost certainty for the utilities in their long-term planning.” Transcript of Testimony Volume 3 (Heard 10-30-2013 in Raleigh), pp. 21-22, Commission Docket No. E-100, Sub 136 (14 November 2013). Energy efficiency, at a minimum, can be added to witness Ellis’ list of fuel-less resources that can mitigate fuel price risk if integrated into a utility’s supply portfolio:

The Nicholas Institute for Environmental Policy Solutions and the Nicholas School of the Environment at Duke University recently investigated energy efficiency as a potential hedge against natural gas price volatility. The resulting report indicates cost savings for consumers from energy efficiency for all natural gas forecasts analyzed, and presents a method to quantify the value of energy efficiency as a hedge. The report, “Using Energy Efficiency to Hedge Natural Gas Price Uncertainty,” is available online at http://nicholasinstitute.duke.edu/sites/default/files/publications/ni_wp_13-02.pdf.

Tr. at pp. 125-126 (NCSEA witness Mullen testimony).

Fuel-less generation plant (including DSM/EE “plant” that produces “negawatts”) often requires investment of significant up-front capital and is therefore sometimes compared unfavorably to the capital costs of a natural gas plant. It should be optimization methods. There is no clear preferred method to quantify the benefits of a diverse generation portfolio.

Comments of the Public Staff, pp. 65-66, Commission Docket No. E-100, Sub 137 (11 April 2014). While general quantification of diversity value may be challenging, clear methods are emerging for quantifying at least some of the financial hedging costs that are avoided when a utility diversifies into fuel-less resources, such as solar, wind, hydro, and DSM/EE. See, e.g., infra at p. 14 (reference in this Post-Hearing Brief to Rebuttal Testimony of Dr. Richard E. Brown on Behalf of the Public Staff, p. 5, Commission Docket No. E-100, Sub 140 (20 June 2014)).
remembered, however, that fuel-less generation plant avoids the cost of ongoing fuel payments throughout the plant’s useful life; fuel-less generation plant also avoids the cost of financially hedging against fuel price volatility and rising price trends.

Even when implemented in a prudent and reasonable manner, financial hedging is not without cost. As Commission Chairman Finley and then-DEP witness Weintraub helped clarify in a proceeding last year, financial hedging involves the equivalent of paying an “insurance premium:”

*Q (Finley):* Would a rough analogy be that a homeowner spends money on fire insurance year after year after year after year, knowing that that’s a cost he has to incur, but he’s ensuring against a fire? He hopes he never gets to have a fire, but he’s paying that money year after year after year in case he might. Is that sort of a rough analogy?

*A:* It is . . .

*Transcript of Testimony Volume 1 (Heard September 17, 2013),* pp. 64-65, Commission Docket No. E-2, Sub 1031 (25 September 2013). Diversifying into fuel-less resources – such as solar, wind, hydro, and DSM/EE – can help avoid variable ongoing fuel payments and the “insurance premiums” paid to help smooth out the variability. As Public Staff witness Dr. Richard Brown, an engineer, states in his pre-filed testimony in a separate pending docket, the avoided costs associated with diversification are real, resulting in his recommendation “that avoided costs for a [fuel-less generator] include the natural gas hedging cost over a one-to-two year term.” *Rebuttal Testimony of Dr. Richard E. Brown on Behalf of the Public Staff,* p. 5, Commission Docket No. E-100, Sub 140 (20 June 2014).

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6 DEC witness Weintraub testified that, in the aftermath of the “polar vortex,” the Company is considering increasing coverage of its hedges to account not only for the anticipated consumption of its CCs, but also some more predictable portion of the anticipated consumption of its CTs. Tr. at pp. 65-67. While such a strategy may be prudent and reasonable, this does not mean it will be without additional cost.
CONCLUSION

NCSEA does not challenge herein as unreasonable or imprudently incurred any costs DEC seeks to recover in its fuel and fuel-related rider application. NCSEA does, however, respectfully pray the Commission

(1) Authorize DEC to proceed with the shorter-term rolling 24-month hedging portion of its filed strategy, subject to prudency and reasonableness review;

(2) Clarify that the review of the prudency of hedging decisions, including both any hedging plan and any decision made during the implementation of such a plan, will be conducted on the basis of facts known at the time each decision to hedge (or not to hedge) was made and not on the basis of the outcome of the hedging decisions;

(3) Direct DEC to report in next year’s fuel rider application the results of its evaluation, if any, of potential options for longer-term, risk-aware opportunities such as investment in proven natural gas production and reserves; and, finally,

(4) Encourage DEC to continue to diversify its supply portfolio into clean energy resources, including solar, wind, hydro, biomass and DSM/EE.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that all persons on the docket service list have been served true and accurate copies of the foregoing Post-Hearing Brief by hand delivery, first class mail deposited in the U.S. mail, postage pre-paid, or by email transmission with the party's consent.

This the 7 day of July, 2014.

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