

**BEFORE THE NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. E-100, SUB 179**

In the Matter of Duke Energy Progress, LLC,)	
and Duke Energy Carolinas, LLC, 2022)	AVANGRID RENEWABLES
Biennial Integrated Resource Plans and Carbon)	LLC’S POST-HEARING BRIEF
Plan)	
)	

AVANGRID RENEWABLES, LLC’S POST-HEARING BRIEF

Pursuant to the scheduling deadline set forth by Chair Mitchell of the North Carolina Utilities Commission (“Commission”) at the conclusion of the expert witness hearing on September 29, 2022, Avangrid Renewables, LLC (“Avangrid Renewables”) submits this post-hearing brief.

BACKGROUND

I. Legislative Background

On October 13, 2021, Governor Roy Cooper signed into law Session Law 2021-165 (“HB 951”). HB 951 altered Chapter 62 of the North Carolina General Statutes and included for the first time the requirement that Commission enable policies in electric generation in North Carolina to reduce carbon emissions: “[t]he Utilities Commission shall take all reasonable steps to achieve a seventy percent (70%) reduction in emissions of carbon dioxide (CO₂) emitted in the State from electric generating facilities owned or operated by electric public utilities from 2005 levels by the year 2030 and carbon neutrality by the year 2050.”¹

II. Relevant Procedural Background

HB 951 directed the Commission to “[d]evelop a plan, no later than December 31, 2022, with the electric public utilities, including stakeholder input, for the utilities to achieve the

¹ N.C.G.S. § 62-110.9.

authorized reduction goals[.]”² To that end, on November 19, 2021, the Commission issued the *Order Requiring Filing of Carbon Plan and Establishing Procedural Deadlines* (“Initial November 19, 2021 Order”) which delayed the requirement for Duke Energy Progress, LLC (“DEP”) and Duke Energy Carolinas, LLC (“DEC”) (DEP and DEC, collectively, “Duke”) to file biennial integrated resource plans (“IRP”) and, instead, initiated the initial carbon plan docket proceeding. The Initial November 19, 2021 Order laid out the procedural guidelines for the initial carbon plan proceeding, including an April 1, 2022 deadline for Duke to file its initial Carbon Plan proposal. On November 23, 2021, Duke requested an extension to file its initial Carbon Plan proposal until May 16, 2022, which was granted on November 29, 2021.³

On July 29, 2022, the Commission issued the *Order Scheduling Expert Witness Hearing, Requiring Filing of Testimony, and Establishing Discovery Guidelines* (“July 29, 2022 Order”) wherein the Commission ordered parallel procedural tracks for issues defined as appropriate for either review in an expert witness hearing or via legal briefing.

A. Non-Hearing Track

The July 29, 2022 Order listed the following issues to be addressed via legal briefing in a non-hearing track:

- a. Commentary pertaining to procedures for the next biennial Carbon Plan update proceeding and future IRP proceedings;
- b. Commentary pertaining to rule-making procedures for revisions to the Commission’s IRP Rule R8-60 and related rules for certificating new generating facilities to support execution of the Carbon Plan;
- c. Commentary pertaining to the Commission’s authority to extend the 2030 interim 70% carbon emission reduction target pursuant to N.C.G.S. § 62-110.9(4);
- d. Commentary pertaining to legality of purchasing third party-owned generation excluded from N.C.G.S. § 62-110.9(2);

² N.C.G.S. § 62-110.9 (1).

³ See, *Duke Energy Carolinas, LLC and Duke Energy Progress, LLC’s Motion to Extend Time to File Carbon Plan and Order Granting Extension of Time*.

- e. Commentary pertaining to the proper analysis of the impacts of methane emissions from natural gas;
- f. All sub-issues designated under the topic identified as “General/Other;” and
- g. Any miscellaneous issues previously raised by any party but omitted from the Issues Report or not designed to the hearing track by this Order[.]

The July 29, 2022 Order instructed that briefing on these issues should be filed with the Commission by September 9, 2022.

B. Hearing Track

The July 29, 2022 Order also set forth particular procedures for the expert witness hearing, including the requirement for parties to file written, direct testimony, as necessary, and for Duke to file written, rebuttal testimony, as necessary, prior to the beginning of the expert witness hearing on September 13, 2022.

ARGUMENT

I. Offshore Wind is a Scalable Long-Lead Resource and the Commission Should Take Decisive Steps in 2022 to Enable Its Deployment as Quickly and Efficiently as Possible.

N.C.G.S. § 62-110.9 requires the Commission “take all reasonable steps to achieve a seventy percent (70%) reduction in emissions” by 2030. Prioritizing offshore wind as a generation resource block to enable considerable clean energy benefits is a reasonable step. Offshore wind is a proven and reliable resource that is readily available to be developed to deliver power to North Carolina within the current decade. Offshore wind is a technology that is widely used across the world and growing. “There are more than 55 GW of offshore wind in operation globally – 21 GW of which came online in 2021 alone – and more than 17 GW under contract and working towards operation in the US.”⁴ Duke acknowledges as much, stating in Appendix J to its proposed Carbon

⁴ Tr Vol. 23, p. 165; for more context to the maturity of the offshore wind global market, see generally *Avangrid Renewables, LLC’s Limited Comments*.

Plan that “[o]ffshore wind is a mature, scalable and increasingly cost-effective zero-carbon resource.”⁵

Offshore wind is also a priority for state leadership in North Carolina. On June 9, 2021, Governor Cooper signed Executive Order No. 218, which stated in pertinent part: “North Carolina will strive for development of 2.8 gigawatts (“GW”) of offshore wind energy resources off the North Carolina coast by 2030 and 8.0 GW by 2040.”⁶ In the instant case, on September 9, 2022, Assistant Secretary Jennifer R. F. Mundt submitted a consumer statement of position on behalf of the North Carolina Department of Commerce.⁷ In this consumer statement of position, Ms. Mundt stated, in discussing the need for offshore wind:

Offshore wind is a strategic, least-cost resource whose operating characteristics complement those of other zero-emission resources. Inclusion of significant amounts of offshore wind in the Carbon Plan will lead to substantial economic development and job growth for North Carolina communities that will not otherwise materialize to the same degree[...]

Offshore wind costs are rapidly declining in the U.S. due to technology advancements and economies of scale, and they will continue to decline due to the investment tax credit and production tax credit included in the Inflation Reduction Act, P.L. 117-169. Offshore wind can help protect consumers against the cost risks associated with other resources from fuel price volatility, supply disruptions, and unproven deployment at scale. Offshore wind is a reliable zero-emission resource and provides operating characteristics (e.g., high-capacity factor and night- and day-time generation) that complement solar, battery storage, and other resources. In addition, offshore wind has proven dependable, commercially viable, and cost-competitive, with 40 gigawatts deployed globally in 2020[.] In contrast, small modular nuclear reactors and retrofitting natural gas plants to be powered by hydrogen have not reached commercial viability and unlike offshore wind, have not been tested by decades of real-world application[.]⁸

⁵ *Duke Energy Carolinas, LLC and Duke Energy Progress, LLC's Verified Petition for Approval of Carbon Plan* (“Duke Carbon Plan Proposal”), Appendix J, p. 1.

⁶ E.O. 218, (Governor Roy Cooper) (June 9, 2021).

⁷ Available here: <https://starw1.ncuc.gov/NCUC/ViewFile.aspx?Id=d5d017c6-de73-4109-ad75-ab0960fd6bb2>.

⁸ *Id.* (Internal citations omitted).

There are three wind lease areas off the coast of North Carolina readily available for development: Avangrid Renewables' Kitty Hawk Wind lease area (OCS-A 0508) ("Kitty Hawk"), TotalEnergies Renewables USA's Carolina Long Bay West (OCS-A 0545) ("CLB West"), and Duke Energy Renewables Wind, LLC's Carolina Long Bay East (OCS-A 0546) ("CLB East").

Kitty Hawk is a 122,405 acre lease area which Avangrid Renewables projects can provide up to 3.5 GW of energy.⁹ As stated in Duke's Carbon Plan Proposal, "Carolina Long Bay is a couple of two offshore parcels located at least 20 miles off the southern shore of North Carolina."¹⁰ CLB West is a 54,937 acre lease area and CLB East is a 55,154 acre lease area.¹¹

A. Duke's Carbon Plan Proposal considers long lead resources in the wrong way.

In Duke's Carbon Plan Proposal, Duke has proposed three long lead resource additions – small modular nuclear reactors ("SMRs"), pumped storage hydro, and offshore wind.¹² Duke treats SMRs, pumped storage hydro, and offshore wind similarly despite offshore wind's clear advantage in size, scale, and executability compared to the other two.

SMRs are not available for utility-scale use at this time, and it is not certain when or if they will be. As Duke acknowledged in its testimony, "there is no current SMR anywhere in the world that is generating power and providing it for commercial operation" and any such technology is not likely to be deployed at scale before 2030.¹³ Duke's inclusion of SMRs in its Carbon Plan Proposal thus significantly elevates the risk profile of its long-lead portfolio and threatens the

⁹ *Investor Day*, Presentation by Avangrid, Inc., September 22, 2022, p. 42 (available at https://s24.q4cdn.com/489945429/files/doc_presentations/2022/09/FINAL-Main-Deck-and-Workshops-Investor-Day-September-2022.pdf).

¹⁰ Duke Carbon Plan Proposal, Appendix J, p. 4.

¹¹ *Id.*

¹² Tr Vol. 17, p. 17.

¹³ Tr Vol. 17, pp. 183-184.

achievement of the carbon plan targets. The viability of SMRs has been questioned publicly by NextEra Chairman and CEO John Ketchum, who recently stated:

SMRs, if you can ever figure them out, are great because they have a small footprint. But I'm very skeptical with regard to SMRs [...] They are going to be very expensive and then you're going to be taking a bet on the technology [...] Right now, I look at SMRs as an opportunity to lose money in smaller batches.¹⁴

Despite this acute executability risk, Duke has treated SMRs in the same manner as offshore wind, a resource with a development and deliverability history. By contrast, if Duke assumes development of all three offshore wind lease areas, which will reliably translate to a minimum of 5 GW of carbon-free energy resource capacity, with Kitty Hawk delivering power as early as 2029. This substantial offshore wind resource would complement Duke's considerable solar investments¹⁵ and lessen the other low carbon resources' variability risk.¹⁶ Instead of relying on unproven long-lead resources, the Commission should move decisively to incorporate North Carolina's considerable offshore wind resources into its generation planning portfolio.

The pumped storage details in Duke's Carbon Plan Proposal are smaller in magnitude than the combined offshore wind potential of the three lease areas and cannot deliver significant capacity within the timeline required by HB 951. Duke's proposed new pumped storage upgrades at Bad Creek I will only provide an additional 340 MW of storage capacity. The new Bad Creek II facility may provide an additional 1,700 MW of new capacity, but Duke's projected in-service date for this facility is 2033, which is after the interim 2030 deadline.¹⁷

¹⁴ <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/electric-power/100322-nextera-ceo-sees-us-climate-law-catalyzing-decades-of-clean-energy-growth>

¹⁵ Tr Vol. 17, p. 112; Tr Vol. 23, p. 166.

¹⁶ Tr Vol. 17, pp. 112-113.

¹⁷ Tr Vol. 17, pp. 85-90.

While not characterized as a long-lead resource, Duke Energy includes hydrogen energy in its Carbon Plan Proposal as a generation resource beginning after the 2030 interim deadline.¹⁸ Duke's position is that natural gas is needed for firm generation in the near and mid-term to provide certainty to a generation portfolio that will increasingly include intermittent generation resources.¹⁹ The only way for Duke to validate building new traditional generation, like the proposed new natural gas plants included in its Carbon Plan Proposal, is to include a plan to transition such plants to use carbon-free hydrogen as their fuel. To achieve carbon neutrality through hydrogen use, the hydrogen must be generated by a carbon-free resource. Offshore wind is the only proven, large-scale, carbon-free resource that can deliver energy at the scale required to generate hydrogen.

B. The offshore wind resources available to North Carolina are greater and less expensive than what Duke has represented.

The Duke Carbon Plan arbitrarily proposes a maximum total deployment of 800 MW or 1,600 MW of offshore wind by 2035, which does not accurately reflect the offshore wind resources available to North Carolina. If fully developed (with no viewshed buffers in place), each of the three offshore wind lease areas offshore of the Carolinas can individually support well over 1,000 MW. Kitty Hawk alone can support up to 3,500 MW. The use of 800 MW phases, as Duke has done in its Carbon Plan Proposal, is an inefficient approach for offshore wind construction when it is possible to construct and deploy fewer, larger projects that can leverage economies of scale and achieve lower prices for ratepayers, as previously stated by Avangrid Renewables.²⁰ Assistant Secretary Mundt stated, in pertinent part:

Duke Energy's proposed portfolios appear not to reflect that the offshore areas currently held under lease can support at least 5GW of offshore wind capacity by 2032. [. . .] Duke Energy's three resource portfolios with 0.8GW, 1.6GW, and

¹⁸ See generally Duke's Carbon Plan Proposal, Appendix O.

¹⁹ *Id.* at 7; ("The Companies maintain a fleet of CT and CC generation units in the Carolinas that will continue to be important in maintaining reliability and resilience of the grid as more intermittent resources are added.")

²⁰ *Limited Comments of Avangrid Renewables, LLC*, p. 10.

0.8GW offshore wind by 2030, 2032, and 2034 respectively, are neither congruent with the existing potential offshore wind energy generation opportunity off our coast nor sufficient to achieve the state's goals under Executive Order No. 218 of developing 2.8GW of offshore wind off our coast by 2030 and 8.0GW by 2040.²¹

Rather than assuming generic 800 MW increments, Duke should have modeled a system that accurately reflects the existing lease areas available offshore of the Carolinas and that seeks to develop those areas in the timeliest and economically efficient manner possible. For these reasons and given the long-lead nature of offshore wind, it is important for the Commission to take decisive and prudent action to advance offshore wind in its final 2022 Carbon Plan as part of the near-term action plan to meet the interim carbon emissions reduction goals.

Further, Duke's modeling fails to consider how to most economically build the infrastructure needed to interconnect offshore wind. As an initial matter, while some transmission buildout may be necessary to interconnect offshore wind, Duke acknowledged in testimony that the 500kV New Bern line upgrade would be due, in part, to like solar interconnection in the area.²² Transmission upgrades are long-lead time upgrades. Duke has proposed to build a 500 kV line upgrade at New Bern, but such an upgrade represent a costly initial investment in offshore wind. By contrast, if the Commission wants to balance economies of scale with commitment risk, it should consider directing more modest initial upgrades which could support a single 1.3 GW project, with additional upgrades and project deployments to follow. This would save approximately \$500 million in grid upgrades compared to what Duke modeled, lowering the risk for the first 1.3 GW of offshore wind deployment.²³

²¹ Available here: <https://starw1.ncuc.gov/NCUC/ViewFile.aspx?Id=d5d017c6-de73-4109-ad75-ab0960fd6bb2>.

²² Tr Vol. 17, p. 19.

²³ For further discussion of transmission opportunities, including the potential for multiple points of interconnection, see the *Limited Comments of Avangrid Renewables, LLC*, p. 13 & Appendix D.

II. The Record Shows that Kitty Hawk, not CLB East, is the Best Initial Offshore Wind Resource Option for North Carolina, and a Third-Party Study Would Provide the Commission Data-Based Assurance in Choosing North Carolina's Offshore Wind Pathway.

A. Kitty Hawk Has the Best Project Fundamentals and Would Best Assure Compliance with HB 951.

Throughout the proceeding, Avangrid Renewables has sought to differentiate Kitty Hawk from the two CLB areas. For the reasons set forth below (and elsewhere in this docket), Kitty Hawk is the best positioned of the three lease areas to assist in meeting HB 951's requirements. Kitty Hawk has the shortest timeline to commercial operation, the least executability risk, the best meteorological outlook, and presents the overall highest value to ratepayers.

1. Kitty Hawk is the only offshore wind lease which can meet HB 951's timing requirements.

Only one of the six portfolios submitted by Duke attains a 70% reduction in carbon dioxide emissions by 2030.²⁴ For the portfolios that do not meet the interim emissions reduction, Duke inappropriately seeks to outline resource development that will require extensions to the deadline for interim compliance, which the Public Staff notably opposes despite the apparent supposition by Duke that extensions will lower costs.²⁵ Duke seemingly attributes its difficulty in meeting the 2030 deadline, in part, to its reliance on developing the CLB East and/or CLB West lease(s). This reliance is misplaced given that CLB lease areas are still in the earliest stage of development.

By contrast, assuming the Commission resolutely pursues offshore wind in the Carbon Plan, Kitty Hawk can meet the interim deadline. Avangrid Renewables Witness Becky Gallagher testified that:

Kitty Hawk, both North and South, are significantly more advanced than either of the Carolina Long Bay lease areas which were only just won this past May. Kitty Hawk has submitted both of its [construction and operations plans] for the North

²⁴ Tr Vol. 7, pp. 103-104.

²⁵ "A delay beyond two years should not be preemptively authorized in this proceeding[.]" Tr Vol. 21, p. 40.

and the South. We're materially more advanced having purchased that lease area in 2017.²⁶

Kitty Hawk has a head start of more than five years in permitting and survey work over CLB East and CLB West. This significant timing advantage is an opportunity for North Carolina because it enables one or more projects from the Kitty Hawk area to achieve commercial operation as early as 2029 or 2030 and to help the Commission achieve the interim emissions reduction deadline with significantly less risk.

In addition, Avangrid Renewables has already done significant community outreach to bring Kitty Hawk generation to shore. Regarding the underwater cabling, the North Carolina Division of Marine Fisheries and the National Park Service have indicated to Avangrid Renewables that the Pamlico Sound underwater cabling route is preferred.²⁷ Additionally, Avangrid Renewables has met with the U.S. Department of Transportation to understand its interest in Avangrid Renewables' ability to travel on the roadways and the National Forest Service about Kitty Hawk infrastructure traveling through the coastal forest.²⁸

Comparatively, Duke has done minimal, if any, outreach to-date regarding offshore wind resource siting or development. As its witnesses stated at the hearing, Duke is not aware of any outreach that has been done to local communities regarding their CLB-specific viewshed concerns.²⁹

Further, Avangrid Renewables has a considerable advantage compared to Duke in offshore wind development experience.³⁰ Duke does not have any experience in permitting projects located

²⁶ Tr Vol. 23, p. 224.

²⁷ Tr Vol. 23, p. 207.

²⁸ Tr Vol. 23, p. 205.

²⁹ Tr Vol. 17, pp. 139-140.

³⁰ See, *Limited Comments of Avangrid Renewables, LLC*, pp. 4-5 for context on Avangrid Renewables' considerable experience in offshore wind; see also Tr Vol. 23, p. 200 to review Avangrid Renewables Witness Starrett discuss the Avangrid Renewables offshore wind team in the U.S.

in federal waters and no one on its long lead resources panel has experience developing offshore wind.³¹ Duke does not even know the status of CLB East permitting work:

[Smith Question] [...] your affiliate, Duke Energy Renewables Wind, will be taking the [CLB East] permitting work on?

[Repko Answer] They are progressing with that at the current time. I do not know at the rate of which that's progressing.³²

The learning curve associated with Duke staffing and training an offshore wind development and permitting team is a substantial hurdle for Duke to deliver offshore wind generation to North Carolina on the timeline required by HB 951.

2. Least Cost Compliance for Offshore Wind.

Avangrid Renewables Witness Gallagher testified that Duke should have provided in its Carbon Plan the following cost/benefit details for offshore wind, but it failed to do so:

Duke has failed to provide any cost/benefit review of what they propose to acquire, for example:

- expected total nameplate capacity in the zone based on engineering,
- likely net capacity factors based on nearby meteorological towers,
- how viewshed risk may impact the size and value of the resource,
- what a project from this area will cost beyond a generic estimation, and
- how each of these fundamental value drivers compare to other lease areas available to deliver to North Carolina.³³

Notably, Duke has failed to provide any of these details for its affiliate's CLB East lease. These cost/benefit details, even based upon estimates commensurate with typical industry practice in evaluating offshore wind lease areas, are necessary to determine whether North Carolina is benefiting from the least cost path to compliance.

a. Net Capacity Factor

³¹ Tr Vol. 17, p. 124.

³² Tr Vol. 17, p. 134.

³³ Tr Vol. 23, p. 171.

Net Capacity Factor (“NCF”), which is largely derived from lease area wind speed, is the biggest driver of value difference between the three existing offshore wind lease areas. By Avangrid’s estimation, the difference in value due to NCF alone between an approximately 1300 MW project sited in the Kitty Hawk lease area versus a project of the same size sited in either of the CLB lease areas is equivalent to a CapEx discount of \$850 million. Avangrid Renewables Witness Starrett articulated the importance of wind speed when calculating NCF:

Duke, in their testimony, characterizes all of the southeastern offshore lease areas the same, as having “high-capacity factors.” But this mischaracterizes the major disadvantage of the CLB lease areas – that they have the lowest wind speed of any auctioned lease area in the country. Avangrid Renewables estimates a 36% NCF for CLB lease areas versus a 43% NCF for the Kitty Hawk lease area. Wind speed, like solar resource, is immutable. There is nothing developers can do to improve this basic meteorological characteristic of the region.³⁴

Duke Witness Pompee confirmed that publicly available data shows Kitty Hawk having a higher wind speed and likely higher capacity factor:

[Smith Question] And have you looked at the publicly available data resources, such as NREL or Energy.gov, at the wind speed in the -- in the Duke Energy Renewable Wind's Carolina Long Bay lease area and in the Kitty Hawk lease Area?

[Pompee Answer] Yes, we have.

[Smith Question] And how do they compare?

[Pompee Answer] The Kitty Hawk parcel has a higher wind than Carolina Long Bay, and so would expect a bit of a higher capacity factor.³⁵

Avangrid Renewables, due to its significant head start in permitting, has been able to conduct wind analysis at Kitty Hawk and has confidence in its Kitty Hawk wind speed projections. As Witness Starrett stated in testimony: “Kitty Hawk lease area has had two such floating LiDAR buoys deployed to-date over a period of multiple weather years which leads to a very high

³⁴ Tr Vol. 23, pp. 181-182.

³⁵ Tr Vol. 17, p. 147.

confidence in the expected wind speeds and production there.”³⁶ Duke has not yet done meteorological studies for CLB East and disputes whether the relative wind speed in the area can be known at this time,³⁷ but it has not provided testimony or evidence to refute Avangrid Renewables’ testimony. Avangrid Renewables’ analysis of the three lease areas and their respective NCFs is consistent with that done by an experienced offshore wind developer evaluating bidding into an offshore wind lease auction or otherwise seeking information about the market, including using publicly available meteorological data Avangrid Renewables considered participation in the CLB auctions and did this sort of diligence on CLB East and CLB West.³⁸ Projects with higher wind speeds and NCFs produce more energy and reduce the levelized cost of energy (“LCOE”) of the project.³⁹ The value delta between CLB East and Kitty Hawk is thus significant. Testimony by Duke’s Witness Pompee during the hearing created some confusion on this issue, which was subsequently clarified by Avangrid Renewables. Avangrid Renewables Witness Starrett testified:

Put in terms of CapEx, based on a simple but reasonable financial equivalence of about \$50 million per percent change in NCF, projects on a CLB lease area would need to be constructed for \$850 million less than Kitty Hawk to overcome the lower wind speeds present in the CLB lease areas and provide the same value to ratepayers. But as we stated earlier, the construction cost between the two sites will be materially identical. Therefore, based on NCF alone, the CLB lease areas would deliver energy with an LCOE of about \$10 to \$15/MWh higher than Kitty Hawk’s LCOE. That is a cost that ratepayers would feel directly regardless of the mechanism for cost recovery.⁴⁰

³⁶ Tr Vol. 23, p. 181.

³⁷ Tr Vol. 17, p. 146.

³⁸ Tr Vol. 23, p. 202.

³⁹ Tr Vol. 23, p. 181.

⁴⁰ Tr Vol. 23, p. 182.

Duke has not provided evidence refuting this delta in relative value of wind lease areas, however Duke Witness Pompee claimed that the \$850 million delta in value was a mathematical error by Avangrid Renewables and that the difference was actually \$350 million.⁴¹

Commissioner Clodfelter asked the Avangrid Renewables witness panel about this alleged error and Avangrid Renewables Witness Starrett corrected Mr. Pompee:

[Clodfelter Question] Doctor Starrett, were you listening to the testimony of the Duke Long Lead-time Resources Panel when Mr. Pompee accused Avangrid of a \$500 million mathematical error in its direct testimony?

[Starrett Answer] Yes, I was.

[Clodfelter Question] Do you have a response to that accusation?

[Starrett Answer] Yes, I was, and thank you very much for the opportunity to clarify that. In the Renewables [development] business, it's quite common to think in terms of percent change rather than percent, and that's because your starting point matters a lot. So when we're representing the LCOE of the Carolina Long Bay and Kitty Hawk, it serves as 36 and 43 percent respectively. That differential change, right, the relative change between 36 and 43 percent is a 20 percent improvement, okay.

So when I'm talking here about \$50 million dollars per percent change, that's the relative percent change. That's 20 percent. 20 times 50 is somewhere in the ballpark of \$850 million, all those being rounded [. . .]⁴²

Duke has not provided evidence refuting this delta in relative value of wind lease areas aside from Duke Witness Pompee's claim above regarding a mathematical error. However, as quoted above, Duke Witness Pompee agreed that based on information from publicly available sources that Kitty Hawk is projected to have better NCF than Carolina Long Bay.⁴³

⁴¹ Tr Vol. 17, p. 165.

⁴² Tr Vol. 23, pp. 194-195.

⁴⁴ Tr Vol. 17, pp. 166-167.

b. Underwater Cabling

Duke's sole claim that CLB East represents a better ratepayer value than Kitty Hawk is limited in evidence to Duke's claim that the preferred route for the underwater cabling required for Kitty Hawk to reach shore at New Bern may cause environmental concerns.⁴⁴ However, as already stated herein, Avangrid Renewables has already done initial outreach to federal and state agencies to confirm its preferred cabling route and is confident in the Pamlico Sound route.⁴⁵

Assuming underwater cabling through the Pamlico Sound, the Kitty Hawk cabling would be approximately 25 kilometers longer than the cabling required to connect CLB East to New Bern.⁴⁶ Based on its prior development and construction experience, Avangrid Renewables estimates that cost of each additional kilometer of underwater cabling is approximately \$1 million which, while material, is an insignificant delta in cost when considering the relative size of the respective offshore wind developments.⁴⁷ \$25 million in additional cabling costs is significantly less than the \$850 million delta in NCF value that Avangrid Renewables estimates between similarly sized projects sited on Kitty Hawk and CLB East. Even if Kitty Hawk could not be connected via the preferred Pamlico Sound route and had to follow the Duke projection – which Avangrid Renewables disputes – the delta in cost between cabling CLB East and Kitty Hawk would fall somewhere in the vicinity of \$350 million, according to Duke Witness Pompee⁴⁸, and is still significantly less than the \$850 million delta in NCF.⁴⁹

⁴⁴ Tr Vol. 17, pp. 166-167.

⁴⁵ Tr Vol. 23, pp. 206-207.

⁴⁶ Tr Vol. 23, p. 200.

⁴⁷ Tr Vol. 23, p. 200.

⁴⁸ Tr Vol. 17, pp. 165-166.

⁴⁹ Tr Vol. 17, pp. 165-166.

c. Weather

Beyond wind speed (and its effect on NCF), Kitty Hawk has a better meteorological profile than CLB East and CLB West and has less risk of major hurricane disruption.⁵⁰ Appendix II-D to Avangrid Renewables' Limited Comments states, in pertinent part: "Avangrid Renewables' analysis, based on NOAA data, shows that Kitty Hawk has a Category 3 storm every 56.7 years, whereas the Carolina Long Bay (shown below as Wilmington East area) has a Category 3+ storm every 28.3 years."⁵¹

On rebuttal, Duke sought to downplay the weather risk stating that "Avangrid's hurricane risk analysis fails to mention that Category 4 or greater hurricane event probabilities are not significantly different for the Kitty Hawk lease area (<1%) versus the Carolina Long Bay lease area (<2%)."⁵² While a small number, Duke's admission that Carolina Long Bay has *approximately double* the risk of a Category 4 hurricane than Kitty Hawk is material. Further, Avangrid Renewables' analysis includes Hurricanes sized as *Category 3 or higher*. Duke's rebuttal does not address this significant difference in risk of Category 3 (or higher) hurricanes and, while offshore wind turbines are a resilient and evolved technology designed to withstand most high winds, Duke underplays the major execution and operational risks associated with hurricanes at the CLB lease areas.

d. Certainty, viewshed, and positions

Unlike Kitty Hawk, CLB East still has unsettled disputes related to its location off the coast. Avangrid Renewables detailed these issues in its Limited Comments, including by attaching, as Appendix II-A, a letter from the North Carolina U.S. Congressional Delegation to the Bureau

⁵⁰ See, *Avangrid Renewables' Limited Comments*, p. 17.

⁵¹ *Id.*, p. 31.

⁵² Tr Vol. 29, pp. 110-111.

of Ocean Energy Management (“BOEM”) expressing concerns about the viewshed. Duke does not yet appear to have done anything to alleviate these local community concerns. Duke Witness Pompee stated, regarding the 24-nautical-mile viewshed:

Duke Energy would continue to do the work, as we have always done, to work with our stakeholders to ensure that we meet their needs. And that 24 nautical miles is just a number. The real work has to be to ensure that the communities that we serve are heard and that we meet their needs and their concerns.

This statement prompted a further question about what stakeholder activities are currently ongoing about the 24-nautical-mile viewshed issue, to which Duke Witness Pompee said he was unaware of specifics of any stakeholder activities that might be occurring.⁵³ Duke Witness Repko testified that local opposition of offshore wind is common and stated that the lease area is a triangle-shaped area which allows for minimal loss of turbines.

Avangrid Renewables disputed the claim that the shape of the CLB East lease area will mitigate the potential loss of turbine positions from an imposed viewshed buffer:

[W]e looked at Carolina Long Bay. We had considered to participate in the lease area, so we did a lot of diligence on it. The Duke [lease], we have that as being out of most, 90 positions and our own risk assessment. You could take what you want about the 24 nautical mile buffer. We took it seriously. It would put you down 46 positions.⁵⁴

Comparatively, Kitty Hawk can host wind turbines at approximately 175 positions. Since the number of wind turbine positions directly determines the amount of potential energy output, Kitty Hawk has an enormous advantage in terms of capacity and does not have the same concerns regarding community pushback on viewshed issues. This disparity in positions (and the underlying viewshed uncertainty) provides an obvious value and executability advantage for Kitty Hawk.

⁵³ Tr Vol. 17, pp. 139-140.

⁵⁴ Tr Vol. 23, p. 202

[BEGIN CONFIDENTIAL]

e. [REDACTED]

[REDACTED]

[END CONFIDENTIAL]

⁵⁵ Confidential Tr Vol. 29, p. 163.

⁵⁶ “You may file proposed orders, you may file briefs, you may file whatever you think would aid the Commission in our making decisions in this proceeding.” Tr Vol. 29, p. 127.

⁵⁷ [REDACTED]

B. The Commission Should Order a Neutral Study be Made of Offshore Wind Resources Available to North Carolina and Reap the Benefits of Competitive Sourcing.

Unlike Duke, Avangrid Renewables is not seeking the Commission to approve an initial investment in offshore wind in excess of \$300 million. Rather, Avangrid Renewables seeks to let Kitty Hawk speak for itself through an independent study of the three offshore wind sites off North Carolina conducted by a neutral third party with quantitative and qualitative analysis including, LCOE and other relevant metrics. There is no ratepayer risk associated with more thoroughly studying the three wind lease areas. The Commission can then determine a pathway forward for offshore wind before it must approve major investments on behalf of ratepayers.

Duke has repeatedly taken the position that Kitty Hawk is not for sale.⁵⁸ Avangrid Renewables unambiguously states that Kitty Hawk, or a portion thereof, is available for sale – indeed Avangrid Renewables would not be dedicating its time and resources to this proceeding if this were not the case.⁵⁹ Duke’s position appears to be based on the fact that a sale would require negotiation with Avangrid Renewables. To alleviate concerns about this negotiation that Duke has sewn into the record, Avangrid Renewables believes that the study could function, effectively, like an RFP (as set forth more fully below) and include an opportunity for the individual lease area owners to provide a pricing suite reflecting different ownership or contractual options, such as: pure conveyance of the wind lease area, a PPA, Build-Own-Transfer Model, or some other hybrid model that the Commission deems fit for this exercise.

Notably, other than Duke, no party has specifically opposed a study in testimony. The Public Staff had the most nuanced position on the matter, as well as the potential for an RFP, but ultimately aligned in concept with those supporting a comparative study of the offshore wind lease

⁵⁸ Tr Vol. 17, pp. 46, 171.

⁵⁹ Tr Vol. 23, p. 192.

areas. Notably, Public Staff Witness Metz recommended that the Commission deny Duke's proposal for near term development of CLB East, in part, because of cost results in the modeling outputs.⁶⁰ Public Staff Witness Metz went further to enumerate some of the concerns he had about the uncertainties with CLB East:

[Metz Answer] [...] the Carolina Long Bay project, given the modeling results, it's just -- it's premature at this time to move forward with the overall project, given the potential unknowns for locational guidance, sustained wind speed, capacity factors, cable routing, potential paths. Give me a few more minutes and I'll probably come up with a bunch more.

[Smith Question] But all those things would be informative in a study?

[Metz Answer] Yes.⁶¹

Public Staff Witness Metz further testified that due diligence regarding the development of offshore wind would address some of the Public Staff's concerns.⁶²

Public Staff Witness Thomas noted the difficulty in modeling offshore wind and supported the idea of site-specific characteristics in a model and further stated that "to the extent that a competitive procurement requires sufficient information to evaluate the potential options for the least cost, more information is better."⁶³ Other parties to this proceeding outright support a study and, in collaboration, have suggested that they will be advocating for such a study when they file their respective final briefs and proposed orders.

If there is no study process to consider the long-term strategy for offshore wind for North Carolina, then the Commission risks an untimely and uneconomical offshore wind development owned by Duke to be recovered by ratepayers.

⁶⁰ Tr Vol. 21, p. 223.

⁶¹ Tr Vol. 21, p. 223.

⁶² Tr Vol. 21, p. 225.

⁶³ Tr Vol. 21, pp. 226-227.

It is important to note that Duke takes the position that there is no specific Certificate of Public Convenience and Necessity (“CPCN”) process for offshore wind⁶⁴ – unless otherwise ordered by the Commission, Duke’s certificate approval process will be limited to CPCN processes and without oversight will cause risk to ratepayers. A study and process as outlined above might alleviate some of those concerns.

III. To Determine the Best and Least Cost Path to Advance Offshore Wind, the Commission Must Clarify Its Position On Ownership Within the Final Carbon Plan.

There has been significant argument and testimony on the issues related to ownership. The Commission must determine its legal conclusion on the ownership issue, and offshore wind holds a unique position within this argument as the only generation resource located in federal waters and largely falling outside the North Carolina statutory construct for additional generation resources. As noted in the outset of this Brief, the Commission must take all reasonable steps to meet the least cost compliant path to meet the HB 951 emissions reduction requirements. The following suite of options represents several reasonable pathways which could result in least cost compliance and reduce the risks to be borne by North Carolina ratepayers.

A. An Offshore Wind PPA Structure Would Provide the Optimal Ratepayer Outcome.

If this Commission wanted to take all reasonable steps to comply with the emissions reduction requirements of HB 951 in a least cost manner, it would require Duke to enter into a power purchase agreement (PPA) with a third-party wind developer. A PPA structure would decrease project costs and de-risk ratepayers from the costs associated with utility-owned wind energy. In a true PPA model, the developer would shoulder nearly all of the development risk, and provide wind energy to Duke, as its sole off taker. Even parties that have conceded the generation

⁶⁴ Tr Vol. 29, p. 120.

ownership legal argument in favor of Duke argue that a PPA structure would be preferable, including the Public Staff:

[Buffkin Question]. Okay. So just to summarize, absent a legal constraint, it would be your recommendation to use competitive procurement for getting new resources needed under the Carbon Plan?

[Witness Thomas Answer] Yes. If the Commission says that the PPAs are permissible, then yes, we would want those to be considered in the least-cost plan.

CIGFUR,⁶⁵ CCEBA,⁶⁶ the Tech Customers,⁶⁷ AGO,⁶⁸ Kingfisher Energy Holdings, LLC⁶⁹ and Walmart⁷⁰ all support PPA structure proposals as well.

The contract terms, including a long-term, fixed contract, would provide project finance certainty to the developer, cost certainty to the utility, and reduced cost and risk for the ratepayers. North Carolina has seen considerable success with this type of method in the solar market, including the Competitive Procurement for Renewable Energy (“CPRE”) program.

It is not hard to see the risks of Duke’s development and ownership proposal regarding offshore wind. The initial development costs alone are high, and, without a competitive process, there is no economic incentive to effectively manage ongoing development costs. A competitive PPA structure, like CPRE, provides North Carolina the opportunity to de-risk captive ratepayers.

⁶⁵ *Comments of CIGFUR II & III on Issues Designated to Non-Hearing Track* (September 9, 2022), p. 7.

⁶⁶ *Responsive Comments of Carolina Clean Energy Business Association* (September 9, 2022), pp. 5-6.

⁶⁷ *Tech Customers’ Comments on Non-Hearing Issues Relating to Duke’s Proposed Carbon Plan* (September 9, 2022), pp. 11-14.

⁶⁸ *Responsive Comments of the Attorney General’s Office* (September 9, 2022), pp. 11-13.

⁶⁹ *Comments of Kingfisher Energy Holdings, LLC* (September 9, 2022), p. 4-7.

⁷⁰ *Responsive Comments of Walmart, Inc.* (September 9, 2022), pp. 5-6.

B. Even a modified PPA or other program could de-risk ratepayers if the Commission believes some version of “ownership” needs to be retained.

If the Commission determines that Duke must own offshore wind due to the language in HB 951, then the Commission should avail its ratepayers of an alternative ownership method that would de-risk offshore wind development.

1. Request for procurement for offshore wind.

Public Staff Witness Jeff Thomas testified that the Commission could order a request for procurement for offshore wind:

[B]ut certainly [the Commission] could, based on the results of a study, order Duke to open up a competitive procurement for offshore wind resources that would be open to those three leaseholders, and then through an independent administrator or evaluator, DEP could pick the most competitive of those three leases regardless of who owns it and whether it’s a regulated affiliate or not. I think that’s the important concept here, is we are just trying to make sure that ratepayers get the best bang for their buck in terms of offshore wind.⁷¹

Avangrid Renewables believes the study process outlined in Section II above could inform an RFP and, in the interest of efficiency, could even be structured as a single process. The Commission, with help from the Public Staff and intervenors, could determine the best option for North Carolina, in terms of cost and risk profile, while still providing each of the leaseholders an opportunity to convey their lease area to Duke. The types of offers solicited in such an RFP (whether PPA prices, partnership terms, and/or sale prices) should be informed by the Commission’s determinations regarding HB 951’s ownership requirements.

2. Joint ownership between Avangrid/Duke.

Duke takes the position that joint ownership is barred by the ownership provision of HB 951.⁷² The issue of the definition of ownership has not been thoroughly briefed to determine

⁷¹ Tr Vol. 22, p. 352.

⁷² Tr Vol. 17, p. 175.

whether Duke's reading on joint ownership is well-taken. However, it is common in the offshore wind industry to maintain joint ownership of facilities and utilize this structure to alleviate some of the risk and capital requirements that would otherwise fall on a single owner. Joint ownership of offshore wind projects is a tried-and-true development method that can ease the risk on each side of the ownership split. Should the Commission deem this structure to be a workable solution, Avangrid Renewables believes the Commission should direct Duke to include such an option in the offshore wind study/RFP proposed above.

3. Build/Own/Transfer.

During the Carbon Plan proceeding, Duke Witness Maura Farver testified that Duke had changed its position on build-own-transfer regarding stand-alone storage:

[Farver Answer] · · The earlier draft of the rebuttal testimony stated that we were not going to pursue a build-own-transfer option for standalone storage, and upon further reflection, we have edited that to allow for further discussion about the potential benefits of a build-own transfer arrangement for standalone storage.

[Burns Question] · · So it's -- the Company is now open to the discussion and possibility of build-own-transfer for standalone storage?

[Farver Answer] Yes. We'd like to learn more about that.⁷³

It is unclear why Duke changed its position on a build-own-transfer structure for standalone storage, or why Duke refuses to consider alternative ownership models for offshore wind. It does not follow logically for Duke to be open to the idea of build-own-transfer for standalone storage, but to oppose such an approach for offshore wind. Duke's positions on when HB 951's ownership provision applies and when it does not is inconsistent, confusing, and not in the best interests of ratepayers nor in service to a least cost carbon plan.

⁷³ Tr Vol. 28, p. 167.

Both the Commission and Duke have experience implementing each of the above-listed paradigms. Unlike complete utility ownership and development of an offshore wind project, contracting for what is effectively wholesale energy from an independent power producer is a comfortable and efficient fit for Duke and is likely to result in lower rates. Similarly, a partial ownership split or a build-own-transfer arrangement would reduce ratepayer risk and encourage lower rates than traditional utility ownership.

C. Ownership, Affiliate Transaction, and Regulatory Issues.

Neither DEC nor DEP currently owns an offshore wind lease area. Under Duke’s legal position on ownership, Duke’s affiliate offshore wind lease area *cannot* be selected by the Commission as part of this Carbon Plan.⁷⁴ Instead, Duke seeks to convey CLB East via an affiliate transaction from its non-regulated affiliate.⁷⁵ N.C.G.S. § 62-153(a) provides for Commission review of an affiliate transaction and, if necessary, a hearing on the matter. Duke Witness Repko claims that the affiliate transaction will be, in comparison with a negotiation with a third-party for an offshore wind lease area, “simple and straightforward.”⁷⁶ However, other parties to this proceeding, including the Public Staff, have opposed Duke’s request for approval for offshore wind development including the affiliate transaction procurement of CLB East.⁷⁷ It stands to reason that parties in this docket, and possibly others, would oppose such an affiliate transaction without the proper groundwork via a study of the three offshore wind lease areas to determine the ratepayer risk and value associated with each.

⁷⁴ “[...] third parties shall own 45% of new solar and solar paired with energy storage (“SPS”), and Duke Energy shall own all other Facilities selected by the Commission to achieve the Carbon Plan[.]” *Duke Energy Carolinas, LLC and Duke Energy Progress, LLC’s Pre-Hearing Comments on Non-Expert Track Legal and Policy Issues*, p. 19.

⁷⁵ Tr Vol. 17, p. 117.

⁷⁶ Tr Vol. 29, p. 117.

⁷⁷ Tr Vol. 21, p. 127.

Duke's position that an affiliate transaction is a clearer path to ownership is wishful thinking given that it is subject to considerable regulatory risk and delay and may put the 2030 intermittent deadline in danger.

CONCLUSION

For all the reasons set forth herein, Avangrid Renewables requests that the Commission reject Duke's proposal for development of offshore wind including the procurement of CLB East. Avangrid Renewables further requests that the Commission make a legal determination wherein Duke is not required by statute to own offshore wind resources that may contribute to the reduction of emissions in North Carolina as required by HB 951 and that it is a reasonable step for the Commission to allow for alternative ownership or commercial mechanisms related to offshore wind to allow for least cost compliance with HB 951.

Avangrid Renewables finally requests the Commission order an independent third-party study of offshore wind to be conducted, with transparency, Commission oversight, and intervenor determined metrics, that such study be completed within six months of the entry of the final order in this proceeding, and that such study consider the Commission's definition of ownership, requesting offer prices from lease area owners to make the study results actionable.

/s/ Benjamin W. Smith

Benjamin W. Smith

N.C. Bar No. 48344

KILPATRICK TOWNSEND & STOCKTON LLP

4208 Six Forks Road, Suite 1400

Raleigh, North Carolina 27609

Telephone: (919) 420-1719

BWSmith@KilpatrickTownsend.com

Attorney for Avangrid Renewables, LLC

CERTIFICATE OF SERVICE

I, Benjamin W. Smith, certify that on this date I served the foregoing document upon all parties of record by hand delivery, electronic mail and/or depositing a copy thereof in the United States mail, postage prepaid and addressed.

This 24th day of October, 2022.

/s/ Benjamin W. Smith
Benjamin W. Smith
N.C. Bar No. 48344
KILPATRICK TOWNSEND & STOCKTON LLP
4208 Six Forks Road, Suite 1400
Raleigh, North Carolina 27609
Telephone: (919) 420-1719
BWSmith@KilpatrickTownsend.com