

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. E-100, SUB 179

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of
Duke Energy Progress, LLC, and Duke Energy Carolinas, LLC, 2022 Biennial Integrated Resource Plans and Carbon Plan) ORDER ADOPTING INITIAL
) CARBON PLAN AND
) PROVIDING DIRECTION FOR
) FUTURE PLANNING

HEARD: Monday, July 11, 2022, at 7:00 p.m., in Courtroom D7, Durham County Courthouse, 510 S. Dillard St., Durham, North Carolina 27701

Tuesday, July 12, 2022, at 7:00 p.m., in Courtroom 317, New Hanover County Courthouse, 316 Princess Street Wilmington, North Carolina 28401

Wednesday, July 27, 2022, at 7:00 p.m., in Courtroom 1-A, Buncombe County Courthouse, 60 Court Plaza, Asheville, North Carolina 28801

Thursday, July 28, 2022, at 7:00 p.m., in Courtroom 5350, Mecklenburg County Courthouse, 832 E. 4th Street Charlotte, North Carolina 28202

Tuesday, August 23, 2022, at 1:30 p.m. and 4:30 p.m. via Webex

Tuesday, September 13, 2022, at 9:00 a.m., in Commission Hearing Room 2115, Dobbs Building, 430 North Salisbury Street, Raleigh, North Carolina 27603

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

APPEARANCES:

For Duke Energy Carolinas, LLC, and Duke Energy Progress, LLC:

Jack E. Jirak, Esq., Kendrick C. Fentress, Esq., Jason A. Higginbotham, Esq., and Kathleen Hunter-Richard, Esq., Duke Energy Corporation, Post Office Box 1551, Raleigh, North Carolina 27602

Lara S. Nichols, Duke Energy Corporation, 4720 Piedmont Row Drive, Charlotte, North Carolina 28210

41. ARs provide flexible operations that can support hydrogen production, thermal storage, and integration with variable renewable energy resources.

42. New nuclear generation is expected to provide firm, dispatchable, carbon-free electricity to the grid with greater operational flexibility than traditional nuclear generation.

43. Duke estimates that its proposed near-term development activities for new nuclear in 2022 through 2024 will cost \$72,000,000 and include: (a) beginning new nuclear Early Site Permit (ESP) development; and (b) beginning development activities for the first two SMR units. The Commission finds that this authorization of initial development costs constitutes approval under N.C.G.S. § 62-110.7(b).

44. Offshore wind provides resource diversity to complement solar variability, especially in the winter months. Offshore wind's highest seasonal generation is in the winter mornings when solar generation output is not available.

45. Once an offshore wind lease for a Wind Energy Area (WEA) has been executed, it takes approximately 8 to 10 years to achieve commercial operation.

46. The Bureau of Ocean Energy Management (BOEM) to date has leased three WEAs near the coast of North Carolina for the potential development of offshore wind, including the Kitty Hawk, North Carolina WEA and two WEAs in the Carolina Long Bay (CLB) area near Cape Fear, North Carolina. Each WEA has a unique set of meteorological and geographical characteristics which will affect the WEA's cost of development and production profile, and therefore its economics.

47. All three WEAs would require cabling from the wind facility to onshore, with Kitty Hawk's having a significantly longer subsea cabling requirement due to its location near the North Carolina/Virginia border.

48. All three WEAs will require significant new transmission infrastructure in order to connect to the existing transmission system.

49. Duke Energy Renewables Wind, LLC, an affiliate of Duke, has acquired one of the two WEAs in the CLB Area. Duke remains open to pursuing other opportunities for ownership of cost-effective offshore wind WEAs.

50. Duke proposes the following offshore wind development activities for 2022 to 2024 at a total cost of \$317,400,000: (a) enter into a lease (\$155,400,000); (b) perform development activities (\$62,000,000); and (c) construct transmission from landing site to point of injection (\$100,000,000).

51. Avangrid Renewables holds the lease to the Kitty Hawk WEA and states that it is willing to negotiate for a sale of its interest to Duke.

Offshore Wind

Duke witness Repko testified that Duke has requested that the Commission approve certain near-term development actions related to offshore wind. Tr. vol. 17, 81-82. Duke witness Pompee testified that while Duke has yet to develop an offshore wind facility, the deployment of the technology has a 25-year global track record. *Id.* at 110. Duke states that the domestic offshore wind market is growing, as there are over 30 GW of projects with leases in place to achieve the State's carbon dioxide emissions reduction mandates and economic policy goals. *Id.* at 110. Duke proposes to develop the CLB WEA, which is one of three currently available siting opportunities in the Carolinas (which includes CLB and the Kitty Hawk WEAs). *Id.* at 111-12. In May 2022, Duke Energy Renewables Wind LLC (DERW), an unregulated affiliate of Duke, entered into a lease for the CLB WEA, approximately 20 miles from Cape Fear. This wind lease area consists of approximately 55,000 acres and cost \$155,000,000. *Id.* at 111; tr. vol. 29, 103.

Duke witness Pompee testified that the three WEAs off North Carolina could produce approximately 4,800 MW of offshore wind energy. Tr. vol. 17, 111. Witness Pompee stated that offshore wind offers numerous benefits, such as "carbon [dioxide] emissions reduction, fuel cost savings, and increased renewable resource diversity in regions with high penetration of solar energy." *Id.* at 112. In addition, the relatively high capacity factors and lower intermittency compares favorably with other low carbon resources, and the distance from shore provides an opportunity to create larger and taller wind towers, thus resulting in site outputs that are measured in gigawatts. *Id.* at 112-13.

Duke testified that a variety of obligations and timing requirements accompany holders of leases for offshore wind energy areas. Duke agrees that under the applicable law and lease, DERW would have to submit a site assessment plan before June 1, 2023, and a construction operations plan before either December 2026 or June 2027, unless DERW seeks and is granted additional time from BOEM, the federal agency that regulates offshore wind development in federal waters. Tr. vol. 17, 113-14; tr. vol. 29, 127, 133. If DERW fails to comply with these obligations (in the absence of the grant of additional time), Duke agrees that DERW runs the risk of having BOEM cancel its CLB lease. Tr. vol. 29, 129-30.

Duke testified that after obtaining a lease for an offshore WEA, it can take eight to ten years to get to the point where electric power is commercially available. Tr. vol. 18, 80. In order to achieve offshore wind generation in this eight-to-ten-year timeframe, Duke outlines a series of steps that would be necessary, including: (1) obtaining BOEM's approval of a site assessment plan by 2024 for the CLB WEA; and (2) submitting a construction and operations plan to BOEM by 2027. Tr. vol. 7, Duke Proposed Carbon Plan, Ch. 4, 20-21.

Duke does not necessarily have to be the entity obtaining approval of a site assessment plan and submitting a construction and operations plan in order to keep offshore wind on the eight-to-ten-year timeframe. If DERW complies with the applicable law (without seeking extensions), it would meet the timeframe Duke proposes. Duke agrees that if DERW moved expeditiously, DERW's actions would keep Duke on the same timeframe as outlined in its near-term action plan. Tr. vol. 29, 134.

In fact, Duke believes its affiliate DERW is currently working on a site assessment plan that it targets for completion by mid-2023. Tr. vol. 17, 120; tr. vol. 18, 121. When asked if DERW would sell to Duke in five years, witness Repko testified: “I don’t know. I presume so.” Tr. vol. 18, 83.

Under the rules governing affiliates, Duke’s purchase from DERW would be made at the lower of cost or market. Duke asserts that because the auction was an independent, third-party process, the May 2022 auction necessarily set the market price. Tr. vol. 7, Duke Proposed Carbon Plan, Ch. 4, 19; tr. vol. 29, 103. Duke testified that its assertion regarding market price has not accounted for the IRA’s impact on the offshore wind moratorium. Tr. vol. 18, 83.

Duke projects the near-term costs associated with offshore wind development to be \$317,400,000. It would use approximately half of the funds to purchase DERW’s CLB lease. Tr. vol. 17, 119. Duke was unaware of whether DERW would purchase its lease back if Duke acquired it from DERW and then did not move forward with offshore wind generation. Tr. vol. 18, 83-84.

Two intervenors in this case, TotalEnergies and Avangrid, have also leased offshore wind lease areas. TotalEnergies has leased approximately 55,000 acres in the CLB offshore WEA that is adjacent to that of DERW. Tr. vol. 17, 111. Avangrid has leased 122,405 acres approximately 27 miles from the Outer Banks (the Kitty Hawk lease area). Avangrid Initial Comments at 5.

Duke and Avangrid both support the need to develop offshore wind, as Duke witness Pompee testified that Duke’s modeling economically selected 800 MW of offshore wind energy in 2029 for both Portfolios 1 and 2. *Id.* at 123-24. Avangrid witness Starrett testified “that at least 1.3 GW of offshore wind can . . . serve as a cornerstone to meeting the 70% reduction target required by N.C.G.S. § 110.9. by 2030, with more offshore wind capacity available to follow thereafter.” Tr. vol. 23, 165. But testimony from Duke and Avangrid reveals differing views of the benefits of the various WEAs. Avangrid purchased the lease for the Kitty Hawk WEA. *Id.* at 177. Duke’s unregulated affiliate, DERW, purchased the lease for one of the CLB WEAs. Tr. vol. 29, 95. Avangrid states that the Kitty Hawk lease area is on a much more advanced permitting timeline than that of DERW. Avangrid Initial Comments at 15-17. Avangrid witness Starrett testified that — using publicly available data — the Kitty Hawk WEA provides a superior net capacity factor (NCF) of 43% versus the 36% for the CLB WEA. Tr. vol. 23, 181-82. Duke witness Pompee testified that Duke disagrees with Avangrid’s calculated NCF for the CLB WEA. As witness Pompee testified, “[d]etermining the NCF of any lease area requires detailed site assessment planning and, at this time, [Duke] does not believe that any party has performed the requisite analysis to definitively establish an NCF of 36% for the Carolina Long Bay WEA.” Witness Pompee concludes that the NCF for the CLB WEA that DERW owns is not known without further study, the kind that will occur if Duke pursues the development activities. Tr. vol. 29, 114.

Witness Pompee also testified that the Kitty Hawk WEA would require longer undersea cable than Avangrid claims. The shortest route for undersea cable for the Kitty Hawk WEA would have to traverse the Pamlico Sound, an environmentally sensitive area. According to Pompee, crossing the Pamlico Sound “introduces significant uncertainty due to challenges that could be encountered from a permitting, timing, and cost perspective, and it is likely that BOEM will require an assessment of multiple alternatives to a cable route through Pamlico Sound to reduce potential impacts.” *Id.* at 111-13. Avangrid witness Starrett responded that the National Park Service and North Carolina Division of Marine Fisheries suggested crossing the Pamlico Sound as a potential preferred route but admitted permitting could complicate matters. Tr. vol. 23, 207. Witness Pompee testified that the less challenging undersea cable route for the Kitty Hawk WEA would require roughly 100 miles of additional cabling.¹⁶ This longer route would add approximately \$350 million to the cost of developing the Kitty Hawk WEA which could offset the lower NCF from the CLB WEA that DERW owns. Tr. vol. 18, 105 (transcript error; Pompee answering). Whether or not a route crossing the Pamlico Sound is ultimately feasible is unknowable at this time.

Avangrid testified that it “is open to any manner of transaction that is on reasonable terms and fairly values the Kitty Hawk lease area, including PPA transactions, or a sale of the lease area, in whole or in part.” *Id.* at 173. However, testimony from Avangrid witness Starrett revealed that the ability to advance development of the Kitty Hawk WEA for the benefit of Duke’s ratepayers is uncertain. *Id.* at 211-12; 217, 219. First, Avangrid witness Starrett admitted that the current iteration of the Construction and Operations Plan (COP) for the Kitty Hawk North WEA places its interconnection point at Virginia Beach, Virginia, and amending the COP to change that interconnection point to a point in North Carolina could add approximately 18 months to the site’s development timeline. *Id.* Second, Avangrid witness Starrett also admitted that while the COP for Kitty Hawk South WEA lists North Carolina counties as possible interconnection points, they could easily amend the COP to list Virginia counties as interconnection points through PJM. Tr. vol. 23, 216-17. Third, Public Staff witness Thomas testified that development of the Kitty Hawk parcels is not as straightforward because “there is no guarantee that the more advanced Kitty Hawk offshore wind resource can be secured by Duke, as electric public utilities in Virginia also have stringent carbon reduction requirements under the Virginia Clean Economy Act.” Tr. vol. 21, 62.

Duke’s proposed portfolio P1 includes the addition of 800 MW of offshore wind to the generation mix in 2030 with no increase through 2050. Portfolio P2 includes the addition of 800 MW of offshore wind to the generation mix in 2030, the addition of 800 MW in 2032, and the total offshore wind capacity climbing to 3,200 MW by 2050. Portfolio P3 includes no offshore wind as part of the generation mix through 2050. Portfolio P4 includes the addition of 800 MW of offshore wind to the generation mix in 2032 with no increase through 2050. Portfolios SP5 and SP6 did not select offshore wind as part of the generation mix

¹⁶ See *also* tr. vol. 29, 111 (“[Duke] disagrees with Avangrid’s analysis that the export route differential is only 25 km. Our analysis of transmission routing indicates an estimate of a longer cable by about 170 km.”).

until the 2040s but include at least 1,600 MW of capacity by 2050. Tr. vol. 7, Duke Proposed Carbon Plan, App. E, 73-77; tr. vol. 7, 262; tr. vol. 10, 133.

Offshore wind is selected in only half of the portfolios before the year 2040. Tr. vol. 18, 81. Public Staff witness Metz, therefore, recommended that Duke re-evaluate the need for offshore wind in the 2024 Carbon Plan. Tr. vol. 21, 221-22. Public Staff witness Metz recommended that, at this time, the Commission deny the request to begin the near-term development activities Duke seeks, especially the affiliate transfer from DERW to DEP. *Id.* at 127. Public Staff witness Thomas stated that DERW can undertake the development work for the offshore lease before transferring the lease to Duke. Witness Thomas asserted that this would help ratepayers by reducing risks, supports Duke's "check and adjust" plan, and provides the Commission with an opportunity to evaluate the other lease areas. Tr. vol. 22, 334-35.

For his part, Duke witness Repko testified that if the Commission were to adopt the Public Staff's position, it "would effectively eliminate the ability to keep offshore wind as an option to meet the 70% Interim Target of the Carbon Plan," and goes on to reemphasize Duke's "all of the above" strategy. Tr. vol. 29, 96.

While it is well established globally, with more than 30 GW installed capacity, primarily located in Europe and Asia, offshore wind development in the United States on the scale Duke proposes is nascent. Tr. vol. 7, Duke Proposed Carbon Plan App. J, 1; tr. vol. 21, 127. Presently, hurdles exist with offshore wind, including the lack of Jones Act-compliant seagoing ships needed for construction activities and the risk of strong hurricanes in the area. Public Staff Initial Comments at 91-92.

Offshore wind generation requires undersea cabling, landfall facilities, and overland routing to the point of interconnection to Duke's grid. The NCTPC performed a 2020 Offshore Wind Study which provided a comprehensive screening analysis for several potential points of interconnection. However, that study was not an official generator interconnection study responding to an interconnection request a facility submitted to the DEP Transmission Provider in accordance with the FERC-approved process in the Open Access Transmission Tariff (OATT). In order for offshore wind to appropriately connect to the grid, DEP would have to conduct such studies. Tr. vol. 16, 100.

The Commission concludes that at this time the facts do not support Duke's request for approval of an affiliate transfer of the CLB WEA lease. Given the uncertainty around the price and nature of any potential deal for the Kitty Hawk WEA, and the very early state of understanding of the CLB WEAs, the Commission cannot determine whether or not a transfer from DERW to DEP is consistent with least cost principles at this time. While Avangrid argues that Kitty Hawk will provide the most value to ratepayers, Duke counters that the price certainty of its proposed CLB-first approach outweighs Kitty Hawk's supposed advantages. Duke admits that it cannot determine yet the relative merits of the various WEAs. The Commission requires a better understanding of the variables in order to determine prudence. To the extent Duke chooses to pursue offshore wind development in the near-term, and views purchase of a WEA lease as necessary to furtherance of that

objective, it should be prepared to support that decision in a future proceeding, including information showing that its course of action was in keeping with least cost principles.

The Commission supports offshore wind and agrees that Duke's "no regrets" and "all of the above" approaches are appropriate. However, the near-term development steps Duke outlines with respect to offshore wind first require identification of the appropriate WEA. Therefore, the Commission determines that Duke should commence evaluating the three alternative WEAs. The Commission directs Duke to study and consider each of the three WEAs off the coast of North Carolina before pursuing acquisition of a leasehold. This evaluation should include best estimates of all relevant costs to acquire and develop a WEA and deliver energy to the point of injection into Duke's grid. To the greatest extent practicable, this evaluation should compare the WEAs on a similar basis to one another, including a comparison of the levelized cost of energy to the point of injection into Duke's grid.

The Commission notes that offshore wind is not selected until the 2040s in SP5 and SP6 and is not selected at all in P3. However, offshore wind is selected in portfolios P1, P2, and P4, representing both pathways as Duke lays out in its proposed Carbon Plan. The Commission is not persuaded by the Public Staff's contention that because offshore wind is not selected until the 2040s, or ever, in half the portfolios modeled, the Commission should deny near-term actions at this time. Denying all the near-term actions would prevent Duke from using offshore wind within 8-10 years of any eventual decision to go forward, effectively nullifying the portfolios that rely upon offshore wind within that timeframe. On the other hand, even if Duke does not need offshore wind for interim compliance, the near-term actions would be foundational if it does eventually need offshore wind energy.

DERW is not a party to this proceeding, and it is not clear what actions DERW can or will take with respect to development of the CLB lease. The Commission notes for clarity that this Order in no way applies to DERW or any other wind lease holder that this Commission does not regulate, nor does this Order prevent their undertaking any work on or development of an offshore wind lease.

The Commission rejects Duke's assertion that Duke's failure to acquire DERW's lease in the near term will "effectively eliminate" offshore wind as an option for interim compliance. The Commission finds that holders of offshore wind leases may develop the offshore WEAs without Duke's ownership. In fact, both the applicable law and provisions of the BOEM lease require such activities. Should holders of offshore wind leases fail to move forward with the development of their areas for generation, they run the risk of cancelation. Bolstering the Commission's finding, Duke testified that it believes DERW is currently working on the required site assessment plan. Moreover, now that the Commission has clarified the issue of ownership, Duke may have additional options to purchase the other WEAs off the coast of North Carolina. Avangrid testified that it is willing to engage in discussions with Duke for the sale of its offshore wind lease.

The Commission directs Duke to report the findings of its evaluation of the WEAs to the Commission either in the first CIPRP filing or sooner for consideration. This study will permit more accurate modeling in the CIPRP proceeding and enable the Commission to

better understand the costs and benefits of potential offshore wind resources. Both Avangrid and the Public Staff argue for an independent third party to conduct this study. While the Commission recognizes that third-party studies can provide benefits, the Commission determines that Duke is the proper party to make this evaluation and that a third-party study is not necessary. The Commission notes the potential that the sunk cost of the CLB WEA lease, from the parent company's perspective, may bias the outcome of the decision, and as such, directs Duke to adopt steps in its evaluation process to protect against this potential bias. Further, to the extent there are any near-term development activities common to all the WEAs under evaluation, including the related onshore transmission infrastructure needed from the point of injection into the Duke grid and thence inland to load centers, Duke may proceed with these activities. Also, the Commission directs Duke to investigate and pursue any federal funding that is available, through the IIJA or the IRA or any subsequent legislation, for offshore wind facilities and associated infrastructure. To the extent that Duke chooses not to pursue any such funding, the Commission expects Duke to provide sufficient justification for why doing so was prudent.

As is the case for pumped storage hydro, the Commission deems Duke's decision to incur costs associated with the limited development activities outlined in the preceding paragraph to be reasonable and prudent in furtherance of the Carbon Plan. To the extent the Commission finds, in a future cost recovery proceeding, the specific activities involved in, and the costs of pursuing these limited development activities to be prudent and reasonable (whether or not the Commission ultimately selects offshore wind for the Carbon Plan), Duke may recover in rates the North Carolina allocable portion of Duke's share of such costs at the time(s) and in the manner determined to be appropriate by the Commission and as otherwise allowed by North Carolina law. To further clarify, the Commission is not preapproving any particular future ratemaking treatment regardless of whether the plant is ultimately never begun, abandoned, or completed. Instead, the Commission retains full discretion to determine the appropriate ratemaking treatment in a future general rate case proceeding.

EVIDENCE AND CONCLUSIONS FOR FINDING OF FACT NO. 52

Grid Edge and Customer Programs – Load Reduction

The evidence supporting these findings and conclusions is in Duke's Carbon Plan proposal, testimony and exhibits of Duke's Modeling and Near-Term Actions Panel and Grid Edge Panel, Appalachian Voices witnesses McIlmoil and Kinkhabwala, NCSEA et al. witness Fitch, Public Staff witness Williamson, and the entire record in this proceeding.

In its Carbon Plan proposal, Duke includes certain modeling assumptions that reduce its peak demand and load forecasts based on demand-side activities. Tr. vol. 7, Duke Proposed Carbon Plan, Ch. 2, 7. Duke characterizes this as the first prong of its three-step approach to maintaining reliability while reducing carbon dioxide emissions. Duke seeks to "shrink the challenge" through load reduction from these demand-side activities. *Id.* at 1. Duke groups Grid Edge and other customer programs into three categories: (1) programs that allow customers to reduce carbon dioxide emissions;

approximately ten stakeholders, representing a variety of interests, including health, environmental, and economic impacts of the Carbon Plan. *Id.* Duke explains that the stakeholder engagement effort will be ongoing and will involve a select number of individuals committed to working together with Duke to explore these complex issues and identify areas for potential partnership and progress. *Id.*

RTHC et al. express significant concern regarding the sufficiency of Duke's outreach towards — or accessibility to — low-income, minority, and rural communities, both in terms of quality of the outreach as well as timing of the outreach. They highlight for the Commission that “that only those living in impacted communities can capture the full range of the lived experience.” RTHC et al. Partial Proposed Order at 6-7, 10.

Duke also held an Impacted/Frontline Communities stakeholder meeting on May 5, 2022, to initiate engagement with communities that Duke expects future coal retirements to impact. Tr. vol. 7, 49. Person County advocates that the Commission require Duke to provide community support, including workforce development and charitable contributions, to communities like Person County, which the transition will likely impact. Person County Partial Proposed Order at 11-12.

The Commission recognizes the extent of the stakeholder outreach Duke conducted in conjunction with this initial Carbon Plan proceeding and recognizes that the limitation of time was a very real constraint on Duke's ability to expand its engagement to all potentially impacted stakeholders. Duke understands that continued and expanded engagement will be necessary going forward, in order to hear from and respond to those communities uniquely impacted by the transition to a carbon neutral electric system. Tr. vol. 7, Duke Proposed Carbon Plan, App. B, 22-23. Accordingly, the Commission directs Duke to continue to develop targeted engagement plans for impacted communities, to enact these plans in the near term and to report to the Commission on these plans and the ensuing engagement with stakeholders in its upcoming CPIRP filing.

IT IS, THEREFORE, ORDERED as follows:

1. That Duke shall file its first proposed biennial CPIRP by no later than September 1, 2023;

2. That Duke shall engage with the Public Staff and any interested stakeholders to draft a new proposed Commission rule governing CPIRP, subject to the following parameters, and file the proposed rule with the Commission by no later than April 28, 2023, in a new and separate proceeding:

a. By September 1, 2023, and every two years thereafter, Duke shall file with the Commission its proposed biennial CPIRP, including the testimony and exhibits of expert witnesses. At the time of the filing, Duke shall provide complete modeling input and output data files to intervenors. Each proposed biennial CPIRP shall include a proposed near-term action plan discussing the specific actions Duke

recommends taking over the near term following the Commission's final order on the proposed CPIRP;

b. No later than 180 days after the later of either September 1 or the filing of Duke's proposed biennial CPIRP, the Public Staff or any other intervenor may file testimony and exhibits of expert witnesses commenting on, critiquing, or giving alternatives to Duke's proposed CPIRP;

c. No later than 45 days after the filing of intervenor testimony and exhibits, Duke may file its rebuttal testimony and exhibits of expert witnesses;

d. The Commission shall schedule an expert witness hearing to review the CPIRP proposals beginning on the second Tuesday in May following Duke's proposed biennial CPIRP filing, and shall set one or more hearings to receive testimony from the public at a time and place of the Commission's designation; and

e. The proposed rule filing shall also propose a separate mechanism for the filing and review of annual compliance plans that DEP and DEC previously filed with their respective IRP filings;

3. That to meet the Interim Target, Duke shall be required to reduce the carbon dioxide emitted by the electric generating facilities sited within North Carolina that it owns, operates, or that are operated on its behalf to 22,759,556 short tons of carbon dioxide;

4. That Duke shall incorporate the impacts of the IRA, the IIJA, and other future legislative changes, as well as the impacts of other changing conditions such as inflationary pressures, into its first biennial CPIRP that it will file with the Commission on or before September 1, 2023, and into any CPCN applications it files in the interim;

5. That in its first proposed biennial CPIRP Duke shall make all reasonable efforts to maximize its modeling optimization period, and seek to model a 15-year, or greater, optimization period;

6. That in its first proposed biennial CPIRP Duke shall model Solar Plus Storage resources using dynamic dispatch and bi-directional inverter capability, subject to modeling limitations. Furthermore, Duke and the Public Staff shall work together closely on modeling Solar Plus Storage resources during the next proceeding and, if they do not reach consensus on modeling techniques, each shall provide a robust explanation to the Commission as to the points of disagreement and agreement;

7. That in its first proposed biennial CPIRP Duke shall make all reasonable efforts to model storage resources in the capacity expansion and production cost modeling steps without manual adjustments, subject to modeling limitations, and if such limitations remain, that Duke shall develop robust cost sensitivity analyses that clearly demonstrate the cost impacts of potential resource replacement;

8. That Duke shall proactively address risks to system reliability in its upcoming first proposed biennial CIPRP, including but not limited to engaging with the Public Staff in leveraging actual operational experience to continue to plan for the future, mitigate foreseeable risk, and prepare for the challenges ahead;

9. That Duke shall take appropriate steps to optimally retire its coal fleet on a schedule commensurate with its Carbon Plan proposal filed on May 16, 2022;

10. That in determining the least cost path for ratepayers, Duke shall evaluate whether securitization of eligible costs related to subcritical coal-fired units will maximize ratepayer savings;

11. That Duke shall re-study the potential costs and benefits of a further conversion of Belews Creek and provide the results in its initial CIPRP filing;

12. That Duke shall continue to pursue SLR for its existing nuclear fleet and shall develop a schedule detailing its plans for SLR of the existing nuclear fleet and provide this information in its upcoming CIPRP filing;

13. That Duke shall continue to review the NRC SLR regulatory process, paying particular attention to the two nuclear licenses that the NRC reset in early 2022, and shall incorporate any lessons learned from its review into its first proposed biennial CIPRP;

14. That Duke shall pursue expansion of flexibility of its existing natural gas fleet and target specific natural gas plants or regions of its service areas that would benefit the most from flexibility expansion projects. In its planning for the expansion of the flexibility of the existing natural gas fleet, the Commission directs Duke to identify least cost flexibility expansion projects that will improve or maintain system operability and reliability;

15. That Duke shall analyze and incorporate, in future modeling efforts, realistic assumptions regarding the availability of firm natural gas transportation capacity and shall work with the Public Staff in achieving those assumptions;

16. That Duke shall use the natural gas price forecast method approved herein in its proposed CIPRP and in subsequent avoided cost proceedings;

17. That Duke, in its CIPRP filing, shall include in its modeling efforts the costs and assumptions for natural gas-fired generating facilities operating after 2050;

18. That in any future CPCN filing for natural gas-fired generating resources, Duke shall provide an analysis of the sufficiency of firm natural gas transportation capacity for the proposed facility;

19. That during the 2023-2024 period Duke shall target the procurement of 2,350 MW of new solar;

20. That Duke shall hold stakeholder discussions regarding a competitive, least cost 2023 Solar Procurement and shall file, by than no later than February 15, 2023, a proposal to procure new solar generation to be placed in service by 2028, subject to a VAM, including a targeted procurement of Solar Plus Storage in alignment with the 2023 DISIS. Duke's proposal shall include proposed terms and conditions, operational conditions, and a pro forma PPA to be used for Solar Plus Storage resources;

21. That Duke shall file, no later than February 15, 2024, a proposal to procure the remainder of 2,350 MW of new solar generation to be placed in service by 2028, subject to a VAM, including a targeted procurement of Solar Plus Storage in alignment with the 2024 DISIS;

22. That Duke is authorized to conduct the initial development and procurement activities for 1,000 MW standalone storage and 600 MW of Solar Plus Storage, consistent with those activities outlined for the 2022-2024 timeframe in Table 4-11 of Duke's Carbon Plan proposal;

23. That Duke shall engage with onshore wind stakeholders as soon as practicable and in formulating its first biennial CPIRP, Duke shall consider onshore wind and particularly any pertinent information gleaned from its stakeholder engagement, and, to the extent that future Encompass modeling economically selects utility-owned onshore wind resources, Duke should support that proposal in detail in its first biennial CPIRP;

24. That with respect to near-term development actions for small modular and advanced nuclear reactors, Duke is hereby authorized to take steps it outlines in its proposed Carbon Plan and this authorization constitutes approval under N.C.G.S. § 62-110.7(b). Duke shall report in its first CPIRP filing on the specific activities and costs incurred to date;

25. That the Commission approves Duke's decision to incur project development costs associated with the initial project development activities proposed for new pumped storage hydro at Bad Creek II and requires Duke to report in its first CPIRP filing on the specific activities and costs incurred to date;

26. That Duke shall study and consider each of the three currently available WEAs off the coast of North Carolina, adopting steps in its evaluation process to protect against any potential affiliate bias, and report the findings of its evaluation of the WEAs to the Commission in its first CPIRP filing;

27. That Duke shall investigate and pursue any federal funding that is available, through the IIJA or the IRA or any subsequent legislation, for offshore wind facilities and associated infrastructure;

28. That, in addition to Duke's proposed UEE forecast of 1% of eligible retail sales, Duke shall provide an alternative modeling scenario in its next CPIRP filing that uses a UEE forecast of 1.5% of eligible retail sales. Further, Duke shall continue to

explore avenues to increase load reduction by implementing new DSM/EE programs, implementing EE and load reduction programs for wholesale customers, and reducing the number of non-residential customers that have opted out of the DSM/EE program;

29. That Duke should continue to explore rate design as a load shaping tool to encourage customers to change their load profiles to support the use of new generation facilities;

30. That Duke should include, in its CPIRP filing, a separate and robust analysis on the electrification of transportation, both in terms of load projections and actions undertaken to encourage charging at off-peak times or during times of excess energy and to facilitate the location of charging infrastructure on the system that avoids or obviates the need for system upgrades;

31. That Duke shall initiate a docket to review the DEC and DEP DSM/EE cost recovery mechanisms to consider the enablers Duke proposes, including: (i) updating the inputs underlying the cost benefit test in the mechanisms; (ii) using the as-found baseline for EE measures; (iii) changing the definition of low-income customer; and (iv) developing guidelines for expedited regulatory approval of DSM/EE pilot programs;

32. That Duke shall engage with stakeholders to develop guidelines for expedited regulatory approval of customer programs and pilots for non-DSM/EE customer programs that enable load reduction or load management consistent with the Carbon Plan including rate design programs and EV programs;

33. That Duke shall take all reasonably necessary steps to construct the fourteen 2022 RZEP projects further identified herein;

34. That Duke shall make all reasonable efforts in accordance with state and Federal law to update and improve its local transmission planning process including increasing transparency and coordination;

35. That Duke shall make semi-annual reports in the CPIRP sub-docket regarding the status of transmission upgrades including timing milestone completion, and cost estimates to the Commission pursuant to Section 2.5 of Attachment N-1 of the OATT;

36. That Duke shall make all reasonable efforts to comply with the carbon dioxide emissions reduction mandates of N.C.G.S. § 62-110.9, but shall not alter, delay, or modify any scheduled maintenance, asset management operations, or upgrades on its system or to the delivery points of other LSEs that would negatively impact the reliability or service quality of the customers of those LSEs;

37. That to the extent Duke proposes future transmission Network Upgrades to support its Carbon Plan compliance for consideration by the NCTPC, Duke shall include an assessment of the timing, costs, and benefits of the Network Upgrades on its system as well as the systems of other LSEs, in its future CPIRP filings, and shall also include

documentation of its efforts to coordinate with all LSEs in North Carolina on these upgrades;

38. That Duke shall address the rate disparity between DEC and DEP in its upcoming DEC general rate case application in Docket No. E-7, Sub 1276, in any update filing made in its DEP general case proceeding in Docket No. E-2, Sub 1300, and shall provide an update on rate disparity in its first biennial CPIRP filing along with an update of recent actions taken to pursue the recommended merger; and

39. That Duke shall continue to develop targeted engagement plans for impacted communities, as are further discussed in conjunction with Finding of Fact No. 66, shall enact these plans in the near term, and shall report to the Commission on these plans and the ensuing engagement with stakeholders in its initial CPIRP filing.

ISSUED BY ORDER OF THE COMMISSION.

This the 30th day of December, 2022.

NORTH CAROLINA UTILITIES COMMISSION

A handwritten signature in black ink that reads "A. Shonta Dunston". The signature is written in a cursive, flowing style.

A. Shonta Dunston, Chief Clerk

Commissioner Daniel G. Clodfelter concurs.