N

Cross Reference

For the benefit of the Public Service Commission of South Carolina ("PSCSC") and the North Carolina Utilities Commission ("NCUC"), Duke Energy Carolinas, LLC ("DEC") and Duke Energy Progress, LLC ("DEP" and, together with DEC, "Duke Energy" or the "Companies") provide Table N-1 to identify where in the Carolinas Resource Plan (the "Plan") the Companies have addressed specific requirements or expectations set forth in S.C. Code Ann. § 58-37-40. Table N-2 provides requirements set forth in the *Order Requiring Modifications to Integrated Resource Plans*, Order No. 2021-447, Docket Nos. 2019-224-E & 2019-225-E (June 28, 2021) as well as the *Order Accepting 2022 Integrated Resource Plan Updates*, Order No. 2023-189, Docket Nos. 2019-224-E, 2019-225-E, 2021-8-E & 2021-10-E (Mar. 22, 2023). Table N-3 identifies where the Companies have addressed requirements in Proposed Rule R8-60A (pending NCUC approval in Docket No. E-100, Sub 191). Additionally, Table N-4 identifies where in the Plan the Companies address the requirements stated in the O*rder Adopting Initial Carbon Plan and Providing Direction for Future Planning*, Docket No. E-100, Sub 179 (Dec. 30, 2022) and *Order Clarifying Generator Interconnection Standards and Requiring Periodic Filing of Information Regarding Risks Posed By Inverter-Based Resources*, Docket No. E-100, Sub 101, at 7 (Ordering Paragraph No. 3) (Apr. 13, 2023) ("IBR Order"). Finally, a glossary of terms applicable to the Carolinas Resource Plan is provided in Table N-5.

Table N-1: S.C. Code Ann. § 58-37-40 Cross Reference

Requirement	Source	Document Location
Each electrical utility must submit its integrated resource plan to the commission. The integrated resource plan must be posted on the electrical utility's website and on the commission's website.	S.C. Code Ann. § 58-37-40(A)	Submit Plan/Post on Website
[An integrated resource plan shall include] a long-term forecast of the utility's sales and peak demand under various reasonable scenarios;	S.C. Code Ann. § 58-37-40(B)(1)(a)	Chapter 2 Appendix C Appendix D
An integrated resource plan shall include] a forecast of the utility's peak demand, details regarding the amount of peak demand reduction the utility expects to achieve, and the actions the utility proposes to take in order to achieve that peak demand	S.C. Code Ann. § 58-37-40(B)(1)(i)	Chapter 3 Chapter 4 Appendix C Appendix D
[An integrated resource plan shall include] data regarding the utility's current generation portfolio, including the age, licensing status, and remaining estimated life of operation for each facility in the portfolio;	S.C. Code Ann. § 58-37-40(B)(1)(f)	Appendix B
[An integrated resource plan shall include] The type of generation technology proposed for a generation facility contained in the plan and the proposed capacity of the generation facility, including fuel cost sensitivities under various reasonable scenarios;	S.C. Code Ann. § 58-37-40(B)(1)(b)	Chapter 3 Appendix C Appendix E
[An integrated resource plan shall include] an analysis of the cost and reliability impacts of all reasonable options available to meet projected energy and capacity needs	S.C. Code Ann. § 58-37-40(B)(1)(h)	Chapter 3 Appendix C Appendix E
[An integrated resource plan shall include] several resource portfolios developed with the purpose of fairly evaluating the	S.C. Code Ann. § 58-37-40(B)(1)(h)	Chapter 3

Requirement	Source	Document Location
range of demand-side, supply-side, storage, and other technologies and services available to meet the utility's service obligations.		Appendix C
[An integrated resource plan may include] distribution resource plans or integrated system operation plans.	S.C. Code Ann. § 58-37-40(B)(2)	Appendix C Appendix G Appendix L
[An integrated resource plan shall include] Such portfolios and evaluations must include an evaluation of low, medium, and high cases for the adoption of renewable energy and cogeneration, energy efficiency, and demand response measures, including consideration of the following: i. customer energy efficiency and demand response programs; ii. facility retirement assumptions; and iii. sensitivity analyses related to fuel costs, environmental regulations, and other uncertainties or risks;	S.C. Code Ann. § 58-37-40(B)(1)(e)	Chapter 3 Appendix C Appendix F Appendix H
[An integrated resource plan shall include] The type of generation technology proposed for a generation facility contained in the plan and the proposed capacity of the generation facility, including fuel cost sensitivities under various reasonable scenarios;	S.C. Code Ann. § 58-37-40(B)(1)(b)	Chapter 3 Appendix C
[An integrated resource plan shall include] projected energy purchased or produced by the utility from a renewable energy resource;	S.C. Code Ann. § 58-37-40(B)(1)(c)	Chapter 3 Chapter 4 Appendix C Appendix I
[An integrated resource plan shall include] a summary of the electrical transmission investments planned by the utility;	S.C. Code Ann. § 58-37-40(B)(1)(d)	Appendix C Appendix L

Table N-2: PSCSC Order No. 2021-447, PSCSC Order No. 2023-189 Cross Reference

Requirement	Source	Document Location
Duke is required to use the Utility Cost Test when developing EE/DSM scenarios and savings projections in its future IRPs, IRP updates, and market potential studies.	Order Requiring Modifications to Integrated Resource Plans, Order No. 2021-447 at 86 (Ordering Paragraph No. 2), Docket Nos. 2019-224-E & 2019-225-E (June 28, 2021) ("Order Requiring Modifications to 2020 IRPs")	Appendix H Attachment II
[In future IRPs, IRP updates, and market potential studies], Duke must work with the EE/DSM Collaborative to identify a set of reasonable assumptions surrounding: 1) increased market acceptance of existing technologies and 2) emerging technologies to incorporate into EE/DSM saving forecasts.	Order Requiring Modifications to 2020 IRPs at 86 (Ordering Paragraph No. 3)	Appendix H
Duke should [also] work with members of the EE/ DSM Collaborative to ensure that residential saving projections are not overly dependent on behavioral programs with short savings persistence. Further, Duke's next IRPs should identify which of the Collaborative's recommendations relating to market acceptance, emerging technologies, and types of programs were and were not adopted when developing market potential studies and IRPs.	Order Requiring Modifications to 2020 IRPs at 86 (Ordering Paragraph No. 3)	Appendix H
[Duke shall include in all future IRPs] Continued engagement with stakeholders to identify additional cost-effective EE/DSM programs to achieve greater levels of energy savings. (ORS Recommendation #7)	Order Requiring Modifications to 2020 IRPs at 89 (Ordering Paragraph No. 21(d))	Appendix H

Requirement	Source	Document Location
[In its Modified IRP, IRP Update, and future full IRPs], Duke shall remodel its portfolios using natural gas pricing forecasts that rely on market prices for eighteen months before transitioning over eighteen months to the average of at least two fundamentals-based forecasts, as recommended by CCEBA Witness Lucas.	Order Requiring Modifications to 2020 IRPs at 88 (Ordering Paragraph No. 10)	Chapter 2 Appendix C Appendix K
[Duke shall include in all future IRPs] A review of their natural gas price forecasting methodology and investigation of alternative approaches. (ORS Recommendation #8)	Order Requiring Modifications to 2020 IRPs at 90 (Ordering Paragraph No. 21(f))	Appendix C Appendix K
[In its next full IRP], Duke shall account for the risk of non-available firm fuel for CT units during peak winter mornings and evenings when building heating load is highest.	Order Requiring Modifications to 2020 IRPs at 87 (Ordering Paragraph No. 9)	Appendix C Appendix K
[In its next full IRP], Duke shall address the risks of natural gas transportation and delivery, including rejection of cancellation of pipeline projects; and shall quantitatively address the potential impacts of transport and delivery risk on natural gas availability and pricing.	Order Requiring Modifications to 2020 IRPs at 87 (Ordering Paragraph No. 8)	Appendix C Appendix K
[In the Modified 2020 IRPs and future IRPs], Duke shall prepare additional load forecast scenarios, such as high and low scenarios that account for economic and other types of uncertainty. The level of uncertainty evaluated in the future load forecast analyses used to develop IRPs should be consistent with Duke's resource adequacy studies.	Order Requiring Modifications to 2020 IRPs at 86 (Ordering Paragraph No. 1)	Appendix D Appendix C Attachment I
[In future IRPs], Duke must evaluate high and low EE/DSM cases across a range of fuel and $C0_2$ assumptions to better understand what level of EE/DSM should be implemented if fuel costs rise or higher CO_2 costs are imposed.	Order Requiring Modifications to 2020 IRPs at 86 (Ordering Paragraph No. 4)	Appendix C
[Duke shall include the following in all future IRPs] Revised calculation of the average retail rate impact on customers so	Order Requiring Modifications to 2020 IRPs at 90 (Ordering Paragraph No. 21(l))	Chapter 3 Appendix C

Requirement	Source	Document Location
that the assumptions and methodologies are consistent with the calculations of the Present Value Revenue Requirement (PVRR), except for the levelization of the capital-related costs. (ORS Recommendation #22, 23)		
[Duke shall include the following in all future IRPs] Minimax regret analysis and other risk analyses. (ORS Recommendation #26)	Order Requiring Modifications to 2020 IRPs at 90 (Ordering Paragraph No. 21(k))	Chapter 3 Appendix C
[In future IRPs, including Modified IRPs and IRP Updates], Duke shall perform and include a minimax regret analysis of the type described and performed in this proceeding.	Order Requiring Modifications to 2020 IRPs at 89 (Ordering Paragraph No. 19)	Chapter 3 Appendix C
Duke shall perform a comprehensive coal retirement analysis to inform development of their 2022 IRPs.	Order Requiring Modifications to 2020 IRPs at 87 (Ordering Paragraph No. 7)	Appendix F
[Duke shall include the following in all future IRPs] Enhanced coal retirement analysis methodology. (ORS Recommendation #14)	Order Requiring Modifications to 2020 IRPs at 90 (Ordering Paragraph No. 21(g)	Appendix F
Duke is ordered to adjust its modeling as suggested by witness Lucas to take into account the increasing market saturation of single-axis solar systems in the DEC and DEP territories.	Order Requiring Modifications to 2020 IRPs at 88 (Ordering Paragraph No. 15)	Chapter 2 Appendix C
For purposes of modeling solar PPAs as a selectable resource, the Company shall assume a contract term of at least 20 years, and operational characteristics identical to CPRE projects.	Order Requiring Modifications to 2020 IRPs at 88 (Ordering Paragraph No. 12)	Appendix C Appendix I
[In all future IRPs and IRP Updates], Duke shall include a solar purchase power resource option as a sensitivity.	Order Requiring Modifications to 2020 IRPs at 89 (Ordering Paragraph No. 20)	Chapter 2 Chapter 3 Appendix C

Requirement	Source	Document Location
		Appendix I
[Duke shall include the following in all future IRPs] An additional solar generic resource option modeling assumptions that reflects the kind of solar purchase power agreements ("PPA") prices that may be available in the market. (ORS Recommendation #18)	Order Requiring Modifications to 2020 IRPs at 90 (Ordering Paragraph No. 21(i))	Appendix C Appendix I
In its Modified IRP and future IRPs, Duke shall use the NREL ATB Low figures for battery storage costs.	Order Requiring Modifications to 2020 IRPs at 88 (Ordering Paragraph No. 16)	Appendix C Appendix I
[Duke shall include the following in all future IRPs] Corrected capital and variable cost assumptions for combustion turbine and battery storage resources and re-evaluate the reasonableness of the assumptions. (ORS Recommendation #16, 17)	Order Requiring Modifications to 2020 IRPs at 90 (Ordering Paragraph No. 21(h))	Appendix C Appendix I Appendix K
[In its next full IRP], Duke shall, if it elects to impose a limitation on interconnections, provide a limitation that is analytically justified, nondiscriminatory, and accounts both for the expected benefits of queue reform and the possibility of making further investments in Duke's capacity to study and interconnect new generation.	Order Requiring Modifications to 2020 IRPs at 89 (Ordering Paragraph No. 18)	Appendix C Appendix I Appendix L
Duke should make a number of changes to its development of effective load carrying capability ("ELCC") values and revisions to its capacity expansion modeling that incorporates those ELCC values, including: a. Applying single-step optimization rather than multi-step optimization when conducting its capacity expansion modeling; b. Creating an ELCC "surface" that determines the combined capacity value of different portfolios of solar and storage;	Order Requiring Modifications to 2020 IRPs at 87 (Ordering Paragraph No. 6)	Appendix C Appendix I Attachment II

Requirement	Source	Document Location
c. Revising resource ELCC studies by: i. Varying ELCC as a function of load, including applying a 2035 load profile; ii. Modeling all future solar as single-axis tracking consistent with industry trends; and iii. Updating DR values to include those identified in the Winter Peak Demand Reduction Potential Assessment.		
[Duke shall include the following in all future IRPs] Further investigation regarding solar capacity values and solar plus battery energy storage capacity values, with stakeholder input, discussed as part of a stakeholder engagement process. (ORS Recommendation #4, 19)	Order Requiring Modifications to 2020 IRPs at 90 (Ordering Paragraph No. 21(j))	Appendix A Appendix C Appendix I Attachment II
[Duke shall include the following in all future IRPs] A more detailed discussion of the specific methodology used to develop the synthetic loads for extreme low temperature periods. (ORS Recommendation #2)	Order Requiring Modifications to 2020 IRPs at 89 (Ordering Paragraph No. 21(b))	Appendix M Attachment I
[Duke shall include the following in all future IRPs] Further development of the methodology to model the effects of extreme low temperatures on winter peak load. (ORS Recommendation #3)	Order Requiring Modifications to 2020 IRPs at 89 (Ordering Paragraph No. 21(c))	Appendix M Attachment I
Duke must study the relationship between extreme winter weather and load, and develop more sophisticated methods for estimating the potential impact of future extreme winter weather on load for use in future IRP proceedings.	Order Requiring Modifications to 2020 IRPs at 86 (Ordering Paragraph No. 5)	Appendix D Attachment I
[Duke shall include the following in all future IRPs] Details regarding the status of the Southeast Energy Exchange Market ("SEEM"), details regarding important current and planned activities, and information regarding the monetary benefits that have been or could be achieved by implementation of the	Order Requiring Modifications to 2020 IRPs at 90 (Ordering Paragraph No. 21(m))	Appendix L

Requirement	Source	Document Location
Southeast Energy Exchange Market (SEEM). (ORS Recommendation #25)		
Duke shall implement all commitments made in response to ORS's recommendations, as described in the Rebuttal Testimony of Duke's witnesses, and as set forth in Table 1 and Table 2 of ORS Witness Hayet's Surrebuttal Testimony. ORS Recommendation #11: Recommended the Companies supply additional information regarding its Nuclear Unit relicensing plans (including a timeline) and its plans to conduct economic evaluations to assess the benefits of relicensing the units. Also, recommended the Companies provide additional insight into why it is beginning this process so far in advance ofthe relicensing dates. Recommended this information be provided in a modified IRP in this proceeding. Recommendation #12: DEC Only - Recommended that DEC provide the status of its plans to relicense the Bad Creek Pumped Hydro units, including any actions it will have to take as part of the relicensing process and any costs that it will incur to relicense the units. Recommended this information be provided in a modified IRP in this proceeding.	Order Requiring Modifications to 2020 IRPs at 90-91 (Ordering Paragraph No. 22)	Chapter 4 Appendix J
Continue to model both Company-owned and Power Purchase Agreement (PPA) solar as selectable resource options and not arbitrarily limit the selection of PPA solar resources.	Order Accepting 2022 Integrated Resource Plan Updates, Order No. 2023-189 at 4, Docket Nos. 2019-224-E, 2019-225-E, 2021-8-E & 2021-10-E (Mar. 22, 2023) ("Order Accepting 2022 IRP Updates")	Chapter 2 Appendix C
Include a comprehensive coal retirement analysis to determine the most economic retirement dates, while preserving reliability.	Order Accepting 2022 IRP Updates at 4	Appendix C Appendix F

Requirement	Source	Document Location
Include a Portfolio that is optimized utilizing the economic coal retirement dates, developed without carbon taxes, and that does not include any carbon dioxide reduction constraints	Order Accepting 2022 IRP Updates at 4	Appendix C Appendix F
[DEC and DEP should] include the impacts of extreme weather events in the reliability analysis performed as part of the target reserve margin study used in the upcoming 2023 Comprehensive IRPs, and DEC and DEP should also develop and include a resiliency plan to deal with reliability during extreme weather	Order Accepting 2022 IRP Updates at 4	Appendix C Attachment I
[DEC and DEP should] also include an analysis of the financial impacts of federal investment tax credits contained in the Inflation Reduction Act & the Infrastructure Investment and Jobs Act in their 2023 Comprehensive IRPs, specifically as it relates to the selection of future generation resources.	Order Accepting 2022 IRP Updates at 4	Chapter 2 Appendix C Appendix E

Table N-3: NCUC Proposed R8-60A Cross Reference

Requirement	Source	Document Location
Base Planning for Native Load Requirements and Firm Planning Obligations. — The CPIRP shall include a forecast of native load requirements for the Base Planning Period (including known and quantified load reduction measures taken by wholesale customers pursuant to their FERC-jurisdictional wholesale power contracts) and other system capacity or firm energy obligations extending through at least one summer and one winter peak; supply-side resources (including owned/leased generation capacity and firm purchased power arrangements) and grid edge resources (including demand side management programs, rate designs, voltage control, customer sited generation and storage, and energy efficiency)	Proposed Rule R8-60A(d)(1)	Chapter 2 Appendix C Appendix D

Requirement	Source	Document Location
expected to satisfy those loads; and the reserve margin thus produced.		
Long-Term Planning for Carbon Neutrality. — The CPIRP shall also include a longer-term planning forecast beyond the Base Planning Period that is designed to ensure that the electric public utilities remain on a path that complies with the provisions set forth in G.S. 62-110.9. For purposes of analyzing resource needs to achieve carbon neutrality beyond the Base Planning Period, the electric public utilities may use simplifying assumptions and analytical approaches recognizing the inherent uncertainty in long-range planning and the ability to make planning adjustments in future updates to the CPIRP.	Proposed Rule R8-60A(d)(2)	Chapter 2 Appendix C Appendix D
[The CPIRP must include, at a minimum,] a comprehensive analysis of all resource options (supply- and demand-side) considered by the electric public utilities to serve customer native load requirements and firm planning obligations during the Base Planning Period and the Carbon Neutrality Planning Horizon in a manner that maintains or improves upon the adequacy and reliability of the existing grid as required by G.S. 62-110.9(3). The electric public utilities shall analyze potential resource options and combinations of resource options to serve its system needs, taking into account the sensitivity of its analysis to variations in future estimates of peak load, energy requirements, and other significant assumptions, including, but not limited to, the risks associated with extreme weather conditions, fuel costs, construction/implementation costs, and costs of complying with environmental regulation. Additionally, this analysis should account for, as applicable, system operations, compliance with state and federal regulations, and other qualitative factors.	Proposed Rule R8-60A(d)(3)	Chapter 2 Chapter 3 Appendix C Appendix D Appendix E Appendix H Appendix I Appendix J Appendix L
[Each updated CPIRP shall include] several resource portfolios developed with the purpose of fairly evaluating the range of	Proposed Rule R8-60A(d)(4)	Chapter 2 Chapter 3

Requirement	Source	Document Location
demand-side, supply-side, energy storage, and other technologies available to meet each electric public utility's service obligations during the Base Planning Period and Carbon Neutrality Planning Horizon. For each resource portfolio, the electric public utilities shall identify planned resource additions and retirements, projected carbon emission reductions, present value revenue requirements over the Base Planning Period and Carbon Neutrality Planning Horizon and explain whether, and if so, to what extent the electric public utilities plan to use offsets as allowed by G.S. 62-110.9 as part of the least cost path to achieving carbon neutrality.		Appendix C Appendix F
Evaluation of Resource Options. — As part of its CPIRP process, each electric public utility shall consider and compare a comprehensive set of potential resource options, including both demand-side and supply-side options, to determine the least cost combination (on a long-term basis) of resource options for reliably meeting the anticipated needs of its system in achieving the State's authorized carbon reduction goals. The CPIRP should include an assessment of power generation, transmission and distribution, grid modernization, energy storage, energy efficiency measures, demand-side management, and the latest technological breakthroughs to achieve the least cost path consistent with the requirements of G.S. 62-110.9.	Proposed Rule R8-60A(d)(5)	Chapter 2 Appendix B Appendix C Appendix E Appendix H Appendix I Appendix L
[Each updated CPIRP shall] describe how the proposed CPIRP ensures that generation and resource changes presented in the plan maintain or improve upon the adequacy and reliability of the existing grid. This analysis should address the electric public utilities' assessment of and plans to maintain appropriate planning reserve margins and maintain or improve resource adequacy of their systems.	Proposed Rule R8-60A(d)(6)	Chapter 2 Chapter 3 Chapter 4 Appendix C Appendix L Appendix M

Requirement	Source	Document Location
[Each updated CPIRP shall] identify the generation facilities and other resources proposed to be selected by the Commission pursuant to and subject to the requirements of G.S. 62-110.9(2). To the extent resources are selected based upon resource diversity, the electric public utility shall provide additional support for its decision based on the costs and benefits of alternatives to achieve the authorized carbon reduction goals and meet the requirements of G.S. 62-110.9.	Proposed Rule R8-60A(d)(7)	Chapter 4
[Each updated CPIRP shall include]: a near-term action plan that the electric public utilities propose to execute over the near-term identifying specific supply-side and demand-side development, procurement, and retirement activities, including upgrades to the transmission system necessary to interconnect new supply-side resources. The CPIRP should also identify longer-term resource planning risks, strategies, or other considerations that the electric public utilities are monitoring that could impact achieving the State's carbon reduction goals in a manner that complies with the requirements set forth in G.S. 62-110.9.	Proposed Rule R8-60A(d)(8)	Chapter 4 Appendix F Appendix K
Forecasts of Load, Supply-Side Resources, and Demand-Side Resources. — The forecasts filed as part of its CPIRP shall include descriptions of the methods, models, and assumptions used by the electric public utility to prepare its gross and net peak load in megawatts (MW) and energy sales (MWh) forecasts and the variables used in the models. The forecasts filed by the electric public utilities shall include, at a minimum, the following: (i) The most recent ten-year history and a forecast of customers by each customer class, the most recent ten-year history and a forecast of energy sales (MWh) by each customer class, and the most recent ten-year history and a forecast of the utility's summer and winter peak load (MW);	Proposed Rule R8-60A(f)(1)	Chapter 2 Appendix C Appendix D Appendix H Appendix I

Requirement	Source	Document Location
(ii) A detailed calculation of the impact of grid edge resources on gross load, including comparably quantified and verified information provided by wholesale customers within the utility's balancing area, and an explanation of why those resources are treated as load modifying or as a resource modeled on the supply side; (iii) The electric public utility's forecast for at least the Base Planning Period, including peak loads for summer and winter seasons of each year, annual energy forecasts, reserve margins, and load duration curves, with and without projected supply or demand-side resource additions. The forecast shall also indicate the projected effects of grid edge resources on the forecasted annual energy and peak loads on an annual basis for the Base Planning Period, and these effects also may be reported as an equivalent generation capacity impact; and (iv) For new technologies that may have significant impacts on the electric public utility's net load forecast, such as sector or process electrification or load modifying technologies, the utility should provide a description of the forecast methodology and projections.		
[Each electric public utility shall] include a list of existing generation resources in service, with the information specified below for each listed resource. The information shall be provided for the Base Planning Period: a) Type of fuel(s) used; b) Unit characteristics (Type of unit i.e., CT, Nuclear, etc., summer and winter capacity ratings, in-service date, and planned retirement date, if applicable);	Proposed Rule R8-60A(f)(2)(i)	Chapter 2 Appendix B Appendix C Appendix J Appendix K

Requirement	Source	Document Location
c) Location of each existing unit; d) A list of units for which there are specific plans for life extension, refurbishment or upgrading. The reporting electric public utility shall also provide the expected (or actual) date removed from service, general location, capacity rating upon return to service, expected return to service date, and a general description of work to be performed; and e) Other changes to existing generating units that are expected to increase or decrease generation capability of the unit in question by an amount that is plus or minus 10%, or 10 MW, whichever is greater.		
[The electric public utility shall] include a summary of its existing energy storage in service, with the information specified below for each technology. The information shall be provided for the Base Planning Period: a. Storage technology (Pumped storage hydro, battery, etc.); and b. Aggregate power capacity and designed storage duration.	Proposed Rule R8-60A(f)(2)(ii)	Appendix B
[The electric public utility shall] include a list of planned generation resource additions, the rationale as to why each listed resource addition was selected, and the following for each listed addition: a. Type of fuel(s) used; b. Unit characteristics (Type of unit i.e., CT, Battery, etc., summer and winter capacity ratings, in-service date, and planned retirement date, if applicable;	Proposed Rule R8-60A(f)(2)(iii)	Chapter 3 Chapter 4 Appendix C

Requirement	Source	Document Location
c. Location of each planned unit to the extent such location has been determined; and d. Summaries of the analyses supporting any new generation additions included in its forecast for the Base Planning Period, including its designation as baseload capacity, if applicable.		
[The electric public utility shall] include a list of planned energy storage additions, the rationale as to why each listed resource addition was selected, and the following for each listed addition: a. Storage technology (Pumped storage hydro, battery, etc.); and b. Aggregate power capacity and designed storage durations.	Proposed Rule R8-60A(f)(2)(iv)	Chapter 3 Chapter 4 Appendix C Appendix E Appendix I
[Each electric public utility shall] provide a summary of all non-utility electric generating facilities and energy storage in its service areas, including customer-owned and stand-by generating facilities. This summary shall aggregate capacities by generation type (solar, hydro, biomass, etc.).	Proposed Rule R8-60A(f)(3)	Appendix B
[The electric public utility shall] include a list of firm wholesale purchased power contracts currently in effect, including the primary fuel type, capacity (including its designation as base, intermediate, or peaking capacity), location, expiration date, treatment of the wholesale resource in CPIRP modeling after expiration, and volume of purchases actually made since the last CPIRP for each contract.	Proposed Rule R8-60A(f)(4)(i)	Appendix B Appendix C
[The electric public utility shall] discuss the results of any Request for Proposals (RFP) that the electric public utility has	Proposed Rule R8-60A(f)(4)(ii)	Chapter 4 Appendix I

Requirement	Source	Document Location
issued for purchases of solar generation from third parties and for acquisition for utility ownership and, as applicable, RFPs for acquisition, transfer, or engineering, procurement and construction of other selected generation or storage resources since its last CPIRP. This discussion shall include a description of each RFP, the number of entities responding to the RFP, the number of proposals received, the terms of the proposals, and an explanation of why the proposals were accepted or rejected. The discussion shall also address how the results of the most recent RFP completed during the biennial CPIRP period are incorporated into the electric public utility's analysis of its long-range energy and capacity needs. If any of this information is readily accessible in documents already filed with the Commission, the electric public utility may incorporate by reference the document or documents in its CPIRP, so long as the electric public utilities provide the docket number and the date of filing.		Appendix L
[The electric public utility shall] include a list of the wholesale power sales contracts for the sale of capacity or firm energy for which the utility has committed to sell power during the Base Planning Period, the identity of each wholesale entity to which the utility has committed itself to sell power during the planning horizon, the number of megawatts (MW) on an annual basis for each contract, the length of each contract, and the type of each contract (e.g., native load priority, firm, etc.).	Proposed Rule R8-60A(f)(4)(iii)	Appendix B
Demand-Side Management and Energy Efficiency. — The electric public utility shall include an assessment of the portfolio of existing and future grid edge resources including demand-side management and energy efficiency programs consistent with the most recently filed DSM/EE cost recovery rider filed by the electric public utility pursuant to Rule R8-69 and G.S. 62-133.9(c). The electric public utility shall appropriately reflect grid edge resources as either load modifiers or as a resource	Proposed Rule R8-60A(f)(5)	Chapter 2 Appendix C Appendix D Appendix H

Requirement	Source	Document Location
considered on the supply side based upon the operating characteristics of the resource. For purposes of utility planning, the electric public utility shall model energy efficiency as a load modifying resource, ensuring its priority in utility planning. The electric public utility's modeling of the load modification associated with energy efficiency shall include a low, base, and high case.		
Transmission System Planning - The electric public utility shall discuss the adequacy of its transmission system and identified future transmission needs (100 kV and above). With respect to future needs, the electric public utility shall include an overview of the utility's local and regional transmission planning process and discuss identified needs as well as planned transmission lines and facilities appearing in its most recent local transmission planning report that, as identified in that report, could reasonably be placed into service during the Base Planning Period.	Proposed Rule R8-60A(f)(6)(i)	Appendix L
The electric public utility shall] include a list of planned, new or to be upgraded, transmission lines (100 kV or over) and transformers (low side voltage 100 kV or over) which are under construction or for which there are specific plans to be constructed during the Base Planning Period, including the capacity and voltage levels, location, and schedules for completion and operation. a. The electric public utility shall describe how applicable planned improvements may enable specific siting of new resources or provide expected and planned impacts to other resource interconnection constraints or operations of the systems.	Proposed Rule R8-60A(f)(6)(ii)	Appendix L

Requirement	Source	Document Location
Non-wires alternatives — The electric public utility shall provide an overall assessment methodology for non-wires alternatives, including a descriptive summary of analysis performed or used by the utility in the assessment of alternative solutions to transmission constraints that may be more cost-effective, such as locating generation in less constrained areas or strategically locating energy storage resources. or the dispatch of distributed energy resources of its wholesale customers located within the electric public utility's balancing area to the extent the electric public utility has rights to dispatch, operate, and control such resources in the same manner as the electric public utility's own resources.	Proposed Rule R8-60A(f)(6)(iii)	Appendix G Appendix L
Modeling of System Operations. — Each electric public utility shall provide a discussion of or applicable study addressing how utility relationships and system interconnections are modeled in the CPIRP including how relevant planning and operation functions influence modeling, such as modeled balancing areas and interconnections, joint dispatch agreements, energy exchange markets, and other future operating efficiencies planned by the electric public utility during the Base Planning Period.	Proposed Rule R8-60A(f)(7)	Appendix C Appendix L
[The electric public utilities shall] also include, as applicable, a discussion of other planning factors influencing CPIRP modeling, such as corporate emission reduction goals or generation resource restrictions, legal or regulatory requirements from other authorities or jurisdictions that materially impact the resource plan, and the impact of these factors on the utilities' long-range resource plans over the Base Planning Period and Carbon Neutrality Planning Horizon, as applicable.	Proposed Rule R8-60A(f)(7)(i)	Chapter 1 Chapter 3 Chapter 4 Appendix C
The electric public utility shall discuss the results that are expected from integrated (generation, transmission and/or	Proposed Rule R8-60A(f)(7)(ii)	Appendix G

Requirement	Source	Document Location
distribution) systems planning processes, how integrated systems planning is used in the CPIRP process, and the impact of it and its wholesale customers' distributed energy resources and non-traditional solutions on resource planning and load forecasting.		
[The electric public utility shall include]: • an overall modeling framework and methodology for existing and potential generating and storage resources, including a descriptive summary of material assumptions and analysis performed or used by the utility in the assessment. • general information on any changes to the methods and assumptions used in the assessment since its most recently approved CPIRP, including supportive studies impacting assessment and selection of resources.	Proposed Rule R8-60A(f)(8)	Chapter 2 Appendix C Appendix I
To the extent that an updated unit retirement analysis is conducted as a part of the CPIRP, the electric public utility shall include a descriptive summary of material assumptions and analysis performed that may impact the retirement date modeled such as transmission requirements or replacement resource needs to enable executable retirement of resources.	Proposed Rule R8-60A(f)(8)(i)	Chapter 3 Chapter 4 Appendix F Appendix L
Maintaining or Improving Reliability and Resource Adequacy. — The electric public utility shall provide a description of, and justification for, the methodology by which the CPIRP will demonstrate that system reliability will be maintained or improved throughout the Base Planning Period and Carbon Neutrality Planning Horizon. To the extent that the electric public utility's standards for quantifying that the reliability of the system has been maintained has changed, the electric public	Proposed Rule R8-60A(f)(9)	Appendix G Attachment I Appendix M

Requirement	Source	Document Location
utility should discuss the reasons for the changes to these standards, including impacts to resource adequacy studies, effective load carry capability studies, or other applicable reliability studies. The electric public utility shall also describe coordination efforts with its wholesale customers to utilize their resources to maintain or improve reliability.		
[Each electric public utility shall] provide a table for a reference portfolio that shows, for both winter and summer peaks, the available capacity, wholesale purchases and sales, capacity from non-utility generation, load (gross and net of grid edge resources), retirements, new capacity additions, and estimated reserve margin for each year of the Base Planning Period.	Proposed Rule R8-60A(f)(10)	Appendix B Appendix C
[Each electric public utility shall] calculate and provide a description of, and justification for, the methodology by which the utility determines a first year of avoidable capacity need (First Year of Avoidable Capacity).	Proposed Rule R8-60A(f)(10)(i)	Appendix C
Evaluation of Resource Portfolios and Selection of Resources. — The electric public utility shall provide a description and a summary of the results of its analyses of potential resource options and combinations of resource options (supply-side and demand-side), including relevant information pertaining to portfolio costs (present value of revenue requirements and average retail customer bill impact analyses), operability and reliability, and CO_2 emissions. Taking into account the resource portfolios presented in the proposed CPIRP, the electric public utilities will designate resources for selection by the Commission as the proposed near-term action plan for implementation by the electric public utilities following the Commission's final order on the proposed CPIRP. The near-term action plan required by this Rule should discuss the specific actions the utilities propose to take over the near-term to progress carbon emissions reductions in a least-cost	Proposed Rule R8-60A(f)(11)	Chapter 3 Chapter 4 Chapter NC Appendix C

Requirement	Source	Document Location
manner, while maintaining or improving reliability of the grid and continue executing least cost planning, including actions to preserve optionality for future potential resources that could help achieve these objectives in future updates to the CPIRP.		
[The electric public utilities shall] provide a summary of its stakeholder engagement conducted pursuant to the plan described in section (h).	Proposed Rule R8-60A (f)(12)	Chapter NC Appendix A

Table N-2: NCUC Carbon Plan Order and IBR Order Cross Reference

Requirement	Source	Document Location
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.	Order Adopting Initial Carbon Plan and Providing Direction for Future Planning, Docket No. E-100, Sub 179 at 134 (Ordering Paragraph No. 36) (Dec. 30, 2022) ("Carbon Plan Order")	Chapter 2 Chapter 3 Chapter 4 Appendix C Appendix L
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;	Carbon Plan Order at 131-31 (Ordering Paragraph No. 2(a))	Duke Energy will be posting modeling input and output files to Datasite, contemporaneous with filing the Plan

Requirement	Source	Document Location
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	Carbon Plan Order at 133 (Ordering Paragraph No. 25)	Chapter 4 Appendix I
[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;	Carbon Plan Order at 133 (Ordering Paragraph No. 23)	Chapter 4 Appendix A Appendix C Appendix I
[That Duke shall] continue to develop targeted engagement plans for impacted communities, . . . [and] 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.	Carbon Plan Order at 135 (Ordering Paragraph No. 39)	Chapter NC
[That Duke shall] proactively address risks to system reliability in its upcoming first proposed biennial CPIRP, 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;	Carbon Plan Order at 132 (Ordering Paragraph No. 8)	Appendix C Appendix M
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;	Carbon Plan Order at 132 (Ordering Paragraph No. 10)	Appendix F

Requirement	Source	Document Location
[That Duke, in its CPIRP filing, shall] include in its modeling efforts the costs and assumptions for natural gas-fired generating facilities operating after 2050;	Carbon Plan Order at 132 (Ordering Paragraph No. 17)	Appendix C Appendix K
[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;	Carbon Plan Order at 134 (Ordering Paragraph No. 29)	Chapter 2 Appendix H
The Commission finds that, at this time, it is not appropriate to determine whether it is reasonable or necessary to extend the Interim Target compliance date beyond 2030. The Commission expects Duke to continue to pursue compliance with the Interim Target, including proposing portfolios that comply with the Interim Target in future Carbon Plan proceedings. The Commission expects Duke to continue to consider the future recommendations of all stakeholders, which the Commission's decisions in this proceeding will presumably inform, in crafting a path to compliance with the Interim Target.	Carbon Plan Order at 19	Chapter 3 Chapter NC Appendix C
Re-study the potential costs and benefits of a further conversion of Belews Creek and provide the results in its initial CPIRP filing.	Carbon Plan Order at 65	Appendix C Appendix K
[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;	Carbon Plan Order at 132 (Ordering Paragraph No. 14)	Chapter 4 Appendix C Appendix K

Requirement	Source	Document Location
[Include in CPIRP], a detailed discussion of interstate transportation capacity and modeling analysis to demonstrate that any natural gas resource selected in future plans continues to be part of the least cost path to compliance.	Carbon Plan Order at 79	Appendix C Appendix K
*[*Test longer segmentation periods as it implements new versions of the model and engage with the Public Staff and other parties on this issue preparation for its upcoming biennial CPIRP filing. The Commission concludes that it is reasonable for Companies to make all practicable efforts to maximize its modeling optimization period and to seek to model a 15-year, or greater, optimization period in upcoming biennial CPIRP. *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. Continue to engage with Public staff and other parties on this issue in preparation for CPIRP filing.	Carbon Plan Order at 49-50	Chapter NC Appendix C
Plan for approximately 800 MW of CTs and a CC of up to 1,200 MW, including by assessing replacement generation options at the sites of retiring units on the DEC and DEP systems.	Carbon Plan Order at 79	Chapter 4 Appendix C Appendix K
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.	Carbon Plan Order at 131 (Ordering Paragraph No. 7)	Chapter 3 Appendix C

Requirement	Source	Document Location
Review potential nuclear generation resources to determine the most viable and cost-effective technologies and provide the Commission with additional information and more refined cost estimates regarding new nuclear facilities in future proceedings. In CPIRP, provide progress updates and any significant developments in the industry impacting Duke's plans.	Carbon Plan Order at 95-96	Chapter 4 Appendix C Appendix J
Use the natural gas price forecast method approved herein (no more than eight years of market-based forward natural gas prices before using fundamental forecast data for the remainder of the planning period, consistent with the Commission's Avoided Cost Order in Docket No. E-100, Sub 158.)	Carbon Plan Order at 132 (Ordering Paragraph No. 16)	Chapter 2 Appendix C
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.	Carbon Plan Order at 132 (Ordering Paragraph No. 15)	Chapter 2 Appendix C Appendix K
The Commission agrees with the Public Staff that the expansion of the existing natural gas fleet to allow for operational flexibility is necessary but expects Duke to identify targeted needs for expansion projects that will enhance flexibility and that meet the least cost path to compliance mandates. The Commission directs Duke to identify specific natural gas plants or regions of its service areas that would benefit from flexibility expansion projects and update the Commission on its analysis, including any change in carbon dioxide emissions from these changes, in future Carbon Plans.	Carbon Plan Order at 132 (Ordering Paragraph No. 14)	Chapter 2 Appendix C Appendix K Appendix L

Requirement	Source	Document Location
Include 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.	Carbon Plan Order at 134 (Ordering Paragraph No. 30)	Appendix D Appendix H Appendix I
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; If Duke chooses not to pursue any available federal funding, provide sufficient justification for why declining to do so was prudent in CPIRP.	Carbon Plan Order at 133 (Ordering Paragraph No. 27)	Chapter 2 Appendix C Appendix E Appendix I Appendix L
Take appropriate steps to optimally retire its coal fleet on a schedule commensurate with its Carbon Plan proposal filed on May 16, 2022.	Carbon Plan Order at 132 (Ordering Paragraph No. 9)	Chapter 4 Appendix C Appendix F
[The Commission directs Duke to] present a comprehensive analysis of the planned coal unit retirement schedule in its next CPIRP filing to specifically address the contingencies witnesses identified and discussed in this proceeding that may affect Duke's currently planned retirement dates of its coal-fired units, especially for the units Duke contemplates for retirement before 2030 (Cliffside Unit 5, Marshall Units 1 and 2, Mayo Unit 1, and Roxboro Units 1 and 2), and for Roxboro Units 3 and 4, which Duke retires in 2028 in its proposed portfolio P1. Duke shall further address steps it has taken and plans to take to ensure that those contingencies do not require delays to	Carbon Plan Order at 65	Chapter 4 Appendix C Appendix F

Requirement	Source	Document Location
Duke’s proposed retirement dates set forth in Appendix E, Table 4-2 of Duke’s Carbon Plan proposal.		
[In CPIRP], address steps Duke has taken and plans to take to ensure that contingencies do not require delays to Duke's proposed retirement dates set forth in Appendix E, Table 4-2 of Duke's Carbon Plan Proposal.	Carbon Plan Order at 65	Chapter 4 Appendix F
[In CPIRP], show substantial justification for any delays in coal retirements and present alternatives for reducing the additional carbon dioxide emissions that may result from delaying retirements beyond the dates proposed in Duke's 2022 CP filing.	Carbon Plan Order at 65	Chapter 4 Appendix C Appendix F
Continue to coordinate with NCEMC and other LSEs in both ISOP process and the Carbon Plan stakeholder process regarding utilization of the capabilities of their DER programs and the ability of such programs to contribute to Duke’s ability to comply with the carbon dioxide emissions reduction mandates. In CPIRP, Duke shall include a report on the discussions between it and the other LSEs in the state, provide an estimate of the future potential of those reasonable efforts to incorporate those measures in its 2024 CPIRP filings. Duke shall also include in CPIRP a discussion of progress with the wholesale customers, as well as any impediments it identifies regarding the capability of these coordinated DER resources to contribute to low cost, reliable Carbon Plan compliance.	Carbon Plan Order at 112	Appendix G
Commission encourages Duke, in its future transmission planning efforts, to support ISOP's strengthening these	Carbon Plan Order at 121	Appendix G Appendix L

Requirement	Source	Document Location
linkages between the bulk power system and distribution level DER programs.		
Seek to quantify the adoption of non-utility EE to accurately reflect the adoption of EE programs in Duke's load forecasts.	Carbon Plan Order at 106	Appendix H
In addition to Duke's proposed UEE forecast of 1% of eligible retail sales, provide an alternative modeling scenario in its next CPIRP filing that uses a UEE forecast of 1.5% of eligible retail sales.	Carbon Plan Order at 133-34 (Ordering Paragraph No. 28)	Chapter 2 Chapter 3 Appendix C Appendix D Appendix H
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 that have opted out of the DSM/EE program.	Carbon Plan Order at 133-34 (Ordering Paragraph No. 28)	Chapter 4 Appendix G Appendix H
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.	Carbon Plan Order at 134 (Ordering Paragraph No. 31)	Appendix H

Requirement	Source	Document Location
Initiate review of DEC's and DEP's DSM/EE Mechanisms within 120 days of Order issuance.	Carbon Plan Order at 110	Appendix H
Focus on expanding the pool for savings by developing programs aimed at reducing the number of DSM/EE opt outs.	Carbon Plan Order at 110	Appendix H
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.	Carbon Plan Order at 134 (Ordering Paragraph No. 32)	Appendix H
The Commission is also persuaded that the adoption of new flexibility and rapid prototyping guidelines to ensure regulatory approval of new customer programs, pilots and rate designs in a timely manner would be appropriate at this time. The Grid Edge Panel explained: • that other states have expedited implementation processes for customer programs and that Duke believes that similar guidelines in North Carolina can help enable timely implementation of the energy transition and the Carbon Plan. • that the current “Flexibility Guidelines” the Commission has approved as part of Duke’s Mechanisms for DSM/EE programs is an example of such a guideline, and that a similar expedited approval process for new customer programs and pilots for non- DSM/EE programs would better allow Duke to innovate, shrink the challenge, and timely implement the Carbon Plan.	Carbon Plan Order at 110	Appendix H Chapter 4

Requirement	Source	Document Location
The Commission is receptive to this approach and directs Duke to file a formal proposal with the Commission.		
Model Solar Plus Storage resources using dynamic dispatch and bi-directional inverter capability, subject to modeling limitations.	Carbon Plan Order at 131 (Ordering Paragraph No. 6)	Appendix C
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.	Carbon Plan Order at 131 (Ordering Paragraph No. 6)	Chapter NC Appendix C
During the 2023-2024 period Duke shall target the procurement of 2,350 MW of new solar.	Carbon Plan Order at 132 (Ordering Paragraph No. 19)	Chapter 4 Appendix I
File for a competitive, least cost 2023 Solar Procurement 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.	Carbon Plan Order at 133 (Ordering Paragraph No. 20)	Chapter 4 Appendix I
File for a competitive, least cost 2024 Solar Procurement by 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.	Carbon Plan Order at 133 (Ordering Paragraph No. 21)	Chapter 4 Appendix I

Requirement	Source	Document Location
Prepare mechanism for 2023 Solar Procurement that evaluates bids for solar projects that depend on the RZEP that includes an appropriate cost for the RZEP projects.	Carbon Plan Order at 118-19	Chapter 4 Appendix I Appendix L
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.	Carbon Plan Order at 133 (Ordering Paragraph No. 22) .	Chapter 4 Appendix I
Hold stakeholder discussions regarding a competitive, least cost 2023 Solar Procurement.	Carbon Plan Order at 133 (Ordering Paragraph No. 20)	Appendix I
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. Report the findings of its evaluation of the WEAs to the Commission in its first CPIRP filing.	Carbon Plan Order at 133 (Ordering Paragraph No. 26)	Appendix I WEA Report to be filed with direct testimony on September 1, 2023.
In evaluation, 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, 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. Adopt steps in evaluation process to protect against potential bias.	Carbon Plan Order at 102	Appendix I WEA Report to be filed with direct testimony on September 1, 2023.
Pursue SLR for its existing nuclear fleet and shall develop a schedule detailing its plans for SLR of the existing nuclear fleet. Provide existing nuclear fleet SLR plan information in its upcoming CPIRP filing.	Carbon Plan Order at 132 (Ordering Paragraph No. 12)	Chapter 4 Appendix J

Requirement	Source	Document Location
Incorporate any lessons learned from review of NRC SLR regulatory process and NRC reset in early 2022 into its first proposed biennial CPIRP.	Carbon Plan Order at 132 (Ordering Paragraph No. 13)	Appendix J
SMR and Advanced Nuclear - 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).	Carbon Plan Order at 133 (Ordering Paragraph No. 24)	Chapter 4 Appendix J
SMR and Advanced Nuclear - report in its first CPIRP filing on the specific activities and costs incurred to date for the authorized development work.	Carbon Plan Order at 133 (Ordering Paragraph No. 24)	Chapter 4 Appendix J
Authorizes Duke to incur SMR development costs up to $75 million without Commission approval.	Carbon Plan Order at 96	Chapter NC Appendix J
Take all reasonably necessary steps to construct the fourteen 2022 RZEP projects further identified in 2022 Carbon Plan.	Carbon Plan Order at 134 (Ordering Paragraph No. 33)	Appendix L
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.	Carbon Plan Order at 134 (Ordering Paragraph No. 34)	Appendix L
Integrate transmission planning with resource planning to maintain the reliability of the electric system and to ensure a least cost path to compliance with N.C.G.S. 62-110.9.	Carbon Plan Order at 121	Appendix G Appendix L

Requirement	Source	Document Location
[Commission urges to Duke to] explore all possible efficiencies and be vigilant in participation in the SERTP and in coordination with PJM to assure a least cost path to achieve the carbon dioxide emissions reduction requirements while maintaining or improving upon reliability.	Carbon Plan Order at 121	Appendix L
Further, due to the increasing significance of transmission and potential increased investment in transmission pursuant to this Order, the Commission will avail itself of Section 2.5 of Attachment N-1 of Duke's OATT and require periodic status updates and progress reports on the NCTPC process. The Commission shall open a sub docket to the CPIRP process in order to receive these updates and reports pursuant to the FERC OATT.	Carbon Plan Order at 134 (Ordering Paragraph No. 35)	Appendix L
That to the extent Duke proposes future transmission Network Upgrades to support its Carbon Plan compliance for consideration by the NCTPC, 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,	Carbon Plan Order at 134 (Ordering Paragraph No. 37)	Appendix L
The Commission supports Duke's acknowledgement that changes to the NCTPC are necessary and strongly advises Duke to initiate a review of its processes and quickly implement any improvements that FERC may require in a final rule resulting from the Notice of Proposed Rulemaking in FERC Docket RM21-17-000.	Carbon Plan Order at 121	Appendix L

Requirement	Source	Document Location
Although the Commission will not dictate any specific changes to the NCTPC, the Commission encourages Duke to engage with stakeholders and the other members of the NCTPC immediately to improve the NCTPC process and address requests to increase transparency and coordination and to provide more opportunities for stakeholder input.	Carbon Plan Order at 121	Appendix L
[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;	Carbon Plan Order at 134 (Ordering Paragraph No. 35)	Appendix L
Robustly address each of the six specific risks to reliability Duke identified in CP proceeding, with updated information and modeling where appropriate, in CPIRP filing.	Carbon Plan Order at 56	Appendix C Appendix F Appendix M Attachment I
[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.	Carbon Plan Order at 135 (Ordering Paragraph No. 38)	Chapter NC
Propose a separate mechanism for the filing and review of annual compliance plans that DEP and DEC previously filed with their respective IRP filings.	Carbon Plan Order at 131 (Ordering Paragraph No. 2(e))	Addressed in Proposed Rule R8-60A filed 4/28/23 in NCUC Docket No. E-100, Sub 191

Requirement	Source	Document Location
That Duke and DENC are to include in their next and subsequent CPIRP and IRP filings, respectively, as an Appendix to other information on system reliability planning, the following information: a. A risk assessment that outlines the risk posed to Duke's or DENC's system by existing and future Interconnected Generating Facilities, regardless of FERC or state jurisdiction and regardless of interconnection to transmission or distribution; b. A description of Duke's and DENC's existing programs and processes which seek to assure, on a periodic basis, that inverters at state-jurisdictional IBR continue to have all settings configured as intended by the utility; c. For Duke, a summary of TSRG activity related to these issues, such as generator ride-through, electromagnetic transient (EMT) modeling, and on-going monitoring of IBR, and how well these and any other reliability-related issues are being adopted in existing and new IBR, as appropriate.	Order Clarifying Generator Interconnection Standards and Requiring Periodic Filing of Information Regarding Risks Posed By Inverter-Based Resources, Docket No. E-100, Sub 101, at 7 (Ordering Paragraph No. 3) (Apr. 13, 2023)	Appendix L Appendix M

Table N-3: Glossary of Terms

GLOSSARY OF TERMS	
$/kW	Dollars per kilowatt
$/kW-yr	Dollars per kilowatt per year
$/MWh	Dollars per megawatt-hour
$/W	Dollar per watt
$B	Billions of dollars
0.1 LOLE	"One-day-in-10-years" loss of load expectation threshold
2022 DISIS	First annual DISIS cluster commenced in August 2022
2022-2032 Plan	NCTPC 2022-2032 Collaborative Transmission Plan dated February 21, 2023
20 CP	Critical events up to 20 times per year
24MFC	Twenty-four month fuel cycles
ACP	Atlantic Coast Pipeline
Act 62 of 2019	South Carolina IRP statute
ADP	Advanced distribution planning
AEO	Annual Energy Outlook
AR	Advanced nuclear reactor
ARDP	Advanced reactor demonstration program
ARH	All Resource Hours
BA	Balancing authority
Bad Creek	Bad Creek Pumped Storage Hydro Facility
Bad Creek II	Bad Creek Pumped Storage Hydro Facility second powerhouse
Base case	Local transmission planning process base reliability study
Base Planning Period	15-year period from 2024 through 2038
Belews Creek	Belews Creek Steam Station in Stokes County, North Carolina
BESS	Battery energy storage system
BOEM	Bureau of Ocean Energy Management
BOP	Balance of plant
BOY	Beginning of year
BTA	Build transfer agreement
BTM	Behind-the-meter
BWR	Boiling water reactor
CAA	Clean Air Act
CAES	Compressed air energy storage
CAGR	Compound average growth rate
CAISO	California Independent System Operator
CAPP	Central Appalachian Coal
CAR	Carolinas
CC	Combined Cycle
CCS	Carbon Capture and Sequestration

GLOSSARY OF TERMS	
CFPP	Carbon Free Power Project
CHP	Combined heat and power
CO_2	Carbon dioxide
CECPCN	Certificate of Environmental Compatibility and Public Convenience and Necessity
COLA	Construction and operating license application
COP	Construction and operations plan
COVID-19 or COVID	Coronavirus Disease 2019
CPA	Construction permit application
CPCN	Certificate of Public Convenience and Necessity
CPIRP	Carbon Plan and Integrated Resource Plan
CPP	Critical peak pricing
CPRE	Competitive procurement for renewable energy
CRRS	Climate risk and resilience study
CT	Simple cycle combustion turbine
CVR	Conservation voltage reduction
DC	Direct current
DEC	Duke Energy Carolinas
DEP	Duke Energy Progress
DEP-East (or DEP-E)	Duke Energy Progress' eastern Balancing Authority
DEP-West (or DEP-W)	Duke Energy Progress' western Balancing Authority
DER	Distributed energy resource
DG Guidance Map	Distributed generation guidance map
DISIS	Definitive Interconnection System Impact Study
DMS	Distribution management system
DNV	DNV Energy USA Inc.
DOD	United States Department of Defense
DOE	United States Department of Energy
DR	Demand response
DSDR	Distribution system demand response
DSM	Demand-side management
Dth/day	Dekatherms per day
EE	Energy efficiency
EGU	Electric Generating Units
EI	Eastern Interconnection
EIA	Energy Information Administration
EIPC	Eastern Interconnection Planning Collaborative
EJ	Environmental justice
ELCC	Effective Load Carrying Capability
EOY	End of year
EPA	United States Environmental Protection Agency

GLOSSARY OF TERMS	
EPA CAA Section 111 Proposed Rule	Proposed EPA regulations addressing greenhouse gas (“GHG”) emissions from existing coal plants and from new and existing natural gas plants
EPACT 2005	Energy Policy Act of 2005
EPC	Engineering, procurement and construction
EPRI	Electric Power Research Institute
ERCOT	Electric Reliability Council of Texas
ESP	Early site permit
ET	Electric transportation
EUE	Expected unserved energy
EV	Electric vehicle
FAA	Federal Aviation Administration
FERC	Federal Energy Regulatory Commission
FOAK	First-of-a-Kind
Fourth Circuit	United States Court of Appeals for the Fourth Circuit
FRA	Fiscal Responsibility Act
FT	Firm transportation
FTE	Full-time equivalent
GEIS	Generic Environmental Impact Statement
GET	Grid Enhancing Technology
GHC	Grid hosting capacity
GHG	Greenhouse gas
GPI	Great Plains Institute
GREET	GHG, Regulated Emissions and Energy Use in Transportation
GRR	Generator replacement request
GSA	Green Source Advantage
GSU	Generator Step Up
GW	Gigawatt
GWh	Gigawatt-hours
H_2	Hydrogen
HALEU	High-assay low-enriched uranium
HB 951	North Carolina House Bill 951 / S.L. 2021-165
Hermes	Advanced reactor prototype in Tennessee receiving DOE ARDP risk reduction award
HOMES	Homeowner Managed Energy Savings
HSPF	Heating Season Performance Factor
HVAC	Heating, ventilation and air conditioning
IA	Interconnection agreement
IBR	Inverter based resources
IEEE	Institute for Electric and Electronics Engineers
IHS Markit	Information Handling Services Markit

GLOSSARY OF TERMS	
IIJA	Infrastructure Investment and Jobs Act
INL	Idaho National Laboratory
Interim Target	70% CO_2 emissions reduction from 2005 levels
Intermediate term	Years 2027-2032
IRA	Inflation Reduction Act of 2022
IRP	Integrated resource plan
ISO	Independent System Operator
ISOP	Integrated System and Operations Planning
ITC	Investment tax credit
ITP	Incidental take permit
IVVC	Integrated volt-var control
JDA	Joint Dispatch Agreement
kV	Kilovolt
kW-AC	Kilowatts-alternating current
kWh	Kilowatt-hour
LB	Pounds
LCOE	Levelized cost of electricity
LCR	Load, Capacity and Reserves table
LNG	Liquified natural gas
Local Transmission Plan	NCTPC's annual development of a single, coordinal local transmission plan
LOLE	Loss of load expectation
LOLF	Loss of load frequency
LOLH	Loss of load hours
LROL	Lowest reliability operating limit
LSE	Load Serving Entities
LWR	Light-water reactors
MACRS	Modified accelerated cost recovery system
MCFR	Molten Chloride Fast Reactor
Met Tower	Meteorological tower
MISO	Midcontinent Independent System Operator
MMWG	NERC Multiregional Modeling Working Group
MPS	Market Potential Study
MVP	Mountain Valley Pipeline
MUR	Measurement uncertainty recapture
MW	Megawatt
MWe	Megawatts electric
MWh	Megawatt-hour
MyHER	My Home Energy Report
N.C. or NC	North Carolina
NCDEQ	North Carolina Department of Environmental Quality

GLOSSARY OF TERMS	
NCEMC	North Carolina Electric Membership Corporation
NCTPC	North Carolina Transmission Planning Collaborative
NCUC	North Carolina Utilities Commission
NCWAP	North Carolina's Weatherization Assistance Program
Near-term	Years 2024-2026
NEM	Net energy metering
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
nEUE	Normalized Expected Unserved Energy
NEVI	National electric vehicle infrastructure
NIM	Negative Internal Margin
NOAA	National Oceanic and Atmospheric Administration
NOx	Nitrogen oxide
NRC	Nuclear Regulatory Commission
NREL	National Renewable Energy Laboratory
NTAP	Near-Term Action Plan (Plan for near-term actions through 2026)
NTS	Non-Traditional Solution
NYISO	New York Independent System Operator
O&M	Operating and maintenance
OASIS	Open Access Same-Time Information System
OATT	Open Access Transmission Tariff
OEM	Original equipment manufacturers
Oconee	Oconee Nuclear Station Units 1, 2 and 3
OPG	Ontario Power Generation
ORS	South Carolina Office of Regulatory Staff
OSC	Oversight/steering committee
OSW	Offshore wind
P1 Base	Core Portfolio in Pathway 1 which utilizes base planning assumptions.
P1 Belews Creek Gas	Portfolio Variant in Pathway 1 that includes converting Belews Creek to operate exclusively on natural gas and delaying retirement of the 2,220 MW station to 2040
P2 Base	Core Portfolio in Pathway 2 which utilizes base planning assumptions.
P2 High Availability	Portfolio Variant in Pathway 2 that assumes increased availability of resources on either an annual or cumulative basis, or in terms of accelerated availability, or a combination of all three above base case assumptions
P2 Limited Gas	Portfolio Variant in Pathway 2 that assumes natural gas availability below base case assumptions.
P2 Low Solar	Portfolio Variant in Pathway 2 that assumes solar availability below base case assumptions

GLOSSARY OF TERMS	
P2 Low Onshore	Portfolio Variant in Pathway 2 that assumes availability for onshore wind below base case assumptions
P2 MVP	Portfolio Variant in Pathway 2 that assumes MVP gas availability
P3 Base	Core Portfolio in Pathway 3 which utilizes base planning assumptions
P3 High Availability	Portfolio Variant in Pathway 3 that assumes increased availability of resources on either an annual or cumulative basis, or in terms of accelerated availability, or a combination of all three than base planning assumptions.
P3 High DSM	Sensitivity Analysis Portfolio in Pathway 3 that assumes higher demand-side management than base planning assumptions.
P3 High EE	Sensitivity Analysis Portfolio in Pathway 3 that assumes higher energy efficiency than base planning assumptions.
P3 High Fuel	Sensitivity Analysis Portfolio in Pathway 3 that assumes higher fuel prices than base planning assumptions
P3 High Load	Sensitivity Analysis Portfolio in Pathway 3 that assumes higher load forecast than base planning assumptions
P3 High Resource Costs	Sensitivity Analysis Portfolio in Pathway 3 that assumes higher resource capital costs than base planning assumptions
P3 Limited Gas	Portfolio Variant in Pathway 3 that assumes natural gas availability below base case assumptions
P3 Low DSM	Sensitivity Analysis Portfolio in Pathway 3 that assumes lower demand-side management than base planning assumptions.
P3 Low EE	Sensitivity Analysis Portfolio in Pathway 3 that assumes lower energy efficiency than base planning assumptions
P3 Low Fuel	Sensitivity Analysis Portfolio in Pathway 3 that assumes lower fuel prices than base planning assumptions
P3 Low Load	Sensitivity Analysis Portfolio in Pathway 3 that assumes lower load than base planning assumptions
P2 Low Onshore	Portfolio Variant in Pathway 3 that assumes onshore wind availability below base case assumptions
P3 Low Resource Costs	Sensitivity Analysis Portfolio in Pathway 3 that assumes lower resource costs than base planning assumptions
P3 Low Solar	Portfolio Variant in Pathway 3 that assumes solar availability below base case assumptions
P3 MVP	Portfolio Variant in Pathway 3 that assumes MVP completion
P3 OSW in '37	Portfolio Variant in Pathway 3 that requires model selection of offshore wind by 2037
P3 SMR Delay	Portfolio Variant in Pathway 3 that assumes a delay in new nuclear availability
Pathway 1	Energy Transition Pathway that targets achieving 70% CO_2 emissions reductions by 2030 and carbon neutrality by 2050

GLOSSARY OF TERMS	
Pathway 2	Energy Transition Pathway that targets achieving 70% CO_2 emissions reductions by 2033 and carbon neutrality by 2050
Pathway 3	Energy Transition Pathway that targets achieving 70% CO_2 emissions reductions by 2035 and carbon neutrality by 2050
Peaker	Simple cycle combustion turbine
PEM	Polymer electrolyte membrane
Phase 3 Restudy	Restudy of the 2022 DISIS
PJM	PJM Interconnection, LLC
PPA	Purchased power agreements
PSCSC	Public Service Commission of South Carolina
PSH	Pumped storage hydro
PTC	Production tax credit
PTR	Peak time rebate
Public Staff	Public Staff-North Carolina Utilities Commission
PUR	Power uprate
PURPA	Public Utility Regulatory Policies Act
PV	Photovoltaic
PVRR	Present value of revenue requirement
PWG	Planning working group
PWR	Pressurized water reactor
Q&A	Question and answer
REC	Renewable energy certificate
RFI	Request for information
RFP	Request for proposals
RNG	Renewable natural gas
Robinson	H.B. Robinson Steam Electric Plant, Unit 2
Rolled off	Subtracted
ROW	Right-of-way
Roxboro	Roxboro Steam Station in Person County, North Carolina
RS	Rooftop solar
RTE	Round-trip-efficiency
RZEP	Red zone transmission expansion plan
RZEP 1.0	First phase of RZEP projects
RZEP 2.0	Second phase of RZEP projects
Santee Cooper	South Carolina Public Service Authority
SAE	Statistically adjusted end-use
SAP	Site Assessment Plan
SAT	Single axis tracking
S.C. or SC	South Carolina
sCO_2	Supercritical carbon dioxide
SCOTUS	Supreme Court of the United States

GLOSSARY OF TERMS	
SEEM	Southeast Energy Exchange Market
SEER	Seasonal Energy Efficiency Rating
SEO	State Energy Office
SERC	SERC Reliability Corporation
SERTP	Southeastern Regional Transmission Planning
SERVM	Strategic Energy & Risk Valuation Model
SLR	Subsequent license renewal
SMB	Small and medium business
SMR	Small modular reactor
SO_2	Sulfur dioxide
SP	Solar procurement
SP EPA 111 H_2	Supplemental Portfolio that assumes sufficient hydrogen availability to meet emission limitation standards
SP EPA 111 CF	Supplemental Portfolio that assumes compliance with the EPA CAA Section 111 Proposed Rule
SP SC Battery and Gas Cost	Supplemental Portfolio that assumes low battery and natural gas costs, and no constraints on carbon emissions
SP High EE, DSM, Fuel, CO_2	Supplemental Portfolio that assumes high energy efficiency, demand-side management, fuel costs using Pathway 1
SP Low EE, DSM, Fuel, No CO_2	Supplemental Portfolio that assumes low energy efficiency, demand-side management, fuel costs, and no constraints on carbon emissions
SP SC No CO_2	Supplemental Portfolio that assumes no constraints on carbon emissions
SP SC PV PPA	Supplemental Portfolio that assumes all new solar is procured via PPA. Also assumes no constraints on carbon emissions
SPS	Solar paired with storage
T&D	Transmission and distribution
T&E	Threatened and endangered
TAG	Transmission advisory group
TOP	Transmission Operator
TOB	Tariffed On-Bill
TOU	Time-of-use
TPL	Transmission planning
Transco	Transcontinental Gas Pipeline
TRISO	Tri structural Isotropic
TSP	Transmission service provider
TSR	Transmission service request
TVA	Tennessee Valley Authority
UAMPS	Utah Municipal Power Systems
UEE	Utility energy efficiency
ULSD	Ultra-low sulfur diesel
U.S. or US	United States

GLOSSARY OF TERMS	
USFWS	United States Fish and Wildlife Services
V2G	Vehicle-to-grid
VOYGR-6	6 reactor VOYGR plant
VOYGR-12	12 reactor VOYGR plant
WEA	Wind energy area
Winter Peak Study	Winter Peak Demand Reduction Potential Assessment