

## **R8-60A BIENNIAL INTEGRATED RESOURCE PLANNING AND CARBON PLAN FILINGS**

(a) Purpose. — The purpose of this rule is to implement the provisions of G.S. 62-2(a)(3a), 62-110.1 and G.S. 62-110.9. The Carbon Plan constitutes the least cost integrated resource planning process for electric public utilities subject to G.S. 62-110.9 and the process for assessing and updating the integrated resource plan and the Carbon Plan for those utilities are therefore consolidated. The consolidated integrated resource plan and Carbon Plan (CPIRP) shall be reviewed every two years and may be adjusted as necessary in the determination of the Commission and the electric public utilities.

(b) Applicability. — This rule is applicable to Duke Energy Progress, LLC, and Duke Energy Carolinas, LLC, each of which is an "electric public utility" as defined in G.S. 62-110.9.

(c) Definitions. — As used in this rule, the following definitions shall apply:

- (1) "Base Planning Period" shall mean the 15-year period from the start of the year following the date the CPIRP is filed.
- (2) "Carbon Neutrality Planning Horizon" shall mean the period beyond the Base Planning Horizon that is designed to ensure that the electric public utilities remain on the least cost path towards achieving carbon neutrality (as defined by G.S. 62-110.9(ii)) consistent with the requirements of G.S. 62-110.9.

(d) Consolidated Carbon Plan and Integrated Resource Plan. — An electric public utility shall develop and keep current a proposed CPIRP to determine the planned generation and resource mix that complies with the requirements set forth in G.S. 62-110.9. The CPIRP shall incorporate, at a minimum, the following:

- (1) 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 or 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) expected to satisfy those loads; and the reserve margin thus produced.
- (2) Long-Term Planning for Carbon Neutrality. — The CPIRP shall 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.
- (3) Modeling Resource Needs Over Base Planning Period and Carbon Neutrality Planning Horizon. — The CPIRP shall include, at a minimum, a comprehensive analysis of all resource options (demand-side and supply-side) considered by the electric public utilities to serve 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 their 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 the costs of complying with environmental regulations. Additionally, this analysis should account for, as applicable, system operations, compliance with state and federal regulations, and other qualitative factors.
- (4) Resource Portfolios. — Each updated CPIRP shall include several resource portfolios developed with the purpose of fairly evaluating the range of demand-side, supply-side, energy storage, and other technologies available to meet the electric public utilities' service obligations during the Base Planning Period and the 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 the 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. In addition, each CPIRP filed prior to 2030 shall include at least one resource portfolio that achieves the 70% reduction in carbon dioxide emissions by 2030.

- (5) 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.
- (6) Ensuring Resource Adequacy and Reliability. — 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 the resource adequacy of their systems.
- (7) Resource Selection. — 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 utilities shall provide additional support for their decisions 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.
- (8) Execution. — Each updated CPIRP shall include a near-term action plan that the electric public utilities propose to execute over the near term, identifying specific demand-side and supply-side development, procurement, and retirement activities, including upgrades to the transmission system necessary to interconnect new supply-side resources. The proposed near-term action plan should identify whether it is sufficient to support all of the resource portfolios identified pursuant subsection (d)(4). If the proposed near-term action is not sufficient to support any of the identified resource portfolios, the CPIRP shall identify any additional activities that would be necessary. 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.

(e) Filings.

- (1) By September 1, 2023, and every two years thereafter, the electric public utilities shall file with the Commission their proposed CPIRP, together with all information required by subsection (f) of this rule. This CPIRP shall propose resources to be selected and a near-term action plan to be approved by the Commission for execution prior to Commission approval of the next succeeding CPIRP. Contemporaneous with filing the CPIRP, the electric public utilities make available complete CPIRP modeling input and output data files, as well as their method underlying the use of all modeling software and process steps utilized in the CPIRP, to the Public Staff and intervenors, subject to appropriate confidentiality protections.
- (2) Each CPIRP shall include an update on the progress the electric public utilities have made to advance the near-term action plan in the most recently approved CPIRP.
- (3) If an electric public utility considers certain information in its biennial comprehensive CPIRP to be proprietary, confidential, and within the scope of G.S. 132-1.2, the electric public utility may designate the information as "confidential" and file it under seal.

(f) Contents of Biennial CPIRP. — The electric public utilities shall include in each updated CPIRP the following:

- (1) Forecasts of Load, and Demand-Side and Supply-Side Resources. — The forecasts filed as part of the CPIRP shall include descriptions of the methods, models, and assumptions used by the electric public utilities to prepare their 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 electric public utility's summer and winter peak load (MW);

- (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 electric public 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 demand-side or supply-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 electric public utility should provide a description of the forecast methodology and projections.
- (2) **Generating Facilities and Energy Storage.** — The electric public utilities shall provide the following data for their owned existing and planned electric generating facilities (including planned additions and retirements, but excluding cogeneration and small power production) and energy storage systems:
- (i) **Existing Generation.** — The electric public utilities 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 by each generating unit;
    - b. Generating unit characteristics (type of unit, i.e., CT, nuclear, etc., summer and winter capacity ratings, in-service date, and planned retirement date, if applicable);
    - c. Location of each existing generating unit;
    - d. A list of generating 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 the unit is, or is expected to be, removed from service, the general location, the capacity rating upon return to service, the expected return to service date, and a general description of the work to be performed on the unit; and
    - e. Other changes to existing generating units that are expected to increase or decrease generation capacity of the unit in question by an amount that is plus or minus 10%, or 10 MW, whichever is greater.
  - (ii) **Existing Energy Storage.** — The electric public utilities shall include a summary of their 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.
  - (iii) **Planned Generation.** — The electric public utilities 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 by each generating unit;
    - b. Generating unit characteristics (type of unit, i.e., CT, battery, etc., summer and winter capacity ratings, in-service date, and planned retirement date, if applicable);
    - c. Location of each planned generating unit to the extent such location has been determined; and
    - d. Summaries of the analyses supporting any new generation additions included in the forecast for the Base Planning Period, including its designation as baseload capacity, if applicable.
  - (iv) **Planned Energy Storage Additions.** — The electric public utilities 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.
- (3) Non-Utility Generation. — The electric public utilities shall provide a summary of all non-utility electric generating facilities and energy storage in their service areas, including customer-owned and stand-by generating facilities. This summary shall aggregate capacities by generation type (solar, hydro, biomass, etc.).
- (4) Wholesale Contracts for the Purchase and Sale of Power. —
  - (i) The electric public utilities shall include a list of firm wholesale purchased power contracts currently in effect, including the primary fuel type, capacity (including the designation as base, intermediate, or peaking capacity), location, expiration date, treatment of the wholesale resource in CIPRP modeling after expiration, and volume of purchases actually made since the last CIPRP for each contract.
  - (ii) The electric public utilities shall discuss the results of any Request for Proposals (RFP) that the electric public utilities have 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 the last CIPRP. 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 CIPRP period are incorporated into the electric public utilities' analysis of their long-range energy and capacity needs. If any of this information is readily accessible in documents already filed with the Commission, the electric public utilities may incorporate by reference the document or documents in the CIPRP, so long as the electric public utilities provide the docket number and the date of filing.
  - (iii) The electric public utilities shall include a list of the wholesale power sales contracts for the sale of capacity or firm energy for which the electric public utilities have committed to sell power during the Base Planning Period, the identity of each wholesale entity to which the electric public utilities have committed itself to sell power during the planning horizon, the number of MWs 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.).
- (5) Demand-Side Management and Energy Efficiency. — The electric public utilities 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 utilities pursuant to Rule R8-69 and G.S. 62-133.9(c). The electric public utilities shall appropriately reflect grid edge resources as either load modifiers or as a resource considered on the supply side based upon the operating characteristics of the resource. For purposes of utility planning, the electric public utilities shall model energy efficiency as a load modifying resource, ensuring its priority in utility planning. The electric public utilities' modeling of the load modification associated with energy efficiency shall include low, base, and high cases.
- (6) Transmission System Planning and Facilities. —
  - (i) Transmission System Planning - The electric public utilities shall discuss the adequacy of the transmission system and identified future transmission needs (100 kV and above). With respect to future needs, the electric public utilities shall include an overview of the electric public utilities' local and regional transmission planning process, a discussion of how the most recently approved CIPRP was incorporated into the electric public utilities' transmission planning processes, and discussion of the identified needs, as well as planned transmission lines and facilities, appearing in the most recent local transmission planning report that, as identified in that report, could reasonably be placed into service during the Base Planning Period.
  - (ii) Planned Improvements - The electric public utilities 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 utilities 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.
  - (iii) Non-wires alternatives — The electric public utilities shall provide an overall assessment methodology for non-wires alternatives, including a descriptive summary of analysis performed or used by the electric public utilities 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 the wholesale customers located within the electric public utilities' balancing area to the extent the electric public utilities have rights to dispatch, operate, and control such resources in the same manner as the electric public utilities' own resources.
- (7) Modeling of System Operations. — The electric public utilities shall provide a discussion of or applicable study addressing how electric public utility relationships and system interconnections are modeled in the CIPRP 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 utilities during the Base Planning Period.
  - (i) The electric public utilities shall also include, as applicable, a discussion of other planning factors influencing CIPRP 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 electric public utilities' long-range resource plans over the Base Planning Period and Carbon Neutrality Planning Horizon, as applicable.
  - (ii) The electric public utilities shall discuss the results that are expected from integrated (generation, transmission and/or distribution) systems planning processes, how integrated systems planning is used in the CIPRP process, and the impact of it and their wholesale customers' distributed energy resources and non-traditional solutions on resource planning and load forecasting.
- (8) Modeling of Generating and Energy Storage Resources. — The electric public utilities 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 electric public utilities in the assessment. The electric public utilities shall also provide general information on any changes to the methods and assumptions used in the assessment since the most recently approved CIPRP, including supportive studies impacting assessment and selection of resources.
  - (i) To the extent that an updated unit retirement analysis is conducted as a part of the CIPRP, the electric public utilities 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.
- (9) Maintaining or Improving Upon the Adequacy and Reliability of the Existing Grid. — The electric public utilities shall provide a description of, and justification for, the methodology by which the CIPRP will demonstrate that adequacy and reliability of the system will be maintained or improved throughout the Base Planning Period and Carbon Neutrality Planning Horizon. To the extent that the electric public utilities' standards for quantifying that the reliability of the system has been maintained has changed, the electric public utilities shall 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 utilities shall also describe coordination efforts with their wholesale customers to utilize their resources to maintain or improve reliability.
- (10) Load, Capacity, and Reserve Tables. — The electric public utilities 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.

- (i) The electric public utilities shall calculate and provide a description of, and justification for, the methodology by which the electric public utilities determine a first year of avoidable capacity need (First Year of Avoidable Capacity).
  - (11) Evaluation of Resource Portfolios and Selection of Resources. — The electric public utilities shall provide a description and a summary of the results of their analyses of potential resource options and combinations of resource options (demand-side and supply-side), including relevant information pertaining to portfolio costs (present value of revenue requirements and average retail customer bill impact analyses), operability and reliability, and CO2 emissions. Taking into account the resource portfolios presented in the proposed CPIRP, the electric public utilities shall 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 electric public utilities propose to take over the near-term to progress carbon emissions reductions in a least-cost 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.
  - (12) Stakeholder Engagement Report – The electric public utilities shall provide a summary of its stakeholder engagement conducted pursuant to the plan described in section (h).
- (g) Procedure for Review.
- (1) At the time the electric public utilities file their proposed CPIRP with the Commission pursuant to subsection (e), the electric public utilities shall also file with the Commission testimony and exhibits of expert witnesses supporting the proposed CPIRP.
  - (2) No later than 180 days after the later of either September 1 or the filing of the electric public utilities' CPIRP, the Public Staff and intervenors may file testimony and exhibits of expert witnesses commenting on, critiquing, or giving alternatives to the electric public utilities' proposed CPIRP.
  - (3) No later than 45 days after the filing of intervenor testimony and exhibits, the electric public utilities may file rebuttal testimony and exhibits of its expert witnesses.
  - (4) The Commission shall schedule an expert witness hearing to review the CPIRP proposals beginning on the second Tuesday in May following the electric public utilities' proposed CPIRP filing. The scope of any such hearing may be limited to issues as identified by the Commission. The Commission will also schedule one or more hearings to receive testimony from the public at a time and place of the Commission's designation.
  - (5) The Commission will issue an order adopting the next CPIRP by no later than December 31 of the year after the year in which the proposed CPIRP is filed with the Commission.
- (h) The electric public utilities individually or jointly shall provide notice to the Commission of their plans for engaging with interested parties at least 200 days in advance of its planned biennial CPIRP. The notice to the Commission should provide, at a minimum, information on how the utilities:
- (1) Determined the timing, frequency, and location of stakeholder meetings, as well as whether to hold meetings virtually;
  - (2) Selected facilitators for the meetings;
  - (3) Notified stakeholders about the meetings; and
  - (4) Planned the structure and content of the meetings.

*(NCUC Docket No. E-100, Sub 191, 11/21/2023.)*