NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. E-2, SUB 1318
DOCKET NO. EC-67, SUB 55

JOINT APPLICATION FOR A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY

PERSON COUNTY ENERGY COMPLEX
COMBINED-CYCLE COMBUSTION TURBINE ADDITION PROJECT

Exhibit 4: Construction Information

DUKE ENERGY® PROGRESS

4.1 CONSTRUCTION SCHEDULE

After North Carolina Utilities Commission ("Commission") issuance of the requested certificate of public convenience and necessity ("CPCN"), Duke Energy Progress, LLC ("DEP" or the "Company") will undertake a competitive process to select an Engineering, Procurement, and Construction ("EPC") contractor to construct DEP's proposed hydrogen capable, advanced-class combined cycle ("CC") generating facility (this Exhibit will refer to the CC and its ancillary facilities as the "Proposed Facility"). The Company will take care, custody, and control of the Proposed Facility and commence commercial operation after Substantial Completion of the project is achieved. The construction schedule for the Proposed Facility is presented below in Table 4.1.

Table 4.1: Construction Schedule

EVENT	DATE
Award Combustion Turbine Generator Contract	3Q 2024
Receive ruling on DEP's Application for a CPCN	4Q 2024
Award EPC Contract	1Q 2025
Begin Site Construction	4Q 2025
Natural Gas Available for Commissioning	3Q 2027
Transmission Back Feed for Commissioning	4Q 2027
Commissioning and Testing	1Q 2028
Substantial Completion and Commercial Operation	3Q 2028
Final Completion	4Q 2028

4.2 PLANT DESCRIPTION

The Proposed Facility will be sited at DEP's Roxboro Plant ("Roxboro"), which is a four-unit, coal-fired 2,462 megawatt ("MW") generating facility located in Person County, North Carolina. It entered commercial operation in 1966 and is one of the largest generating facilities in the United States.

The Proposed Facility will be composed of two hydrogen capable, advanced-class combustion turbines ("CT"), two heat recovery steam generators ("HRSG"), and one steam turbine generator ("STG") in a configuration known as a "2 x 1" CC. The CTs will be equipped with

bypass stacks to allow for simple-cycle operation for extended periods should DEP have to take the STG or HRSGs out of service. The Proposed Facility's HRSGs will be equipped with Selective Catalytic Reduction technology to control and reduce emissions. The main electric equipment will include three generator step-up transformers ("GSU") and two unit auxiliary transformers ("UAT").

The Proposed Facility has an estimated nominal winter capacity of 1,360 MW to facilitate the permanent retirement of Units 1 and 4 of Roxboro's four coal-fired generating units and is designed to utilize the existing transmission infrastructure that Roxboro Units 1 and 4 are currently utilizing. The Company submitted a Generator Replacement Request ("GRR") to utilize the roughly 1,053 MW of transmission interconnection rights from Roxboro's coal-fired units. The GRR process facilitates expedited interconnection of replacement generation at the retiring generation's point of interconnection and can, thereby, reduce or avoid the cost of certain interconnection facilities and potentially expensive network upgrades. The GRR Facilities Study indicated that limited network upgrades are necessary for the Proposed Facility, and DEP has executed an associated GRR Large Generator Interconnection Agreement to support interconnecting the replacement MW. For the Proposed Facility's incremental MW beyond those included in the GRR, DEP submitted an Interconnection Request into the 2023 Definitive Interconnection System Impact Study ("DISIS") Cluster Study process. The Phase I study report indicated limited network upgrades are necessary to support the incremental MW. Phase II of the DISIS study is underway and DEP expects to receive results in May 2024.

One proposed CT and the STG will supply, each through their own breakers, a 230 kilovolt ("kV") 0.88-mile span bus line that will connect to the Roxboro 230 kV switchyard. The second CT will supply, also through its own breaker, a second 230 kV 0.88-mile span bus line that will connect to the Roxboro 230 kV switchyard. Several 230 kV breakers in Roxboro's switchyard are required to complete the breaker-and-a-half scheme to facilitate the Proposed Facility's point of interconnection.

A plant description with additional detail is provided as Appendix A to this Exhibit 4.

4.3 MAJOR EQUIPMENT

4.3.1 Combustion Turbines

The Company received bids to supply the CT units to be installed at the Proposed Facility from all three major CT manufacturers (General Electric Vernova ("GE"), Siemens Energy ("Siemens"), and Mitsubishi Power Americas, Inc. ("Mitsubishi")).

The gas turbine models for which DEP received bids are:

[BEGIN CONFIDENTIAL]

[END CONFIDENTIAL]

Regarding the units identified confidentially above, there are two GE units in commercial operation, five Mitsubishi units in commercial operation, and two Siemens units in commercial operation. All three original equipment manufacturers ("OEM") are currently testing the CTs identified above at various test facilities in addition to the units in commercial operation. By the time the Proposed Facility enters commercial operation, DEP expects that all three OEMs will have increased experience operating the CTs identified above.

Each manufacturer's CT design is unique and has different nominal MW capacity ratings, operating requirements, cooling requirements, compressor designs, and unique characteristics such as inlet gas pressure requirements. The Company considered all three of the OEM-submitted bids to supply advanced-class turbines. To identify the bid that represented the best valued commercial offering, DEP performed a qualitative assessment of several factors including capital cost, constructability, life-cycle fuel costs, performance, experience, reliability, completeness of bid, ability to meet schedule, long-term parts and maintenance cost, and key contract terms and conditions. The Company has concluded the bid evaluation process and has initiated commercial negotiations with the OEM that supplied the bid that represented the best valued commercial offering.

As identified above in Table 4.1: Construction Schedule, DEP anticipates awarding the contract for the CTs in 3Q 2024.

4.3.2 Steam Turbine Generator

The Company is currently evaluating bids for the Proposed Facility's STG, having received bids from GE, Mitsubishi, Siemens, and Toshiba America Energy Systems Corporation. Each manufacturer's STG design is unique and has different nominal MW capacity ratings, operating requirements, cooling requirements, and generator design and characteristics. To identify the bid that represents the best valued commercial offering, DEP will consider each manufacturer's unique requirements and characteristics along with other criteria including bid understanding and

completeness, technical operating parameters, operating costs, generator design, technical support, technology and maturity, ability to comply with requested schedule, sourcing location, warranty, payment and cancellation terms, and the bid price for delivery. The Company groups these evaluation criteria into technical, commercial, and corporate responsibility categories for evaluation and scoring that will support final selection and recommendation and anticipates finalizing selection of the STG unit in 2Q 2024. The Company will then initiate negotiations with the selected OEM.

4.3.3 Heat Recovery Steam Generator

The Company will develop a list of acceptable OEMs as well as Company-preferred specifications for the HRSG and provide this information in the Request for Proposal ("RFP") that DEP will issue to potential EPC contractors for firm bids later this year. The EPC contractor's responsibilities will include obtaining and reviewing bids and awarding a contract to procure the HRSG, as well as erecting, installing, and commissioning the equipment and incorporating it into the overall facility performance guarantees.

4.3.4 Generator Step-up and Unit Auxiliary Transformers

The Company received and reviewed bids from multiple OEM providers to supply the GSUs and UATs for the Proposed Facility. To identify the best valued commercial offering, DEP evaluated criteria such as supplier experience, technical compliance, operating characteristics, ability to achieve delivery schedule, and key contract terms and conditions. The Company has concluded the bid evaluation process and has initiated commercial negotiations with the OEM bidder that provided the best valued commercial offering.

4.4 EPC

The Company's strategy for constructing the Proposed Facility includes a combination of Owner-procured major equipment components, such as CTs, step-up and auxiliary transformers, and a steam turbine generator, and contracting with a full-service EPC contractor. The Company will procure the Owner-procured equipment and will then assign it to the selected EPC contractor for coordination, construction, and commissioning.

The EPC contractor will be responsible for all civil, structural, mechanical, and electrical scopes required to construct the Proposed Facility and bring it to a state of mechanical completion. Upon receiving DEP's agreement that the Proposed Facility is in a safe condition to begin energizing plant equipment, the EPC contractor will begin start-up and commissioning and will bring the Proposed Facility up to full power. Once fully powered, the EPC contractor will be

responsible for testing the Proposed Facility and executing performance tests under the direction of a DEP-provided third-party testing service.

The Company plans to engage qualified EPCs and undertake a competitive selection process in 2024 and, as identified above in Table 4.1: Construction Schedule, is targeting selecting the EPC contractor for the Proposed Facility in 1Q 2025. The Company has assembled the project specifications and RFP documents and is in the process of issuing the project for bids. The Company continually evaluates potential EPC providers through site visits and interviews to understand their abilities and availability by assessing their experience, financials, workload, and available resources. To date, DEP has developed an initial qualified bidders list, including **[BEGIN CONFIDENTIAL]** [redacted] **[END CONFIDENTIAL]** and will continue to update its list based on bidder qualifications as well as information learned from the marketplace before issuing the RFP. The Company anticipates a bid list of between three and six qualified providers.

Once DEP receives bids, it will consider and score various criteria that it will then summarize under technical, commercial, and corporate responsibility categories. The Company will conduct thorough EPC contractor evaluations as that position will have a significant influence on the project's success. The criteria will include safety, environmental, scope understanding, engineering capabilities, construction team experience and commitment, project management and project controls teams and tools, experience with similar technology and project scale, quality assurance, project execution planning, schedule adherence, and key aspects of the commercial terms and conditions that provide confidence that the EPC contractor is committed to the project. After completing the evaluation, DEP will identify the bid that represents the best valued commercial offering and begin negotiations.

4.5 SCOPE OUTSIDE EPC CONTRACT

The Company will procure the following components prior to assigning them to the EPC contractor: CTs (including the bypass stacks), STG, GSUs and UATs, Distributed Control System, and High-Voltage Breakers.

The Company will retain environmental emissions and facility performance testing oversight responsibility through a DEP-contracted third-party testing service(s). Use of independent third parties ensures that the interests of all parties including DEP, major equipment OEMs, and the EPC contractor are protected in determining whether the parties have achieved their respective performance requirements that were the original basis for validating the overall project economics, including long-term operations and maintenance costs.

4.6 DEPENDABLE FUEL SUPPLY

4.6.1 Natural Gas

The Company has contracted for intrastate firm transportation ("FT") rights with Public Service Company of North Carolina, Inc., d/b/a Dominion Energy North Carolina ("PSNC") as part of PSNC's T15 Pipeline Reliability Project. PSNC filed the agreement, which facilitates the Proposed Facility's intrastate gas FT needs, with the Commission for its review and approval on October 16, 2023, in Docket No. G-5, Sub 668. If the Commission approves the agreement, PSNC will construct incremental facilities to provide natural gas transportation and redelivery service to the Proposed Facility. Please see Company witness Lee Mitchell's direct testimony for additional discussion regarding PSNC's planned incremental facilities.

4.6.2 Back Up On-Site Ultra-Low Sulfur Diesel

The Proposed Facility will be able to operate using ultra-low sulfur diesel ("ULSD") as a backup fuel. The back-up fuel facilities will consist of ULSD fuel tanks with capacity for approximately 72 hours of continuous operation of the Proposed Facility. The EPC contractor will be responsible for the construction of these tanks and all other facilities necessary to store and utilize ULSD on-site.

4.7 RISK FACTORS

The Company will transfer the major construction risk factors including labor availability, labor productivity, weather, supply chain constraints, and schedule to the EPC contractor as appropriate and contingent on the final terms of the EPC agreement. The Company will allocate risks associated with new CT technology performance commercially in its contract with the CT manufacturer.

The major operating risks are equipment failure and weather. Equipment failure impacts on plant operations will be mitigated by a quality assurance program during equipment manufacturing/fabrication, and further through Project Management and Construction, EPC contractor, and OEM Quality oversight during construction and commissioning. The Company will also negotiate and require the selected OEMs and EPC contractor to provide extended equipment warranties.

In accordance with Commission Rule R8-61(b)(4)(iv), applicable reliability regulations, and DEP's and the Electric Power Research Institute's winterization criteria, the Proposed Facility will be designed and constructed to operate during the lowest temperature ever recorded in the area using information from the National Weather Service Automated Surface Observing System

("ASOS"). The lowest temperature ever recorded by ASOS at the Raleigh-Durham airport in Raleigh, North Carolina, was -9°F in January 1985. This temperature is incorporated into all equipment and EPC specifications as the minimum design temperature and the Proposed Facility will be capable of operating at -9°F. Enclosures around the HRSG drums will be installed to provide an additional level of cold hardening.

For additional discussion about the execution risks to constructing and operating new natural gas-fueled resources, as well as DEP's plan to manage those risks, please see Appendix K (Natural Gas, Low-Carbon Fuels and Hydrogen) to DEP's and Duke Energy Carolinas, LLC's 2023-2024 Carbon Plan and Integrated Resource Plan.

EXHIBIT 4, APPENDIX A: PLANT DESCRIPTION

1. PROJECT SCOPE

Duke Energy Progress, LLC ("DEP" or the "Company") proposes to construct a hydrogen capable, advanced-class combined cycle ("CC") facility with dual fuel capability that will primarily utilize natural gas as a fuel source, but which will also be able to utilize on-site ultra-low sulfur diesel ("ULSD") as a back-up fuel (this Appendix will refer to the proposed CC and its ancillary facilities as the "Proposed Facility"). The Proposed Facility will be a 2x1 CC composed of two hydrogen capable, advanced-class combustion turbines ("CT"), two bypass stacks, two heat recovery steam generators ("HRSG"), and one steam turbine generator ("STG"). Selective Catalytic Reduction ("SCR") emissions control systems will be included in the HRSGs.

2. CAPACITY OBJECTIVE

The Company designed the Proposed Facility to have an estimated nominal winter capacity of 1,360 megawatts ("MW") and to leverage the transmission infrastructure currently being utilized by existing coal-fired generation units. Duct firing and evaporative cooling are included in the project scope to maximize output across the ambient range.

3. PLANT LOCATION

The Proposed Facility will be located at DEP's Roxboro Plant ("Roxboro") in Person County, North Carolina. The Proposed Facility will be located on DEP-owned land that is contiguous with the existing coal units.

4. EXISTING UNIT OVERVIEW

Roxboro consists of four coal-fired units with a winter capacity of 2,462 MW. The Company will retire Roxboro coal-fired Units 1 and 4 in conjunction with the commercialization of the Proposed Facility. Roxboro coal-fired Units 2 and 3 will continue to operate until 2034.

The Proposed Facility will utilize all or part of the following existing equipment systems:

- Plant intake system; and
- Plant discharge system.

5. DESIGN CRITERIA

The Proposed Facility will be designed based on project-specific Duke Energy operational scope requirements and discipline design criteria. The design criteria specify initial requirements, but final specific requirements will be determined during project drawing and model reviews.

6. MAJOR EQUIPMENT

Major project equipment will consist of the following:

1. Hydrogen-capable CT generator set
   - Dual fuel capable
   - Dry low nitrogen oxide ("NOx") combustors (33 ppm NOx)

2. HRSG
   - Bypass stacks
   - Three (3) pressure reheat design
   - 1080°F/1080°F steam temperatures
   - Duct firing
   - SCR catalyst
   - Carbon monoxide catalyst

3. STG
   - 1080°F/1080°F steam temperatures
   - 2,400 pounds per square inch absolute maximum pressure
   - Down exhaust

4. Condenser
   - Water-cooled surface condenser
   - 100% steam bypass capability

5. Cooling Tower
   - Mechanical draft cooling tower
   - Fiberglass structure
   - Splash or hybrid open fill
   - 2 x 50% circulating water pumps

6. Main Steam System
   - 100% steam turbine bypass design to condenser and atmospheric vents for maximum reliability

7. Feedwater System
   - Two (2) 100% capacity boiler feedwater pump per power block with fluid couplings

8. Condensate System
   - Two (2) 100% capacity condensate pump per condenser to match cycle requirements

9. Auxiliary Steam Boiler
   - Fire tube auxiliary boiler for maintaining steam turbine seals, condenser sparging, HSRG sparging and steam turbine pre-warming

10. Controls
    - CT and STG controls provided by supplier
    - Integrated Emerson Ovation distributed control system for balance of plant with integration of turbine control systems

11. Makeup Water
    - Existing Roxboro coal-fired Unit 4 intake to be reused (to be validated)
    - New submersible makeup water pumps will be installed in the existing intake structure
    - Two (2) x 100% or three (3) x 50% makeup water pumps

12. Demineralized Water Supply
    - System will be designed with adequate redundancy for boiler water makeup for all operating scenarios
    - System shall include permanently installed pretreatment and reverse osmosis system with final treatment by rental mixed bed demineralizers

13. Waste Water
    - Will comply with all regulatory requirements
    - Internal outfalls will be provided for cooling tower blowdown and low volume waste water
    - Wastewater will be discharged to existing wastewater ponds if the system permits such a flow after basin excavation and closure
    - A new sanitary system will be dedicated to the Proposed Facility

14. Natural Gas
    - Public Service Company of North Carolina Inc., d/b/a Dominion Energy North Carolina ("PSNC") will construct a new gas line to serve the Proposed Facility
    - PSNC will construct a new natural gas metering and regulation yard to support the required pressure

15. ULSD
    - Three (3) days of ULSD storage will be provided

16. Major Tanks
    - Demineralized water: Two (2) new stainless steel, unpainted, demineralized water tanks will be installed and sized for a system fill plus one (1) day of normal operating capacity, which equates to 50% of rated condensate makeup water treatment capacity
    - Fire water/service water:
        - One (1) new dual-purpose tank with service water connection above the minimum fire water level to ensure adequate fire water storage
        - Minimum service water capacity to be in accordance with project-specific design criteria and applicable National Fire Prevention Association codes
    - ULSD: Facilities sufficient to keep 72 hours of ULSD on site will be installed

17. Electrical Equipment
    - Two (2) generator step-up transformers
    - Transmission lines to existing switchyards for tie to existing 230 kilovolt ("kV") system.
    - Two (2) redundant auxiliary transformers
    - Emergency diesel generator
    - Shop fabricated power distribution centers
    - Unit excitation transformers
    - Arc-flash resistant switchgear

18. Freeze Protection/Winterization
    - The Proposed Facility will be designed such that it can reliably deliver its full capability with an ambient temperature of -9° Fahrenheit (F)

- Exterior piping freeze protection shall be based on a -9°F ambient temperature and a 5.0 mph wind velocity

19. Facilities
    - One (1) approximately 15,000 square foot ("sq. ft.") shop/administration building including control room, offices, conference room, and restroom facilities
    - One (1) approximately 14,000 sq. ft. warehouse
    - One (1) approximately 800 sq. ft. oil storage building
    - Fire water pump package including emergency diesel pump
    - Cathodic protection
    - Heat tracing
    - Natural gas or electric dew point heater

7. DEP ENERGY CONTROL CENTER

The Proposed Facility will incorporate features including but not limited to:

- Automatic ring down communications circuit
- 900 MHz radio communications
- Satellite phone communications
- Automatic generation control for simple-cycle CT operations
- Automatic voltage regulator and ability to manually control voltage.
- Individual auxiliary metering for each CT and the STG
- Adequate specification on governor control/droop characteristic and governor dead band and generator and turbine control system shall be designed for primary frequency response
- Display 230 kV busbar
- To include automated generation control as required

8. NERC RELIABILITY STANDARDS

The Proposed Facility will comply with all applicable North American Electric Reliability Corporation and Southeastern Electric Reliability Council reliability standards.

9. ELECTRICAL TRANSMISSION

The Proposed Facility will require on-site transmission facilities to connect to the 230 kV system.