

**STATE OF NORTH CAROLINA  
UTILITIES COMMISSION  
RALEIGH**

DOCKET NO. E-2, SUB 1318  
DOCKET NO. EC-67, SUB 55

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of )  
Joint Application of Duke Energy )  
Progress, LLC and North Carolina )  
Electric Membership Corporation for a )  
Certificate of Public Convenience and )  
Necessity to Construct a 1,360 MW )  
Natural Gas-Fueled Combined Cycle )  
Electric Generating Facility in Person )  
County, North Carolina )

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**DIRECT TESTIMONY OF  
JOHN ROBERT SMITH, JR. ON  
BEHALF OF DUKE ENERGY  
PROGRESS, LLC**

1 **I. INTRODUCTION AND OVERVIEW**

2 **Q. MR. SMITH, PLEASE STATE YOUR NAME, BUSINESS ADDRESS**  
3 **AND POSITION WITH DUKE ENERGY CORPORATION.**

4 A. My name is John Robert Smith, Jr. (Bobby), and my business address is 525  
5 South Tryon Street, Charlotte, North Carolina 28202. I am employed by Duke  
6 Energy Business Services, LLC as the General Manager for New Gas  
7 Generation Development within the Project Management and Construction  
8 (“PMC”) department of Duke Energy.

9 **Q. PLEASE BRIEFLY SUMMARIZE YOUR EDUCATIONAL**  
10 **BACKGROUND AND PROFESSIONAL QUALIFICATIONS.**

11 A. I received a Bachelor of Science in Civil Engineering from North Carolina State  
12 University in 1982. I am a registered Professional Engineer in North Carolina  
13 (“NC”), maintaining registration since 1987.

14 **Q. PLEASE DESCRIBE YOUR BUSINESS BACKGROUND AND**  
15 **EXPERIENCE.**

16 A. I started my career with Duke Energy Carolinas, LLC’s (“DEC”) predecessor  
17 Duke Power in 1982 as a field engineer supporting construction of Catawba  
18 Nuclear Station. In 1988, I began a transition from engineering into project  
19 management working for DEC, Fluor, The Shaw Group, and CB&I in various  
20 roles focused on Engineering, Procurement, and Construction (“EPC”) services  
21 for all forms of new generation installations throughout the United States and  
22 abroad. Upon returning to Duke Energy as Senior Project Director in 2018, I  
23 focused on managing EPC projects. I assumed my current position as General

1 Manager for New Gas Generation Development at the beginning of 2023. In  
2 total, I have over 35 years of experience with responsibility for EPC and project  
3 management of new power plant construction projects.

4 **Q. WHAT ARE YOUR RESPONSIBILITIES IN YOUR CURRENT**  
5 **POSITION?**

6 A. In my role as General Manager for New Gas Generation Development, I  
7 provide leadership and direction for a team of project managers, engineers,  
8 sourcing resources, and estimators responsible for front-end development of  
9 new natural gas-fueled generation projects (the “PMC Gas Development  
10 Team”), both in the Carolinas and in the other jurisdictions where Duke Energy  
11 owns generation resources and provides electric service. Other teams within  
12 Duke Energy Progress, LLC (“DEP” or the “Company”) and DEC are  
13 responsible for generation and transmission strategy and integrated resource  
14 planning on the front end and then others are responsible for managing and/or  
15 supervising project construction on the back end.

16 Once the Company identifies the need for a new gas-fueled resource in  
17 a resource plan, the PMC Gas Development Team is responsible for developing  
18 conceptual designs that satisfy the need and the associated cost estimates to  
19 construct the new generating facility. The PMC Gas Development Team also  
20 establishes and initiates project structure, including seeking key regulatory  
21 approvals such as certificates of public convenience and necessity (“CPCN”) to  
22 construct the resource. The PMC Gas Development Team coordinates with  
23 internal stakeholders and multiple third parties to obtain all necessary permits

1 and regulatory approvals, and issues purchase orders and contracts related to  
2 the construction of the generation resource. The PMC Gas Development Team  
3 also manages the Companies' process to obtain pricing from major equipment  
4 suppliers and EPC providers and uses the information to internally develop a  
5 comprehensive cost estimate. The PMC Gas Development Team uses the  
6 internally developed comprehensive cost estimate to seek internal approvals  
7 before it is used to obtain necessary regulatory approvals. Once all necessary  
8 internal and regulatory approvals, permits, purchase orders, and contracts are in  
9 place, the PMC Gas Development team transitions responsibility for the  
10 resource to a team assembled to oversee and manage execution of the project  
11 plan to construct the facility.

12 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE COMMISSION?**

13 A. On March 14, 2024, I submitted pre-filed direct testimony to the North Carolina  
14 Utilities Commission ("Commission") in Docket No. E-7, Sub 1297 in support  
15 of DEC's Application for a CPCN to construct the Marshall Energy Complex.  
16 I have not otherwise appeared before the Commission.

17 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

18 A. The purpose of my testimony is to support DEP's Joint Application with the  
19 North Carolina Electric Membership Corporation ("NCEMC") for a CPCN to  
20 construct an advanced-class, combined cycle gas turbine ("CC") facility for the  
21 generation of electricity at the site of DEP's existing Roxboro Plant  
22 ("Roxboro") in Person County, North Carolina ("Proposed Facility").  
23 Construction of the Proposed Facility will facilitate permanent retirement of

1 two of the four coal-fired generating units at Roxboro. The remaining two coal-  
2 fired units, together with the Proposed Facility, will collectively be known as  
3 the Person County Energy Complex. In this testimony, I will describe the  
4 generation technology, proposed construction schedule, the status of various  
5 construction and environmental permits, DEP's plans to procure components  
6 and select contractors, and cost estimates for the Proposed Facility.

7 **Q. ARE YOU SPONSORING ANY EXHIBITS TO THE APPLICATION?**

8 A. Yes. I am sponsoring Confidential Exhibit 2 (Siting and Permitting  
9 Information), Confidential Exhibit 3 (Cost Information), and Confidential  
10 Exhibit 4 (Construction Information) to the Application, which collectively  
11 contain the detailed information required by Commission Rule R8-61(b).  
12 Confidential Exhibit 2 provides updates to the information set forth in the  
13 Company's preliminary plans filed on September 1, 2023, including DEP's  
14 decision to retire Roxboro Units 1 and 4 instead of Units 1 and 2. Confidential  
15 Exhibit 2 also provides additional discussion about the methodology underlying  
16 the studies and analysis presented in the preliminary plans. Confidential  
17 Exhibits 3 and 4 to the Application contain commercially sensitive cost and  
18 supplier contract information that should be protected from public disclosure  
19 and DEP is, therefore, filing them under seal. Confidential Exhibits 2, 3, and 4  
20 were prepared under my supervision and at my direction.

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**II. THE PROPOSED FACILITY**

**Q. PLEASE GENERALLY DESCRIBE THE PROPOSED FACILITY.**

A. Roxboro is a four-unit, coal-fired 2,462 megawatt (“MW”) generating facility located in Person County that has operated commercially since 1966. Roxboro Units 1 and 4 have a combined capacity rating of 1,091 MW and constructing the Proposed Facility will replace the combined capacity of Units 1 and 4 with an estimated nominal winter capacity of 1,360 MW.

Through this Joint Application, DEP and NCEMC seek Commission approval to construct a hydrogen capable, advanced-class CC facility with onsite ultra-low sulfur diesel (“ULSD”) backup fuel on DEP-owned property. The advanced-class CC will be able to ramp roughly five times faster than Roxboro Units 1 and 4 and its heat rate will be roughly 30% improved over Roxboro Units 1 and 4. As identified in the Companies’ 2023-2024 Carbon Plan and Integrated Resource Plan (“CPIRP” or the “Plan”), DEP plans to permanently retire Roxboro’s coal-fired Units 1 and 4 and replace them with the Proposed Facility by January 1, 2029.<sup>1</sup>

Construction of the Proposed Facility is an important component of DEP’s strategy to replace dispatchable coal-fired generation with alternative forms of dispatchable generation necessary to ensure the reliability of its power delivery system, which is discussed in more detail in CPIRP Chapter 4 (Execution Plan). Constructing the Proposed Facility at the site of retiring coal generation facilities enables DEP to leverage prior customer investments in

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<sup>1</sup> Exhibit 1A CPIRP Supplemental Planning Analysis Section 4 at 49.

1 generation infrastructure including, for example, existing electric transmission  
2 facilities. Leveraging Roxboro’s existing infrastructure will allow DEP to  
3 construct and place the Proposed Facility in-service more quickly and on a more  
4 certain timeline than if it attempted the same at a greenfield location (i.e.,  
5 undeveloped land without existing plant infrastructure).

6 **Q. PLEASE GENERALLY DESCRIBE HOW COMBINED CYCLE**  
7 **GENERATING TECHNOLOGY PRODUCES ENERGY.**

8 A. Combined-cycle power plants utilize one or more gas combustion turbines  
9 (“CT”) to generate electricity. At least one heat recovery steam generator  
10 (“HRSG”) then utilizes the heat from the exhaust produced by the CT(s) (that  
11 the exhaust stack would otherwise remove) to generate steam. The HRSG(s)  
12 produces and delivers the steam to a steam turbine generator that produces  
13 additional electricity beyond the electricity produced by the CT(s) alone,  
14 making the combined-cycle configuration more efficient than a simple-cycle  
15 CT generator.

16 **Q. PLEASE DESCRIBE THE CONFIGURATION OF THE PROPOSED**  
17 **FACILITY.**

18 A. The Proposed Facility will be composed of two hydrogen capable, advanced-  
19 class CTs, two HRSGs, and one steam turbine generator. This configuration is  
20 known as a “2 x 1” CC. The Proposed Facility will also be equipped with bypass  
21 stacks that will enable continued operation of the CTs in simple-cycle mode for  
22 extended periods should DEP have to take the steam turbine or HRSGs out of  
23 service.

1 **Q. DOES DEP PLAN TO EQUIP THE CC FACILITY WITH EMISSIONS**  
2 **CONTROL TECHNOLOGY?**

3 A. Yes. The Company will equip the Proposed Facility with selective catalytic  
4 reduction (“SCR”) technology located within the HRSG equipment, which will  
5 significantly reduce the emissions profile of the Proposed Facility. The  
6 Company anticipates that replacing Roxboro coal-fired Units 1 and 4 with the  
7 Proposed Facility will reduce annual emissions of NO<sub>x</sub> by 77% and SO<sub>2</sub> by  
8 93%, while also reducing CO<sub>2</sub> by 57% per megawatt hour.

9 **Q. WILL THE PROPOSED FACILITY REQUIRE CONSTRUCTION OF**  
10 **NEW OFFSITE NATURAL GAS TRANSPORTATION**  
11 **INFRASTRUCTURE?**

12 A. Yes. The Company has contracted for intrastate firm transportation rights with  
13 Public Service Company of North Carolina, Inc., d/b/a Dominion Energy North  
14 Carolina (“PSNC”) as part of PSNC’s T15 Pipeline Reliability Project. As  
15 further discussed by Company witness Lee Mitchell, PSNC filed the agreement,  
16 which facilitates the Proposed Facility’s intrastate gas firm transportation  
17 (“FT”) needs, for the Commission’s review and approval on October 16, 2023,  
18 in Docket No. G-5, Sub 668. If the Commission approves the agreement, PSNC  
19 will construct incremental facilities to provide FT natural gas transportation and  
20 redelivery service to the Proposed Facility.



1 **Q. DOES DEP PLAN TO CONSTRUCT ANY NEW ELECTRIC**  
2 **TRANSMISSION FACILITIES TO SERVE THE PROPOSED**  
3 **FACILITY?**

4 A. Yes. The Company anticipates that upgrades to existing interconnection  
5 facilities within Roxboro as well as limited Network Upgrades will be required  
6 to interconnect the Proposed Facility. Interconnection facilities within the  
7 Roxboro site will include two 230 kilovolt (“kV”) 0.88-mile span bus lines that  
8 will connect to the Roxboro 230 kV switchyard. Several 230 kV breakers in  
9 Roxboro’s switchyard are required to complete the breaker-and-a-half scheme  
10 to facilitate the Proposed Facility’s point of interconnection. To route the two  
11 new span bus lines, DEP must relocate two existing 230 kV transmission lines  
12 to prevent line crossings and open a location for the point of interconnection at  
13 the Roxboro switchyard.

14 In March 2023, the Company submitted a Generator Replacement  
15 Request (“GRR”) to utilize the roughly 1,053 MW of transmission  
16 interconnection rights from Roxboro’s coal-fired units. The GRR process  
17 facilitates expedited interconnection of replacement generation at the point of  
18 interconnection of retiring generation and can, thereby, reduce or avoid the cost  
19 of certain interconnection facilities and potentially expensive network  
20 upgrades. The GRR Facilities Study indicated only limited network upgrades  
21 were necessary and DEP has now executed an associated GRR Large Generator  
22 Interconnection Agreement. For the incremental MW of the Proposed Facility  
23 beyond those included in the GRR, DEP submitted an interconnection request

1 into the 2023 Definitive Interconnection System Impact Study (“DISIS”)  
2 Cluster Study process. The Phase I DISIS study report indicated that limited  
3 network upgrades are necessary to support the incremental MW. Phase II of the  
4 DISIS study is underway and DEP expects to receive results in May 2024.

5 **Q. DOES DEP PLAN TO CONSTRUCT ANY NEW FACILITIES TO**  
6 **ENABLE THE CC FACILITY TO OPERATE USING ULSD?**

7 A. Yes. The Company will construct ULSD storage facilities that will provide  
8 approximately three days of on-site fuel storage for the Proposed Facility.

9 **III. SITE EVALUATION**

10 **Q. AS PART OF ITS SITING ANALYSIS, DID DEP CONSIDER**  
11 **POTENTIAL CULTURAL IMPACTS OF THE PROPOSED FACILITY**  
12 **ON THE LOCAL COMMUNITY?**

13 A. Yes. DEP contracted with Pike Engineering, LLC (“Pike”), to research and  
14 study several aspects of the local community including, but not limited to, area  
15 development, visual and auditory resources, and aesthetic and cultural  
16 resources. The Company sets forth the results of these studies in more detail in  
17 Confidential Exhibit 2 to the Application. Some notable conclusions from  
18 Pike’s analysis are as follows:

- 19 • The Proposed Facility will be visible from areas totaling only 0.98 square  
20 miles (1.25% of the total area) outside DEP-owned property when  
21 considering the total area within five miles of the Proposed Facility (78.54  
22 square miles). Further, the Proposed Facility would only be visible from  
23 areas totaling 0.1 square miles that do not already have a view of existing

1 Roxboro infrastructure (0.13% of the total area) within five miles of the  
2 Proposed Facility and outside of DEP-owned property.

- 3 • A limited number of residences may have a slight view of the tallest parts  
4 of the Proposed Facility. However, the visual quality of the area from the  
5 perspective of those residences should not be negatively impacted because  
6 the distances between the Proposed Facility and the closest residences  
7 (between 0.7 and 2 miles) will render the visible portions of the Proposed  
8 Facility visually inferior to the surrounding environment, which already  
9 includes views of existing Roxboro infrastructure.
- 10 • There are a few roads from which passing motorists will have a brief view  
11 of the tallest portions of the Proposed Facility and, in those cases, the views  
12 will be slight due to distance between the motorist and the Proposed Facility.

13 Additional details on the Company's site evaluation for Roxboro are set  
14 forth in Confidential Exhibit 2 to the Application. Company witness Daniel  
15 Donochod also further discusses the Company's determination to construct the  
16 Proposed Facility at Roxboro in his direct testimony.

17 **IV. CONSTRUCTION AND PERMITTING OF THE PROPOSED**  
18 **FACILITY**

19 **Q. WHAT IS DEP'S PROPOSED SCHEDULE FOR CONSTRUCTING**  
20 **THE PROPOSED FACILITY?**

21 A. Confidential Exhibit 4 to the Application provides the detailed construction  
22 schedule for the Proposed Facility. Under the construction schedule, DEP plans  
23 to begin site construction in 4Q 2025 and place the Proposed Facility into  
24 service by the end of 2028.

1 **Q. WHAT ENVIRONMENTAL PERMITS ARE REQUIRED FOR THE**  
2 **PROPOSED FACILITY?**

3 A. The Company must obtain an Air Permit for the Proposed Facility from the  
4 Division of Air Quality within the North Carolina Department of Environmental  
5 Quality (“DEQ”). The Company is filing its Air Permit application with DEQ  
6 contemporaneously with this Application. The Company will address other  
7 permits necessary for the Proposed Facility within the agreement within the  
8 EPC contract that DEP intends to execute in 1Q 2025. Confidential Exhibit 2 to  
9 the Application provides additional information on the necessary permits for  
10 the Proposed Facility.

11 **Q. HOW WILL DEP SELECT MAJOR COMPONENTS AND MAJOR**  
12 **COMPONENT SUPPLIERS FOR THE PROPOSED FACILITY?**

13 A. The Company’s process for requesting bids from the marketplace begins with  
14 an evaluation of providers it strategically intends to include in the bidding  
15 process. The PMC Gas Development Team assembles the documents necessary  
16 to describe the project and to develop the specifications that will satisfy the  
17 performance requirements for the facility. In parallel, PMC develops the  
18 evaluation criteria that DEP will use to evaluate bids once received. The  
19 evaluation criteria are tailored to each purchased component and weighted  
20 based upon the team’s determination of the needs of the individual project. The  
21 evaluation criteria are also grouped into technical, commercial, and corporate  
22 responsibility categories and include criteria such as bid understanding and  
23 completeness, technical operating parameters, technology and maturity, ability

1 to comply with requested schedule, sourcing location, warranty, payment and  
2 cancellation terms, and the bid price for delivery. After completing the  
3 evaluation, the team decides to proceed with the supplier with the best valued  
4 commercial offering.

5 **Q. WHAT IS THE STATUS OF THE COMPANY’S BID EVALUATION**  
6 **AND SELECTION PROCESS FOR THE MAJOR COMPONENTS FOR**  
7 **THE PROPOSED FACILITY?**

8 A. The Company initiated a competitive selection process in 4Q 2023 and has now  
9 received and evaluated bids to supply the two hydrogen capable, advanced-  
10 class CT units to be constructed in CC configuration at Roxboro. The Company  
11 received bids from all three manufacturers that build Advanced Class CTs, i.e.,  
12 General Electric Vernova, Siemens Energy, and Mitsubishi Powers Americas,  
13 Inc. The Company evaluated the bids and performed a qualitative assessment  
14 of a number of factors including capital cost, constructability, life-cycle fuel  
15 costs, performance, experience, reliability, completeness of bid, ability to meet  
16 schedule, long-term parts and maintenance cost, and key contract terms and  
17 conditions. The Company has concluded the bid evaluation process and has  
18 initiated commercial negotiations with the original equipment manufacturer  
19 (“OEM”) bidder that provided the best valued commercial offering.

20 The Company has also received and evaluated bids from multiple  
21 qualified OEM providers to supply generator step-up (“GSU”) and unit  
22 auxiliary transformers (“UAT”) as well as a STG. DEP considered each  
23 manufacturer’s unique requirements and characteristics along with several

1 other factors to identify the bids to supply the GSUs, UATs, and the STG that  
2 represent the best valued commercial offerings. Please see Confidential Exhibit  
3 4 to the Application for more information on the status of DEP’s procurement  
4 of GSUs, UATs, and the STG.

5 Finally, the Company will develop a list of acceptable OEMs and  
6 preferred specifications for the HRSG and will include this information in the  
7 Request for Proposal (“RFP”) that DEP will issue to potential EPC contractors  
8 for firm bids later this year. The EPC contractor will be responsible for  
9 obtaining and reviewing bids, awarding a contract to the selected bidder, and  
10 procuring and installing the HRSG pursuant to the terms of the EPC Agreement.

11 **Q. HAS DEP SELECTED THE PRINCIPAL CONTRACTORS FOR**  
12 **CONSTRUCTION OF THE PROPOSED FACILITY?**

13 A. No. The Company has not yet determined the EPC contractor for the Proposed  
14 Facility but has assembled the project specifications and RFP documents and is  
15 in the process of issuing the project for bids. The Company anticipates awarding  
16 the EPC contract in 1Q 2025.

17 The Company continually evaluates potential EPC providers through  
18 site visits, interviews, and by evaluating their experience, financials, workload,  
19 and available resources to understand their abilities and availability. Based upon  
20 this process, DEP developed an initial qualified bidders list. DEP will continue  
21 to update the list based on bidder qualifications as well as information learned  
22 from the marketplace before issuing the RFP. The Company ultimately  
23 anticipates a bid list of between three and six qualified providers. Confidential

1 Exhibit 4 to the Application contains a list of the initial qualified bidders as of  
2 March 28, 2024, which DEP is filing under seal.

3 Evaluations for an EPC contractor are thorough because the selected  
4 contractor will have a significant influence on the project's success. Once DEP  
5 receives bids, it will consider and score various criteria that it will then  
6 summarize under technical, commercial, and corporate responsibility  
7 categories. The criteria will include safety, environmental, scope understanding,  
8 engineering capabilities, construction team experience and commitment,  
9 project management and project controls teams and tools, experience with  
10 similar technology and project scale, quality assurance, project execution  
11 planning, schedule adherence, and key aspects of the commercial terms and  
12 conditions that provide confidence that the contractor is committed to the  
13 project. After completing the evaluation, the PMC Gas Development Team will  
14 summarize and recommend to management the contractor that, through the  
15 evaluation process, it identified as best suited for execution of the work.

16 **V. ESTIMATED COST OF THE PROPOSED FACILITY**

17 **Q. PLEASE DESCRIBE THE ESTIMATED CONSTRUCTION AND**  
18 **ANNUAL OPERATING COSTS ASSOCIATED WITH THE PROPOSED**  
19 **FACILITY.**

20 A. The projected capital costs and operating expenses are confidential and  
21 proprietary and, as a result, the Company is filing this information under seal in  
22 Confidential Exhibit 3 to the Application. Confidential Exhibit 3 also provides  
23 a detailed, non-confidential explanation of the methodology DEP used to

1 develop its construction cost estimate.

2 **VI. CONCLUSION**

3 **Q. IN SUMMARY, WHY SHOULD THE COMMISSION AUTHORIZE**  
4 **CONSTRUCTION OF THE PROPOSED FACILITY?**

5 A. The Company has a reasonable and executable plan to construct the Proposed  
6 Facility on the planned schedule to meet the meet the timeframe for new CC  
7 generation identified in the CPIRP. The Company designed the Proposed  
8 Facility to satisfy the planning need for new CC generation identified in the  
9 CPIRP and constructing it at Roxboro will enable DEP to leverage prior  
10 customer investments in plant infrastructure. Accordingly, the Commission  
11 should grant the requested CPCN.

12 **Q. MR. SMITH, DOES THIS CONCLUDE YOUR PRE-FILED DIRECT**  
13 **TESTIMONY?**

14 A. Yes.