



Regulated & Renewable Energy

Roxboro Station Reliability Assurance Initiative

DE-FE0032776

Robert Myron

Project Director, CDG Services - Central/North Zones

October 2, 2026

Acknowledgment and Disclaimer

Acknowledgment: This presentation is based upon work supported by the Department of Energy under Award Number DE-FE0032776.

Disclaimer: This portion of the presentation was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

Agreement Overview (DE-FE0032776)

- **Project Estimate**

- Total Value: \$78,206,404
- Duke Energy Carolinas Cost-Share: \$49,806,404
- DOE Cost Share \$28,400,000 (maximum)

- **Project Goals**

1. U2 Component Maintenance
2. U3 Component Maintenance
3. U3 ID Fan VFDs
4. U3 Boiler Block Valves
5. U2 Economizer to SCR Duct

- **Project Location:** Roxboro Station, Person County, Semora, NC

- **Project Period:** 09/01/2026 – 03/31/2030

Roxboro Station Overview



Roxboro Station Overview

Fully owned and controlled by Duke Energy Progress

One of the largest coal plants in the United States

Cunningham township, rural population 1,463

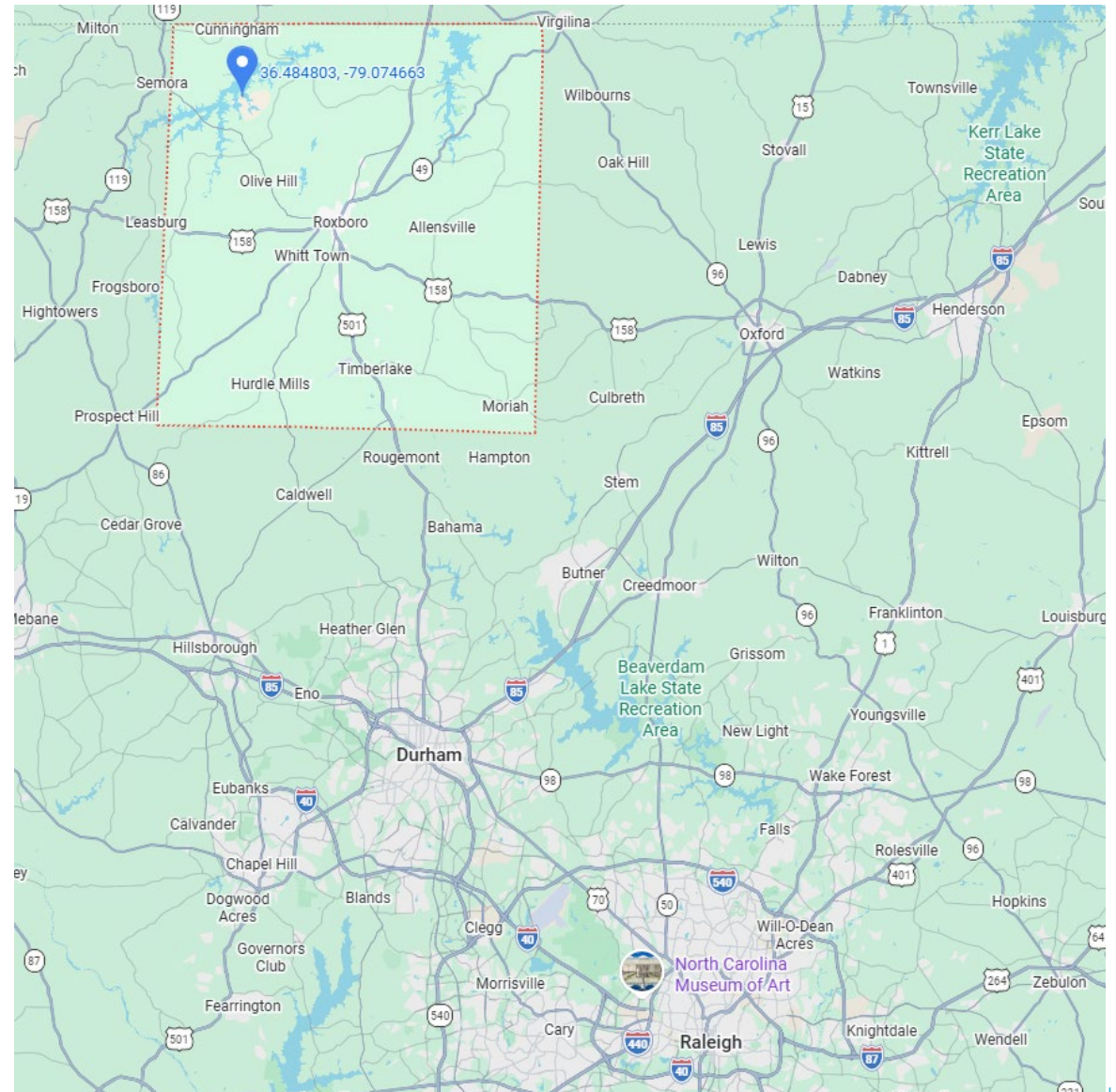
Currently anticipated to operate until the early 2030's

Four-unit subcritical boilers*

2,462 MW net output**

*Project focus is on Units 2 & 3.

**Unit 2 & 3 combine for 1,371 MW net output



Roxboro Station Overview (continued)

- Commercial Operation
 - U1 – 1966
 - U2 – 1968
 - U3 – 1973
 - U4 – 1980
- SCRs installed 2005
- Scrubbers installed 2007 – 2008
- GE Tandem-compound quad flow turbines
- 4 Generators
- Cooling from Hyco Lake
 - Unit 1 – Once thru
 - Unit 2 – Once thru
 - Unit 3 – Once thru (helper cooling tower for summer)
 - Unit 4 – Closed Loop

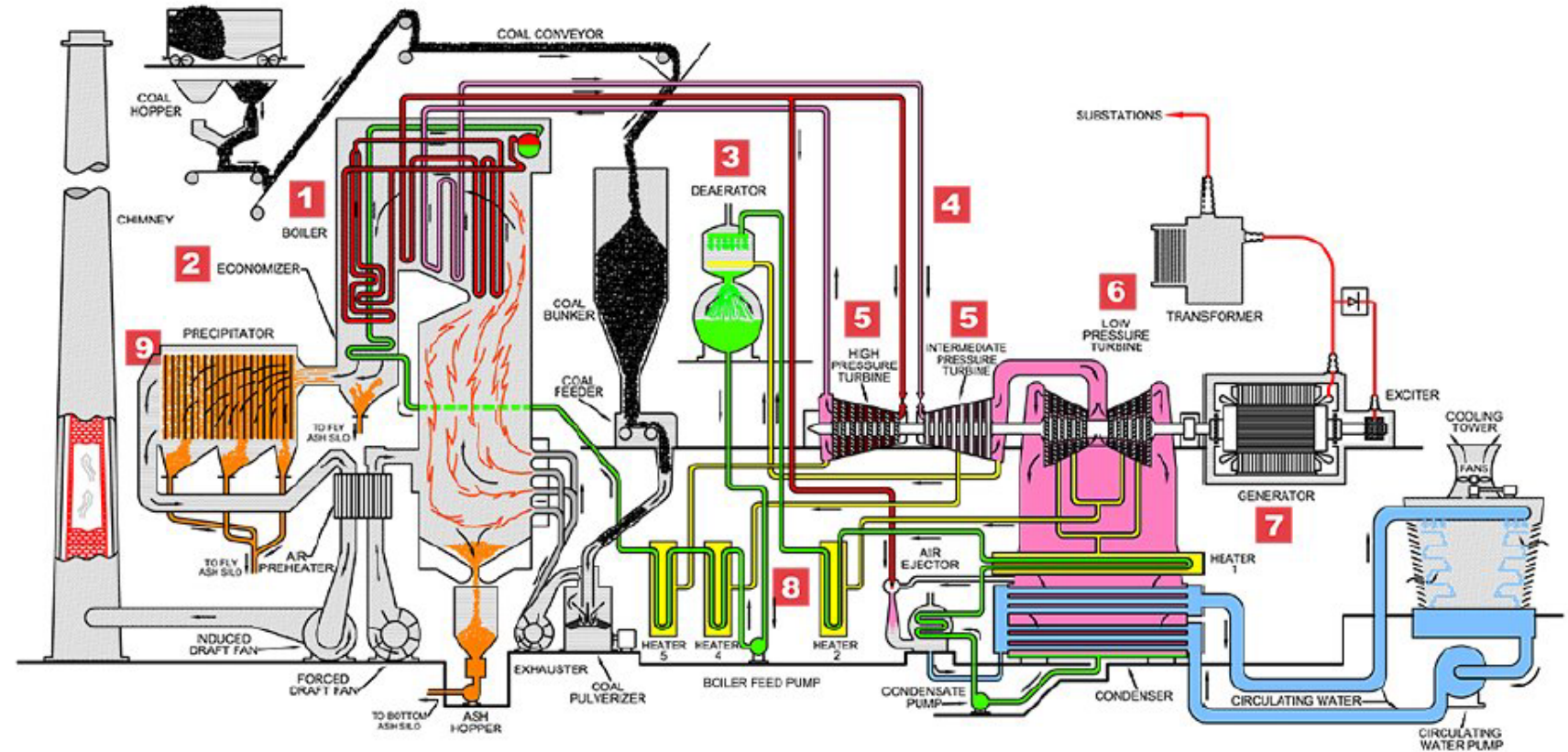


Project Scope

Technical Objective	Project Description	DOE Share	Duke Share	Total	Outage Period
M1	Initial BCA	\$125,284	\$219,716	\$345,000	F 2026
M2	2027 - Roxboro Common	\$1,353,593	\$2,373,860	\$3,727,453	S/F 2027
M3	2027 - Roxboro U2	\$685,576	\$1,202,327	\$1,887,903	S 2027
M4	2028 - Roxboro U3	\$4,035,258	\$7,076,820	\$11,112,078	F 2027
M5	Roxboro U3 ID Fan VFD	\$2,570,903	\$4,508,712	\$7,079,615	F 2027
M6	Roxboro U3 Boiler Block Valves	\$2,735,185	\$4,796,821	\$7,532,006	F 2027
M7	2028 - Roxboro Common	\$1,141,974	\$2,002,733	\$3,144,707	S/F 2028
M8	2028 - Roxboro U2	\$2,855,058	\$5,007,048	\$7,862,105	S 2028
M9	2028 - Roxboro U3	\$1,629,981	\$2,858,573	\$4,488,554	F 2028
M10	Roxboro U2 Econ to SCR Duct	\$7,019,752	\$12,310,866	\$19,330,618	S 2028
M11	2029 - Roxboro U2	\$307,703	\$539,633	\$847,335	S 2029
M12	2029 - Roxboro U3	\$3,814,242	\$6,689,214	\$10,503,456	F 2029
M13	Final BCA	\$125,493	\$220,082	\$345,575	S 2030
		\$28,400,000	\$49,806,404	\$78,206,404	

Project Scope

- Component maintenance –
 - Coal crushers
 - Pulverizers/coal mills
 - Mill motor rewinds
 - Limestone ball mill liners/bars
 - SFC Chain and flight
 - FGD AR Pumps
- Targeted Component Replacements
 - Boiler soot blowers
 - Burner flame scanners
 - ID fan VFDs
 - Boiler Block Valves
 - Ductwork replacement
 - Hydrated Lime System
 - FGD AR Headers
 - Coal silo liners
 - U3 Cooling Tower 4kv Switchgear and 480V cables
 - Condenser Steam Packing Exhauster



Project Schedule

Spring Initiatives 2027-2030

Roxboro U2 - 2027 Technical Objectives	Outage Timing	Qtr
Initial BCA		Q4 2026
Long Lead Equipment Purchase	T-24 to T-18 months	Q3 2025
Contracts Issued	T-3 months	Q1 2027
Outage Readiness Review	T-1 month	Q1 2027
Spring 2027 Outage	T-0 to T+3 months	Q2 2027
Roxboro U2 - 2028 Technical Objectives	Outage Timing	Qtr
Long Lead Equipment Purchase	T-24 to T-18 months	Q3 2026
Contracts Issued	T-3 months	Q1 2028
Outage Readiness Review	T-1 month	Q1 2028
Spring 2028 Outage	T-0 to T+3 months	Q2 2028
Roxboro U2 - 2029 Technical Objectives	Outage Timing	Qtr
Long Lead Equipment Purchase	T-24 to T-18 months	Q3 2027
Contracts Issued	T-3 months	Q1 2029
Outage Readiness Review	T-1 month	Q1 2029
Spring 2029 Outage	T-0 to T+3 months	Q2 2029
Roxboro Common - 2027 Technical Objectives (May complete in Fall 2027)	Outage Timing	Qtr
Initial BCA		Q4 2026
Long Lead Equipment Purchase	T-24 to T-18 months	Q1 2026
Contracts Issued	T-3 months	Q2 2027
Outage Readiness Review	T-1 month	Q3 2027
Spring/Fall 2027 Outage	T-0 to T+3 months	Q1/Q3 2027
Final BCA		Q1 2030

Fall Initiatives 2027-2030

Roxboro U3 - 2027 Technical Objectives	Outage Timing	Qtr
Initial BCA		Q4 2026
Long Lead Equipment Purchase	T-24 to T-18 months	Q1 2026
Contracts Issued	T-3 months	Q2 2027
Outage Readiness Review	T-1 month	Q3 2027
Fall 2027 Outage	T-0 to T+3 months	Q3 2027
Roxboro U3 - 2028 Technical Objectives	Outage Timing	Qtr
Long Lead Equipment Purchase	T-24 to T-18 months	Q1 2027
Contracts Issued	T-3 months	Q2 2028
Outage Readiness Review	T-1 month	Q3 2028
Fall 20278Outage	T-0 to T+3 months	Q3 2028
Roxboro U3 - 2029 Technical Objectives	Outage Timing	Qtr
Long Lead Equipment Purchase	T-24 to T-18 months	Q1 2028
Contracts Issued	T-3 months	Q2 2029
Outage Readiness Review	T-1 month	Q3 2029
Spring 2029 Outage	T-0 to T+3 months	Q3 2029
Roxboro Common - 2028 Technical Objectives	Outage Timing	Qtr
Initial BCA		Q4 2026
Long Lead Equipment Purchase	T-24 to T-18 months	Q1 2026
Contracts Issued	T-3 months	Q2 2028
Outage Readiness Review	T-1 month	Q3 2028
Spring/Fall 2028 Outage	T-0 to T+3 months	Q1/Q3 2028
Final BCA		Q1 2030

Key Project Participants

- Department of Energy
- Duke Energy Teams
 - Regional Services Projects Team
 - Station Teams
 - Central Operation Services & Oversight (COSO)
 - Supply Chain Services
 - Finance
 - Environmental, Health and Safety
- Engineering Services – Design, NDE
- Installation Contract Partners
- Material Suppliers (including but not limited to):
 - Ferguson
 - Innomotics
 - Riley Power
 - Thermal Engineering International
 - Wesco

Performance / Success Metrics

Project	Success Criteria	Deliverable
Component Maintenance	1) Replacements completed demonstrated by field verification 2) Work Order Completion	1) On-site DOE verification and/or supporting documentation photos 2) Maintenance system (Maximo) work order status as complete, "COMP"
U3 ID Fan VFDs	1) Replacements completed demonstrated by field verification 2) OEM commissioning sign-off	1) On-site DOE verification and/or supporting documentation photos 2) OEM final test/assembly report
U3 Boiler Block Valves	1) Replacements completed demonstrated by field verification 2) Successful weld test	1) On-site DOE verification and/or supporting documentation photos 2) Contractor's non-destructive examination (NDE) report

Intended Impact

Customer Benefit

- Projects will support sustained generating reliability and help keep customer costs low
- Prevent failures and costly downtime that threatens bulk electric system reliability and, therefore, impacts customer affordability.

Community Benefit

- Maintain permanent jobs further into the future by renewing critical station equipment
- ~\$33M of construction work in Person County from 2027-2030 – endorsement from Person County Economic Development Commission
- Sustain 1,371MW dispatchable capacity

Station Benefit

- Improved equipment availability 4-7% (total for both units)
- Improved employee workload with reliable equipment
- Increased employee/station morale

Risk Assessment



TECHNICAL RISK

Ductwork - Complex rigging evolutions

Reliability impacts from other plant systems mask the project's overall benefits

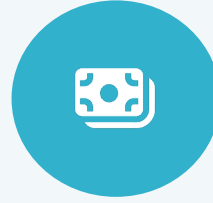
Performance requires permit modification

MITIGATION

Detailed engineering and design reviews to optimize cutlines

Track both unit reliability performance & system reliability performance

Conduct environmental permit review



COST RISK

Inflation and market volatility may increase project costs.

MITIGATION

Phased funding, estimate validation, contingency



SCHEDULE RISK

Long-lead equipment manufacturing and outage timing represent the highest schedule risk.

MITIGATION

Early procurement and shop reservation commitments

