



U.S. DEPARTMENT of ENERGY

Hydrocarbons and
Geothermal Energy Office

OFFICE OF COAL

America's need for affordable, reliable, and secure energy is growing as super intelligence, advanced manufacturing, and other industries increase demand for electricity. The [U.S. Energy Information Administration](#) projects this demand could grow as much as 50 percent by 2050. The U.S. Department of Energy's (DOE) Hydrocarbons and Geothermal Energy Office (HGEO) is working to meet that demand by making more effective use of America's abundant domestic energy resources, strengthening existing infrastructure, and advancing new technologies.

As part of that mission, HGEO's Office of Coal works with the National Energy Technology Laboratory (NETL), other DOE national laboratories, industry, universities, and partners to **stabilize, optimize, and grow America's coal industry.**

Research & Development Priorities

The Office of Coal focuses on four objectives:

1. **Modernize and extend the life of existing coal mines and coal-based power plants** through advanced technologies and infrastructure improvements.
2. **Improve efficiency across the coal value chain**, including extraction, processing, conversion, and power generation.
3. **Grow coal-based power generation and product manufacturing** by advancing technologies for reliable electricity and high-value coal-derived products.



4. **Expand opportunities for U.S. coal exports** by addressing technical and infrastructure barriers and strengthening access to global markets.

Innovation Across the Value Chain

The **Mining & Processing Division** develops technologies to modernize coal extraction and processing, improve safety and productivity, extend mine life, and access resources previously considered uneconomic or difficult to recover.

Super Intelligence, Robotics & Automation • Digital Twins • Advanced Coal Processing • Enhanced Coalbed Methane Recovery • Underground Gasification • Export-Enabling Technologies

The **Conversion & Products Division** advances new uses for coal and coal-derived feedstocks, expanding opportunities beyond traditional power generation and strengthening domestic manufacturing and supply chains.

High-Value Carbon Materials • Graphite & Carbon Fibers • Coal-Derived Fuels & Chemicals • Waste-to-Products • Gasification

The **Power & Capture Division** develops technologies to modernize America's existing coal power fleet, improve efficiency and operational flexibility, and create value from power plant waste streams.

Coal Plant Modernization • High-Efficiency Power Systems • Flexible Operations • Waste Stream Conversion • Carbon Dioxide-Enhanced Oil Recovery

From Research to Real-World Impact

More Than \$1 Billion Investment Announced

In FY26, HGEO announced more than \$1.1 billion in federal funding for coal plants and infrastructure, including projects to modernize existing generation, recommission viable facilities, add generating capacity, and strengthen export infrastructure.

More Value From American Coal

HGEO and NETL are advancing technologies that can create graphite, critical minerals, carbon materials, construction materials, fuels, and chemicals from coal and coal-related resources, opening new markets while strengthening domestic industrial supply chains.

Coal Center of Excellence

Based at NETL's Morgantown, West Virginia campus, the Coal Center of Excellence connects industry and other stakeholders with DOE expertise, facilities, and technical capabilities to solve real-world challenges and move technologies toward deployment. The Center has already supported more than 68 industry engagements.

Powering North Carolina

As electricity demand grows, HGEO is investing in existing generation infrastructure to improve reliability, reduce operational risk, and preserve dispatchable capacity. Two Duke Energy facilities, Roxboro Plant in Person County and Belews Creek Steam Station in Stokes County, have been selected for coal reliability and modernization initiatives.

Roxboro: Targeted Modernization for Reliable Power

The Roxboro 2 & 3 Coal Reliability Assurance Initiative includes more than 60 targeted upgrades to modernize boiler, scrubber, electrical, and balance-of-plant systems at Duke Energy Progress' Roxboro Plant. The upgrades will reduce operational risk, improve plant performance, and provide greater flexibility to meet electricity demand.

PROJECT AT A GLANCE

1,465 MW (gross)

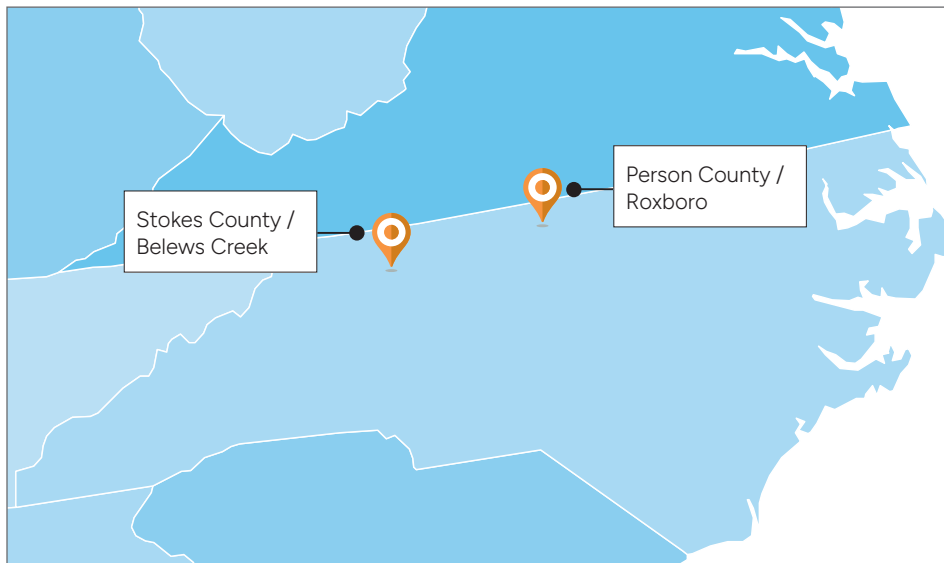
Enough generating capacity to power approximately 590,000 homes

60+

Targeted upgrades

\$28.4 MILLION

Federal investment



Belews Creek: Investing In Existing Generation

The Belews Creek Coal Reliability Assurance Initiative includes 18 actions to replace and upgrade boilers, turbines and generators, fans, controls, ducts, valves, and other critical components at Duke Energy Carolinas' Belews Creek Steam Station. Consistently ranked as one of the most efficient coal facilities in the nation, the initiative will further improve reliability, reduce the risk of forced outages, and increase energy affordability both locally and across the broader Duke Energy Carolina service area.

PROJECT AT A GLANCE

2,340 MW (gross)

Enough generating capacity to power approximately 940,000 homes

18

Targeted upgrades

\$34 MILLION

Federal investment

Investing In Reliability

Together, the projects represent approximately **3,805 MW (gross) of existing generating capacity** and more than **\$62 million in planned federal investment**. By targeting critical equipment and infrastructure, DOE and industry are working to improve plant availability, reduce operational risk, and keep dependable generation available to meet growing electricity demand.

Work With Us

HGEO works directly with industry and other partners to identify barriers, apply DOE's technical capabilities, and move promising technologies from research through demonstration and toward commercial deployment.

Learn more: energy.gov/hgeo/office-coal

Contact: coal@hq.doe.gov ■



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For more information, visit:
energy.gov/hgeo/office-coal

October 2026

