



Carbon Capture Demonstration Projects Program Front-End Engineering Design (FEED) Studies

The Carbon Capture Demonstration Projects Program, managed by the U.S. Department of Energy's (DOE) Office of Clean Energy Demonstrations (OCED), aims to de-risk integrated carbon capture and storage (CCS) demonstrations and catalyze significant follow-on investments from the private sector for commercial-scale, integrated CCS demonstrations on carbon emissions sources across industries in the United States. To advance CCS demonstrations, OCED sought applications to execute and complete front-end engineering design (FEED) studies for prospective integrated carbon capture, transport (if required) and storage systems projects. OCED awarded this FEED study in December 2023.

CCS FEED Study Awardee

Tampa Electric Company: Polk Power Station Integrated CO₂ Capture Project

Project At A Glance

- » **Project Total:** \$9,439,445*
- » **OCED Award Amount:** \$4,719,722
- » **Total Potential Carbon Savings:** 3 million metric tons of CO₂ per year
- » **Project Synopsis:** Ensure the existing units maintain the flexibility to dispatch as needed while running a carbon capture system that treats 100% of the flue gas from its four heat recovery steam generators
- » **Awardee:** Tampa Electric Company (TEC) is an investor-owned, regulated utility with more than 120 years of experience in power construction and generation
- » **Project Locations:** Polk Power Station; Mulberry, Florida
- » **Project Start Date:** December 1, 2023

*For FEED study only.

About This Project

OCED is working with TEC to complete a FEED study to design and determine the cost of retrofitting ION Clean Energy, Inc.'s post-combustion carbon capture technology with pipeline transport and secure geologic storage for the natural gas combined cycle power plant at the Polk Power Station in Mulberry, Florida. This technology captures a minimum of 95% of the CO₂ emissions, which equates to nearly 3 million metric tons of CO₂ per year. The carbon captured will be stored in secure geologic storage.

As part of this project, the CCS system will be designed to maintain the necessary flexibility of a dispatch-based generating asset, which pushes the boundaries of scalability, maximizes energy efficiency, and utilizes a transformational solvent, while maintaining a robust and flexible system.

The project will include project management, community benefits work, a CO₂ pipeline transportation FEED study, storage-field development plan, initiation of the NEPA process, necessary permits for carbon storage, and a CO₂ capture supplemental FEED study that builds on the concept developed in DE-FE0032224.

The U.S. Department of Energy established OCED to help scale the emerging technologies needed to tackle our most pressing climate challenges and achieve net zero emissions by 2050. OCED's mission is to deliver clean energy demonstration projects at scale in partnership with the private sector to accelerate deployment, market adoption, and the equitable transition to a decarbonized system.

Tampa Electric Company CCS FEED Study

Project Fact Sheet

Project Site

The Polk Power Station — including a 1,190 MW, 4x1 natural gas combined cycle (NGCC) power plant (unit) — occupies over 2,500 acres in Mulberry, Florida. The station is located approximately 40 miles southeast of Tampa and about 60 miles southwest of Orlando.

Community Benefits Plan

An initial Community Benefits Plan — developed as part of this project's application — will be executed by TEC personnel and experts in environmental justice and community engagement. Supporting DOE's Justice40 goals, the project benefits will flow to all residents in the area, of which 42% are in disadvantaged communities. Diversity, equity, inclusion, and accessibility goals for this project include:

- Creating and implementing a diverse hiring strategy
- Increasing awareness of community benefits and impacts through project-wide training and engagement
- Assessing and increasing community awareness of CCS technologies and their potential benefits
- Increasing diversity of business ownership within project subcontractors
- Developing an apprenticeship plan to educate those underrepresented in the workforce

Replicability

More than 335 million residents in the United States depend on our energy grid to reliably generate an average of 4 trillion kilowatt hours of power annually, but much of the power generation system relies on fossil fuels to operate. Carbon Capture and Storage is one important solution that can help reduce carbon emissions and their impact on the environment without sacrificing the reliable power generation that Americans need to thrive.

Through conducting Carbon Capture and Storage demonstrations, OCED envisions the technology being replicated at power generation plants all over the country, significantly reducing carbon emissions.

To learn more about Carbon Management you can access DOE's [Pathways to Commercial Liftoff](#) report or visit the [Carbon Management](#) section on the OCED website.



Contact

Program Email: ccdempoprojectsprogram@hq.doe.gov

Site-Specific Email: Polk_FEED@hq.doe.gov

More Resources

Website: energy.gov/oced/CCFEEDs

Office of Clean Energy Demonstrations:
energy.gov/oced

Carbon Management Interactive Graphic:
edx.netl.doe.gov/carbonstorage/interactive-graphic/

