

**FINDING OF NO SIGNIFICANT IMPACT
FOR
RTI INTERNATIONAL SCALE-UP OF HIGH-TEMPERATURE
SYNGAS CLEANUP AND CARBON CAPTURE AND
SEQUESTRATION TECHNOLOGIES,
POLK COUNTY, FLORIDA**

RESPONSIBLE AGENCY: U.S. Department of Energy (DOE)

ACTION: Finding of No Significant Impact (FONSI)

SUMMARY: DOE completed the *Final Environmental Assessment for RTI International Scale-Up of High-Temperature Syngas Cleanup and Carbon Capture and Sequestration Technologies* (DOE/EA-1867). Based on the analyses in the environmental assessment (EA), DOE determined that its proposed action—providing cost-shared funding to RTI International (RTI) to demonstrate the precommercial scale-up of its high-temperature syngas cleanup and carbon capture and sequestration technologies—would result in no significant adverse impacts. DOE further determined that RTI’s proposed project would have potential beneficial impacts in advancing the commercial deployment of cost-effective, environmentally sound technology options that reduce constraints associated with using domestic energy resources and may ultimately assist in reducing greenhouse gas (GHG) levels. In addition, beneficial local socioeconomic impacts would occur from increased employment opportunities and expenditures in the project area.

BACKGROUND: Congress appropriated funding for DOE’s Industrial Carbon Capture and Sequestration (ICCS) Program as part of the *American Recovery and Reinvestment Act of 2009* (Recovery Act) (Public Law 111-5, 123 Statute 115) to stimulate the economy and reduce unemployment in addition to furthering DOE’s ICCS Program. DOE selected RTI’s proposed project to receive noncompetitive financial assistance from funds authorized in the Recovery Act as an expansion of a smaller project previously funded by DOE.

The federal action of providing funding for ICCS projects requires compliance with the *National Environmental Policy Act of 1969* (NEPA) (42 United States Code [U.S.C.] 4231 *et seq.*), the Council on Environmental Quality regulations (Chapter 40, Parts 1500 through 1508, Code of Federal Regulations [CFR]), and DOE’s NEPA implementing procedures (10 CFR Part 1021). DOE prepared an EA to evaluate the potential environmental consequences of providing financial assistance for this proposed project under the ICCS Program.

PURPOSE AND NEED: The overall purpose and need for DOE action, pursuant to the ICCS Program and the Recovery Act, is to demonstrate high-temperature syngas cleanup technologies integrated with carbon capture and sequestration at a precommercial scale sooner than might otherwise be possible. Information provided by the demonstration would mitigate the technical risks associated with scale-up of these technologies to advance commercial deployment. The project supports DOE’s ICCS Program goal of advancing environmentally sound, cost-effective options that reduce the constraints associated with the use of domestic energy resources and assist in improving the efficiency of capturing and sequestering carbon dioxide (CO₂).

DESCRIPTION OF THE PROPOSED PROJECT: DOE's proposed action is to provide noncompetitive financial assistance to RTI for the precommercial scale-up of high-temperature syngas cleanup and CO₂ capture and sequestration technologies. DOE would provide approximately \$171.8 million in cost-shared funding to facilitate the design, construction, and operation of the project. The project would be located at Tampa Electric Company's existing Polk Power Station in Polk County, Florida.

The proposed project would treat a slipstream, equivalent to up to 66 megawatts of electricity generation, of the coal-derived syngas from the Polk Unit 1 integrated gasification combined-cycle (IGCC) power plant to remove 99.9 percent of the sulfur, reduce trace contaminant (arsenic, selenium, and mercury) concentrations, and convert removed sulfur compounds to elemental sulfur. The proposed project would also capture up to 300,000 tons per year, or 90 percent, of the CO₂ in the cleaned syngas and sequester the CO₂ by injection into a deep geologic formation at the site. The proposed project would operate for approximately 8,000 hours over an 18-month operational period.

ALTERNATIVES CONSIDERED: In addition to the proposed action, DOE considered the no-action alternative as required under NEPA. Under the no-action alternative, DOE would not provide funds for the proposed project. For the purposes of the EA, DOE assumed that the project would not proceed without DOE funding. This assumption established a baseline against which the potential environmental impacts of the proposed project were compared.

ENVIRONMENTAL CONSEQUENCES: DOE evaluated the potential environmental consequences of the proposed project and the no-action alternative. DOE considered 13 environmental resource areas in the EA. However, not all areas were evaluated at the same level of detail. For six of the resource areas, DOE determined there would be no impacts, or the potential impacts would be small, temporary, or both, and therefore did not carry these areas forward for additional analysis. DOE focused its more detailed analyses on those resources that have the potential for significant impacts or controversy, or interest the public. These resource areas included air quality, geology and soils, water resources, socioeconomics, transportation, management, and human health and safety.

The proposed project would be located in an area designated as attainment for all National Ambient Air Quality Standards (NAAQS) criteria air pollutants. Construction of the proposed project would result in fugitive dust air emissions during site preparation activities and the release of nitrogen oxides, carbon monoxide, and other fuel combustion emissions from equipment and vehicles. The potential air quality impacts of the construction-related emissions would be minor due to the temporary and localized nature of the emissions. During operations, the proposed project would include three sources of intermittent emissions and one continuous emissions source, a propane-fired heater. Due to the intermittent and minor level of emissions from these sources, potential air quality impacts would be minor and would not contribute to exceedances of the NAAQS or changes in attainment status. During the 18-month operational period, the project would also reduce GHG emissions by capturing and sequestering up to 300,000 tons per year of CO₂, which would otherwise be released to the atmosphere.

The targeted injection zone would be a deep saline carbonate system located between 4,200 and 8,000 feet below the surface. The injection zone is overlain by a laterally continuous, more than

1,300-foot-thick, low-permeability confining unit. A release of CO₂ vertically through the geologic materials up to the surface or shallower geologic units is considered unlikely because of well design, a monitoring program, and the presence of the thick confining unit. At this time, it is anticipated that the CO₂ injection well would be permitted under the Underground Injection Control Program as a Class V experimental well. Therefore, DOE expects the proposed project to have minimal impacts on geologic and soil resources, including underground sources of drinking water.

During construction of the proposed project, soil erosion and stormwater runoff from the facility and construction laydown areas would be the primary potential surface water concern. Appropriate stormwater management and erosion control measures would be used to avoid or minimize potential impacts, and any potential impacts would be minor and temporary. During operation, the proposed project would use minor amounts of additional water and discharge minimal amounts of wastewater. However, water would be provided from the existing Polk Power Station supply system, and wastewater would be discharged to the existing on-site treatment system. Therefore, potential impacts to surface water resources would be minimal.

Transportation facilities in the vicinity of the Polk Power Station include several state and county roadways currently functioning at acceptable levels of service (LOS). During construction, the proposed project would have short-term, minor transportation impacts due to the movement of construction workers and the deliveries of equipment and materials to and from the site. Potential impacts could involve minor traffic congestion and delays near access road entrances to the Polk Power Station. These potential impacts would be temporary and would not be expected to cause the roads to function at an unacceptable LOS. During operation, the potential transportation impacts would be minimal due to the small number of operational employees.

The proposed project would store and use various chemicals and materials, and generate moderate quantities of waste products, some of which may be hazardous. Such wastes would be managed, controlled, characterized by testing, and transported offsite for appropriate disposal in compliance with all regulations. Workers responsible for project operations would be properly trained in waste handling and emergency response procedures. Based on these measures and the estimated waste quantities, DOE expects the project would have minimal impacts from the generation, handling, and disposal of wastes.

The proposed project would have minor beneficial impacts to the local area economy through the creation of jobs and expenditures during construction and operation. DOE estimates the proposed project to create a monthly average of 107 jobs during the 13-month construction period and 12 jobs during the 18-month operational period.

Cumulative impact considerations included air emissions from the existing power plant and potential future generating units at the Polk Power Station. Tampa Electric Company also plans to use the CO₂ injection well for disposal of wastewater from its existing operations after completion of the demonstration project. Due to the intermittent, minor level of emissions from the proposed project, the cumulative impacts on air quality would be negligible. Based on preliminary geochemical modeling, the combined CO₂ and wastewater plumes would not migrate a considerable distance from the injection site. Modeling predicted the CO₂ plume would react with and dissolve in the brine wastewater within the injection zone in a relatively

short period of time (less than 5 years). Therefore, any cumulative impacts associated with future use of the injection well are expected to be minimal.

Under the no-action alternative, DOE assumed the project would either be delayed, as RTI sought other funding sources, or abandoned altogether. The potential environmental consequences, if the project was delayed, could be different if the project was modified. If abandoned, the potential environmental consequences would not occur. Furthermore, the potential beneficial impacts would change or not occur.

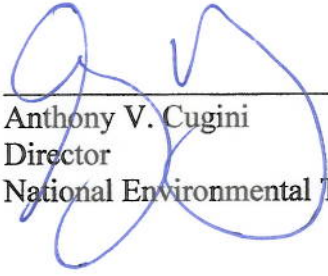
PUBLIC AVAILABILITY: DOE issued the draft EA on July 29, 2011, and advertised its availability in the *Lakeland Ledger* on July 31, and August 1 and 2, 2011. In addition, DOE sent copies of the draft EA to the Mulberry Public Library in Mulberry, Florida, and the Lakeland Public Library in Lakeland, Florida, for public review. DOE established a 15-day public comment period that began July 31, 2011, and ended August 15, 2011. DOE announced it would accept comments by mail, email, or facsimile. DOE also made the draft EA available on its National Energy Technology Laboratory (NETL) web site. No public comments were received.

DOE distributed the draft EA to federal, state, and local agencies with jurisdiction or special expertise. DOE conducted formal consultations by mail with the Florida State Historic Preservation Office (SHPO), the Seminole Tribe of Florida, and the Seminole Nation of Oklahoma. The Florida SHPO and Seminole Tribe concurred with DOE's determination that no historic properties would be affected. DOE received comments on the draft EA from the U.S. Environmental Protection Agency (EPA) Region 4 in a letter dated August 19, 2011. The correspondence stated the agency supports the project and believes the proposed facility and its operation do not appear to represent a significant impact to human health and the environment. The EPA correspondence also provided several comments on the draft EA for consideration, which were addressed in the final EA.

DOE distributed copies of the final EA and this FONSI to stakeholders and resource agencies that provided comments or consultation. DOE also makes these final documents available at its NEPA web site at <http://energy.gov/nepa/doe-nepa-documents> and the NETL's web site at <http://www.netl.doe.gov/publications/others/nepa/ea.html>.

DETERMINATION: On the basis of the evaluations of the final EA, DOE determined that its proposed action to provide \$171.8 million in cost-shared funding, and RTI's proposed project to demonstrate the scale-up of high-temperature syngas cleanup and carbon capture and sequestration technologies, would have no significant impact on the human environment. All potential environmental impacts identified and analyzed in the EA would not be significant. Therefore, preparation of an environmental impact statement is not required, and DOE is issuing this FONSI.

Issued in Pittsburgh, Pennsylvania, this 13th day of October 2011.



10.13.11

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