



the **ENERGY** lab

PROJECT FACTS

Industrial Carbon Capture and Sequestration (ICCS)

Leucadia Energy, LLC: Lake Charles Carbon Capture & Sequestration Project

Background

Carbon dioxide (CO₂) emissions from industrial processes, among other sources, are linked to global climate change. Advancing development of technologies that capture and store or beneficially reuse CO₂ that would otherwise reside in the atmosphere for extended periods is of great importance. Advanced carbon capture, utilization, and storage (CCUS) technologies offer significant potential for reducing CO₂ emissions and mitigating global climate change, while minimizing the economic impacts of the solution.

Under the Industrial Carbon Capture and Storage (ICCS) program, the U.S. Department of Energy (DOE) is collaborating with industry in cost sharing arrangements to demonstrate the next generation of technologies that will capture CO₂ emissions from industrial sources and either sequester those emissions or beneficially reuse them. The technologies included in the ICCS program have progressed beyond the research and development stage to a scale that can be readily replicated and deployed into commercial practice within the industry.

Project Description

The DOE selected Leucadia Energy, LLC to receive ICCS program funding through the American Recovery and Reinvestment Act (ARRA) of 2009, for its Lake Charles Carbon Capture & Sequestration (CCS) Project. The ICCS project will demonstrate the capture of CO₂ from an industrial facility for use in an independent enhanced oil recovery (EOR) application. The industrial source of CO₂ will be a petroleum-coke-to-chemicals (methanol and other by-products) gasification plant being developed by Lake Charles Cogeneration, LLC (a Leucadia Energy, LLC, affiliate) in Lake Charles, Louisiana. Once the CO₂ is captured, it will be purified to remove contaminants and compressed to a pressure suitable for commercial pipeline transport to oil fields in Texas and Louisiana for EOR. The project will also implement a comprehensive monitoring, verification, and accounting (MVA) program to confirm the long-term sequestration of a minimum of one million tons per year of the injected CO₂ at the Hastings oil field in Texas.

Goals/Objectives

The project goal is to advance CCUS technologies from the demonstration stage to commercial viability. The project objectives are to design, construct, and operate an integrated system of industrial-scale CO₂ capture, compression, and sequestration from a petroleum coke gasification plant for the beneficial reuse of CO₂ through EOR.

CONTACTS

Michael Knaggs

Director
Office of Major Demonstrations
National Energy Technology Laboratory
3610 Collins Ferry Road
P.O. Box 880
Morgantown, WV 26507-0880
304-285-4926
michael.knaggs@netl.doe.gov

Greg O'Neil

Project Manager
National Energy Technology Laboratory
626 Cochran Mill Road
P.O. Box 10940
Pittsburgh, PA 15236-0940
412-386-7407
gregory.oneil@netl.doe.gov

Hunter Johnston

Participant Project Manager
Leucadia Energy, LLC
New York, NY 10010-3649
202-429-6404
hjohnston@steptoe.com

PARTNERS

Denbury Onshore, LLC
Black & Veatch Corporation
University of Texas Bureau of Economic Geology

PROJECT DURATION

Start Date 11/16/2009 **End Date** 09/30/2015

COST

Total Project Value
\$435,587,194

DOE/Non-DOE Share
\$261,382,310 / \$174,204,884



Government funding for this project is provided in whole or in part through the American Recovery and Reinvestment Act.

NATIONAL ENERGY TECHNOLOGY LABORATORY

Albany, OR • Fairbanks, AK • Morgantown, WV • Pittsburgh, PA • Sugar Land, TX

Website: www.netl.doe.gov

Customer Service: 1-800-553-7681



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Benefits

The project will result in the large-scale recovery, purification, and compression of more than four million tons of CO₂ per year. The sale of CO₂ from the ICCS project for use in independent EOR operations by Denbury affords a cost effective means to increase domestic oil production while using advanced CCUS technology to beneficially use the recovered CO₂. On a global scale, petroleum coke currently being exported from the U.S. to regions where little, if any, environmental controls are required or implemented will now be used in a domestic chemical project that achieves superior environmental performance and captures CO₂ for beneficial use.

With the completion of the Green Pipeline by Denbury, naturally occurring CO₂ taken from the Jackson Dome in Mississippi will be used for EOR in oil fields in Texas and Louisiana. CO₂ from the project that is compressed and delivered to the Green Pipeline will represent approximately 25 percent of the

daily amount of CO₂ that Denbury will use in these oil fields. By using the anthropogenic CO₂ from the Lake Charles plant, Denbury will be able to reduce the amount taken from the Jackson Dome and prolong the life of this naturally occurring source of CO₂. Additionally, a comprehensive MVA program will be implemented in the Hastings oil field that will confirm the long-term sequestration of injected CO₂ in the EOR project application.

The infrastructure developed by the ICCS project could potentially enable other industrial and power plant CO₂ sources in the Lake Charles industrial community to commercially dispose of CO₂ in Gulf Coast EOR operations. Expansion of EOR in the Gulf Region will promote greater energy security by increasing domestic energy supplies. The Lake Charles gasification facility and CCS project alone are expected to provide up to 1,100 construction jobs and 200 permanent operation jobs, as well as millions of dollars in severance taxes and royalties to the States of Louisiana and Texas.

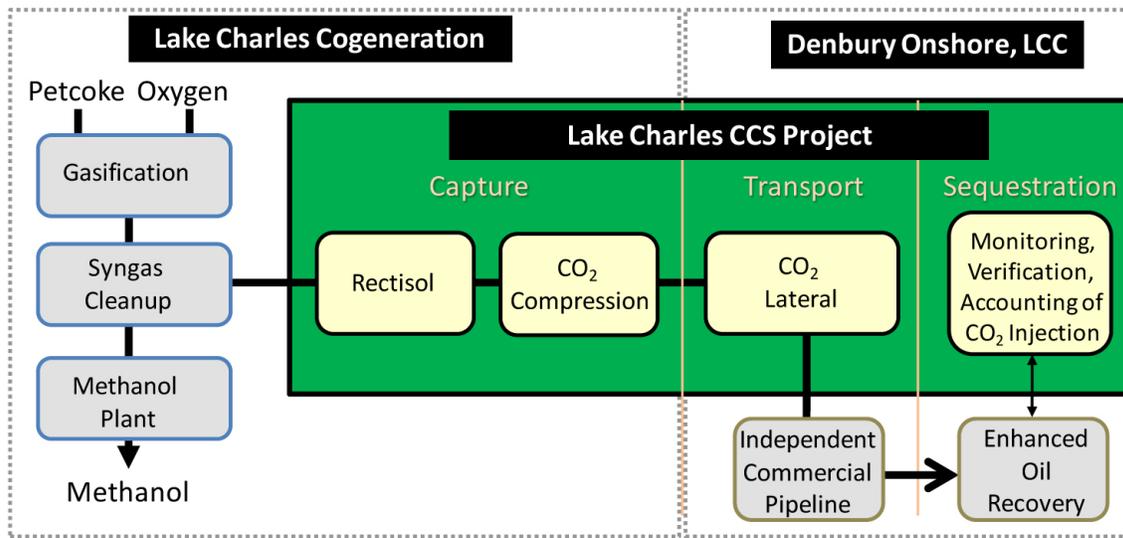


Diagram of the Lake Charles CCS Project

