



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 CO₂ that would otherwise reside in the atmosphere for extended periods is of great importance. Advanced carbon capture and storage (CCS) 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 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 Clean Energy, 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 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 CCS 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.

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PARTNERS

Denbury Onshore, LLC
Fluor Corporation
University of Texas Bureau of Economic Geology

PROJECT DURATION

Start Date	End Date
11/16/2009	09/30/2020

COST

Total Project Value
\$435,587,194

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

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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 CCS technology to beneficially use the recovered CO₂. On a global scale, petroleum coke currently being exported from the U.S. to regions where few, 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. Carbon dioxide 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 state of Texas.

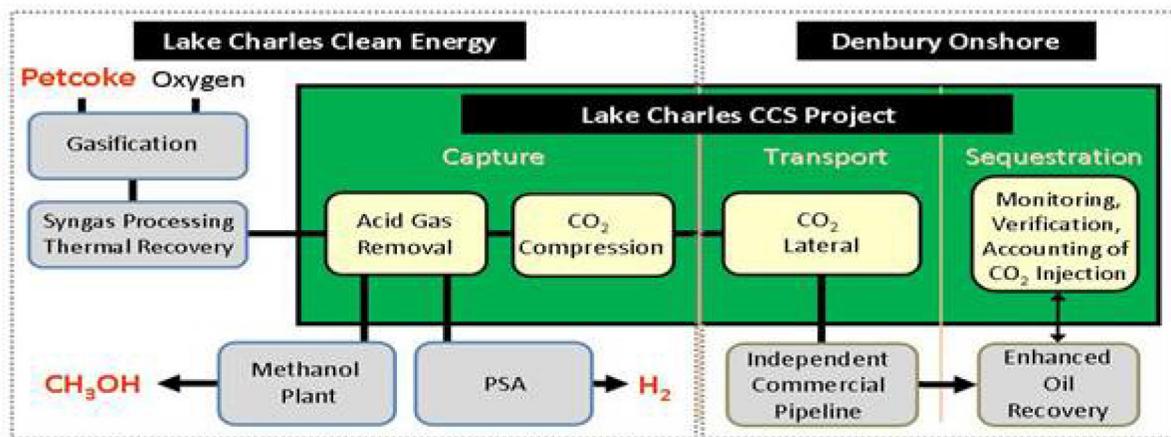


Diagram of the Lake Charles CCS Project

