



the **ENERGY** lab

## PROJECT FACTS

### Industrial Carbon Capture and Sequestration (ICCS)

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

## Background

Carbon dioxide (CO<sub>2</sub>) emissions from industrial processes, among other sources, are linked to global climate change. Advancing development of technologies that capture and store or beneficially reuse CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> from an industrial facility for use in an independent enhanced oil recovery (EOR) application. The industrial source of CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> 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 CO<sub>2</sub> capture, compression, and sequestration from a petroleum coke gasification plant for the beneficial reuse of CO<sub>2</sub> through EOR.

## CONTACTS

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## 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

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## Benefits

The project will result in the large-scale recovery, purification, and compression of more than four million tons of CO<sub>2</sub> per year. The sale of CO<sub>2</sub> 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 CO<sub>2</sub>. 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 CO<sub>2</sub> for beneficial use.

With the completion of the Green Pipeline by Denbury, naturally occurring CO<sub>2</sub> taken from the Jackson Dome in Mississippi will be used for EOR in oil fields in Texas and Louisiana. CO<sub>2</sub> from the project that is compressed and delivered to the Green Pipeline will represent approximately 25 percent of the

daily amount of CO<sub>2</sub> that Denbury will use in these oil fields. By using the anthropogenic CO<sub>2</sub> 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 CO<sub>2</sub>. Additionally, a comprehensive MVA program will be implemented in the Hastings oil field that will confirm the long-term sequestration of injected CO<sub>2</sub> in the EOR project application.

The infrastructure developed by the ICCS project could potentially enable other industrial and power plant CO<sub>2</sub> sources in the Lake Charles industrial community to commercially dispose of CO<sub>2</sub> 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.

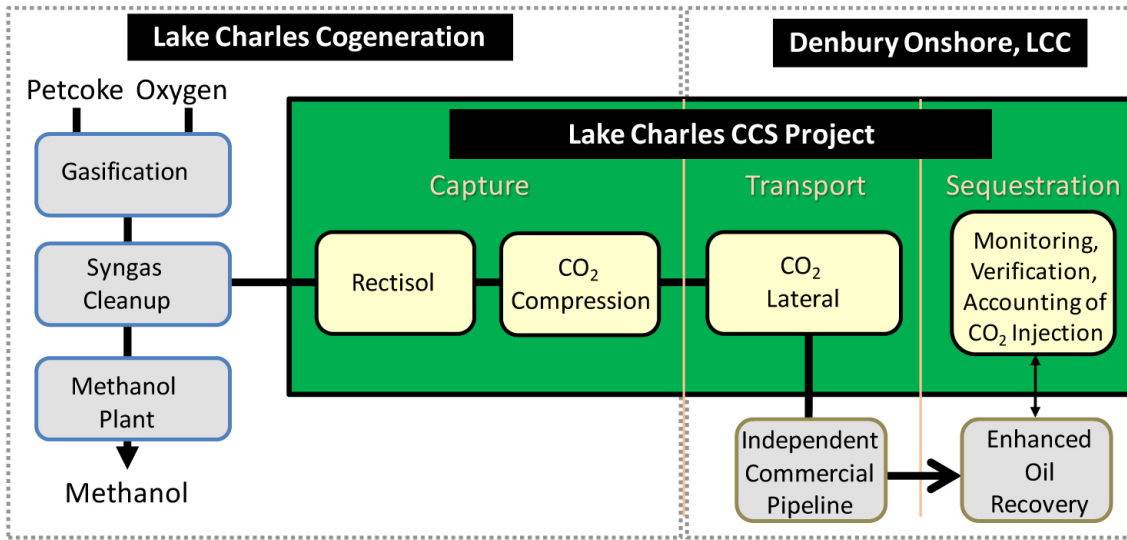


Diagram of the Lake Charles CCS Project

