



the **ENERGY** lab

PROJECT FACTS

Industrial Carbon Capture and Sequestration (ICCS)

Archer Daniels Midland Company: CO₂ Capture from Biofuels Production and Sequestration into the Mt. Simon Sandstone

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. 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 Carbon Capture and Sequestration from Industrial Sources and Innovative Concepts for Beneficial CO₂ Use (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 Archer Daniels Midland Company (ADM) to receive ICCS program funding through the American Recovery and Reinvestment Act (ARRA) of 2009. The project will demonstrate an integrated system of CO₂ capture in an ethanol production plant and geologic sequestration in a sandstone reservoir. The CO₂ used in this project is produced by ADM as a by-product in the production of fuel grade ethanol. ADM will capture approximately one million tons of CO₂ per year using dehydration and compression. The ethanol plant and the sequestration site are both located in Decatur, Illinois. The compressed CO₂ will be sequestered in Mt. Simon Sandstone Formation (saline reservoir). The project team members include ADM, Illinois State Geological Survey (ISGS), Schlumberger Carbon Services, and Richland Community College (RCC).

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U.S. DEPARTMENT OF
ENERGY

PROJECT DURATION

Start Date

11/16/2009

End Date

09/30/2015

COST

Total Project Value

\$207,942,199

DOE/Non-DOE Share

\$141,405,945 / \$66,536,254



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



The scope of the project includes design, construction, and demonstration of CO₂ capture, CO₂ sequestration, and monitoring, verification, and accounting (MVA) of stored CO₂. The project development activities include project schedule, project cost estimate, host-site commitments, financial commitments and funding plans for the non-DOE share of the project costs, and NEPA and environmental permitting.

Goals/Objectives

The overall project objective is to develop and demonstrate an integrated system of CO₂ capture from an ethanol plant and geologic sequestration in the Mt. Simon Sandstone Formation (saline reservoir).

Benefits

The project addresses climate change concerns by capturing CO₂ from a large-scale industrial process and by storing the compressed and dehydrated CO₂ in a saline reservoir. Specific advantages of the project include:

- Design, construction, and operation of a collection, compression, and dehydration facility capable of delivering up to 1,980 MT/day of CO₂ to an injection and sequestration site.
- Integration of the new facility with an existing 990 MT/day CO₂ compression and dehydration facility to achieve a total CO₂ sequestration capacity of approximately one million tons annually.
- Implementation and validation of the monitoring, verification, and accounting plan for the stored CO₂.
- Demonstrate the cost advantages and economic viability of CCS technologies at ethanol production facilities.



ADM's Agricultural Processing and Biofuels Plant, Decatur, IL.

