

PROJECT facts

U.S. DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY
NATIONAL ENERGY TECHNOLOGY LABORATORY



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Sequestration

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ENHANCED COAL BED METHANE PRODUCTION AND SEQUESTRATION OF CO₂ IN UNMINEABLE COAL SEAMS

Background

CONSOL Energy, Inc. will demonstrate a novel drilling and production process that reduces potential methane emissions from coal mining, produces usable methane (natural gas), and creates a sequestration sink for carbon dioxide (CO₂) in unmineable coal seams. CONSOL's project will employ a slant-hole drilling technique to drain coalbed methane from a mineable coal seam and an underlying unmineable coal seam. Upon drainage of 50-60 percent of the coalbed methane, some of the wells will be used for CO₂ injection to sequester the CO₂ in the unmineable seam, while stimulating additional methane production. The technique starts with a vertical well drilled from the surface followed by a guided borehole that extends up to 3,000 feet horizontally in the coal seam, allowing for production over a large area from relatively few surface locations.

The project will involve development of a 206.6 acre area involving two coal seams. The lower seam is an unmineable seam that will be degassed and eventually injected with CO₂. The upper seam is a mineable coal that will be degassed to produce coal bed methane, thus avoiding methane emissions when the seam is mined. The upper mineable seam will be isolated from the lower unmineable seam in which CO₂ injection will take place to prevent CO₂ migration into the mineable seam.



Picture of the North degassing wells

CUSTOMER SERVICE

1-800-553-7681

WEBSITE

www.netl.doe.gov

PARTNERS

CONSOL Energy

COST

Total Project Value:

\$12,642,000

DOE/Non-DOE Share:

\$8,696,000 / \$3,945,000

Primary Project Goal

The primary goal of this project is to evaluate the effectiveness and economics of carbon sequestration in an unmineable coal seam.

Objectives

- Demonstrate the application of coal seam methane production technology using novel slant hole drilling to degasify an unmineable coal seam
- Use the sale of methane to reduce the cost of carbon dioxide sequestration
- Sequester carbon dioxide in a degassed, unmineable coal seam
- Demonstrate that the carbon dioxide remains sequestered in the coal seam in which it was injected

Accomplishments

- The two degassing wells in the Pittsburgh Seam completed; degassing wells in the upper Freeport seam have been drilled and completed
- Dewatering and degassing of wells have begun
- Site preparation of the South Well site was completed
- Central Well site revised wells permitted by West Virginia Department of Environmental Protection

Benefits

This project will provide a documented case study of the effectiveness and economics of carbon sequestration in an unmineable coal seam. The results can be used not only by mining and power generation companies who wish to sequester carbon dioxide in unmineable coal seams but also by regulatory agencies and the public to aid in policy and permitting decisions.