



## DOE Large-scale CO<sub>2</sub> Injection Projects

Awarded August 4, 2008:

**Southwest Regional Partnership (SWP)** - The SWP, led by the New Mexico Institute of Mining and Technology, plans to inject up to 35,000 tons of CO<sub>2</sub> in a 6-month demonstration at the San Juan Basin near Navajo City, N.M. Unlike other enhanced coalbed methane recovery projects, this demonstration will develop ways to maximize permanent storage of the injected CO<sub>2</sub>, a process called geologic carbon sequestration. The SWP includes the states of Colorado, Oklahoma, New Mexico, Utah, and portions of Arizona, Kansas, Texas, and Wyoming. The partnership is currently conducting five field tests—three geologic and two terrestrial—all at various stages of planning and execution. Each is designed to validate the most promising carbon sequestration technologies and infrastructure concepts.

**Total Project Cost:** \$17,299,083

**DOE Share:** \$12,696,283

**Partner Share:** \$4,602,800

Awarded May 8, 2008:

**Midwest Regional Carbon Sequestration Partnership (MRCSP)** — The MRCSP, led by Battelle Memorial Laboratories, will demonstrate CO<sub>2</sub> storage in the Mount Simon Sandstone. This geologic formation stretches from Kentucky through Ohio and has the potential to store more than 100 years of CO<sub>2</sub> emissions from major point sources in the region. The MRCSP will inject approximately one million tons of CO<sub>2</sub> from an ethanol production facility. In this area of Ohio, the Mount Simon formation is approximately 3,000 feet deep. The CO<sub>2</sub> will be injected on the facility site, and MRCSP will be responsible for development of the infrastructure, operations, closure, and monitoring of the injected CO<sub>2</sub>. The MRCSP covers Ohio, Indiana, Kentucky, West Virginia, Maryland, Pennsylvania, New York, and Michigan.

**Total Project Cost:** \$92,846,271

**DOE Share:** \$61,096,271

**Partner Share:** \$31,750,000



**West Coast Regional Carbon Sequestration Partnership (WESTCARB)** —

The WESTCARB Partnership, led by the California Energy Commission, will conduct a geologic CO<sub>2</sub> storage project in the San Joaquin Basin in Central California. The project will inject 1 million tons of CO<sub>2</sub> over 4 years into deep (7,000+ feet) geologic formations below a 50-megawatt, zero-emission power plant in Kimberlina, CA. The Clean Energy Systems plant uses natural or synthesis gas in an oxyfuel system and produces a relatively pure stream of CO<sub>2</sub>. This CO<sub>2</sub> will be compressed and injected into one of a number of potential storage formations below the surface of the plant. WESTCARB will develop, operate, and close the injection site as well as monitor the fate of the injected CO<sub>2</sub>. The WESTCARB Partnership includes California, Arizona, Nevada, Oregon, Washington, Alaska, Hawaii, and British Columbia.

**Total Project Cost:** \$90,594,099

**DOE Share:** \$65,606,584

**Partner Share:** \$24,987,515

Awarded December 18, 2007:

**Midwest Geological Sequestration Consortium (MGSC)** - The partnership, led by Illinois State Geological Survey, will conduct large volume tests in the Illinois Basin to demonstrate the ability of a geologic formation to safely, permanently, and economically store more than one million tons of carbon dioxide (CO<sub>2</sub>). The CO<sub>2</sub> storage will be demonstrated in the Mount Simon Sandstone Formation, a prolific geologic formation throughout Illinois, Kentucky, Indiana, and portions of Ohio. This formation offers great potential to store more than 100 years of carbon dioxide emissions from major point sources in the region. The partnership will inject one million tons of CO<sub>2</sub> into one of the thickest portions of the Mount Simon Formation testing how the heterogeneity of the formation can increase the effectiveness of storage and demonstrate that the massive seals can contain the CO<sub>2</sub> for millennia. The results of this project will provide the foundation for the future development of CO<sub>2</sub> capture and storage opportunities in the region.

**Total Project Cost:** \$ 84,300,000

**DOE Share:** \$66,700,000

**Partner Share:** \$17,600,000



Awarded October 9, 2007:

**Plains CO2 Reduction Partnership** - The Plains CO2 Reduction Partnership, led by the Energy & Environmental Research Center at the University of North Dakota, will conduct geologic CO2 storage projects in the Alberta and Williston Basins. The Williston Basin project in North Dakota will couple enhanced oil recovery and CO2 storage in a deep carbonate formation that is also a major saline formation. The CO2 for this project will come from a post-combustion capture facility located at a coal-fired power plant in the region. A second test will be conducted in northwestern Alberta, Canada, and will demonstrate the co-sequestration of CO2 and hydrogen sulfide from a large gas-processing plant into a deep saline formation. This will provide data about how hydrogen sulfide affects the sequestration process. The Plains partnership includes North Dakota, South Dakota, Minnesota, Montana, Wyoming, Nebraska, Iowa, Missouri, and Wisconsin, along with the Canadian provinces of Alberta, Saskatchewan, and Manitoba.

**Total Project Cost:** \$135,586,059

**DOE Share:** \$67,000,000

**Partner Share:** \$68,586,059

**Southeast Regional Carbon Sequestration Partnership** - This partnership, led by Southern States Energy Board, will demonstrate CO2 storage in the lower Tuscaloosa Formation Massive Sand Unit. This geologic formation stretches from Texas to Florida and has the potential to store more than 200 years of CO2 emissions from major point sources in the region. The partnership will inject CO2 at two locations to assess different CO2 streams and how the heterogeneity of the formation affects the injection and containment. Injection of several million tons of CO2 from a natural deposit is expected to begin in late 2008. The project will then conduct a second injection into the formation using CO2 captured from a coal-fired power plant in the region. The results of these projects will provide the foundation for the future development of CO2 capture and storage opportunities. The Southeast partnership covers Georgia, Florida, South Carolina, North Carolina, Virginia, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, and southeast Texas.

**Total Project Cost:** \$93,689,242

**DOE Share:** \$64,949,079

**Partner Share:** \$28,740,163

**Southwest Regional Partnership for Carbon Sequestration** - Coordinated by the New Mexico Institute of Mining and Technology, the Southwest Regional Partnership for Carbon Sequestration will inject several million tons of CO<sub>2</sub> into the Jurassic-age Entrada Sandstone Formation in the southwestern United States. The Entrada formation stretches from Colorado to Wyoming and is a significant storage reservoir in the region. The partnership will inject CO<sub>2</sub> into the formation after extensive baseline characterization and simulation modeling. The project will test the limits of injection and demonstrate the integrity of the cap rock to trap the gas. Information gained from the project will be used to evaluate locations throughout the region where future power plants are being considered. The Southwest partnership includes the states of New Mexico, Oklahoma, Kansas, Colorado, and Utah, and portions of Texas, Wyoming, and Arizona.

**Total Project Cost:** \$88,845,571

**DOE Share:** \$65,437,395

**Partner Share:** \$23,408,176