

The Plains CO₂ Reduction (PCOR) Partnership: Demonstrating Carbon Management Options for the Central Interior of North America

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The PCOR Partnership is one of seven regional partnerships established by the U.S. Department of Energy National Energy Technology Laboratory to assess and develop carbon sequestration opportunities. The PCOR Partnership covers an area of over 1.4 million square miles in the central interior of North America and includes all or part of nine states and four Canadian provinces. The PCOR Partnership is characterizing the region's stationary CO₂ sources and sinks and evaluating the efficacy of CO₂ capture and storage (CCS) in its region by conducting commercially relevant demonstrations and providing outreach and support to carbon management activities for its varied and numerous partners.

The PCOR Partnership region has several seismically stable geologic basins that are ideal storage targets for CCS. These basins have been well-characterized because of commercial oil and gas activities and have very significant CO₂ storage capacities. The region's energy industry is evaluating carbon management options including CCS. Many of the region's oil fields could develop CO₂-based enhanced oil recovery (EOR) projects if CO₂ were more readily available. CO₂-based tertiary EOR projects offer a means of developing the expertise and infrastructure required to make geologic CCS a commercial reality.

The PCOR Partnership has conducted four field validation tests thus far: 1) Apache Canada Limited hosted a combined EOR/sequestration activity that injected acid gas (approximately 70% CO₂ and 30% H₂S) into a pinnacle reef structure from the Zama, Alberta, gas plant for use as a miscible flood agent; 2) an EOR project in the Williston Basin demonstrated the potential of using CO₂ in a tertiary oil recovery operation in a carbonate formation at depths of approximately 8000 feet; 3) the potential for simultaneous CO₂ sequestration and enhanced coalbed methane production in Williston Basin lignite was investigated; and 4) a terrestrial field validation test developed carbon offsets from the use of alternative land management of wetlands in the Prairie Pothole Region.

The PCOR Partnership is teaming with industrial partners to conduct two commercial-scale (greater than 1 million tons a year) CCS demonstrations in its region. One of the large-scale tests will demonstrate CO₂ storage in a saline formation, while the other will be a combined CCS and EOR demonstration. The sources of CO₂ in both demonstrations are natural gas-processing facilities. The commercial-scale demonstration tests are designed to establish the technical and economic efficacy of CCS in the region, and injections are planned to begin between 2012-2014 for both projects.