

THE PLAINS CO₂ REDUCTION (PCOR) PARTNERSHIP: A REGIONAL CARBON SEQUESTRATION PARTNERSHIP CONDUCTING LARGE-SCALE FIELD TESTS

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ABSTRACT

The Plains CO₂ Reduction (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 parts of nine U.S. 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) throughout the region.

The PCOR Partnership has conducted four field validation tests thus far: 1) Apache Canada Ltd. hosted a combined enhanced oil recovery (EOR)/sequestration activity that has injected acid gas from the Zama, Alberta, gas plant into a pinnacle reef structure 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 building toward the development of large-scale (greater than 1 million tons per year of CO₂) CCS projects that will demonstrate that CO₂ can be injected safely, permanently, and economically into geologic formations of different depositional compositions. The PCOR Partnership is working toward the establishment of two demonstration sites: 1) in the Bell Creek oil field in Powder River County in southeastern Montana and 2) near Spectra Energy's Fort Nelson gas-processing facility, Fort Nelson, British Columbia, Canada. The objectives for these projects are to 1) conduct a successful field demonstration to verify that the region's large number of oil fields has the potential to store significant quantities of CO₂ in a safe, economical, and environmentally responsible manner and 2) conduct a successful demonstration to verify the economic feasibility of using the region's carbonate saline formations for safe, long-term CO₂ storage.