

**Plains CO₂ Reduction (PCOR) Partnership Monthly Update
June 1–30, 2009**

PHASE II ACTIVITIES

Task 1 – Project Management and Reporting (Edward N. Steadman/John A. Harju)

Highlights

- The PCOR Partnership was discussed with representatives from Nebraska Public Power District in a meeting on June 3, 2009.
- A meeting with the PCOR Partnership task leaders was held on June 5 at the Energy & Environmental Research Center (EERC). Topics discussed included Phase II, Year 4 budget status; the U.S. Department of Energy (DOE) Techlines; Williston Basin (Northwest McGregor) test update; the PCOR Partnership Annual Meeting; the Regulatory Workshop – Brainstorming Session; and upcoming deliverables and milestones and travel.
- Participated in a Geologic Working Group meeting held on June 8, 2008, at the EERC.
- Attended the Energy Council’s “2009 State and Provincial Trends in Energy and the Environment Conference” in Saskatoon, Saskatchewan, Canada, on June 18–20, 2009, presenting “Key Issues in Carbon Capture and Storage.” In addition, served on a Saturday morning Breakfast Panel: Working Together on Carbon Issues with the Honorable Warren Chisum, Chairman, Carbon Management Caucus, Texas House of Representatives.
- Attended The U.S.–Canada Clean Energy Dialogue Roundtable on carbon capture and storage in Washington, DC, on June 29–30, 2009.
- On June 9–10, 2009, the PCOR Partnership hosted an independent consultant to assist through September 30, 2009, in developing reports and outreach materials related to the assessment of carbon separation, capture, and storage opportunities and also provide technical support for the development and review of program deliverables.
- A DOE Fossil Energy Techline, “Regional Carbon Sequestration Partnership Huff ‘n’ Puff Test Is under Way: Evaluating the Feasibility of Simultaneous CO₂ Sequestration and Enhanced Oil Recovery,” describing the “puff” phase of the Williston Basin CO₂ huff ‘n’ puff (H&P) Field Validation Test (Northwest McGregor site) was finalized.
- A DOE Fossil Energy Techline, “Sequestration Documentary Wins the Coveted Aurora Award,” is under development to announce both the 2007–2008 Gold Aurora Award in the category of entertainment documentary for nature/environment and the 2009 Communicator Awards of Excellence in the Environmental Documentary Category for the documentary “Out of the Air – Into the Soil: Land Practices That Reduce Atmospheric Carbon Levels” and another 2009 Communicator Award for “Reducing Our Carbon Footprint: The Role of Markets.” The Communicator Awards were announced on June 9, 2009.
- Planning continues on the PCOR Partnership Annual Meeting to be held in St. Louis, Missouri, on December 2–3, 2009. Two half-day premeeting workshops, one on Effective Carbon Capture and Storage (CCS) Outreach Strategies and another on Carbon Management,

will be run concurrently on the afternoon of December 1, 2009. A fee will be charged to non-PCOR Partnership members. Efforts are under way to promote attendance at the workshops and encourage participation in the PCOR Partnership and/or other Regional Carbon Sequestration Partnership (RCSP) programs. A Web site is currently under development.

- Work continues on the Phase II final report. At this time, the field validation tests are drawing to a close, and summaries on the results are being developed. An extension was granted for Deliverable D56 – Phase II Final Report from September 30, 2009, to December 29, 2009.
- Upcoming Phase II Milestones/Deliverables due in July
 - Deliverable D3: Task 1 – Quarterly Report
 - Deliverable D52: Task 3 – Zama Field Validation Test Regional Technology Implementation Deliverable Plan (RTIP)
 - Deliverable D53: Task 4 – Lignite Field Validation Test RTIP
 - Deliverable D54: Task 5 – Terrestrial Field Validation Test RTIP

Task 2 – Field Validation Test at a Williston Basin Oil Field, North Dakota (James A. Sorensen)

Highlights

- In close cooperation with Eagle Operating, the EERC conducted the injection of 440 tons of CO₂ into the E. Goetz No. 1 well as part of a H&P test in the Northwest McGregor oil field in Williams County, North Dakota. Upon completion of the injection, the well was shut in to allow the CO₂ to “soak” into the oil-bearing formation. It is anticipated that the well will be reopened in early July and allowed to flow, which will begin the production or “puff” phase of the test.

Task 3 – Field Validation Test at Zama, Alberta, Canada (Steven A. Smith)

Highlights

- The Zama Regional Technology Implementation Plan is in progress.
- Received the geomechanical evaluation report on the Slave Point formation. This is part of the work conducted on rock that was collected from a former acid gas disposal zone.
- Injection and production continue at the site.

Task 4 – Field Validation Test of Lignite Coal in North Dakota (Lisa S. Botnen)

Highlights

- Evaluation and analysis of the injectivity and sequestration ability of the lignite seam is ongoing.
- Postinjection monitoring at the field test site stopped on June 24, 2009. Analysis of the postinjection monitoring data is continuing.
- Numerous meetings and conference calls continue to be conducted with various partners and field service providers to discuss the analysis of CO₂ injection and monitoring, verification, and accounting (MVA) data.
- The writing of the Regional Technology Implementation Plan continues.

- Final Form 4, Sundry Notices were submitted to the North Dakota Industrial Commission (NDIC) for the monitoring wells for the Lignite Field Validation Test.
- A 1-year extension of the site easement was granted by the state land department in order to continue monitoring at the test site location. The original end date of the easement was June 1, 2009.

Task 5 – Terrestrial Validation Test (Barry W. Botnen)

Highlights

- Work continues on a draft for Deliverable D54: Task 5 – Terrestrial Field Validation Test RTIP (due July 31, 2009).
- A Topical Report titled “Technical, Regulatory, and Economic Feasibility of Wetlands as a Greenhouse Gas Mitigation Strategy” is in final review at the EERC.
- The PCOR Partnership partners have obtained CCBA (Climate Community and Biodiversity Alliance) certification for grassland carbon credits. This certification is at the Gold Rating (the highest rating available), the first approved project by the CCBA in North America.
- Analysis of wetland catchment gas sample continues (U.S. Geological Survey). Reporting on this data is in process.
- An analysis of the economic impact of easement payments is ongoing (North Dakota State University).
- Final reporting activities have been initiated for the terrestrial task.

Task 6 – Continued Characterization of Regional Sequestration Opportunities (Wesley D. Peck)

Highlights

- Deliverable D49: Task 6 – Regional Atlas was due June 30, 2009, but was postponed until August 31, 2009.
- Work continues in the compilation and formatting of the next edition of the PCOR Partnership Atlas. The upcoming third edition will contain individual page spreads for each of the Phase II validation sites as well as one for Phase III activities.
- The new Geographic Information System (GIS) interface for the Decision Support System (DSS, © 2007 EERC Foundation) is nearing an in-house testing phase. This effort will, hopefully, ferret out any illogical or inefficient steps.
- School district and basic demographic data for the PCOR Partnership region have been compiled and are being reviewed by the outreach group.
- Continue to provide new material to the Web programmers who are building the revised DSS.
- The Iowa Geological Survey is in the process of calculating preliminary CO₂ storage.

Task 7 – Research, Safety, Regulatory, and Permitting Issues (Lisa S. Botnen)

Highlights

- Various state, provincial, and regional greenhouse gas (GHG) reduction and CCS initiatives are being tracked and analyzed.

- Analysis of carbon market strategies continues.
- Recent publications relating to regulating CO₂ sequestration and MVA issues continue to be reviewed.
- Final Form 4, Sundry Notices were submitted for the monitoring wells for the Lignite Field Validation Test.
- Actions occurring in Congress continue to be followed and reviewed for any implications relating to CCS. Updates of these activities are provided to task leaders.
- Deliverable D50: Task 7 – Roadmap Document was submitted to DOE for review on June 30, 2009.

Task 8 – Public Outreach and Education (Daniel J. Daly)

Highlights

- D51: Task 8 – Documentary: CO₂ Sequestration and Global Warming – Overview of Phase II Results for Regional PCOR Partnership. The outreach team obtained over 20 hours of video footage from a trip to Cameroon, Africa.
 - Prairie Public Broadcasting continues to organize the footage obtained from India and the footage obtained in the Minneapolis area in preparation for review and selection of key scenes as a basis for the narrative backbone.
- Submitted text regarding the use of focus groups as part of the preparation of a Best Practices Manual by the Outreach Working Group of the RCSP program.

Task 9 – Identification of Commercially Available Sequestration Techniques Ready for Large-Scale Deployment (Melanie D. Jensen/Michael L. Jones)

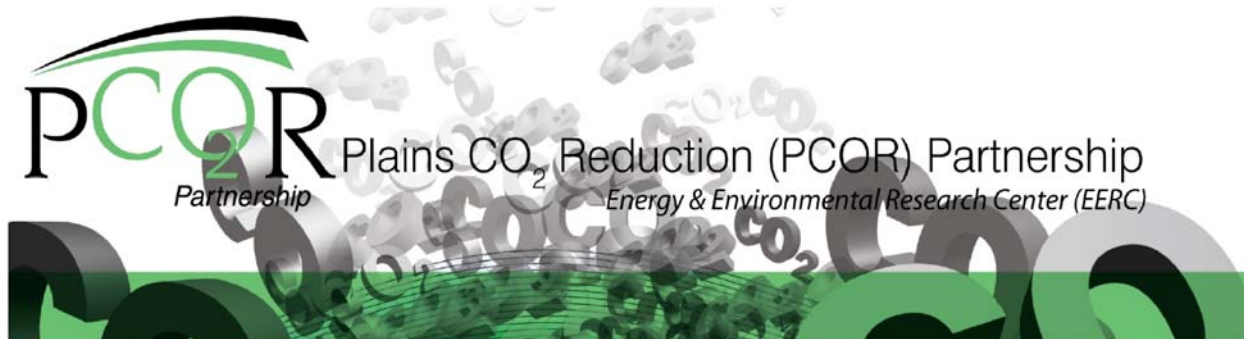
Highlights

- Errors that were found in the updated CO₂ source emissions database were addressed.
- Preparation continues of additional text and figures needed to update the draft Deliverable D44 – Best Practices Manual: Regional Sequestration Opportunities document that was submitted last summer.

Task 10 – Regional Partnership Program Integration (Edward N. Steadman)

Highlights

- The PCOR Partnership participated in working group conference calls, including the following:
 - Geologic
 - GIS
 - Public Outreach Working Group
 - Simulation and risk assessment
 - North American Energy Working Group
 - North American Carbon Atlas Partnership Subcommittee
- Methodology Subcommittee: efforts are under way to transmit the confidential draft report entitled “Development of Storage Coefficients for Carbon Dioxide Storage in Deep Saline Formations” to the Subcommittee for its review prior to the conference call scheduled for July 15, 2009, and the Working Group meeting scheduled for July 22–23, 2009.



PHASE III ACTIVITIES

Task 1 – Regional Characterization (Wesley D. Peck)

Highlights

- A new employee was hired to assist with activities associated with the regional characterization task.
- Attended a regional CO₂ regulatory workshop meeting in Deadwood, South Dakota.
- Spoke to the Nebraska Oil and Gas Commission regarding the possibility of establishing a subcontract with the state of Nebraska to perform geological characterization activities. They expressed interest but currently do not have the staff to conduct the investigation.
- Worked on the continuation application for Phase III of the project.

Task 2 – Public Outreach and Education (Daniel J. Daly)

Highlights

- Completed a revised mock-up of the Web pages featuring information on sequestration validation tests and demonstrations in the United States and Canada as part of preparation for the Web update planned to be completed in August 2009. Also prepared draft pages including video clips as part of the Web update.
- Received the draft of an audit of outreach products conducted by Lipman-Hearne of Chicago and reviewed the findings of the audit with Lipman-Hearne representatives.
- Participated in a daylong session of the Outreach Advisory Panel of the Weyburn-Midale Project in Regina, Saskatchewan, Canada, and toured the Weyburn CO₂ sequestration project site in Weyburn, Saskatchewan.
- Submitted text regarding the use of focus groups as part of the preparation of a Best Practices Manual by the Outreach Working Group of the RCSP program.
- Presented at the North Dakota Petroleum Council Teacher Education Seminar on June 10, 2009, in Bismarck, North Dakota.
- Presented at the Lignite Energy Council Teacher Seminar on June 17, 2009, in Bismarck, North Dakota.

Task 3 – Permitting and National Environmental Policy Act Modeling (Lisa S. Botnen)

Highlights

- Various state, provincial, and regional GHG reduction and CCS initiatives are being tracked and analyzed.

- The Regulatory Workshop – Brainstorming Session was held June 16–17, 2009, in Deadwood, South Dakota, and was a positive experience for the PCOR Partnership. Attendees, who included oil and gas regulators and pipeline authorities from British Columbia, Alberta, Saskatchewan, Montana, Wyoming, North Dakota, South Dakota, Nebraska, and Missouri, all provided an overview of CO₂ sources, sinks, enhanced oil recovery projects, and regulatory activities from their respective jurisdictions. Additionally, the Washington representative of Interstate Oil and Gas Compact Commission and Melzer Consulting were in attendance to update the group on various regional and federal policy issues. The session was set up to allow the group to interact freely and exchange information, ideas, and experiences. As a result of the overwhelming response to this workshop, it has been decided to move forward with another workshop later this year or early next year that will include others who may have a voice in the oversight of proposed CCS projects. A full summary of the meeting is currently being written.
- An update to the regulatory section of the DSS is under development.
- Actions occurring in Congress continue to be followed and reviewed for any implications relating to carbon capture and storage. Updates of these activities are provided to task leaders.
- Recent publications relating to regulating CO₂ sequestration and MVA issues continue to be reviewed.
- Analysis of carbon market strategies continues.
- Frequent updates are provided to task leaders with regard to federal, state, and provincial actions.

Task 4 – Site Characterization and Modeling (James A. Sorensen)

Highlights

- Continued the development of a Project Risk Assessment Plan for the Fort Nelson demonstration.
- Development of the MVA plan for the Fort Nelson demonstration continued. Efforts were focused on gathering and evaluating subsurface geological data, including historical seismic data.
- Group Regional Characterization Activities
 - The results of an evaluation of storage capacity of the mud mounds of the Lodgepole Formation in the Dickinson, North Dakota, area was presented at the American Association of Petroleum Geologists (AAPG) annual meeting in Denver, Colorado, on June 2, 2009.

Task 5 – Well Drilling and Completion (Steven A. Smith)

- This task has not begun (Quarter 1 – Budget Period 3; Year 2). Once activities are initiated, the information will be communicated and detailed in the quarterly progress report.

Task 6 – Infrastructure Development (Melanie D. Jensen)

Highlights

- Photos that illustrate various portions of the Phase III Williston Basin demonstration test were located.
- An evaluation of the proposed preliminary regional pipeline network that was developed under Phase II activities during July 2008 continues. The preliminary network will be adapted to include the Phase III demonstration test activities.
- Currently internally reviewing the updated capture technologies overview.
- Currently performing the preliminary calculations necessary to investigate CO₂ compressors that could be utilized in the Williston Basin demonstration.

Task 7 – CO₂ Procurement (John A. Harju)

- Numerous discussions with potential CO₂ suppliers have taken place. Because of the sensitive nature of negotiations, specifics cannot be shared at the present time.

Task 8 – Transportation and Injection Operations (Steven A. Smith)

- This task has not begun (Quarter 1 – Budget Period 4; Year 3). Once activities are initiated, the information will be communicated and detailed in the quarterly progress report.

Task 9 – Operational Monitoring and Modeling (Charles D. Gorecki)

- This task has not begun (Quarter 1 – Budget Period 4; Year 3). Once activities are initiated, the information will be communicated and detailed in the quarterly progress report.

Task 10 – Site Closure (TBA)

- This task has not begun (Quarter 1 – Budget Period 5; Year 9). Once activities are initiated, the information will be communicated and detailed in the quarterly progress report.

Task 11 – Postinjection Monitoring and Modeling (TBA)

- This task has not begun (Quarter 1 – Budget Period 5; Year 9). Once activities are initiated, the information will be communicated and detailed in the quarterly progress report.

Task 12 – Project Assessment (Katherine K. Anagnost)

- Assessment was conducted for the nine Phase III tasks initiated during the period October 1, 2007 – September 30, 2008. A Project Assessment Annual Report (D57) was submitted on December 31, 2008.

Task 13 – Project Management (Edward N. Steadman)

Highlights

- The Continuation Application for Budget Period 4 (Years 3–8) was transmitted electronically to DOE on June 30, 2009. The Project Management Plan, including the Risk Management Plan, will be submitted in the first few weeks of July. Submittal of the Continuation Application was a month ahead of the contractually required due date.
- In collaboration with Spectra Energy Transmission, the PCOR Partnership assisted in the preparation of a joint project application for the Fort Nelson CCS demonstration project to the Carbon Sequestration Leadership Forum. If awarded, the project will receive recognition from the international research community and potential support from the U.S. and Canadian governments. The application was submitted on June 22, 2009. The PCOR Partnership has offered to assist with any reporting requirements stemming from the award.
- The PCOR Partnership is working closely with additional EERC staff to establish an EERC Carbon Management Working Group. This working group will function as an informal entity that facilitates communications between the various groups working in carbon management activities.
- A DOE Fossil Energy Techline regarding the PCOR Partnership's efforts to assist Excelsior Energy in the development of a carbon management plan is in the final stages of review. The Techline, entitled "Regional Carbon Sequestration Partnership Collaborates with Excelsior Energy Inc.'s Mesaba Energy Project to Determine the Best Strategies for Capture and Storage of CO₂," was sent by the DOE National Energy Technology Laboratory (NETL) project manager to DOE technical writers for a final redraft on June 19, 2009.
- A new Techline is under preparation regarding the Fort Nelson CCS demonstration site. Once details are available from the study of the cores about the formations and seals at the site, the NETL project manager has requested a Techline describing the findings from the well drilling and opportunities for storage.
- The NETL Sequestration Division Director agreed to chair the Carbon Management Session at the EERC's Air Quality VII conference in Arlington, Virginia, on October 26, 2009. The PCOR Partnership will not only be the Session coordinator but will also present a workshop on Carbon Management strategies.
- Upcoming Phase III Milestones/Deliverables for July
 - M23: Task 14 – Monthly Water Working Group (WWG) Conference Call Held
 - D19: Task 2 – Fort Nelson Test Site PowerPoint Presentation
 - D58/D59: Task 13 – Quarterly Progress Report/Milestone Quarterly Report

Task 14 – Regional Carbon Sequestration Partnership (RCSP) WWG Coordination (Charles D. Gorecki)

Highlights

- Milestone M23 - WWG Monthly Conference Call (June) was held on June 25, 2009. The main topic of discussion was the updated Outline for the White paper on the Nexus of CCS and Water. There was also some discussion by some of the RCSP partnerships about other opportunities with respect to water and CCS.
 - The meeting minutes were submitted to DOE for review on June 30, 2009.
- Work continues on the development of the White Paper on the Nexus of CCS and Water.
- June 18–20, 2009: Attended the Energy Council's "2009 State and Provincial Trends in Energy and the Environment Conference" in Saskatoon, Saskatchewan, Canada.
- June 29–30, 2009: Attended the U.S.-Canada Clean Energy Dialogue Roundtable on carbon capture and storage in Washington, DC.

Travel/Meetings for Phase II and III

- June 1–5, 2009: Met with Spectra Energy and Oxand Calgary, Alberta, to discuss the progress of the baseline geological characterization and risk assessment activities for the Fort Nelson project.
- June 1–5, 2009: Presented a poster at the AAPG annual meeting in Denver, Colorado, on the storage capacity of the mud mounds of the Lodgepole Formation in the Dickinson, North Dakota, area.
- June 10, 2009: Presented at a teachers workshop for the North Dakota Petroleum Council in Bismarck, North Dakota.
- June 12–23, 2009: Documentary filming in Cameroon, Africa.
- June 16–17, 2009: Conducted a Regulatory Workshop – Brainstorming Session in Deadwood, South Dakota.
- June 16–19, 2009: Conducted interviews of key personnel at Spectra in Calgary, Alberta, regarding a variety of planning and operational elements that are a part of the risk assessment process.
- June 17, 2009: Presented at a teachers workshop for the Lignite Energy Council in Bismarck, North Dakota.