PLAINS CO_2 REDUCTION (PCOR) PARTNERSHIP

Thomas A. Erickson, John A. Harju, Edward N. Steadman

Energy & Environmental Research Center
15 North 23rd Street
Grand Forks, ND 58203

The Energy & Environmental Research Center (EERC) is leading one of seven regional partnerships developed by the U.S. Department of Energy (DOE) to assess regional carbon sequestration opportunities. The Plains CO_2 Reduction (PCOR) Partnership (which is a designated DOE Regional Carbon Sequestration Partnership [RCSP]) is focused on addressing future sequestration options from a holistic viewpoint, including source characterization, infrastructure needs, deployment, issues, public outreach, sink characterization, environmental impacts, long-term issues, and monitoring. The PCOR Partnership region includes North Dakota, South Dakota, Minnesota, Montana, and Wyoming, as well as the Canadian provinces of Saskatchewan and Manitoba (see Figure 1). The partnership is focused on a wide range of geological and terrestrial sequestration opportunities for both current CO_2 sources and future industrial and utility point sources.

Figure 1. PCOR Partnership region.

As shown in Table 1, the PCOR Partnership features a diverse, multipartner team under EERC leadership that brings together the key government, private sector, technical, and outreach groups needed to undertake the activities in the four performance tasks. The PCOR Partnership team is well suited to assess the regional baseline and infrastructure and to involve stakeholders in developing action plans for future demonstration projects.

The PCOR Partnership team includes 1) industry sponsors that provide cost share and serve as advisors; 2) research partners that are funded under the PCOR Partnership venture; and 3) collaborators that, in most cases, provide in-kind support. The industry sponsors have significant and active operations in all five states of the region. The knowledge base, expertise, and hands-on experience of the PCOR Partnership research team encompass the entire region.

Table 1. PCOR Partnership Team

Industry Sponsors	Research Partners
Basin Electric Power Cooperative	Dakota Gasification Company
Center for Energy & Economic Development (CEED)	EERC
Great River Energy	Fischer Oil and Gas, Inc.
Montana–Dakota Utilities Co.	Interstate Oil and Gas Compact Commission
North Dakota Industrial Commission (NDIC)	Nexant, Inc.
Otter Tail Power Company	North Dakota State University
U.S. Department of Energy	Prairie Public Television
	Western Governors' Association
Collaborators	
Amerada Hess Corporation	Natural Resources Trust
Bechtel Corporation	NDIC Oil and Gas Division
Chicago Climate Exchange	North Dakota Department of Health
Eagle Operating, Inc.	North Dakota Geological Survey
Environment Canada	North Dakota Petroleum Council
Minnesota Pollution Control Agency	Petroleum Technology Transfer Council
Montana Department of Environmental Quality	Tesoro Refinery
Montana Public Service Commission	

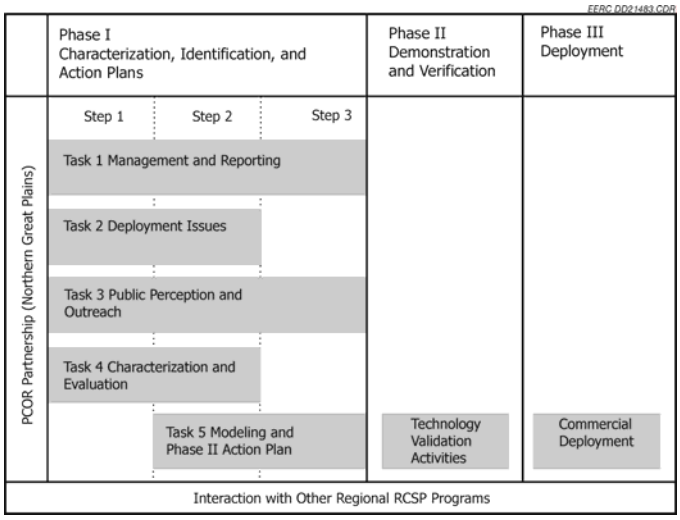

Figure 2. PCOR Partnership project in the context of DOE's 3-phase RCSP program.

The Phase I goals of the PCOR Partnership are being accomplished through a 3-step approach (see Figure 2). Step 1 is characterizing technical issues and the public's understanding and attitudes concerning CO_2 sequestration, including development of a database on sources, sinks, separation and transportation options, regulatory permitting requirements, and environmental benefits and risks. Step 2 will identify regional opportunities for sequestration and inform the public about options and risk. Step 3 will develop a detailed action plan for implementing Phase II demonstration projects in the PCOR Partnership region. The PCOR partners will contribute over the life of the project through working groups designated to focus on key topical areas.

A conceptual model has been developed to characterize the sequestration opportunities in the PCOR region and determine the best projects for demonstration and verification in Phase II demonstration projects. As shown in Figure 3, detailed characterization data will be provided to stakeholders, and sequestration opportunities will be evaluated on the basis of technical and economic feasibility. The potential sequestration projects will then be ranked on the basis of overall deployment feasibility. It is anticipated that several sequestration opportunities will be selected for Phase II demonstration projects.

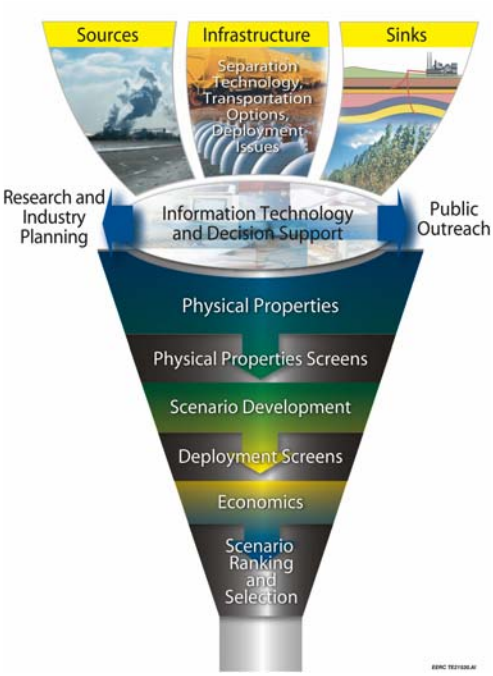

Figure 3. PCOR Partnership model.