Example of an Effective Public Partnership Model in Fossil Energy

The Regional Carbon Sequestration Partnerships

What type of program is it, and for what purpose?

The Office of Fossil Energy (FE) and the National Energy Technology Laboratory (NETL) created a network of seven public/private Regional Carbon Sequestration Partnerships in September of 2003. It was recognized that geographic differences in fossil fuel use and potential sequestration storage sites across the United States required the use of regional approaches in addressing CO_2 sequestration. FE/NETL created a network of seven Regional Carbon Sequestration Partnerships to address the technology, infrastructure, and regulations necessary to implement CO2 sequestration in different regions of the country. Underlying this public/private regional approach is the belief that local entities, organizations, and citizens are best positioned to contribute expertise, experience, and perspectives that more accurately represent the concerns and desires of a given region, resulting in the quickest possible deployment of carbon capture and storage technologies that are best suited to the given region. Collectively, the seven Regional Partnerships encompass 42 states, 3 Indian Nations, 4 Canadian Provinces and over 350 unique companies, organizations and institutions throughout the United States and Canada. The Partnerships cover 97 percent of coal-fired CO_2 emissions, 97 percent of industrial CO_2 emissions, 96 percent of the total land mass, and essentially all the geologic sequestration sites in the United States potentially available for carbon storage. The Partnerships have over 20 small scale geologic storage tests, 8 large scale geologic storage tests, and 11 terrestrial sequestration storage tests in various stages of development. The Partnerships have developed the Carbon Sequestration Atlas of the United States and Canada, and are working with FE/NETL to develop and refine best practices that will serve as the basis for a potential industry for carbon capture and storage technologies. The Partnerships are now world renowned, and were recently evaluated by a panel of scientific experts from the International Energy Agency (IEA) who concluded that the Regional Carbon Sequestration Partnerships and, in particular, their large-scale CO_2 tests are the world's most ambitious and will significantly advance carbon capture and storage in the United States, Canada and internationally.

How is it managed and funded?

FE/NETL was responsible for creating the concept and design of the Carbon Sequestration Regional Partnerships. FE/NETL is also responsible for the daily management and coordination of all aspects of the Partnerships. The Partnerships are managed by a team of Federal Project Managers that use established project management procedures to keep the project coordinated, on track, and on budget. The Partnerships are funded out of the Sequestration Program within FE's Coal Research Program.

What are the specifics of the program that could be models for the agency and divisions from a successful outcome perspective?

- Up front, well defined objectives and outcomes are critical to ensure that all parties stay focused on achieving the same end goals. With so many entities becoming "voices" for the program, it is critical that all of these "voices" understand and have the same message on desired outcomes.

- If multiple public/private partnerships are involved, it is critical to establish and maintain a "unified" mentality to prevent the partnerships from becoming competitive against each other and splintering apart.

- Strong federal leadership and management is essential to keep public/private partnerships focused and on track. For the Regional Carbon Sequestration Partnerships, FE/NETL requires topical working groups with members of all Partnerships, and requires several annual meetings to review results and ensure consistency.

Who participates in the partnership, and how were they recruited?

Collectively, the seven Regional Partnerships encompass 42 states, 3 Indian Nations, 4 Canadian Provinces and over 350 unique companies, organizations and institutions throughout the United States and Canada. Since its inception, FE/NETL managed the Partnerships under the premise that the Federal Government will not dictate Partnership membership. We did require that membership be open to new interested parties, but that the criteria for selection would be at the discretion of each Regional Partnership. Each Partnership maintains a website along with outreach material that is constantly seeking new membership. For example, at the start of the Partnerships, membership was around 140 companies, organizations and institutions covering around 33 states and 2 Canadian Provinces.. Membership currently stands at greater than 350 companies, organizations, institutions, with 42 states and 4 Canadian Provinces being represented.

What sort of legal vehicle was used to create the partnership - a contract, an outside nonprofit entity, an informal arrangement with DoE, etc.?

The Regional Partnerships were awarded in 2003 through a competitive solicitation issued by FE/NETL. The Partnerships are managed by FE/NETL through a Financial Assistance - Cooperative Agreement.

What is the management structure?

From the Federal side, FE/NETL is responsible for the daily management and coordination of all aspects of the Cooperative Agreements with each Partnership. The

Partnerships are managed by a team of Federal Project Managers that use established project management procedures to keep the project coordinated, on track, and on budget. Each Partnership has its own defined management structure that has been reviewed and approved by FE/NETL. Each Partnership is required to maintain a detailed management plan that shows key personnel and their role/connectivity to all key tasks being performed under the Cooperative Agreement.

How is the program funded?

The Partnerships are funded out of the Sequestration Program within FE's Coal Research Program. Each of the seven Partnerships has a separate cooperative agreement which is the financial assistance vehicle used to obligate funding to the projects.

What were the goals of the partnership, and how is the outcome measured ?

FE/NETL created the network of seven Regional Carbon Sequestration Partnerships to address the technology, infrastructure, and regulations necessary to implement CO_2 sequestration in different regions of the country. It was recognized from the outset that the Partnerships could only be successful with clearly defined goals that could be validated throughout year by year. The Partnership Program was divided into three key phases with each phase containing key deliverables/outcomes. At the end of each phase, FE/NETL compiles an accomplishments report to document the results. Here are just some examples of the defined goals in the various Phases for the Program along with some tangible deliverables:

<u>Characterization Phase (2003-2005)</u>

Example Goals

- Establish regional baselines for CO_2 sources and sinks;
- Identify and address issues for carbon sequestration technology deployment;
- Assess environmental permitting, public awareness, and effects on ecosystems;
- Develop avenues for public education and involvement;
- Identify the most promising means of capturing, storing, and transporting CO_2;
- Evaluate procedures for long-term monitoring of CO_2 storage, and;
- Prepare implementation and technology validation plans.

Example Deliverables

1. Established a national network of companies and professionals working to support sequestration deployments
2. Created an official website that is maintained for each Regional Partnership
3. Created a variety of outreach products including brochures, documentaries, and conducting public meetings

4. Created a regional database on CO_2 sources and storage locations
5. Created the first-ever National Carbon Sequestration Database (NATCARB) – available free-of-charge on the web
6. Created the first-ever Carbon Sequestration Atlas for the United States – Year 2006
7. In conjunction with the Interstate Oil and Gas Compact Commission, created and published a "Regulatory Framework for Carbon Capture & Storage" that has been extensively used by EPA in developing future sequestration regulations.
8. Identified and vetted priority opportunities for sequestration field tests
9. Established a series of protocols for project implementation, accounting, and contracts for projects that would results in salable credits

<u>Validation Phase (2005-2009)</u>

Example Goals

- Conduct small scale geologic sequestration field tests
    - Testing to be conducted in oil and gas fields , coal seams, and saline formations
    - Validate injectivity, capacity, and containment
    - Establish permit requirements
    - Continue public outreach and perception
    - Investigate well bore construction methods
    - Begin assembling best practice manuals for key aspects of carbon capture & storage

- Conduct small scale terrestrial sequestration field tests
    - Tree-plantings
    - No-till farming
    - Wetlands restoration
    - Land management (grasslands, grazing lands)
    - Fire management
    - Forest preservation
    - MM&V technologies
    - Accounting protocols for trading markets (CCX)

Example Deliverables

1. Added more than 200 companies, organizations and institutions to the national network of companies and professionals working to support sequestration deployments

2. Continued improvement of official websites maintained for each Regional Partnership
3. Created new and revised outreach products including brochures, documentaries, and conducting public meetings
4. Revised the regional database on CO_2 sources and storage locations to include dozens of new storage opportunities
5. Continued improvement of the National Carbon Sequestration Database (NATCARB) – available free-of-charge on the web
6. Created the 2nd version of the Carbon Sequestration Atlas for the United States – Year 2008 – that includes 100's of years worth of additional storage opportunities
7. In conjunction with the Interstate Oil and Gas Compact Commission, created a report on a "Storage of Carbon Dioxide in Geologic Structures – A Legal and Regulatory Guide for States & Provinces"
8. Initiated over 20 small scale geologic injection tests that are in various stages of development, with several tests already completed
9. Initiated over 10 terrestrial sequestration field tests that are in various stages of development, with several tests already completed
10. Begun preparing Best Practice Manuals on various issues related to carbon capture and storage projects. The first two manuals completed are:
    - Best Practices for the Implementation of the Regional Carbon Sequestration Partnerships
    - Monitoring, Verification, and Accounting of CO2 Stored In Deep Geologic Formations

<u>Deployment Phase (2008-2017)</u>

Example Goals

- Conduct large volume, commercial scale carbon storage tests

Years 1–3

Site selection and characterization
Permitting and NEPA compliance
Well completion and testing
Infrastructure development

Years 4–7

CO_2 procurement and transportation
Injection operations
Monitoring activities

Years 8–10

Site closure
Post-injection monitoring
Project assessment

Example Deliverables

- Projects are just beginning to get underway