



the **ENERGY** lab

## PROJECT FACTS

### Carbon Storage - Training Center

# Wyoming Carbon Capture and Sequestration Technology Institute; Workforce Training, Technology Transfer, and Information Clearinghouse

## Background

Carbon capture utilization and storage (CCUS) technologies offer great potential for reducing carbon dioxide (CO<sub>2</sub>) emissions into the atmosphere without adversely influencing energy use or hindering economic growth. Deploying these technologies in commercial-scale applications will require a significantly expanded workforce trained in CCUS related disciplines, including geologists, engineers, scientists, and technicians. Training to enhance the existing CCUS workforce and to develop new professionals can be accomplished through focused educational initiatives in the CCUS technology area. Key educational topics include simulation and risk assessment; monitoring, verification, and accounting (MVA); geology-related analytical tools; site characterization, methods to interpret geophysical models; methods for designing and completing CO<sub>2</sub> injection and monitoring wells; and methods for conducting public outreach activities in areas where CCUS projects may occur.

The U.S. Department of Energy's (DOE) National Energy Technology Laboratory (NETL) selected seven projects to receive more than \$8.4 million in funding to develop regional carbon storage technology training centers in the United States. The majority of this funding is provided by the American Recovery and Reinvestment Act (ARRA) of 2009. The seven projects are facilitating the transfer of knowledge and skills required for development, operation, and monitoring of commercial CCUS projects. Training activities are focusing on the applied engineering and science of CCUS for site developers, geologists, scientists, engineers, regulators and technicians to provide a technology transfer platform for geologic CO<sub>2</sub> storage activities. The awarded projects will produce a workforce with both technical and non-technical skills and competencies needed to successfully implement and deploy CCUS technologies.

## CONTACTS

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## PARTNERS

None

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U.S. DEPARTMENT OF  
**ENERGY**

## PROJECT DURATION

### Start Date

11/16/2009

### End Date

11/15/2013

## COST

### Total Project Value

\$1,895,786

### DOE/Non-DOE Share

\$994,910/\$900,876



Government funding for this project is provided in whole or in part through the American Recovery and Reinvestment Act.

## Project Description

NETL, in partnership with the University of Wyoming and the Wyoming CCUS Technology Institute (WCTI), has developed a regional sequestration technology training center for Wyoming (Figure 1) and the greater Rocky Mountain region that will establish training programs to facilitate national and global development and deployment of CCUS technology. The WCTI will accomplish this by providing several types of CCUS educational programs, promoting transfer of regional CCUS technology expertise, providing the public, CCUS industry and other interested parties with a variety of professional services, and working with all stakeholders to advance CCUS from demonstration through commercial deployment. These programs will include professional workshops, short-courses focused on specific research and technical topics, online courses, webinars/e-symposia, and communication through newsletters, email tech alerts, and a comprehensive website. More information about the WCTI can be found at <http://www.wyomingcarbonstorage.com/>.

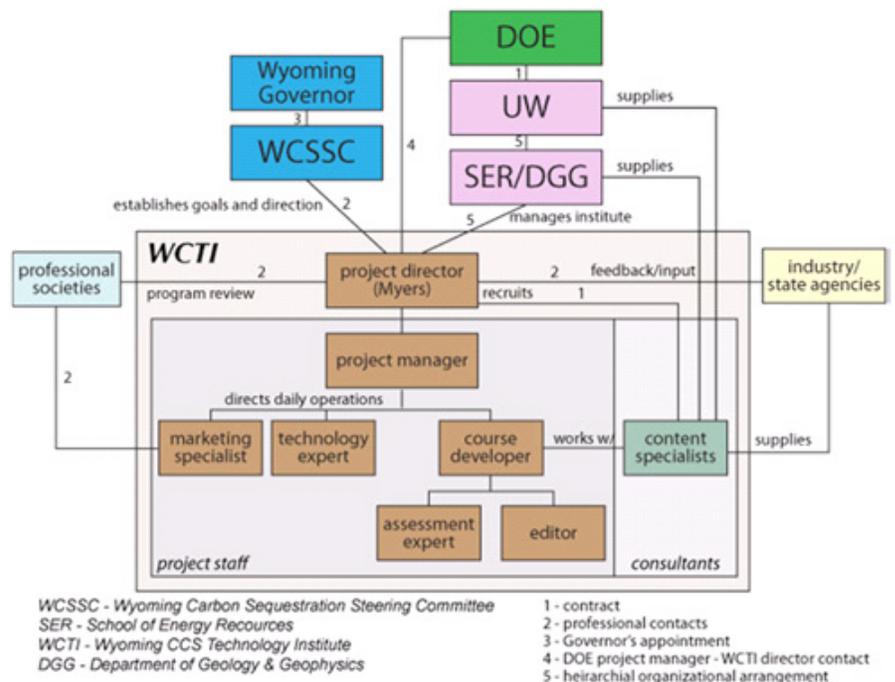


Figure 1 - Wyoming Carbon Capture and Storage Technology Institute Organizational Structure

## Goals/Objectives

The primary objective of the DOE's Carbon Storage Program is to develop technologies to safely and permanently store CO<sub>2</sub> and reduce Greenhouse Gas (GHG) emissions without adversely affecting energy use or hindering economic growth. The Programmatic goals of Carbon Storage research are: (1) estimating CO<sub>2</sub> storage capacity in geologic formations; (2) demonstrating that 99 percent of injected CO<sub>2</sub> remains in the injection zone(s); (3) improving efficiency of storage operations; and (4) developing Best Practices Manuals (BPMs).

The primary goal of this project is to establish the WCTI at the University of Wyoming (Figure 1) to provide education and training activities to a future generation of engineering and scientific professionals that will enable them to successfully develop and deploy CCUS technologies by instilling best practices and lessons learned. The University of Wyoming's goal is to accomplish the project objectives over a four-year period. Specific project objectives include:

- Establishing the WCTI in the Department of Geology and Geophysics at the University of Wyoming.
- Deploying the communication infrastructure, including web site, blogs, print publications, and information outlets necessary to support the WCTI.
- Developing and delivering CCUS workforce training short courses.
- Organizing, creating, and presenting regional CCUS technology transfer workshops.

## Accomplishments

- As of March 2012, a total of 104 Professional Development Hours (PDHs) and 9 Continuing Education Units (CEUs) have been obtained, and close to 30 students have participated in CCUS training.
- Three on-line short courses that provide training on CCUS-related topics were developed and are currently available: (1) An Introduction to the Carbon Capture and Storage (CCS) Industry; (2) CCS Legal and Regulatory Frameworks; and (3) CCS Public Outreach and Education.
- Two additional CCUS-related short courses are under development and will be available by summer 2012: (1) CCS Site Characterization: Best Practices; and (2) Underground Injection Control (UIC) and the new Class VI Well.
- A well construction course, Class VI Well Construction, Operation, Monitoring and Testing, will be developed in the next year.
- In addition to CCUS-related presentations, WCTI has developed a series of workshops that are offered during regional, national and international professional meetings such as AAPG, SPE and GSA. Workshops include: (1) Introduction to CCS, (2) CCS Site Characterization, (3) The Emerging Carbon Capture and Storage Industry: An Overview, (4) GHG and CCS Legal and Regulatory Frameworks, and (5) Public Outreach and Education: Preparing CCS Professionals for Engaging with Stakeholders

## Benefits

Through technical training and technology transfer, the Wyoming Carbon Capture and Storage Technology Institute will advance the United States' position as a technology leader for addressing climate change and developing near-zero emission technologies that significantly reduce carbon CO<sub>2</sub> emissions from power plants. Training provided by the WCTI gives students the tools and knowledge that can be used to help their organizations and future employers successfully facilitate operations at carbon storage sites, including the skills needed for site selection, characterization and evaluation, permitting, operating, monitoring, and closure.

