



10th Annual U.S. Department of Energy Small Business Conference

Fossil Energy R&D

American Recovery & Reinvestment Act Projects



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Fossil Energy R&D

\$3.4 billion

Expand and Extend Clean Coal Power Initiative (CCPI) Round 3

(Additional available CCPI funds total >\$600 million)

\$800 million

Industrial Carbon Capture and Storage

\$1.52 billion

Geologic Sequestration Site Characterization

\$50.0 million

Geologic Sequestration Training & Research

\$20.0 million

Carbon Capture and Storage

(FutureGen Re-start)

\$1.0 billion

FE Program Direction

\$10.0 million



Background

Clean Coal Power Initiative Round 3

- **Goals and Objectives**

- Accelerate deployment of and demonstrate the commercial viability of CCS technology in coal-based power systems
- Gain broader CCS commercial-scale experience by expanding the range of technologies, applications, fuels, and geologic formations that are tested.
- Support an estimated 3 projects with ARRA funds designed to operate at a capacity of at least 300,000 tons per year of carbon dioxide capture and storage or reuse.
- Demonstrate capacity to inject large volumes of CO₂ into underground formations

- **DOE Funding**

- \$1.436 billion
 - \$800 million Recovery Act Funds
 - \$636 million CCPI Appropriated Funds
- Participant Cost Share at least 50%
- FOA issued August 11, 2008; amended June 9, 2009. Applications due August 24, 2009.



Industrial Carbon Capture and Sequestration

- **Goals and Objectives**

- Capture 75% of the carbon-dioxide from the treated industrial stream
- Store 1 million tons of CO₂ in a saline formation or other value-added options (i.e. EOR)
- Investigate novel CO₂ use / reuse technologies
- Support development of CO₂ transmission technology

- **Planned Awards:**

- Competitive FOA (issued June 8, 2009) with Two Areas of Interest. Applications due August 7, 2009.
 - Area 1 - Large-Scale CCS Projects (\$1.32B)
 - Area 2 - Innovative Concepts for Beneficial Carbon Dioxide Use (\$100M)
- Accelerate deployment of two promising CO₂ mitigation technologies
 - Ramgen (\$20M)
 - Arizona Public Services (\$71M)



Recovery Act: Geological Sequestration Site Characterization (DE-FOA-0000033)

- **FOA Issue Date:** June 2, 2009
- **Application Due Date:** August 3, 2009
- **Application Selection Date:** September 3, 2009
- **Objective:** Characterize a minimum of 10 distinct “high-potential” geologic formations
 - Saline formations, depleting/depleted oil fields, or coal seams
 - Focus on a minimum of one specific site, formation, or area not previously characterized with public data
 - Represents a significant storage opportunity in the region with adequate seals that could be developed commercially in the future
 - Increase understanding of the potential for these formations to safely and permanently store CO₂



Recovery Act: Regional Sequestration Technology Training (DE-FOA-0000080)

- **FOA Issue Date:** June 2, 2009
- **Application Due Date:** July 22, 2009
- **Application Selection Date:** August 24, 2009
- **Objective:** To facilitate development of a CCS workforce through regional CO₂ sequestration technology training in all aspects of long-term, underground CO₂ storage
- **Training will be accomplished through activities such as:**
 - Development of CCS short courses
 - Regional CCS training conferences
 - Targeted CCS training seminars
 - Transfer of the lessons learned from CO₂ sequestration field projects



Recovery Act: Geologic Sequestration Training and Research (DE-FOA-0000032)

- **FOA Issue Date:** June 29, 2009
- **Application Due Date:** August 11, 2009
- **Application Selection Date:** September 9, 2009
- **Objective:** Provide training opportunities for graduate and undergraduate students that will provide the human capital and skills required for implementing and deploying CCS technologies (includes \$5M for HBCU/OMI)
- **Training accomplished through fundamental research in the following areas:**
 - Simulation and risk assessment
 - Monitoring, Verification, and Accounting
 - Geological related analytical tools
 - Methods to interpret geophysical models
 - Well completion and integrity for long-term CO₂ storage
 - CO₂ capture



Approach for *FutureGen* Restart

- **New Limited Scope Cooperative Agreement (7/09 – 1/10)**
 - Completion of Preliminary Design (BP-1) – Revised Cost Estimate & Funding Plan
 - Rapid restart of preliminary design activities.
 - Completion of a site-specific preliminary design and updated cost estimate.
 - Expansion of the Alliance sponsorship group.
 - Development of a complete funding plan.
 - Potential additional subsurface characterization.
 - Key Deliverables
 - Revised cost estimate
 - Alliance funding plan
 - Estimated Cost \$12-20 Million
 - DOE share funded using prior year appropriations
- **Go/No-Go Decision 1/31/2010**
 - If Go, \$1.073 Billion maximum DOE contribution (\$1 Billion of ARRA funding) for remainder of project, currently estimated at ~\$2.4 Billion