Kentucky Consortium for Carbon Storage

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Acknowledgements

- Kentucky Legislature and the Governor’s Office of Energy Policy
- Funding from DOE CO$_2$ Regional Partnerships: MRCSP, MGSC, and SECARB
- Discussions with industry representatives
  - KYCCS Industry Partners
Geologic CO$_2$ Storage Concept

Multiple options at different locations

- Unmineable coals
- Organic-rich shales
- Oil and gas reservoirs
- Deep saline aquifers

While CO₂ EOR potential is significant, deep saline or Devonian shale storage will be needed to handle expected volumes.
State Funding for CO$_2$ Research

- Kentucky HB 1 was passed in a 2007 special session and signed into law August 30.
- Provides financial incentives for coal gasification plants
- Major energy projects will need carbon management programs
- Provides $5 million through the Governor’s Office of Energy Policy to provide data on carbon storage potential
2007 HB 1 Directives

- Quantify the potential for:
  - Enhanced oil and gas recovery
  - Enhanced coalbed methane recovery
- Test the Devonian shale for CO$_2$ enhanced gas recovery and CO$_2$ storage potential
- Drilling of deep wells in the eastern and western coal fields to estimate storage potential
Kentucky Consortium for Carbon Storage

- The Commonwealth realized that $5 million is not sufficient to accomplish all these goals
- A joint industry–government consortium formed
- Kentucky Consortium for Carbon Storage (KYCCS)
Consortium Model

- Industry involvement is necessary for the success of this project
  - Cost sharing and well access
  - Provides expertise not available at KGS
  - Justifies the Commonwealth’s investment in carbon management research
Western Kentucky KYCCS

Contributing Partners
ConocoPhillips
E.ON U.S. LLC
Kentucky Syngas, LLC (Peabody)
Kentucky Geological Survey
Kentucky Governor’s Office of Energy Policy
Smith Management Group
State of Illinois Office of Coal Development
Schlumberger Carbon Services
Wyatt, Tarrant, and Combs

Associate Partners
Big Rivers Electric Corp.
GEO Consultants, LLC
Henderson County Riverport Authority
ICON Construction, Inc.
Praxair Inc.
Tennessee Valley Authority
Sunshine Oil and Gas
University of Kentucky CAER
URS Corp.
KYCCS

- Five subprojects:
  - Western deep saline CO₂ storage ($1.35 million)
    - Rick Bowersox, Dave Williams
  - Eastern deep saline CO₂ storage ($1.35 million)
    - Steve Greb, Warren Anderson
  - CO₂ Enhanced oil recovery ($800,000)
    - Marty Parris
  - CO₂ Enhanced gas recovery ($800,000)
    - Brandon Nuttall, Cortland Eble
  - Public Education and Outreach
    - Mike Lynch
Project Areas

- Major coal-producing area
- Coal field
Project Schedule

- Project to require 3 to 4 years for completion
- Subprojects to run concurrently
- Deep drilling to be first priority due to lead time required, identified partners, and costs
- Projects will remain open to new partners
Today’s Agenda

- Short progress reports on four HB 1 research projects
- Your questions and discussion are encouraged
Impact of Results

- Kentucky geology is not homogeneous
- Research sites will be as representative as possible, however:
  - A successful project will not prove sequestration is possible everywhere, and an unsuccessful project will not condemn the entire state
- We cannot guarantee success – there is risk involved
DOE CO₂ Regional Partnerships

Map from DOE-NETL

Partnerships
- MRCSP
- MGSC
- SECARB
- SRCSP
- WESTCARB
- Big Sky
- PCOR

Geologic Field Tests
- Oil bearing
- Gas bearing
- Saline formation
- Coal seam

Terrestrial Field Tests
- Agricultural soils
- Soil Reclamation
- Aforestation
- Accounting/Aggregation
- Wetlands Reclamation

KYCCS.ORG
KYCCS Industry Response

- Industry interest is high; financial commitment varies by region and industry
- **Western Kentucky**
  - Large companies, significant matching funds, broad interest in proving and developing permanent CO$_2$ storage
  - Aggressive schedule due to pending decisions
- **Eastern Kentucky**
  - Smaller companies and local/regional development groups
  - Interest focused on specific properties
- **CO$_2$ Enhanced Oil and Enhanced Gas Recovery**
  - A few companies have shown interest and offered projects