Integrated Carbon Capture and Storage in Kansas (ICKan)

Award Number: DE-FE0029474

Project Summary:
This project conducted a preliminary feasibility study of three of Kansas’s largest carbon dioxide (CO₂) point sources, nearby storage sites with 50-plus million metric tons (MMT) capacity, and potential CO₂ transportation networks. The tasks of this assessment included public outreach, source identification, subsurface geologic characterization, modeling and simulation, risk assessment, and site-development planning.

Prime Performer:
University of Kansas Center for Research

Key Performers:
Kansas Geological Survey

Principal Investigator:
Tandis Bidgoli

Project Duration:
3/15/2017 – 9/15/2018

Performer Location:
Lawrence, Kansas

Program:
Carbon Storage

Presentations, Papers, and Publications


Figure 1: CO₂ sources, possible pipeline routes, injection sites (numbered 1-12) along with study areas and oil fields in Kansas.

Project Outcomes:
This study concluded that Kansas is a viable option for a commercial-scale carbon capture and storage (CCS) development because the size distribution of its oil fields provides deep saline aquifers near existing large point sources of CO₂. Of the four possible sites identified in southwest Kansas, the Patterson site was chosen as the primary location for a CarbonSAFE Phase II project. The potential saline storage aquifers (Mississippian Osage, Ordovician Viola, and Cambrian-Ordovician) are overlain by oil reservoirs that are likely candidates for CO₂-enhanced oil recovery (EOR). Due to high capture costs at the identified sources, CO₂-EOR will likely be needed to provide an additional subsidy for saline aquifer injection through CO₂ sales. The only feasible option that could deliver 4.3 MMT per year of CO₂ to southwest Kansas was 15 ethanol plants in Kansas and Nebraska. Legal, regulatory, and public policy aspects of a commercial-scale project will require significant changes at the state level. Streamlining the Class VI well permitting process and/or establishing state primacy is extremely important for CCS commercialization. Well-orchestrated public outreach is critical for support of state regulatory changes and for public acceptance.