

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 Transport & Storage

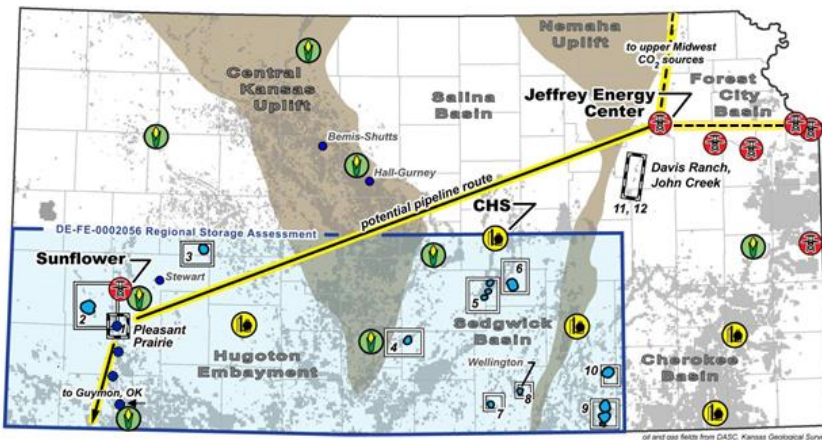


Figure 1: CO₂ sources, possible pipeline routes, injection sites (numbered 1-12) along with study areas and oil fields in Kansas.

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.

Presentations, Papers, and Publications

Final Report: [Integrated CCS for Kansas \(ICKan\) Final Technical Report](#) (Dec 2018) Yevhen 'Eugene' Holunbnyak, Martin Dubois, Tandis Bidgoli, Dana Wreath, Lynn Watney, Susan Stover, David Newell, Fatemeh 'Mina' Fazelalavi, Andrew Hollenbach, Jeffrey Jennings, Christopher Steincamp, Joseph Schremmer, Brendan Jordan, Brad Crabtree, Jennifer Christensen, Dane McFarlane, John Doveton, Krish Krishnamurthy, Makini Byron, Kevin Watts