

CAB-CS: Central Appalachian Basin CarbonSAFE Integrated Pre-Feasibility Project

Award Number: DE-FE0029466

Project Summary:

As part of the Integrated CCS Pre-Feasibility phase of the Carbon Storage Assurance Facility Enterprise (CarbonSAFE) Initiative, Battelle Memorial Institute performed pre-feasibility studies for an integrated commercial-scale carbon capture and storage (CCS) site that will utilize deep geologic strata in the Central Appalachian Basin (Figure 1). The project identified and reviewed major sources of CO₂, conducted a sub-basinal geologic storage assessment, and determined the parameters for a potential integrated storage facility. A major emphasis of the work was to develop an effective team capable of addressing the technical, economic, legal, engineering, surface, and public acceptance issues related to implementation of a real-world CO₂ storage project in the Central Appalachian Basin. Additionally, testing of selected National Risk Assessment Partnership (NRAP) tools was incorporated into several steps of the geological assessment.

Figure 1: Ohio Central Appalachian Basin project study area.

Project Outcomes:

This pre-feasibility study was successful in identifying six potential CO₂ source locations and two potential storage sites in the region with significant storage potential located near oil fields and potential CO₂ sources. Primary and secondary storage sites were identified; however, further site characterization data will be needed to determine the ability to inject CO₂ successfully at the selected site. A single most-promising source situation was not identified since the development of a capture facility in the region relies on an operator being interested in investing in capture technology to either retrofit an existing plant or build a new plant with capture technology integrated into the design. The pre-feasibility study also concluded that the region's existing oil and gas infrastructure can be leveraged in CCS projects to reduce capital costs. However, there is no existing pipeline infrastructure to transport the CO₂ from the sources to oil fields for enhanced oil recovery purposes, and a project such as this could help build the infrastructure by providing a steady stream of CO₂ and financial support. The regulatory environment for CCS is non-existent in Ohio and regulators and policymakers will have to take inspiration from existing oil and gas disposal wells and other states' legislation surrounding CCS. It was also recommended that Ohio consider obtaining Class VI primacy to help operators obtain the injection permits.

Presentations, Papers, and Publications

[Final Report: Central Appalachian Basin CarbonSAFE Integrated Pre-Feasibility Project Final Technical Report](#) (October 2018) – Lydia Cumming, Jared Hawkins, Justin Glier, Glenn Larsen, Joel Sminchak, Paul Champagne, Sarah Wade, Joel Main, Manoj Valluri

Prime Performer:
Battelle Memorial Institute

Principal Investigator:
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Project Duration:
2/1/2017 – 7/31/2018

Performer Location:
Columbus, Ohio

Program:
Carbon Storage

