Integrated Carbon Capture and Storage (CCS) Pre-Feasibility in the Northwest Gulf of Mexico

Award Number: DE-FE0029487

Project Summary:

The Northwest Gulf of Mexico Carbon Storage Assurance Facility Enterprise (CarbonSAFE) Pre-Feasibility Project, led by the University of Texas at Austin Bureau of Economic Geology (UT BEG), explored the feasibility of a large-scale offshore storage complex in the northwest Gulf of Mexico. The study identified and characterized potential carbon dioxide (CO_2) storage reservoirs for large-volume storage in offshore saline formations. The tasks of this pre-feasibility assessment included public outreach, source identification, subsurface geologic characterization, modeling and simulation, risk assessment, and site-development planning.

Prime Performer:
University of Texas at Austin

Principal Investigator:
Dr. Tim Meckel

Project Duration:
2/1/2017 – 7/30/2018

Performer Location:
Austin, Texas

Program:
Carbon Transport & Storage

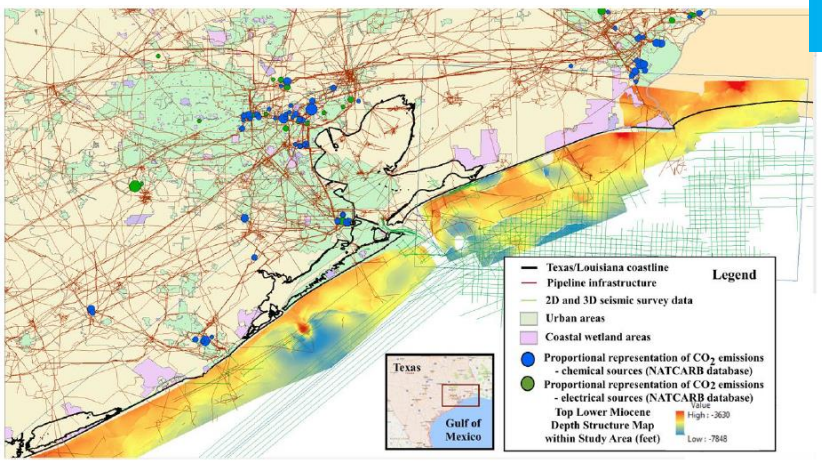

Figure 1. Near-offshore northwest Gulf of Mexico planned project area is completely covered by available 3D seismic lines as well as an array of 2D lines. Refinery and chemical sources (blue) and electricity generators (green; from the NATCARB database) and existing pipeline networks are key elements of project readiness.

Project Outcomes:

The Gulf of Mexico region is an ideal location for commercial-scale CCS development due to the high concentration of industrial clusters with large amounts of high-purity CO_2 sources, extended oil and gas operations and financial infrastructure, and the proximity of vast offshore storage capacity (Figure 1). The CO_2 source assessment identified the high-concentration NET Power demonstration facility in Houston (La Porte), Texas, as the top candidate for a potential commercial-scale CCS project. The pre-feasibility study concluded that the economic feasibility of large-scale CCS deployment is reliant on using the existing regional infrastructure and strategically building on new supporting infrastructure to drive down the costs. Industrial source clusters connected to the transport hub delivering CO_2 to a nearby storage complex is the most cost-effective and improved means to de-carbonize industrial activities. The geologic storage assessment identified the large, high-quality, Miocene-age sandstone reservoirs as the primary target for potential storage sites in this study. Also, a primary confining interval seal was identified. Three potential storage sites were selected for further characterization. This pre-feasibility assessment will pave the way for future carbon storage project development in the Gulf of Mexico.

Presentations, Papers, and Publications

Final Report: FINAL RESEARCH PERFORMANCE PROGRESS REPORT: CarbonSAFE Phase I: Integrated CCS Pre-Feasibility – Northwest Gulf of Mexico (October 2018) Ramon Trevino, Tip Meckel, Susan Hovorka