Integrated Carbon Capture and Storage in the Louisiana Chemical Corridor

Award Number: DE-FE0029274

Project Summary:

LSU analyzed the technical and economic feasibility of an integrated carbon capture and storage (CCS) project that captures at least 50 million metric tons (MMT) of carbon dioxide (CO_2) from various industrial sources, transports it via pipeline, and stores it in underground reservoirs. This included providing a sub-basinal evaluation of the potential for CO_2 storage in depleted oil and gas fields and saline reservoirs in South Louisiana.

Prime Performer:
Louisiana State University

Principal Investigator:
Dr. David Dismukes

Project Duration:
2/1/2017 – 1/31/2019

Performer Location:
Baton Rouge, Louisiana

Program:
Carbon Transport & Storage

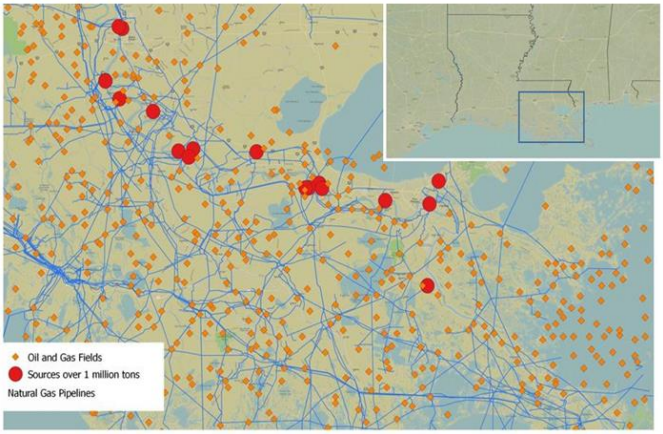

Figure 1: Relevant infrastructure in the Louisiana Chemical Corridor.

Project Outcomes:

The south Louisiana industrial corridor evaluated in this study contains six of the top 10 industrial carbon emission sources that account for 30% of the statewide total carbon emissions. The pipeline repurposing feasibility analysis conducted in this report finds that only 1.4% of the eligible 5,112 pipeline segments in the region could support conversion to carbon transportation.

The economic feasibility analysis shows that a CCS project in south Louisiana is not economically viable, even with the use of 45Q tax credits of up to $50 per metric ton for permanent storage by 2024. The integrated economic feasibility analysis conducted in this report estimates a total CCS unit cost to be $89.01 per metric ton before the 45Q tax credit is applied.

The two field sites (Bayou Sorrel and Paradis) are favorable to store 50+ MMT of CO_2. The total amount of CO_2 storage through EOR was not studied. The Bayou Sorrel field is estimated to have a storage capacity ranging from a low of around 89 MMT to a high of about 135 MMT. The Paradis field is estimated to have storage capacity of between 16 and 30 MMT of CO_2.

The public perception of a CCS project will likely be favorable in the south Louisiana CCS region due to the existing familiarity with oil and gas operations. Further, the Louisiana Legislature enacted statutes over the past several years that provide clear guidelines on how CO_2 will be injected, stored, and monitored. These statutes should reduce a considerable amount of business liability and legal risk for CCS developers.

Presentations, Papers, and Publications

Final Report: Integrated Carbon Capture and Storage in the Louisiana Chemical Corridor (February 2019) – David E. Dismukes, Mehdi Zeidouni, Muhammad Zulqarnain, Richard G. Hughes, Keith B Hall, Brian F. Snyder, Michael Layne, Juan M Lorenzo, Chacko John, Brian Harder