Illinois Storage Corridor
DE-FE0031892

Steve Whittaker
Illinois State Geological Survey

U.S. Department of Energy
National Energy Technology Laboratory
Carbon Capture Front End Engineering Design Studies and CarbonSafe
2020 Integrated Review Webinar
August-17-19 2020
Program Overview

– Funding
  • Federal Share: $17,777,513
  • Non-Federal Share $8,110,159
  • Total: $25,887,672

– Overall Project Performance Dates
  • BP1 (August 1 2020 – July 31 2022)
  • BP2 (August 1 2022 – July 31 2023)

– Overall Project Objectives
  • Perform subsurface and related work to enable submission of 2 Class VI permit applications, and gain approval for construction of CO$_2$ injection wells at 2 sites.
Illinois Storage Corridor Team

Illinois State Geological Survey
PRAIRIE RESEARCH INSTITUTE

MRCI
Midwest Regional Carbon Initiative

MGSC

U.S. DEPARTMENT OF
ENERGY

IGS
INDIANA GEOLOGICAL & WATER SURVEY
INDIANA UNIVERSITY

One Earth Energy

PRAIRIE STATE
Generating Company

Hekla
Environmental

IEc

Stanford
EARTH
SCHOOL OF EARTH, ENERGY & ENVIRONMENTAL SCIENCES

T

BYU
BRIGHAM YOUNG UNIVERSITY

Corner Post
CO2 LLC

Projeo

Trimeric Corporation

Pacific Northwest
National Laboratory

Van Ness Feldman LLP

GEOSTOCK ENTREPRENE

CO2 CRC
BUILDING A LOW EMISSIONS FUTURE

ILLINOIS
Illinois Sustainable Technology Center
PRAIRIE RESEARCH INSTITUTE
Technology Section

- Site Selection
- 2 locations
  - One Earth Energy LLC
    - Ethanol
    - ~ 450,000 t/y
  - Prairie State GC
    - Coal-fired power
    - ~ 6Mt/y
Technology Section

- Site Characterization efforts prior to current project
  - Builds on IBDP, IL-ICCS, CarbonSAFE’s 1 and 2
# Technology Section

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<tr>
<th>SYSTEM</th>
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## Prairie State

- St. Peter-Knox Storage Complex
- Cambro-Ordovician Storage Complex

## One Earth
A. Technical Approach/Project Scope

- PMP update – 30 days
- NEPA Documentation - 12 months
- Application for Underground Injection Class VI Permit to Construct – end BP1
- CO$_2$ Capture Feasibility Assessment – end BP1
- Quantitative Risk Assessment – 30 months
- Permit Underground Injection Class VI to Construct
Technical Approach/Project Scope

B. Project success criteria
   • Execute data acquisition - analyses program:
   • Submit applications for Underground Injection Class VI Permit to Construct
   • Receive Permit Underground Injection Class VI to Construct

C. Significant project risks and mitigation strategies
   • Primary geology unsuitable – secondary storage zones exist
   • Negative public response – develop early engagement strategy
   • Project cost over runs – monitor costs esp during drilling
Progress and Current Status

a. Recent significant accomplishments and how they tie to the site/technology/design/commercialization challenges

CCS Progression in Illinois Basin
Progress and Current Status

b. Status for host site selection/access

- Both sites are rural
- Each site has land available for geological development
- Locations of seismic surveys to be finalized
- Access for drilling is on land owned by source site
Progress and Current Status

c. Regional integration of CO₂ Capture
Progress and Current Status

c. Regional integration of transport and storage/utilization
Progress and Current Status

d. Gaps/Challenges/Hurdles: technology, design, supply chain, regulatory, access, site characteristics

- Time to conduct field activities and generate Class VI permits will be a challenge
- State regulatory uncertainty regarding storage
- Federal regulatory uncertainty regarding time required for EPA to review Class VI submission
- Uncertainty around FN involvement
Progress and Current Status

e. Synergy opportunities

Full-Scale FEED Study For a 816 MWe Capture Plant at the Prairie State Generating Company Using Mitsubishi Heavy Industries of America Technology

DE-FE0031841 / Pittsburgh, PA / November 13, 2019
Kevin C O'Brien
Director, Illinois Sustainable Technology Center and Illinois State Water Survey

Kiewit  MITSUBISHI
Prairie Research Institute  PRARIE STATE
Generating Company
A. Conduct geological evaluation at 2 sites for the storage of CO$_2$ and generation of Class VI permit submissions.
   • Acquire 2D and 3D seismic data
   • Drill 2 characterization wells
   • Perform modeling and simulation of injection performance
   • Conduct quantitative risk assessments
   • Perform pre-feasibility of capture at ethanol plant
   • Prepare 2 Class VI permit applications,
   • Attain approval for construction of CO$_2$ injection wells at 2 sites.

B. Start Project!
   a. Update PMP
Appendix

– These slides will not be discussed during the presentation, but are mandatory.
## Gantt Chart

### Table 6: Gantt Chart with Team Responsibilities by Task. Letters refers to milestones in Table 3.

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