OCED
Office of Clean Energy Demonstrations

THE OFFICE OF
CLEAN ENERGY DEMONSTRATIONS

Carbon Capture Pilot at Big Spring Refinery: Community Briefing

March 5, 2024

Office of Clean Energy Demonstrations

U.S. Department of Energy

Welcome & Meeting Objectives

- The Office of Clean Energy Demonstrations (OCED) at DOE recently announced the selection of four Carbon Capture Large-Scale Pilot Projects, including one in Big Spring, Texas.
- We at DOE want to share more information on this project and the opportunities to plug in and help shape your community's energy future.
- Engage with DOE and the partners involved in this project.

Briefing Logistics

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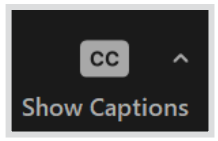

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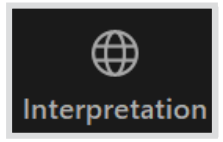


Click on the **“Interpretation”** button in the control panel at the bottom of your screen.

Is this briefing being recorded?

No, this briefing is not being recorded in order to encourage open dialogue and participation from all attendees.

Will the slides be shared?

Yes, a copy of the presentation slides will be shared via email with registrants and on the OCED website within the next few days.

Agenda

- Welcome & Objectives
- OCED Overview
- Carbon Capture Large-Scale Pilot Projects Program Overview
- Carbon Capture Pilot at Big Spring Refinery Overview
- Next Steps & Resources
- Feedback Session
- Wrap-up & Close

OCED Overview

Lydia Kubiak-Cardona,
Community Engagement Specialist, OCED

OCED Mission

Deliver clean energy technology **demonstration projects at scale** in partnership with the **private sector** to **accelerate deployment**, **market adoption**, and the **equitable transition** to a decarbonized energy system.

Prioritizing Community Benefits in OCED Projects

OCED **requires** applicants to include a Community Benefits Plan to help ensure broadly shared prosperity in the clean energy transition.

By **prioritizing community benefits**, we can ensure the next chapter in America's energy story is marked by greater justice, equity, security, and resilience.

Community & Labor Engagement

Diversity, Equity, Inclusion, & Accessibility

Investing in the American Workforce

Justice40 Initiative

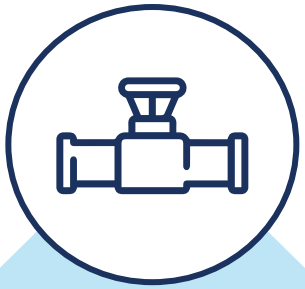
Carbon Capture Large-Scale Pilot Projects

Katie Harkless,
Associate Director,
Project Management,
OCED

How Does Carbon Capture, Utilization, and Storage Work?

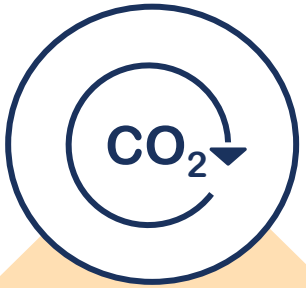
CAPTURE

- Power plants, industrial facilities
- Reduces CO_2 emissions



TRANSPORT

- Compressed CO_2
- Transported by pipelines, road, rail, or ships



UTILIZATION

- CO_2 is used to make products
- E.g., fertilizer, building materials, chemicals, fuels

STORAGE

- CO_2 stored safely and permanently
- Deep geologic formations underground

Deploying Carbon Capture Technology has the Potential to…

Reduce harmful carbon pollution by preventing carbon emissions from entering the atmosphere.

Deliver cleaner air by reducing health-harming pollutants, like SO_2, NOx, and particulate matter.

Decarbonize existing infrastructure and assets in the power and industrial sectors.

Demonstrate technology leadership and increase U.S. competitiveness in the global energy transition.

Maintain good, high-wage jobs while advancing the clean energy economy.

Support our nation's net-zero goals and help the world decarbonize at existing facilities.

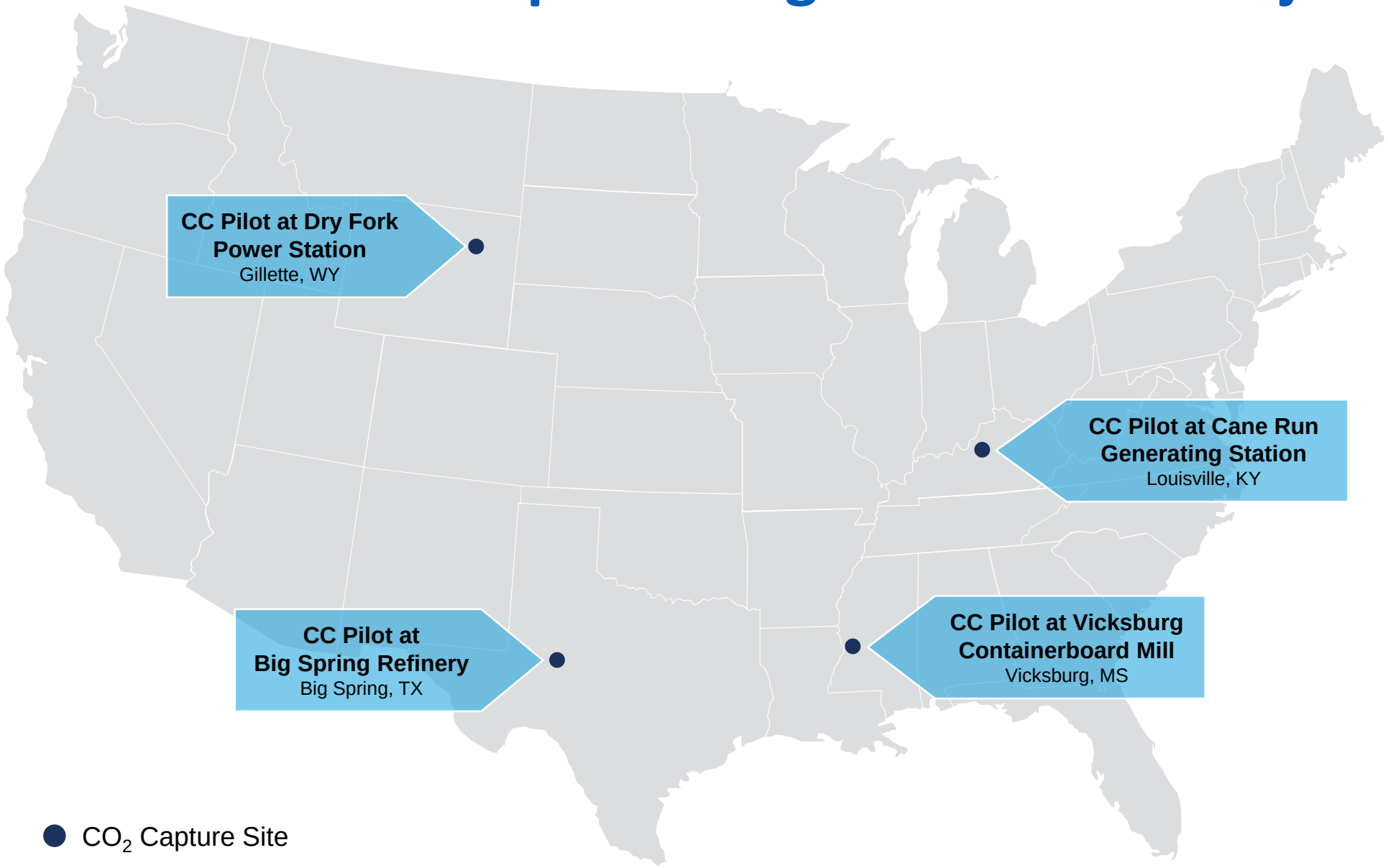
Carbon Capture Large-Scale Pilot Projects Program

Establish and test innovative carbon capture pilot projects large enough to support new processes and technology improvements at scale.

Carbon Capture Pilots Current Status

- February 2023: Announced funding opportunity for Carbon Capture Large-Scale Pilot Projects.
- May 2023: Responded to concept papers.
- July 2023: Received full applications.
- **February 2, 2024: OCED announced four projects selected for award negotiation.**
- DOE is considering another FOA for more Carbon Capture Large-Scale Pilot Projects.

Selected Carbon Capture Large-Scale Pilot Projects



Carbon Capture Pilot at Big Spring Refinery Overview

Carbon Capture Pilot at Big Spring Refinery

March 5, 2024

Project Overview

Project Title: Carbon Capture Pilot at Big Spring Refinery

Prime Applicant: Delek US Holdings

Location: Big Spring, Texas

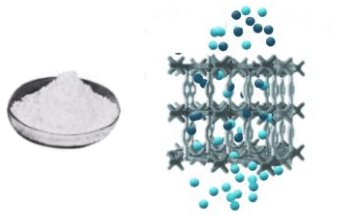
Project Description:

- Capture 145,000 MTPY of CO2 from Big Spring Refinery Fluidized Catalytic Cracker (FCC). Target Commission: 2028
- Utilize Svante's URSA 1000 2nd generation post-combustion carbon capture technology
- Construct short 6-mile CO_2 pipeline & transport captured CO_2 to local Class VI Sequestration and/or utilization options, utilizing existing infrastructure
- Construct Carbon Capture Schoolhouse, equip labor force with valuable energy transition skillset
- Engage Community Advisory Committee to achieve Community Benefits Plan (CBP) targets

About Delek Big Spring Refinery:

- Constructed in 1929
- Produces transportation fuels, solvents, asphalt and LPG. 73,000 Barrels/Day capacity
- 242 Employees, ~70% represented by IUOE Local 351.

Svante 2nd generation Carbon capture technology

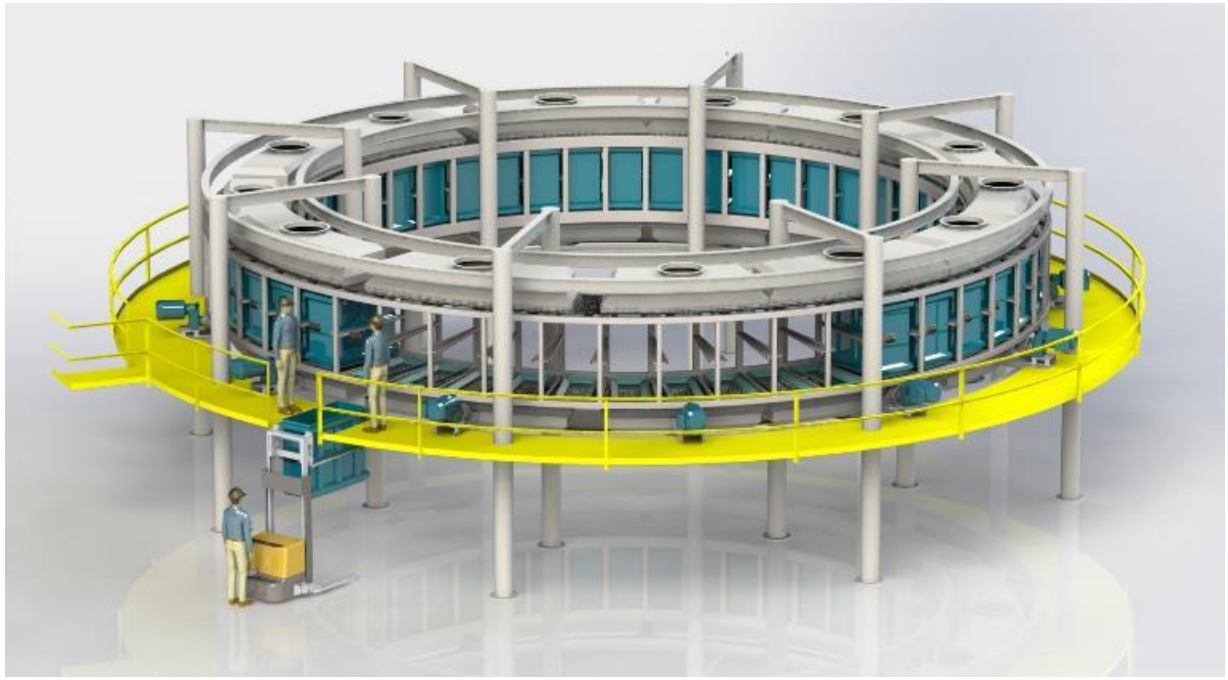


1. Solid Sorbents (MOFs)

Engineered to have high selectivity over water & high capacity for CO_2.

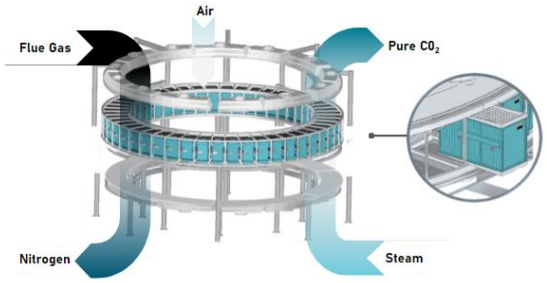
Nanoengineered Carbon Capture Filters (SAB)

Solid sorbents laid onto thin sheets of film & stacked to create a filter.



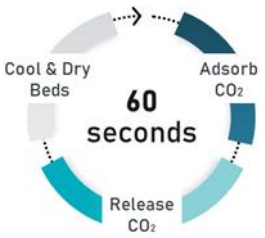
4. Carbon Capture Plant

The overall design, integration and optimization of the entire CO_2 capture plant that goes around the machine and process cycle.



2. Rotary Adsorption Machine (RAM) with Filters Inside

Solid sorbents laid onto thin sheets of film & stacked to create a filter.



3. Process KPI: Performance and Lifetime

Thermal Swing Adsorbent (TSA) Cycle and validated KPIs.

Advance Big Spring & Achieve CBP Targets

1 Supporting Disadvantaged Communities

- Big Spring has 4 disadvantaged census tracts (per CEJST); average $22k per capita income
- Project reduces atmospheric CO_2 and non-CO_2 emissions in local community (e.g., SO_X, NO_x, PM)
- Local Sourcing: Regional TX businesses will be able to compete in competitive procurements to support the project

2 Investing in the American Workforce: CC Schoolhouse

- Renovate IUOE union hall with new classroom and workshop
- Develop curriculum in CCUS, equip labor force with skills for the energy transition
- Begin Instruction in Phase 3 and train approx. 1,440 members over 3 years including unionized operations staff
- Hire & maintain faculty for a 1:3 instructor-student ratio

3 Big Spring: An American Energy Transition Town

- Pilot project will create 200 temporary construction jobs and six permanent positions
- Partnership with local colleges and schools to develop tech programs, pipeline interns and full-time hires
- BSR is a multi-generational workforce, majority of hourly operations & maintenance positions occupied by locals

Impact Metrics: Ensuring Community Benefit

Community and Labor Engagement	• Positive/negative stakeholder perception on key economic, environmental, and social topics (jobs, air and water quality, industrial safety related to project, construction, traffic, noise) • Workforce and Community Agreements executed
Investing in the American Workforce	• Number of jobs created (direct and indirect) • Percentage of new jobs that are unionized • Number of union members receiving Carbon Capture Schoolhouse training
DEIA	• Demographic diversity of project workforce • Percentage of project workers living in disadvantaged census tracts • Number of dollars allocated to local, small, women-owned, minority-owned, veteran-owned, or disadvantaged businesses
Justice40	• Number of tons of CO_2 reduced • Number of tons of non-CO_2 emissions (including NOx and SOx) reduced

Strategic Partnerships

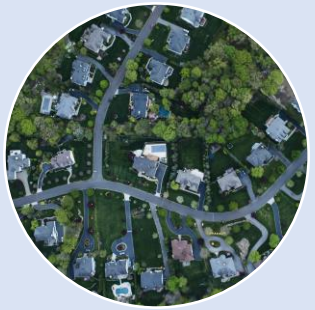
Big Spring CO_2 Capture Project

Project Execution

World-Class EPC and licensing partners enable pilot execution and success

Labor

Union support and partnerships enable local workforce with skills for the energy transition



Community

Intimate relationships with community stakeholders alongside SoCha ensures execution of CBP goals

CO_2 Value Chain

Commercial engagements with offtakes developing pilot optionality and commercial case

Delek US Commitment

Next Steps & Resources

John Brown,
Stakeholder Engagement Lead, Carbon Capture, OCED

Next Steps – Negotiations

Award Negotiations: DOE OCED will begin the negotiations process with project selectees

After Award: *IF the projects receive an award (successful negotiations)*

- Awarded projects will enter into a cooperative agreement with OCED
- Phase 1: Detailed Project Planning begins
- OCED will work with the awarded project partners starting in Phase 1 to ensure compliance with the National Environmental Policy Act (NEPA)
- Local communities (state, local and community stakeholders) will have the opportunity for ongoing engagement with OCED and the awardee(s)

More broadly, DOE is exploring the use of regional frameworks to support project outcomes.

Get Involved

How could this project impact me?

Learn more about OCED's Community Benefits Plan Framework →

Is there a CC Pilots project near me?

Learn more about the selected projects here →

Project selected

WE ARE HERE

Announcement and Negotiations
Projects have been selected, but awards have not been made

What is a CC Pilot?

Learn more →

Project awarded

NEPA engagement during phase 2 →

1 ~18 months

2 Up to 12 months

3 Up to 24 months

4 Up to 24 months

Phase 4: Ramp-Up & Operate
Community Benefit Commitments Public

Phase 3: Install, Integrate, Construct
Community Benefit Commitments Public

Phase 2: Project Development
Community Benefit Commitments Public

Phase 1: Project Planning
Community Benefit Commitments Public

Ongoing community engagement throughout each phase

Learn more about project phases →

When are the CC Pilots project-specific briefings?

Learn more and register here →

How do I stay informed?

Sign up for updates →

OCED
Office of Clean Energy Demonstrations

Community Benefit Commitments Public
Go/No-Go Decisions

Carbon Capture Large-Scale Pilot Projects Resources

Carbon Capture Large-Scale Pilot Projects Program

- Program Page
- Press Release
- Overview of Selected Projects
- Local Engagement Opportunities

Community Benefits

- CBP101 Webinar
- OCED CBP Factsheet
- OCED Communities, Jobs, and Justice Page

Additional Carbon Capture Resources

- Carbon Management Pathways to Commercial Liftoff Report
- Industrial Decarbonization Pathways to Commercial Liftoff Reports
- Interactive Diagram of DOE's Carbon Management Provisions

Feedback Session

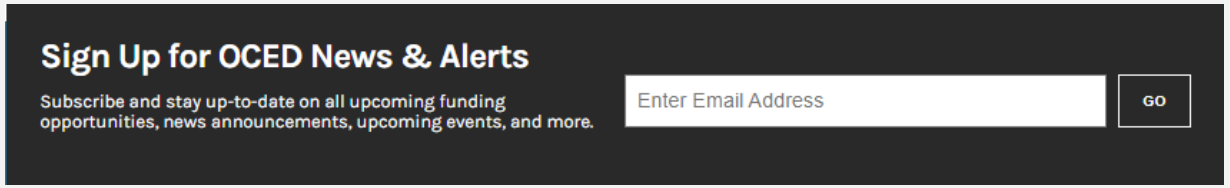
Emmanuel Taylor,
Facilitator

Ground Rules for Discussion

- Submit questions using the Q&A feature.
  - You can also see and upvote other questions that have been asked.
- Reserve judgement
- One idea at a time
- It is okay to build on the ideas of others
- Clarifying questions are okay

Stay Connected

- **Reach DOE OCED about this project at BigSpring_CCPilot@hq.doe.gov**
- **OCED Website & Newsletter**
  energy.gov/oced
  Scroll to the bottom to subscribe:



- **OCED Exchange (RFIs, NOIs, and FOAs)**
  oced-exchange.energy.gov
- **Follow us on LinkedIn**
  linkedin.com/company/doe-oced/

Thank you!

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For more information, please visit: energy.gov/OCED