



# Carbon Capture Large-Scale Pilot Selected and Awarded Projects

## Awarded Projects

### Carbon Capture Pilot at Big Spring Refinery

**PROJECT FACT SHEET →**

**COMMUNITY BENEFITS  
COMMITMENTS SUMMARY →**



 **Aerial view of Delek Big Spring Refinery**

**Federal Cost Share:** Up to \$95 million

**Recipient:** Delek US Holdings, Inc.

**Location:** Big Spring, Texas

**Project Summary:** The Carbon Capture Pilot at Big Spring Refinery project, led by Delek US Holdings, Inc. (Delek), plans to deploy a carbon capture system at Delek's Big Spring Refinery, an oil refinery in Big Spring, TX. The project aims to capture at least 90% of the annual CO<sub>2</sub> emissions from the refinery's Fluidized Catalytic Cracking Unit (FCCU), which adds up to about 145,000 metric tons of CO<sub>2</sub>—equivalent to the annual emissions of more than 34,500 gasoline-powered cars. The Carbon Capture Pilot at Big Spring Refinery project would demonstrate an innovative second-generation post-combustion carbon capture process developed by Svante Technologies Inc. Additionally, the project is expected to decrease emissions of health-harming pollutants, including SO<sub>x</sub> and particulate matter. The project would be designed to transport the CO<sub>2</sub> by existing pipelines for permanent storage or utilization. The refining industry currently produces 243 million metric tons of CO<sub>2</sub>-equivalent emissions per year in the United States. The goal of this project is to enable scale-up of safe and responsible carbon capture technology, which is designed to be more resilient to the harsher flue gas of an FCCU and achieve cost reductions for replication at other oil refineries and industrial facilities.

The Carbon Capture Pilot at Big Spring Refinery plans to create a Community Advisory Committee (CAC) to prioritize public feedback, concerns, and suggestions to project leadership and the community relations team. The CAC could include representatives from labor unions, local stakeholders, environmental organizations, academic organizations, community residents, and community-based organizations that support underrepresented groups. Delek is committed to engaging with the United Steelworkers and the North America's Building Trade Unions to use union labor to construct the facility. Delek has an existing workforce agreement with the International Union of Operating Engineers and plans to engage with the unions and initiate discussions regarding jobs, training, safety, and including potential participation in the construction phase as part of this pilot project. The project team would also work with community partners to establish The Carbon Capture Schoolhouse to

train organized labor and expand Delek's skilled workforce. The project is expected to create six operations jobs once completed and up to 200 construction jobs during the construction phase of the project.

## **Carbon Capture Pilot at Cane Run Generating Station**

**PROJECT FACT SHEET →**

**COMMUNITY BENEFITS  
COMMITMENTS SUMMARY →**



 **Cane Run Natural Gas Combined Generating Station in Louisville, KY**

**Location:** Louisville, Kentucky

**Federal Cost Share:** Up to \$72 million

**Recipient:** Kentucky Utilities Company, a subsidiary of PPL Corporation

**Sector:** Power

**Project Summary:** The Carbon Capture Pilot at Cane Run Generating Station, led by Kentucky Utilities Company, a subsidiary of PPL Corporation (PPL), plans to deploy a carbon capture system at Cane Run 7, a natural gas combined cycle power plant in Louisville, KY operated by PPL subsidiaries Louisville Gas and Electric and Kentucky Utility Company. The Carbon Capture Pilot at Cane Run Generating Station project expects to capture 95% of the carbon dioxide (CO<sub>2</sub>) from a portion of the unit's flue gas using an advanced heat-integrated CO<sub>2</sub>

capture technology. Developed by the University of Kentucky (UK), this technology aims to capture up to 67,000 metric tons of CO<sub>2</sub> per year—equivalent to the annual emissions of nearly 16,000 gasoline-powered cars. The project team plans to partner with an off-taker who would purify the captured CO<sub>2</sub> for beneficial use. The goal of the project is to pilot and inform safe and responsible commercial deployment of UK's solvent-flexible process, which could be scaled up for use at other natural gas combined cycle power plants. This project builds on concurrent DOE carbon capture research and development into the UK solvent-agnostic process through the DOE Office of Fossil Energy and Carbon Management.

Kentucky Utilities Company plans to establish a Community Advisory Board to act as a bridge between the project team and the community, develop a Good Neighbor Agreement to minimize construction impacts, and host town hall meetings and educational workshops to share project information and collect feedback.

## **Carbon Capture Pilot at Dry Fork Power Station**

**PROJECT FACT SHEET →**

# COMMUNITY BENEFITS COMMITMENTS SUMMARY →



 **Dry Fork Power Station plant in Gillette, WY**

**Federal Cost Share:** Up to \$49 million

**Recipient:** TDA Research

**Location:** Gillette, Wyoming

**Project Summary:** The Carbon Capture Pilot at Dry Fork Power Station, led by TDA Research, in collaboration with Schlumberger Technology Corporation, will deploy a carbon capture system adjacent to the Wyoming Integrated Test Center located outside of Basin Electric's Dry Fork Power Station, a coal-fired power plant near Gillette, Wyoming with 405 MWe capacity. TDA's carbon capture system uses a low-cost, physical adsorbent to remove CO<sub>2</sub> via a combination vacuum and concentration swing adsorption process. The proposed carbon capture system plans to be integrated with the power plant flue gas exhaust to remove more than 90% of the plant's overall carbon emissions, emissions from coal flue exhaust at high purity (+95%), capturing 158,000 metric tons of CO<sub>2</sub> each year – an amount equivalent to the annual CO<sub>2</sub> emissions of 37,000 gasoline-powered cars. The Carbon Capture Pilot at the Integrated Test Center project is ideally placed in close proximity to a storage site in the carbon capture hub being developed through the DOE-funded [Wyoming CarbonSAFE project](#). Ultimately, this requires only a short pipeline to transport the captured CO<sub>2</sub> to permanent storage; Wyoming CarbonSAFE is currently undertaking a FEED study for the pipeline connecting the Carbon Capture Pilot location to permanent storage. Coal-fired power plants currently produce approximately 935 million metric tons of CO<sub>2</sub> emissions each year in the United States. The goal of the pilot project is to inform safe and responsible commercial deployment of TDA's sorbent-based technology, which could be scaled up for use at coal plants around the world. This project builds on previous DOE carbon capture research and development into the TDA sorbent, funded through DOE's Office of Fossil Energy and Carbon Management.

The Carbon Capture Pilot at Dry Fork Power Station will engage with the local community and labor unions, through listening sessions, town hall meetings, and open houses to ensure community benefits are informed and developed with local communities and aim to maximize local benefits and mitigate potential impacts of the project. The project expects to develop strategies to recruit local workers to support the

regional economy and has committed to hiring four interns during the duration of the project, recruiting from underrepresented communities, including students from Minority-Serving Institutions. Additionally, the project team plans to deliver seminars to provide educational information for students at local colleges and universities to learn more about carbon capture technology.

## **Carbon Capture Pilot at Vicksburg Containerboard Mill**

**PROJECT FACT SHEET →**

**COMMUNITY BENEFITS  
COMMITMENTS SUMMARY →**



 **Vicksburg Containerboard Mill in Redwood, MS**

**Location:** Redwood, Mississippi

**Federal Cost Share:** Up to \$88 million

**Recipient:** RTI International

**Project Summary:** The Carbon Capture Pilot at Vicksburg Containerboard Mill, led by RTI International in collaboration with International Paper (IP), SLB, and Amazon, aims to build a carbon capture system at IP's pulp and paper mill in Redwood, Mississippi. The Carbon Capture Pilot at Vicksburg Containerboard Mill intends to capture at least 90% of the CO<sub>2</sub> from the mill's power boiler flue gas using RTI International's non-aqueous solvent (NAS) technology. This first-of-its-kind carbon capture project for the pulp and paper industry aims to capture 120,000 metric tons of CO<sub>2</sub> per year—an amount equivalent to the annual CO<sub>2</sub> emissions of nearly 28,000 gasoline-powered cars—and

transport it to a site for permanent geologic storage. The pulp and paper industry currently produces 48 million metric tons of CO<sub>2</sub>-equivalent emissions per year in the United States, plus an additional 100 million metric tons of CO<sub>2</sub>-equivalent emissions per year from related biogenic emissions. The main goal of this pilot project is to illustrate the safe, responsible, and effective use of the NAS technology, advance wider adoption in the pulp and paper industry, and demonstrate how strategic partnerships can accelerate safe and responsible decarbonization. This project builds on previous DOE carbon capture research and development into RTI International's NAS technology, funded through the DOE Office of Fossil Energy and Carbon Management.

Community benefits commitments are a key component of the Carbon Capture Pilot at Vicksburg Containerboard Mill. The project team will establish a Community Engagement Network with membership inclusive of neighboring community members, disadvantaged communities, and labor unions. RTI International has existing collective bargaining agreements with several labor unions, including United Steelworkers (which includes Paper and Forestry, Rubber, Manufacturing, Energy), Allied Industrial Services Workers International Union, United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry, and the International Brotherhood of Electrical Workers. The project expects to create around 90 jobs in the construction phase and will develop strategies to ensure supplier diversity throughout future phases.

### **What is carbon capture?**

Carbon capture is a process that captures carbon dioxide (CO<sub>2</sub>) from other gases produced from carbon-emitting sources like power plants or heavy industrial facilities, to prevent it from being released into the atmosphere.

## **How is carbon capture different from Direct Air Capture?**

Carbon capture technologies capture CO<sub>2</sub> at the source before it enters the atmosphere. In other words, carbon capture technologies help avoid emissions by preventing the release of CO<sub>2</sub> from power plants and industrial facilities. This is known as “point-source capture,” since the CO<sub>2</sub> is captured at the source before it can be emitted.

Direct Air Capture (DAC) is not a form of point-source capture. Rather than avoiding future CO<sub>2</sub> emissions, DAC technologies address the carbon pollution that exists in our atmosphere.

## **Why is DOE investing in carbon capture?**

Large-scale, safe and responsible, deployment of carbon management technologies is critical to addressing the climate crisis and achieving net-zero carbon emissions by 2050. Reaching our nation’s energy transition goals will require capturing and storing 400 to 1,800 million metric tons of carbon dioxide annually by 2050.

The Carbon Capture Large-Scale Pilot Projects Program received \$937 million from the Bipartisan Infrastructure Law to establish a carbon capture technology program for the development of transformational technologies that will significantly improve the efficiency, effectiveness, costs, emissions reductions, and environmental performance of facilities from the power and industrial sectors. The four projects selected for award negotiations will develop technologies at the pilot scale across the power and industrial sectors. The selected projects are designed to pilot

transformational carbon capture technologies and catalyze significant follow-on investments for commercial-scale demonstrations on carbon emission sources, helping to reduce emissions in an effort critical to addressing the climate crisis and meeting our nation's goal of a net-zero emissions economy by 2050. This program builds on more than two decades of research and development by DOE on carbon capture and storage technologies.

### **How many projects have been selected and how much funding is DOE providing?**

DOE selected four projects for award negotiations, with anticipated federal award amounts as follows:

- Carbon Capture Pilot at Vicksburg Containerboard Mill: Up to \$88 million
- Carbon Capture Pilot at Cane Run Generating Station: Up to \$72 million
- Carbon Capture Pilot at Big Spring Refinery: Up to \$95 million
- Carbon Capture Pilot at Dry Fork Power Station: Up to \$49 million

If the projects are awarded, DOE will provide up to 70% of the cost share. OCED plans to issue an additional funding opportunity for this program in the future.

### **How were the Carbon Capture Large-Scale Pilot Projects selected?**

DOE solicited applications for the Carbon Capture Large-Scale Projects Program with [a Funding Opportunity Announcement \(FOA\)](#) in February 2023, and conducted merit reviews of eligible project submissions in 2023. The merit review criteria included:

- Technical Merit, Innovation, and Impact (35%)
- Financial and Market Viability (15%)

- Workplan (15%)
- Management Team and Project Partners (15%)
- Community Benefits Plan (20%)

Internal and external reviewers that are subject matter experts in the evaluation criteria conducted rigorous reviews of eligible submissions. Ultimately, the Selection Official(s) considered the recommendations of the reviewers with respect to individual proposals and applied a portfolio approach to ensure the selected projects satisfied all of the statutory requirements.

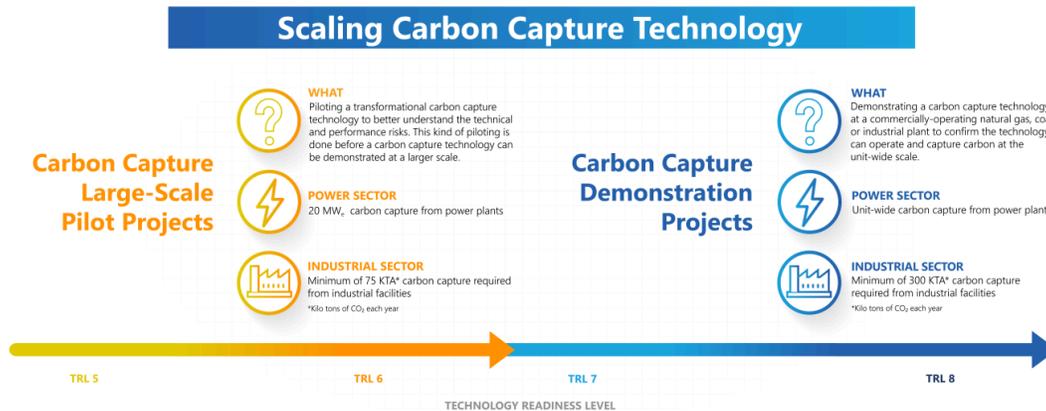
### **How is this program related to the Carbon Capture Demonstrations Program?**

Both the [Carbon Capture Demonstrations Projects Program](#) and the Carbon Capture Large-Scale Pilot Projects Program are part of the OCED carbon management portfolio, which provides funding for carbon capture technologies that are critical to addressing the climate crisis and meeting our nation's goal of a net-zero emissions economy by 2050. The main differences between these two programs are the technology readiness levels and the scale at which the carbon capture technology is being demonstrated.

The Carbon Capture Demonstrations Projects Program will develop six carbon capture facilities at coal electric generation facilities (two projects), natural gas electric generation facilities (two projects), and industrial facilities (two projects). In December 2023, OCED [announced three projects that have been selected for award negotiations](#). OCED anticipates issuing future funding announcements for additional projects in this program to meet the mandate from the Bipartisan Infrastructure Law.

The Carbon Capture Large-Scale Pilot Projects Program provides funding for smaller, pilot-scale projects for carbon capture technology, with a goal of significantly improving the efficiency,

effectiveness, costs, emissions reductions, and environmental performance of carbon capture use at both power and industrial facilities. The program aims to prove carbon capture technologies at the pilot-to-commercial scale in partnership with industry and communities. In February 2024, OCED announced four projects that have been selected for award negotiations, and OCED plans to issue a future funding opportunity to fund additional pilot projects.



### What are the anticipated benefits of the Carbon Capture Large-Scale Pilots?

These four Large-Scale Carbon Capture Pilot Projects are located at power and industrial sites in Kentucky, Mississippi, Texas, and Wyoming. The four selected projects have the potential to prevent more than 500,000 metric tons of CO<sub>2</sub> emissions from being released into the atmosphere each year – an amount equivalent to the annual CO<sub>2</sub> emissions of more than 110,000 gasoline-powered cars. DOE’s funding for the Carbon Capture Large-Scale Pilot Projects will pilot these transformational carbon capture technologies and catalyze significant follow-on investments for commercial-scale projects on carbon emission sources across the power and industrial sectors.

These projects will address community concerns through meaningful engagement and robust analysis of benefits such as technical training and jobs. DOE is dedicated to ensuring that the

selected projects provide tangible community benefits to communities. This includes President Biden's [Justice40 Initiative](#), which set a goal that 40% of the overall benefits of certain federal investments, such as climate and clean energy, flow to disadvantaged communities that have been marginalized by underinvestment and overburdened by pollution.

Our comprehensive [Community Benefits Plan](#) approach and [phased project management approach](#) will ensure the robust engagement of impacted communities throughout the lifecycle of the project, maximize benefits for local communities, and help minimize and mitigate negative impacts.

These projects will create construction and operations jobs. As part of their Community Benefits Plans these projects have also committed to ensure high-quality jobs and expand training programs in coordination with organized labor and local colleges and universities including Minority-Serving Institutions and Historically Black Colleges and Universities.

#### **How does DOE plan to address risks associated with these projects?**

Ensuring safe deployment and mitigating social, economic, technical, and environmental risks associated with carbon capture pilot projects is of the utmost importance to DOE and central to our project management approach. DOE will work with the project selectees and the appropriate authorities to address concerns proactively and continually throughout the duration of the project. Projects must comply with the National Environmental Policy Act (NEPA) as well as other Federal environmental reviews and state and local regulations. Funded projects must submit detailed risk assessments and risk management plans outlining potential risks and impacts, and how they will mitigate those impacts (in addition to what is required for regulatory compliance). They must also

submit detailed Community Benefits Plans, including how the project performers will transparently communicate risks or potential negative impacts associated with the project to the community. These projects will also address community concerns through meaningful engagement and robust analysis of impacts such as emissions and water usage. DOE is dedicated to ensuring that the selected projects minimize risks to communities.

### **How will communities where these projects are located be engaged?**

OCED will engage in early, frequent, and meaningful engagement with communities that host the Carbon Capture Large-Scale Pilot Projects. Communities will have substantive opportunities to engage with both DOE and the projects—starting during the negotiation process and extending throughout the full lifecycle of each project. Before projects are awarded, OCED will begin these engagements by co-hosting virtual community briefings with the selected project teams to engage and build relationships with local stakeholders. Additional engagement opportunities will be planned on a project-by-project basis. DOE may use information gained during these engagements to inform the negotiation process.

Projects that are successfully negotiated and awarded are required to implement their Community Benefits Plans, including engaging with community and labor groups; investing in America's workforce; advancing diversity, equity, inclusion, and accessibility; and supporting the Administration's Justice40 Initiative. While each project is unique, all must pursue robust activities in these four areas. These plans are intended to evolve in response to community and worker input and will be assessed at each phase as part of DOE's go/no-go decision points.

Lastly, to ensure that federal investments are planned and executed in a responsible, equitable, and environmentally sound manner,

OCED-funded projects must comply with applicable environmental and cultural legislation like the National Environmental Policy Act and the National Historic Preservation Act. A major component of this work is to encourage early and meaningful engagement with Tribal entities, other federal and state agencies, and public stakeholders throughout the course of federal decision-making.

**Powering cutting-edge projects & scientific innovations for a safe sustainable future.**

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