



Industrial Demonstrations Program – Sustainable Ethylene from CO₂ Utilization with Renewable Energy

The Industrial Demonstrations Program, managed by the U.S. Department of Energy (DOE) Office of Clean Energy Demonstrations (OCED), aims to accelerate decarbonization projects in energy-intensive industries and provide American manufacturers a competitive advantage in the race to lead the world in low- and net-zero carbon emissions manufacturing. To advance industrial decarbonization, OCED sought applications for up to \$6 billion in funding to support the demonstration of transformational technologies necessary to reduce emissions in the U.S. industrial sector. Following negotiations, in December 2024, OCED awarded the Sustainable Ethylene from CO₂ Utilization with Renewable Energy (SECURE) project with more than \$19.7 million to begin Phase 1 of the project, located on the U.S. Gulf Coast.



Awardee Fact Sheet Industrial Demonstrations Program: Sustainable Ethylene from CO₂ Utilization with Renewable Energy

Project at a Glance — Phase 1

- » **Total OCED Cost Share:** Up to \$200 million
- » **Phase 1 Total Project Amount:** \$39,443,377*
- » **Phase 1 OCED Award Amount:** \$19,721,688**
- » **Phase 1 Scope of Work:** Planning, permitting, design, community engagement, and other development activities
- » **Phase 1 Timeline:** 1 year
- » **Recipient:** Technip Energies USA, Inc. is a world leading engineering and technology company
- » **Project Locations:** U.S. Gulf Coast
- » **Start Date:** December 2024

*Represents the total project cost for Phase 1.

**Represents OCED's cost share for Phase 1. Additional funding for this project is subject to future award negotiations at the end of each project phase.

About This Project

Technip Energies USA (T.EN USA) in partnership with LanzaTech Global, Inc. (LanzaTech), plans to demonstrate an integrated process to utilize captured carbon dioxide (CO₂) from ethylene production. This project aims to use a biotech-based carbon recycling process and low carbon intensity hydrogen to create sustainable ethanol and ethylene. LanzaTech's Gas Fermentation technology, previously supported by DOE, can also be deployed in any industry with waste carbon, allowing other industries to capture and upcycle carbon-rich waste streams instead of emitting them into the atmosphere or needing to sequester them.

During Phase 1 of the project, Technip Energies USA, in partnership with LanzaTech, plans to conduct Front End Engineering Design (FEED), develop project plans, provide

documentation and reports necessary to complete the National Environmental Policy Act (NEPA) review, and engage with community and labor stakeholders.

OCED will provide oversight of the SECURE project by evaluating the status and quality of implementation at each phase of the project. Through its phased approach to project management oversight, OCED will review and evaluate the project's progress, including community benefits, which impact OCED's decision to continue to provide federal funding and allow a project to progress to the following phase.

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Project Site

The SECURE project would be located on the U.S. Gulf Coast.

Community Benefits Commitments

Community benefits commitments are a key component of the SECURE project. The commitments are informed and developed—in consultation with local communities—to maximize local community benefits and mitigate potential impacts. Technip Energies USA plans to implement these commitments through:

- **Creating up to 200 construction jobs and 40 permanent jobs** with benefits and training opportunities.
- Partnering with Minority-Serving Institutions to **create opportunities for underrepresented workers**, implementing a hiring preference policy for local and disadvantaged populations, and collaborating with local community organizations to expand outreach efforts.
- Approaching community groups, unions, and labor groups **to negotiate, review, and update agreements for quality jobs and community collaboration** at the host site.
- Leveraging an existing Community Advisory Body to **engage underrepresented stakeholders** in the community and to address community priorities and minimize negative impacts.
- Pursuing Collective Bargaining and Project Labor Agreements that contain no-strike/no-lockout provisions where possible to **ensure workforce stability**.
- Supporting the Justice40 initiative by **completing a Justice40 Assessment and Implementation Strategy** during each phase.
- **Quantifying air quality impacts** for any relevant air pollutants emitted, or expected to be emitted, from the project.
- Sharing project information publicly **to support engagement, accountability, and transparency**.

More details on the SECURE Project's community benefits commitments can be found in the [Community Benefits Commitments Summary](#).



Close-up photo of an ethylene cracker

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Industrial Demonstrations Program Goals

U.S. industry is a backbone of the nation's economy, producing the goods critical to everyday life, employing millions of Americans in high-quality jobs, and providing an economic anchor for thousands of communities. Yet the sector's energy- and carbon-intensity contributes to nearly one third of the nation's carbon dioxide emissions, representing a unique and complex challenge to achieving a carbon-free economy. Decarbonizing the U.S. industrial sector will require equally unique and innovative technological solutions that leverage multiple pathways, including energy efficiency, electrification, and alternative fuels and feedstocks such as clean hydrogen. The Industrial Demonstrations Program includes new, emerging technologies that aim to help produce clean steel, cement, chemicals, and other materials used in our nation's roads, bridges, transmission lines, electric vehicles, solar panels, wind turbines, and everyday lives, which in turn, benefit every American.



Thread is one of many downstream applications of sustainable ethanol and ethylene

Contact

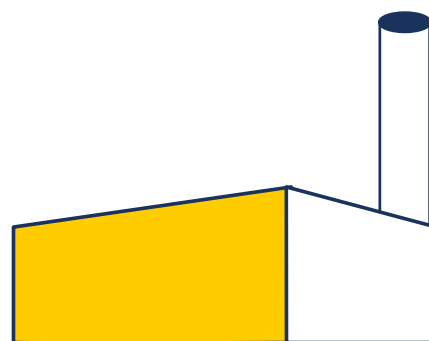
Program Email: engage_industrialdemos@hq.doe.gov

OCED Media Email: OCEDNewsroom@hq.doe.gov

More Resources

Website: energy.gov/oced/IDP

Office of Clean Energy Demonstrations: energy.gov/oced



The U.S. Department of Energy established OCED to help scale the emerging technologies needed to tackle our most pressing climate challenges and achieve net-zero emissions by 2050. OCED's mission is to deliver clean energy demonstration projects at scale in partnership with the private sector to accelerate deployment, market adoption, and the equitable transition to a decarbonized energy system.