OCED
Office of Clean Energy Demonstrations

THE OFFICE OF
CLEAN ENERGY DEMONSTRATIONS



Industrial Demonstrations Program
Northeastern Regional Community Briefing

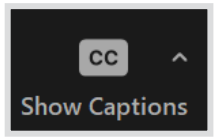
04/23/2024

Office of Clean Energy Demonstrations

U.S. Department of Energy

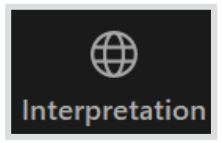
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Is this webinar being recorded?

No, this webinar is not being recorded.

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 week.

Northeastern Regional Briefing Agenda

- **(6:00 – 6:30 pm ET) DOE and Industrial Demos Program Overview**

- **(6:30 – 7:00 pm ET) Project Overview**
  - Kraft Heinz, Lowville, NY
  - Unilever, Albans, VT; Waterbury, VT
  - Sublime Systems, Inc., Holyoke, MA
  - Skyven Technologies, TBD

- **(7:00-7:30 pm ET) Q&A**

- **(7:30 – 7:35 pm ET) Closing Comments**

OCED Overview

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.”

INDUSTRIAL DEMONSTRATIONS PROGRAM SELECTION SNAPSHOT

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Office of Clean Energy Demonstrations

$20+ BILLION
Total Funding
(Federal and private cost shares)

OVER
14 MILLION METRIC TONS
of avoided emissions annually

85% would reduce criteria air pollutants
(28) PROJECTS

TENS OF
THOUSANDS
total jobs

with
19 committed to union labor
PROJECTS

Selectees Delivered on Ambitious Program Priorities

Deep Decarbonization	**Target:** 50 – 75% emissions reductions per project	**Result:** Average **77% reduction** in carbon intensity & ~**14+ million MT CO2e reduced** annually
Timeliness	**Target:** Accelerate decarbonization into this decade	**Result:** Average performance period of **less than 6 years**
Market Viability	**Target:** Spur follow-on investment in lower-embodied carbon goods	**Result:** **35+ products** to be produced with lower embodied emissions; multiple with premium offtake agreements in place today
Community Benefits	**Target:** Select projects with the greatest benefit for the greatest number of people	**Result:** **85% of projects** improve air quality; investment will create **tens of thousands of jobs** across the United States

Community Benefits

Selectees described strategies and methods of accountability to ensure:

- Meaningful, two-way community and labor engagement
- Diversity, equity, inclusion, and accessibility
- Benefits to the surrounding community
- Quality jobs and workforce development
- Furthering the Justice40 Initiative

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

The Inflation Reduction Act supports this goal by giving priority to projects that provide the **greatest benefit to the greatest number of people in nearby communities**.

Community & Labor Engagement



Diversity, Equity, Inclusion, & Accessibility



Greatest Benefit for the Greatest Number



Investing in the American Workforce



Justice40 Initiative



Community Benefit Commitments - Implementation Requirements per Phase



**CBPs are considered alongside assessments of engineering, procurement, and construction; business development and management; permitting and safety; and technical data and analysis.*

Negotiations Conducted

Go/No-Go Decisions

Get Involved

How could this project impact me?

Learn more about OCED's Community Benefits Plan Framework →

What is the Industrial Demonstrations Program?

Learn more →

Project selected

WE ARE HERE

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

Project awarded

1 ~12-18 months

2 ~2-3 years

3 ~2-4 years

4 ~2-4 years

Anticipated phases

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 project-specific briefings being held?

Learn more and register here →

How do I stay informed?

Sign up for updates →

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Community Benefit Commitments Public
Go/No-Go Decisions

Next Steps – Negotiations

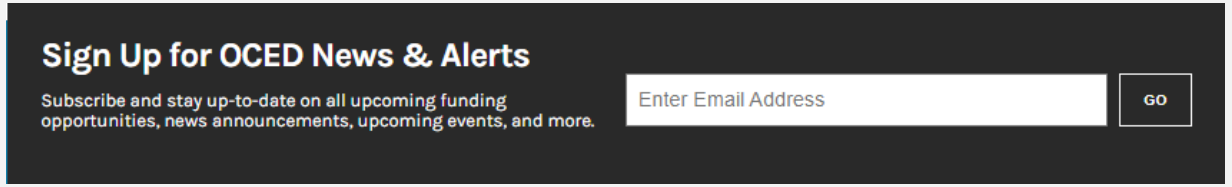
Award Negotiations: OCED will begin the negotiations process with project selectees.

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)

For more information

- **For questions regarding IDP projects email engage_industrialdemos@hq.doe.gov**
- **OCED Website & Newsletter Sign-up energy.gov/oced**
  Scroll to bottom to sign up here:



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

IDP Resources

Industrial Demonstrations

- Program Page
- Press Release
- Overview of Selected Projects
- Local Engagement Opportunities
- OCED CBP fact sheet

Additional Resources

- NEPA Resources
- Industrial Decarbonization Pathways to Commercial Liftoff Reports
- DOE Industrial Decarbonization Roadmap

Justice40 Resources

- Justice40 Initiative
- Energy Justice Dashboard (BETA)
- Climate and Economic Justice Screening Tool

Projects in the Northeastern Region

Ground Rules for Discussion

- Representatives have 5 minutes each to cover their projects
- After project overviews, we will answer questions posed in the Q&A feature, moderated by a third-party facilitator
- 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

Project Overviews

6:30 – 7:00 pm ET

- Kraft Heinz, Lowville, NY
- Unilever, Albans, VT; Waterbury, VT
- Sublime Systems, Inc., Holyoke, MA
- Skyven Technologies, TBD

Delicious Decarbonization: Integrated Electrification for KH Plants in the U.S.

The Kraft Heinz Company

Lowville, NY

- Kraft Heinz is one of the largest Food and Beverage companies in the world with an unparalleled portfolio of iconic and new brands
- **2021: Commitment to achieve Net Zero by 2050, 2021** KH was named 'Industry Mover' by S&P Global Sustainability Yearbook
- Site **built in 1970**. Home to **Philadelphia Cream Cheese Brand,** Mozzarella String Cheese also produced on site
- US Net Zero DOE project (10 sites) accounts for over **40%** of GHGs for NA Manufacturing

Technology Snapshot

- Move away from generating hot water via natural gas produced steam
- Heat pumps and heat exchangers will be used to recover waste heat from air & ammonia compressors and chillers
- Transition natural gas assets to electric units (boilers)
- Any culinary grade steam will be generated via electric boilers
- Transition all procured electricity to 100% renewable sources
- **KH cost share: 22.4 MM**; **KH share for the 10 DOE program sites : 180MM**
- 2024/2025: Eng. feasibility studies & project dev. Construction 2026-2029, Operational: 2029

Federal Cost Share

~ $21.5 MM

Value and Impacts

- BL year 2022 emissions: ~**22,580 MT CO2e**, will be reduced by **close to 100%**
- Decarbonization design/approach can be replicated at our other KH cream cheese plant
- Findings will be shared with broader F&B industry to inform net zero strategies in that sector

Carbon Emission Reductions

~100% *of CO2e emissions will be reduced (**22,580 MT CO2e**)*

Delicious Decarbonization: Integrated Electrification for KH Plants in the U.S.

Community Benefits – this project will allow us to:

The Kraft Heinz Company

- Generate **65 construction jobs and 1-2 permanent jobs**, while also enhancing workforce development and training centers.
- Create a **Community Engagement Steering Committee** at the Lowville Plant to solicit and act on feedback from community stakeholders and plant employees regarding any concerns about the project.
- Invest in and continue to support the promotion of **DEIA initiatives** for hiring and services through inclusive candidacy and job types.
- Compliment **local ESG goals**:
  - Lewis County aims to reduce GHG emissions and transition toward clean renewable energy
  - Lewis County aims to source local workforce, particularly local Veteran population at Fort Drum, for skilled positions and to support trainings/internships that lead to full-time positions
- Expand and enhance **existing community partnerships**:

	Lewis County Chamber of Commerce board member; Naturally Lewis Commission, a business development group working to improve the economy and livability; Department of Public Works; coordination with EPA for distribution of waste on local farms
	Lewis County Coop partnership for sourcing milk from local farmers; internship program with Fort Drum (US Army Base) to provide opportunity for veterans; Lewis County Health System
	Lewis County Board of Cooperative Educational Services (BOCES) partnership for skilled positions; Jefferson County Community College to utilize classrooms for employee training



Delicious Decarbonization: Integrated Electrification for KH Plants in the U.S.

Contact Information

The Kraft Heinz Company

Project Email

Julio.Quintana@KraftHeinz.com

Person of Contact

Julio Quintana-Castillo

[Other Method of Contact]

Media@KraftHeinz.com (Press contact Information)

To contact OCED about this project, please email us at

engage_industrialdemos@hq.doe.gov

Decarbonization of Unilever Ice Cream Manufacturing

Unilever, Covington TN; Sikeston MO; St. Albans VT; Waterbury, VT

Project Overview

Ice Cream Manufacturing

- With over 100 years of experience in delivering smiles, we plan to continue this for many more years to come, with our people and planet first.
- We make some of the most loved ice cream brands in the country including Ben & Jerry's, Breyers, Talenti, Magnum, Klondike, Good Humor, Popsicle and Yasso.

Technology Snapshot

- Replacing a natural gas boiler with electric boilers and industrial heat pumps using waste heat recovery across the 4 sites.
- Implement in a phased approach across the next 5 yrs

Federal Cost Share

[Up to $20.9 million]

Value and Impacts

- Create 240-300 construction jobs
- Pilot application of heat pumps in an industrial application across different geographies and loading requirements.
- Reduce emissions and create training and upskilling opportunities

Carbon Emission Reductions

Reduce emissions by more than 14,000 metric tons per year, with a pathway to address 100% of heat related emissions

Decarbonization of Unilever Ice Cream Manufacturing

Unilever, Covington TN; Sikeston MO; St. Albans VT; Waterbury, VT

Community Benefits

- Create 240-300 construction jobs and retain ~2200 permanent jobs including transitioning some existing jobs to clean energy jobs.
- Continue serving each site's local community through previous partnerships, such as Milk with Dignity (VT) and the Tipton County Manufacturing Council (TN)
- Develop and deliver training program with employees and OEMs while leveraging existing partnerships with local technical schools.
- Community engagement through local townhalls / community centers while leveraging partnerships with community leaders.
- Prioritize local small businesses/ minority owned/ women owned through bid processes
- Reduce air emissions such as particulate matter



Decarbonization of Unilever Ice Cream Manufacturing

Unilever, Covington TN; Sikeston MO; St. Albans VT; Waterbury, VT

Contact Information

Project Email

MediaRelations.USA@unilever.com.

Point of Contact

Mike Gilbert
Aarushi Chopra

To contact OCED about this project, please email us at
engage_industrialdemos@hq.doe.gov



First Commercial Electrochemical Cement Manufacturing

Sublime Systems; Holyoke, Mass.

Project Overview

First Commercial Electrochemical Cement Manufacturing Plant

- Sublime's fully electrified, true-zero cement manufacturing avoids both the fossil-fueled kilns and limestone feedstock that drive traditional cement's massive CO_2 footprint, while producing an industry-accepted cement
- The first commercial plant in Holyoke, Mass. will retire scale-up risks to enable broad market adoption of Sublime Cement™

Technology Snapshot

- This facility is planned to electrochemically produce 30,000TPY of Sublime Cement™, a drop-in replacement for carbon-intensive OPC in concrete
- The plant is built as a module of Sublime's megaton facility, the size of a typical US OPC plant
- Construction is expected to begin in early 2025 for plant commissioning in 2026

Federal Cost Share

Up to $86.9 million

Value and Impacts

- Sublime's carbon-avoidance approach ultimately represents the most cost-efficient way to mitigate CO_2 emissions from cement making
- More than 50% of the capacity from the first three years of production is already reserved, demonstrating an eager customer base for this critical low-carbon building material
- De-risking scale-up will enable broad industry transformation, enhanced domestic low-carbon supply chains, and validated manufacturing technology that can address cement emissions around the globe

Carbon Emission Reductions

Emissions avoided are equivalent to 4,300 vehicle emissions annually

First Commercial Electrochemical Cement Manufacturing

Sublime Systems; Holyoke, Mass.

Community Benefits

- We are adding **hundreds** of construction jobs and **70-90** permanent manufacturing in this former paper manufacturing hub
- Our strategic partnership with USW supports future plant employees' right to **unionize** while training the needed workforce
- We are partnering with the Smithsonian on **STEM programming** to support **public educational goals** of the surrounding Pioneer Valley community (incl. Holyoke, Chicopee, Springfield)
- Our electrochemical manufacturing **avoids** the **harmful fossil-fuel pollutants** from traditional cement kilns, thus bringing strong manufacturing **job growth** to the region with the smallest possible **environmental health impact**

Icon courtesy of flaticon.com



Image Credit: Sublime Systems
(Holyoke site; smokestack will be demolished before construction)

First Commercial Electrochemical Cement Manufacturing

Sublime Systems; Holyoke, Mass.

Contact Information

Project Email

Holyoke@sublime-systems.com

Person of Contact

Patrick Beaudry, Project Development Manager
Patrick@sublime-systems.com

Website

Sublime-systems.com

To contact OCED about this project, please email us at
engage_industrialdemos@hq.doe.gov



Image Credit: Sublime Systems

STEAM-GENERATING HEAT PUMPS FOR CROSS-SECTOR DEEP DECARBONIZATION

Skyven Technologies, Inc. / Buffalo, NY and others

Project Overview

About Skyven

- Skyven is an Energy-as-a-Service company pioneering our Skyven Arcturus steam-generating heat pump (SGHP) technology at manufacturing facilities across the US

Technology Snapshot

- Electrifies steam production to reduce dependency on natural gas boilers
- Generates boiler-quality steam at temperatures up to 420°F
- Multi-site portfolio designed to maximize environmental and community benefits
- Projects kick off in 2024 and will be operational and reducing emissions by 2028

Federal Cost Share

Up to $145 million

Value and Impacts

- **Cross-cutting:** Portfolio contains large steam users in chemicals, pulp and paper, and food and beverage
- **Financially attractive:** High efficiency enables production of steam at lower costs than natural gas
- **Ready for market liftoff:** Commitments from manufacturers representing over $1 billion in potential projects

Carbon Emission Reductions

Avoiding 400,000 metric tons per year, equal to emissions from 95,000 cars

STEAM-GENERATING HEAT PUMPS FOR CROSS-SECTOR DEEP DECARBONIZATION

Skyven Technologies, Inc. / Buffalo, NY and others

Community Benefits

- **Improves air quality:** Reduces emissions of health-harming pollutants like SOx, NOx, CO, particulate matter, and volatile organic compounds
- **Develops workforce:** Creates more than 500 good-paying jobs across the US to develop a diverse and skilled workforce for industrial heat pumps
- **Engages key stakeholders:** Promotes two-way engagement through town halls, online surveys, and Community and Labor Agreements
- **Promotes DEIA:** Incorporates DEIA into all hiring and recruitment practices, including selection of local contractors
- **Provides greatest benefit:** Impacts more than 330,000 community members living within a 3-mile radius of project sites
- **Educates communities:** Transfers knowledge through publication of case studies, lessons learned documentation, and emissions reduction reports



Image Credit: Skyven Technologies

STEAM-GENERATING HEAT PUMPS FOR CROSS-SECTOR DEEP DECARBONIZATION

Skyven Technologies, Inc.

Contact Information

Project Contact

Dr. Juliette Strasser, Corporate and Technical Communications
juliette.strasser@skyven.co

Press and Marketing Inquiries

Chris Barnhill, Director of Marketing
chris.barnhill@skyven.co

To contact OCED about this project, please email us at
engage_industrialdemos@hq.doe.gov

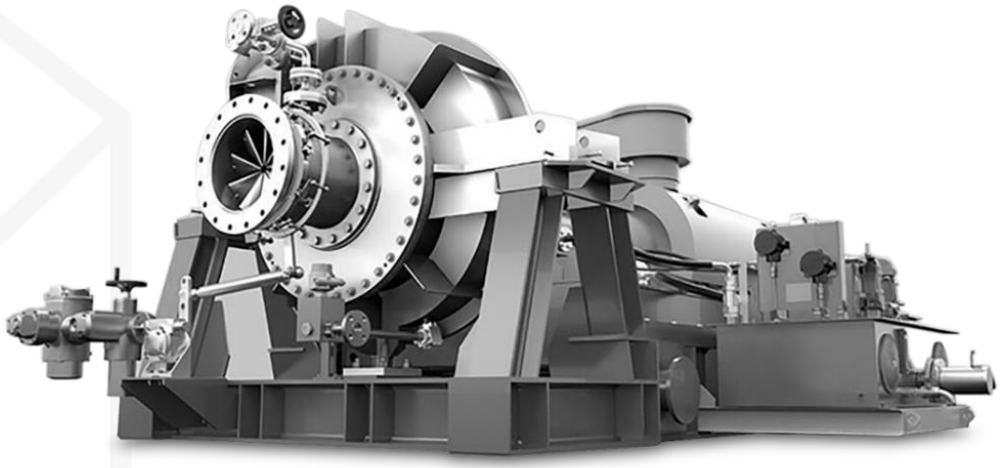


Image Credit: Skyven Technologies

Question & Answer

7:00 – 7:30 pm ET

Thank you!



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For more information; please visit energy.gov/OCED