

# The Industrial Demonstrations Program is Essential for American Competitiveness

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**SUMMARY:** The [Industrial Demonstrations Program](#) (IDP) supports **29 first-of-a-kind projects** that are accelerating the adoption of **new, more competitive technologies** in cement, iron & steel, aluminum, chemicals, and other sectors. Many U.S. plants are decades old and do not have the advanced processes necessary to compete with newer foreign facilities. The IDP is a key step to transform our industrial facilities, strengthen national security, and bring **over \$14 billion in private investment** to communities in over 20 states.

## Aging U.S. industrial facilities need to modernize to stay competitive

A major roadblock to the U.S. industrial sector's competitiveness is a reliance on older facilities that are based on decades-old technologies<sup>1</sup>. Too often, new industrial technologies are developed in our National Labs and universities but then considered too high-risk and expensive for incumbent industry to (1) invest in and (2) retrofit their facilities to deploy these technologies.<sup>2</sup> Instead, these technologies are sometimes adopted by overseas competitors, leaving the U.S. behind.<sup>3</sup>

## The IDP will help bring innovative manufacturing technologies to the United States

The IDP provides \$6 billion in federal funding to support U.S. industrial firms willing to be first-movers in eight industrial focus areas: aluminum; chemicals & refining; concrete & cement; food & beverage; glass; iron & steel; process heat; and pulp & paper (Table 1). The firms will provide \$14 billion in private investment, making the federal share about 30%. These projects advance efficiency, reduce industrial pollution, and keep our domestic industrial facilities competitive with companies around the world given emerging regulations like the EU's emissions-based trade adjustment<sup>4</sup> and corporate preference for lower-emission products.

Foreign companies are investing in many of these technologies and often are ahead of the United States<sup>5</sup>—the IDP helps American firms compete. Critically, these selected industrial facilities won't exist in a vacuum. The materials these sites produce are part of a supply chain that builds our country's roads and bridges, buildings, electrical grid, cars, and other essentials of daily life.

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<sup>1</sup> The U.S. has some of the oldest steel facilities in the world. <https://www.iea.org/data-and-statistics/charts/age-profile-of-global-production-capacity-for-the-steel-sector-blast-furnaces-and-dri-furnaces>

<sup>2</sup> The so-called "Valley of Death" to bring technology to market. <https://www.energy.gov/eere/buildings/technology-market>

<sup>3</sup> For example, Europe's chemical sector is pursuing a variety of new technologies: <https://cefic.org/low-carbon-projects-map/>

<sup>4</sup> The EU's Carbon Border Adjustment Mechanism (CBAM) currently applies to cement, iron and steel, aluminum, fertilizers, electricity, and hydrogen. [https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism\\_en](https://taxation-customs.ec.europa.eu/carbon-border-adjustment-mechanism_en)

<sup>5</sup> For example, the E.U. has many electric process heat technologies installed across industrial subsectors: <https://waermepumpe-izw.de/karte-europa>

Initially, companies proposed 411 projects to the IDP, representing \$100 billion in private cost share.<sup>6</sup> The program's oversubscription indicates the challenges of deploying these new technologies, illustrating why the Department of Energy's industrial programs —like the IDP—are so important.

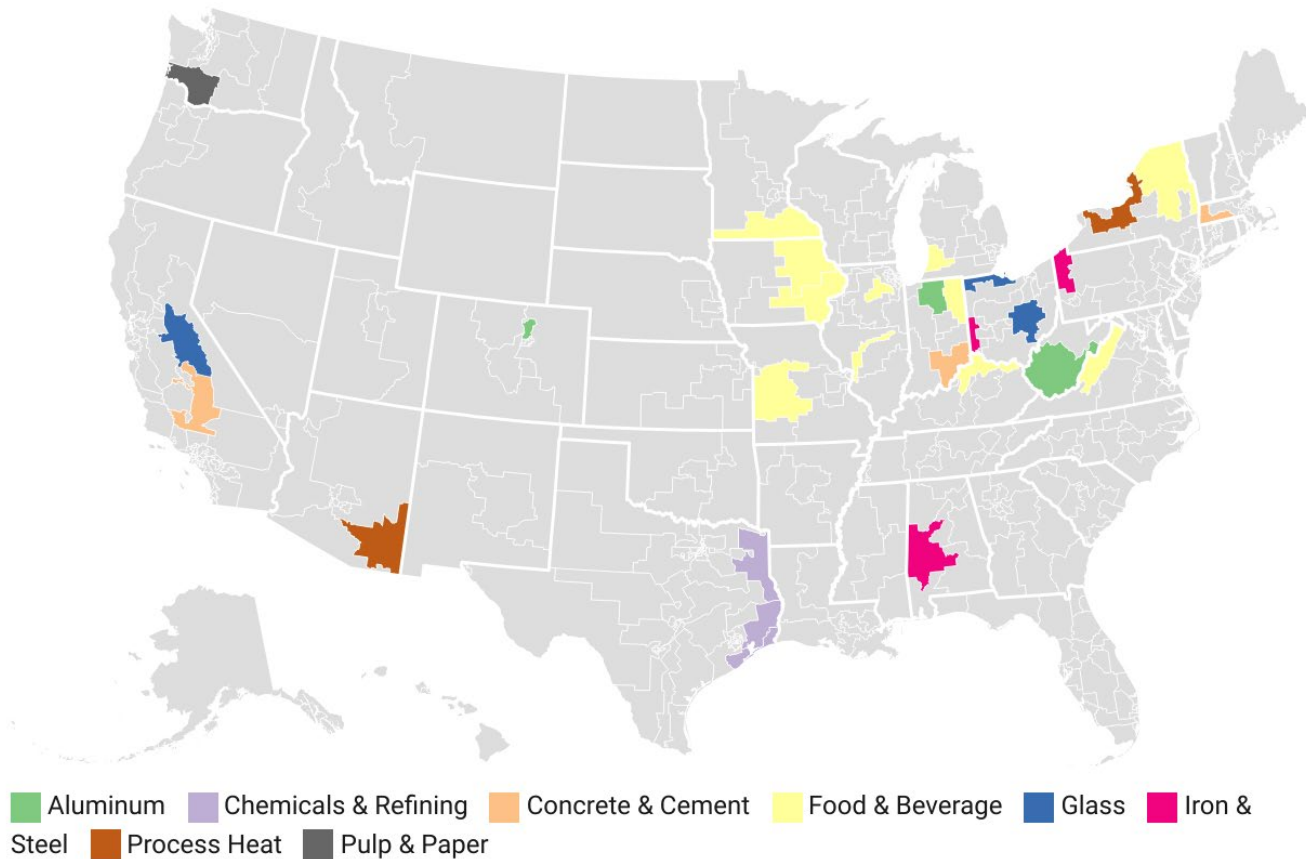
**Table 1. Technologies currently under development through the IDP**

Sector	Technology
Aluminum	Clean aluminum smelting, advanced scrap recycling, new and improved process efficiencies, zero-waste salt slag recycling
Chemicals & Refining	Carbon capture, utilization, and storage (CCUS), thermal batteries, chemical recycling, hydrogen-fired process heat, e-methanol production, alternative feedstocks
Concrete & Cement	Limestone calcined clay cement, biomass as fuel, carbon sequestration, electrochemical cement production, calcium silicate rocks, and alternative production methods
Food & Beverage	Industrial heat pumps, electric heaters and boilers, thermal batteries, new and improved process efficiencies
Glass	Hybrid electric furnaces, new and improved process efficiencies
Iron & Steel	Induction melting furnaces, first-of-its-kind iron ore briquette production, hydrogen-ready direct reduced iron (DRI) plants
Process Heat	Energy storage, heat-as-a-service, electric boilers
Pulp & Paper	Advanced separation membranes

<sup>6</sup> OCED, Industrial Demonstrations Program Update. [https://netl.doe.gov/sites/default/files/netl-file/23CLD\\_Leong.pdf](https://netl.doe.gov/sites/default/files/netl-file/23CLD_Leong.pdf)

## The IDP brings jobs to American communities

The IDP awardees are spread across the country in 20 states, with a few still determining their final location. In total, the projects plan to provide thousands of well-paying jobs, help rebuild communities that were left behind by industrial offshoring in the past decades and position these updated facilities to operate for the decades to come.<sup>7</sup>



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*Figure 1. Congressional Districts hosting IDP projects. Awarded projects without an exact location are not included in this map. Of those projects, Dow, Orsted, Technip Energies, and Vale USA have all indicated that their projects will be located on the Gulf Coast. Century Aluminum and Brimstone have not yet indicated where their projects will be located.*

**For more information contact:** Alexander Ratner ([aratner@aceee.org](mailto:aratner@aceee.org)) and Archie Fraser ([afraser@aceee.org](mailto:afraser@aceee.org))

<sup>7</sup> As part of the award announcements, each project released a factsheet detailing expected job creation and community impact.

# Appendix

## Awarded IDP Project List

The listed award amounts are for the full federal award, which may be split in cases where the project takes place in multiple locations, as in the case of Kraft Heinz. In addition, the total capital investment of each project is significantly greater than the federal share. Over \$14 billion in private sector investment is paired with the \$6 billion in total federal funding. Project specifics, including location, could change as the program is implemented. Job creation estimates are those publicly shared in DOE-released project factsheets.

Location	Project	Sector	Awardee	Award (in millions)	Job Creation	Demonstration Technology
AL-07	Induction Melting Upgrade	Iron & Steel	AMERICAN Cast Iron Pipe Company	75	80–100 permanent	Induction heating
AL-07	Iron Electric Induction Conversion	Iron & Steel	United States Pipe and Foundry Company	75.5	220 construction, up-skilling 36	Induction heating
AZ-06	Vikrell Electric Boiler & Microgrid System	Process Heat	Kohler Co.	51.2	Not available	Electric boilers, microgrid
CA-05	Hybrid Electric Glass Furnace Project	Glass	Gallo Glass Company	75	Not available	Hybrid-electric furnace
CA-20	Lebec Net Zero Cement Plant Project	Concrete & Cement	National Cement Company of California, Inc.	500	20–25 permanent	Low-carbon cement, biomass, carbon sequestration
CO-08	Nexcast: Next Generation Aluminum Mini Mill	Aluminum	Golden Aluminum	22.3	Not available	Nexcast aluminum production
Gulf Coast	Novel CO2 Utilization for Electric Vehicle Battery Chemical Production	Chemicals & Refining	Dow	95	50 permanent, 600 construction	Carbon capture and utilization, batteries
Gulf Coast	Star e-Methanol	Chemicals & Refining	Orsted P2X US Holding LLC	100	50 permanent, 300 construction	Carbon capture and utilization, e-methanol
Gulf Coast	Sustainable Ethylene from CO2 Utilization with Renewable Energy	Chemicals & Refining	Technip Energies USA, Inc.	200	40 permanent, 200 construction	Carbon capture and utilization
Gulf Coast	Low-Emissions, Cold-Agglomerated Iron Ore Briquette Production	Iron & Steel	Vale USA	282.9	150 permanent, several hundred construction	First-of-its-kind iron ore briquette production

Location	Project	Sector	Awardee	Award (in millions)	Job Creation	Demonstration Technology
IA-01	Delicious Decarbonization Through Integrated Electrification and Energy Storage	Food & Beverage	Kraft Heinz	170.9	Not available	Heat pumps, electric heaters, and electric boilers
IA-02	Delicious Decarbonization Through Integrated Electrification and Energy Storage	Food & Beverage	Kraft Heinz	170.9	Not available	Heat pumps, electric heaters, and electric boilers
IL-13	Delicious Decarbonization Through Integrated Electrification and Energy Storage	Food & Beverage	Kraft Heinz	170.9	Not available	Heat pumps, electric heaters, and electric boilers
IL-14	Heat Batteries for Deep Decarbonization of the Beverage Industry	Food & Beverage	Diageo Americas Supply, Inc.	75	100 construction	Heat batteries, electric boilers
IN-02	Zero Waste Advanced Aluminum Recycling	Aluminum	Real Alloy Recycling	67.3	9 permanent, 100 construction	Zero-waste salt slag recycling facility
IN-03	Delicious Decarbonization Through Integrated Electrification and Energy Storage	Food & Beverage	Kraft Heinz	170.9	Not available	Heat pumps, electric heaters, and electric boilers
IN-09	Mitchell Cement Plant Decarbonization Project	Concrete & Cement	Heidelberg Materials US, Inc.	500	20–25 permanent, 1,000 construction	Carbon capture and sequestration
KY-04	Advanced Copper Recycling Facility	Aluminum	Wieland North America Recycling	270	130 permanent	Copper scrap metal processing
KY-04	Heat Batteries for Deep Decarbonization of the Beverage Industry	Food & Beverage	Diageo Americas Supply, Inc.	75	100 construction	Heat batteries, electric boilers
MA-01	First Commercial Electrochemical Cement Manufacturing	Concrete & Cement	Sublime Systems, Inc.	86.9	70–90 permanent	Electrochemical cement
MI-04	Delicious Decarbonization Through Integrated Electrification and Energy Storage	Food & Beverage	Kraft Heinz	170.9	Not available	Heat pumps, electric heaters, and electric boilers

Location	Project	Sector	Awardee	Award (in millions)	Job Creation	Demonstration Technology
MN-01	Delicious Decarbonization Through Integrated Electrification and Energy Storage	Food & Beverage	Kraft Heinz	170.9	Not available	Heat pumps, electric heaters, and electric boilers
MO-04	Delicious Decarbonization Through Integrated Electrification and Energy Storage	Food & Beverage	Kraft Heinz	170.9	Not available	Heat pumps, electric heaters, and electric boilers
NY-21	Delicious Decarbonization Through Integrated Electrification and Energy Storage	Food & Beverage	Kraft Heinz	170.9	Not available	Heat pumps, electric heaters, and electric boilers
NY-24	Steam-Generating Heat Pumps for Cross-Sector Deep Decarbonization	Process Heat	Skyven	145	Not available	Heat-as-a-service
OH-08	Hydrogen-Ready Direct Reduced Iron Plant and Electric Melting Furnace Installation	Iron & Steel	Cleveland-Cliffs Steel Corporation	500	170 permanent, 2,500 existing, 1,200 construction	Hydrogen direct reduction iron (DRI)
OH-09	Delicious Decarbonization Through Integrated Electrification and Energy Storage	Food & Beverage	Kraft Heinz	170.9	Not available	Heat pumps, electric heaters, and electric boilers
OH-09	Flexible Fuel Electric Hybrid Glass Furnace Demonstration	Glass	Libbey Glass	45.1	268 construction	Hybrid-electric furnace
OH-12	Glass Furnace Decarbonization Technology	Glass	O-I Glass, INC	56.6	250–300 construction	Advanced glass furnace
PA-16	Steel Slab Electrified Induction Reheat Furnace Upgrade	Iron & Steel	Cleveland-Cliffs Steel Corporation	75	1,000 existing at Butler Works, 160 existing at Zanesville, 200 construction	Induction heating
TX-01	Polyethylene Terephthalate Recycling Decarbonization Project	Chemicals & Refining	Eastman Chemical Company	375	200 permanent, 1,000 construction	Advanced recycling
TX-14	Syngas Production from Recycled Chemical Byproduct Streams	Chemicals & Refining	BASF Corporation	75	Not available	Advanced recycling

Location	Project	Sector	Awardee	Award (in millions)	Job Creation	Demonstration Technology
TX-36	Baytown Olefins Plant Carbon Reduction Project	Chemicals & Refining	ExxonMobil Corporation	331.9	300 construction, up-skilling 140	Hydrogen-fired heating
VA-06	Calcined Clay Production for Limestone Calcined Clay Cement	Concrete & Cement	Roanoke Cement Company, LLC	61.7	25 permanent, 115 construction	Limestone calcined clay cement
VA-06	Delicious Decarbonization Through Integrated Electrification and Energy Storage	Food & Beverage	Kraft Heinz	170.9	Not available	Heat pumps, electric heaters, and electric boilers
WA-03	Decarbonization of Black Liquor Concentration through Energy Efficient Membrane Separation	Pulp & Paper	Nippon Dynawave Packaging Co. LLC	46.6	Not available	Energy efficient membrane separation
WV-01	Low Carbon SmartMelt Furnace Conversion	Aluminum	Constellium	75	Not available	Zero carbon aluminum casting center
TBD	Green Aluminum Smelter	Aluminum	Century	500	1,000 permanent, 5,500 construction	Clean aluminum smelter
TBD	Deeply Decarbonized Cement	Concrete & Cement	Brimstone	189	100 permanent, 450 construction	Calcium silicate rocks and alternative industrial production methods