

U.S. DEPARTMENT OF
ENERGY

Office of
ENERGY EFFICIENCY &
RENEWABLE ENERGY

Industrial Decarbonization Technical Assistance

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Industrial Efficiency and Decarbonization Office



DOE Priorities: Catalyze Economy-Wide Decarbonization

BIDEN ADMINISTRATION CLIMATE GOALS

A carbon pollution-free power sector by 2035

Net-zero emissions by 2050



Make basic and applied research breakthroughs



Turn that research into deployable technologies

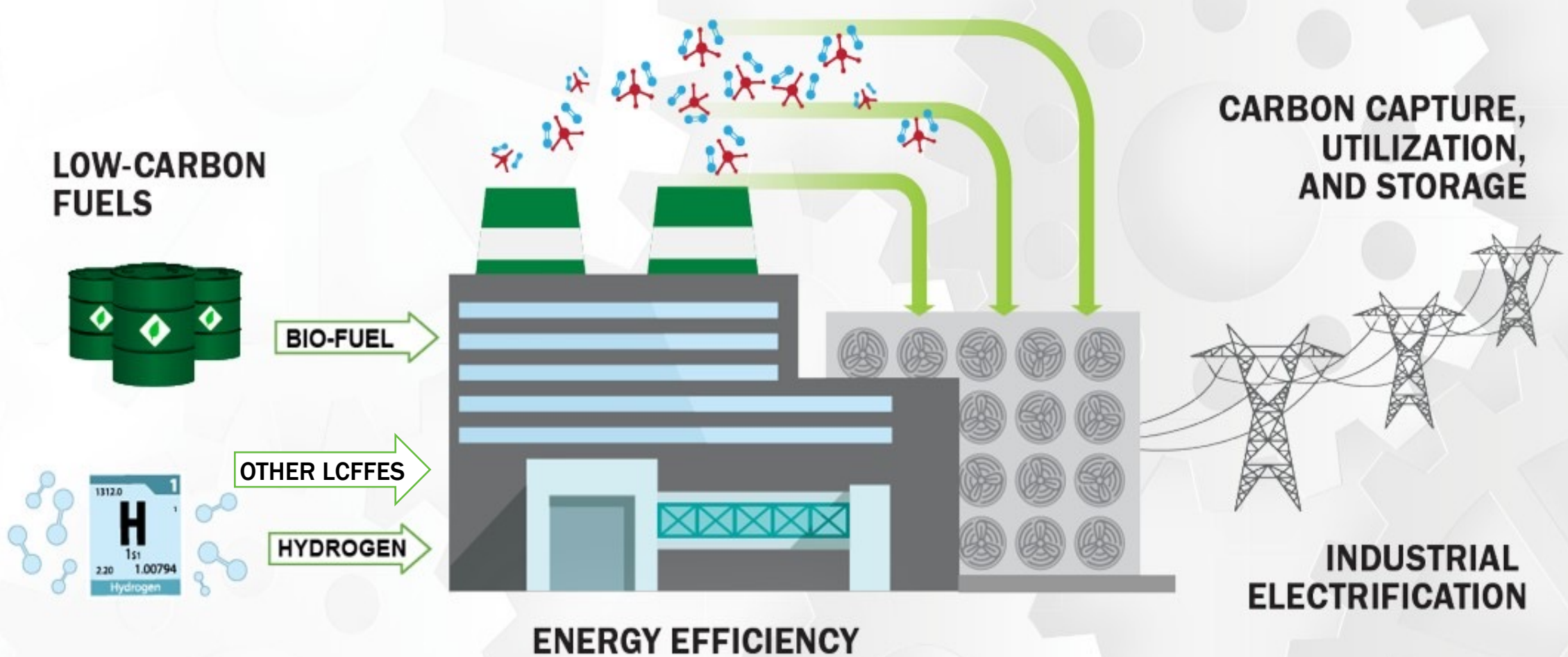


Catalyze deployment of clean energy and decarbonization technologies

- **CREATE GOOD-PAYING JOBS**
associated with the fast-growing global market for products that reduce carbon emissions
- **PURSUE ENVIRONMENTAL AND ENERGY JUSTICE**
and target disadvantaged communities for new clean energy investments, jobs, and businesses
- **COLLABORATE ROBUSTLY**
across the federal government, the fifty states, and the private sector

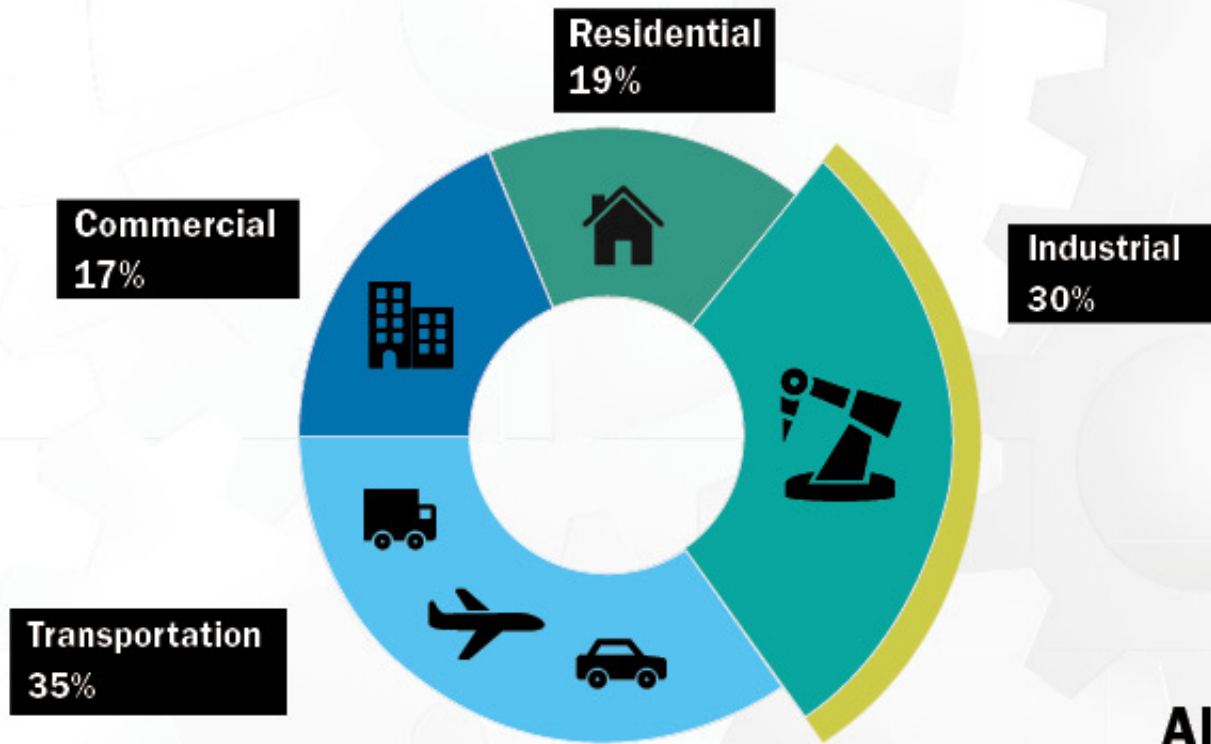
Recent Release: Industrial Decarbonization Roadmap

Four Main Strategies to Decarbonize the Manufacturing Sector

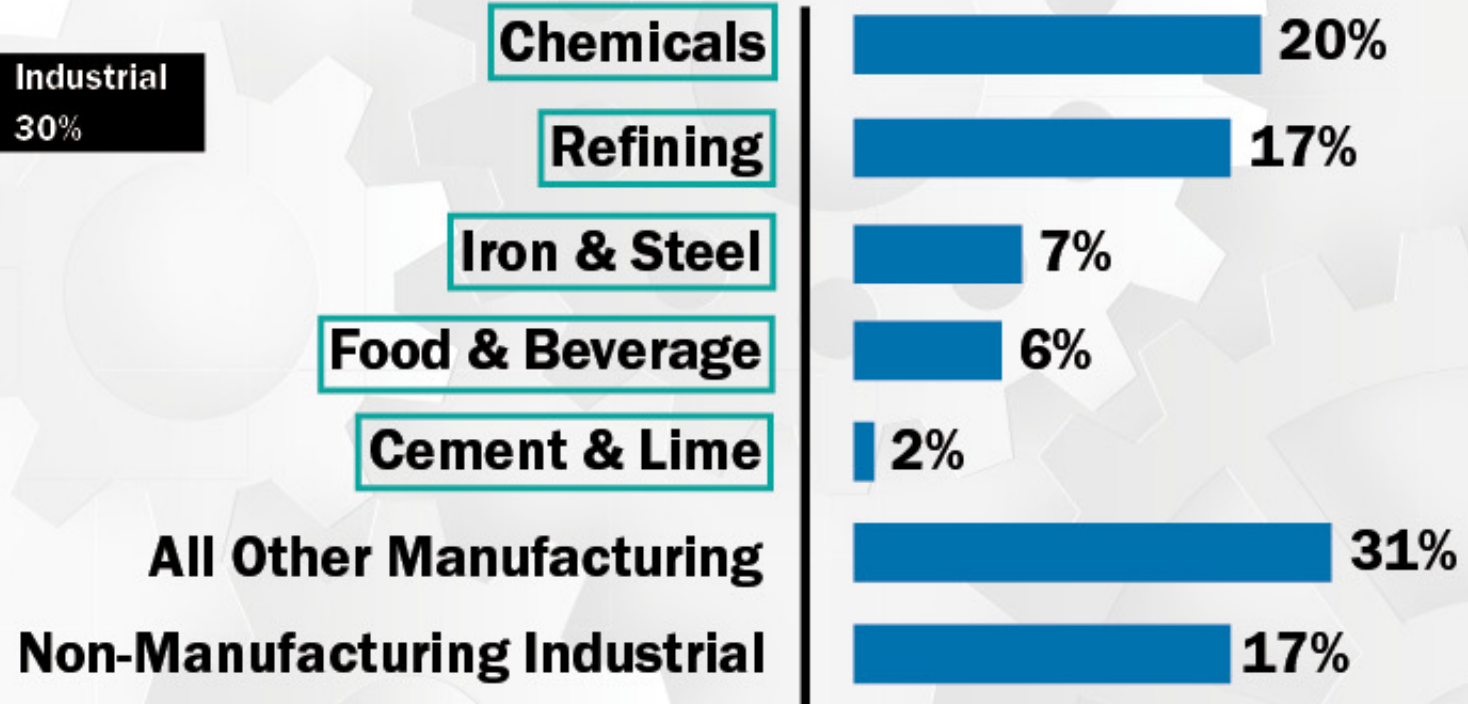


<https://www.energy.gov/eere/doe-industrial-decarbonization-roadmap>

U.S. PRIMARY ENERGY-RELATED CO2 EMISSIONS BY ECONOMIC SECTOR

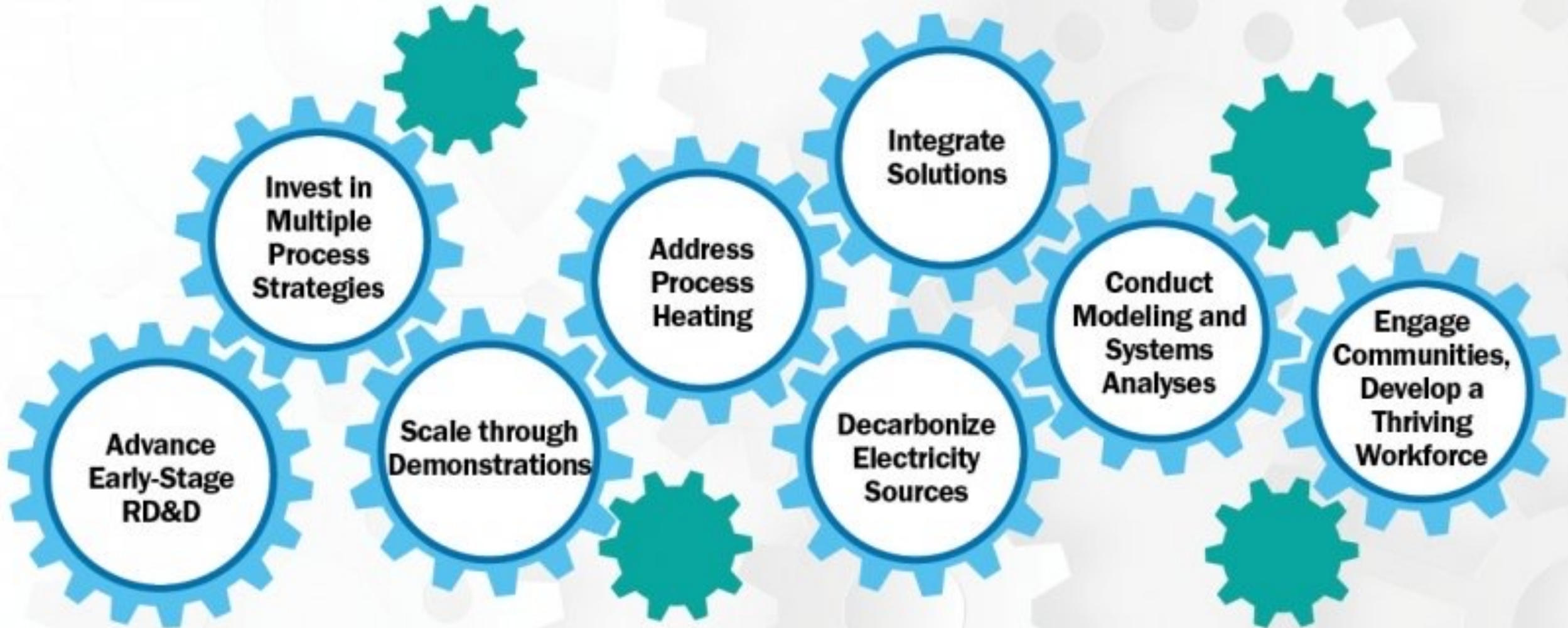


PERCENT OF INDUSTRIAL MMT CO2



* Non-Manufacturing Industrial
(Agriculture, mining and construction)

KEY RECOMMENDATIONS FROM THE INDUSTRIAL DECARBONIZATION ROADMAP



\$104M Industrial Efficiency and Decarbonization FOA

- Incorporates topics and recommendations identified in the roadmap and from other stakeholder engagement activities, applying the four industrial decarbonization pathways to energy-intensive industries where decarbonization technologies could have the greatest impact.
- Concept papers due on October 12, 2022; full applications are due December 20, 2022, by 5:00pm ET.
- Learn more and share:
<https://www.energy.gov/eere/amo/industrial-efficiency-and-decarbonization-funding-opportunity-announcement>

FOA Topics

- Decarbonizing Chemicals
- Decarbonizing Iron & Steel
- Decarbonizing Food and Beverage Products
- Decarbonizing Cement and Concrete
- Decarbonizing Paper and Forest Products
- Cross-sector Decarbonization Technologies

Clean Energy Manufacturing Innovation Institutes



Clean Energy Smart Manufacturing Innovation Institute (CESMII)

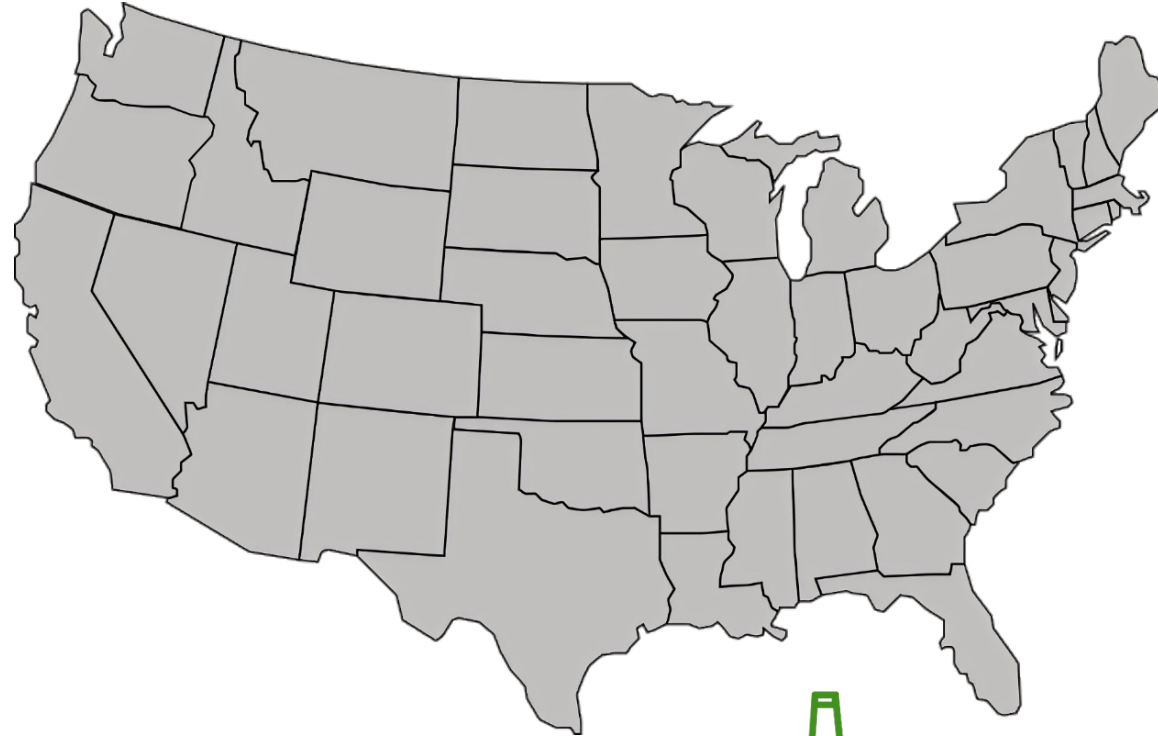


Institute for Advanced Composites Manufacturing Innovation (IACMI)

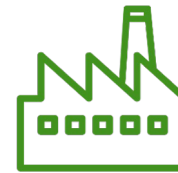


The Rapid Advancement in Process Intensification Deployment (RAPID) Institute

Part of  Manufacturing USA[®] network



AMO is launching a 7th institute focused on



Industrial Electrification



Reducing Embodied Energy and Decreasing Emissions (REMADE)



Cybersecurity Manufacturing Innovation Institute (CYMANII)



AMO Technical Partnerships Programs & Resources

Direct engagement with industry to drive the widespread adoption of proven technologies and practices to reduce energy use and GHG emissions in the manufacturing sector



Support the deployment of energy efficiency and decarbonization technologies and practices



Foster feedback from stakeholders on critical technology challenges that may be addressed through RD&D

Our no-cost tools and programs for energy efficiency, competitiveness, & sustainability:



- Expert technical assistance and trainings
- Facilitated peer-to-peer knowledge sharing
- National recognition for achievements



- No-cost energy assessments for small- to medium-sized manufacturers
- Assessments typically identify >\$130,000 in potential annual savings opportunities



- Tools, guidance and recognition for facilities that implement an ISO 50001-based energy management system
- No-cost, self-paced, audit-free



- Advanced technical assistance for CHP, microgrids, and district energy
- No-cost resources and training webinars
- Packaged CHP system eCatalog

NO-COST TOOLS & SOFTWARE

 MEASUR Software Suite

 50001 Ready Navigator Tool

 REopt Web Tool

 Financing Navigator

 Low Carbon Action Plan Tool

 Carbon Inventory Calculator

 Electrification Impact Calculator

Adapting to Support Partners' Decarbonization Goals

Leverage AMO's CHP program model and expand to include a broad range of clean on-site energy and storage technologies to meet decarbonization goals.

solar PV | wind | solar thermal | bioenergy | geothermal heat pumps | battery storage thermal storage | renewable/net zero CHP | waste heat to power | district energy technologies

Near-Term Goals

- Decrease emissions as quickly as possible
- Minimize the use of fossil fuels
- Complement increased use of wind, solar, and storage
- Provide long-duration resilience

Long-Term Goals

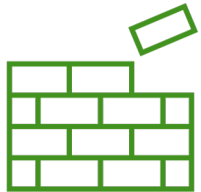
- Use renewable fuels in high-impact applications (hard to decarbonize industries, critical facilities that need long duration resilience and operational reliability), most efficiently
- Support a resilient, renewable energy sector and economy

Onsite Energy Program

Future Focus Areas

- Support deployment of onsite renewable energy and storage technologies
- Assist industry in identifying cost-effective options for achieving RE targets
- Highlight pathways for accelerating the integration of onsite technologies
- Reduce GHG emissions at industrial facilities while prioritizing disadvantaged communities

Key Planning Considerations



Build on existing program models to maintain key components while delivering new, expanded solutions



Ensure resources and technical support are designed to have impact and meet stakeholder needs



Design activities to fill gaps and avoid duplicating what the market is already adequately addressing

Bipartisan Infrastructure Law: Key Manufacturing Provisions

40521 Industrial Research & Assessment Centers

Expand the reach and impacts of the Industrial Assessment Centers:

- Expand IACs to community colleges, technical schools, and union programs
- Create an internship/apprenticeship program
- Coordinate with critical stakeholders & resources
- Expanding activities within disadvantaged communities

A complementary grants program will provide implementation funds for small & medium manufacturers.

\$150M | \$400M (grants)

40209 Advanced Energy Mfg & Recycling Grant Program

Focus on entities in regions with coal mine or coal fired electricity unit closures to:

- Build new or expanded small-to medium-manufacturing facilities to make or recycle clean energy products
- Install energy or emissions reducing projects at existing manufacturing facilities

\$750M

40534 State Manufacturing Leadership

Financial assistance to states to establish programs that:

- Support implementation of smart manufacturing technologies in the industrial sector
- Provide access to the high-performance computing resources at the National Laboratories

\$50M

Inflation Reduction Act: Key Manufacturing Provisions

- Provides \$50 billion in tax incentives to boost domestic clean energy manufacturing of solar panels, wind turbines, batteries, and the processing of critical minerals mineral processing
- Provides an additional \$11.5 billion for industrial emissions reduction programs
- Provides \$500 million for the Defense Production Act to boost the manufacturing of energy-efficient technologies such as heat pumps.

- Clean Manufacturing Investment Tax Credit (48C) (Section 13501)
- Advanced Manufacturing Production Credit (45X) (Section 13502)
- \$5.8 billion for Advanced Industrial Facilities Deployment. (Section 50161)
- \$3 billion for LPO's Advanced Technology Vehicle Manufacturing. (Section 50142)
- \$2 billion for Domestic Manufacturing Conversion grants. (Section 50143)
- Defense Production Act (Section 30001)
- Low-Carbon Materials Investments (Sections 60116, 60503, 60504, 60505, 60506, 70006)

Looking Ahead: State Industrial Working Group

In partnership with NASEO, IEDO hopes to:

- **Enhance communication** with states, across DOE, and other federal agencies
- Support **peer exchange** and regional dialogue on key topics impacting states and manufacturers
- Highlight **best practices** across networks that address targeted needs in the industrial sector
- Identify mutual priorities areas and **enable coordination**
 - industrial decarbonization | energy intensive industries | education & workforce development
 - energy equity & justice | water and wastewater | recycling and waste management
- **Provide data, technical, and program assistance** in support of state energy plans and priorities
- **Share information** about funding, tools, resources, and engagement opportunities



Thank you!

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