

CIBO POLICY & TECHNICAL ISSUES CONFERENCE

May 14th, 2024

Arlington, VA

IEDO – Technical Assistance and Workforce Development subprogram Overview

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Industrial Efficiency and Decarbonization Office



Guiding Principles for the Industrial Efficiency and Decarbonization Office (IEDO)

IEDO works to increase energy efficiency in manufacturing to drive energy productivity, economic growth, and decarbonization

MANUFACTURING

Uses roughly 25% of the nation's primary energy



Accounts for one quarter of the U.S.'s greenhouse gas emissions



Represents nearly 80% of energy use in energy-intensive sectors



Generates 11% of the U.S. GDP and 12 million jobs



Incurs \$150 billion in energy costs annually



IEDO GOALS

- Improve the **productivity, competitiveness, energy efficiency, and security** of U.S. manufacturing
- Reduce the **life cycle energy and resource impacts** of manufactured goods
- Leverage diverse **domestic energy resources and materials** in U.S. manufacturing, while strengthening environmental stewardship
- Transition **DOE-supported innovative technologies and practices** into U.S. manufacturing capabilities
- Strengthen the **U.S. manufacturing workforce**
- Accelerate emerging and transformative technologies needed to **approach net-zero greenhouse gas emissions** in the industrial sector by 2050

IEDO Technical Partnerships Programs & Resources

Direct engagement with industry to drive the widespread adoption of proven technologies and practices to improve energy performance and reduce GHG emissions



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

IEDO offers no-cost tools/programs to improve energy efficiency, competitiveness, & sustainability:



- Expert technical assistance and training on energy efficiency
- Access to Innovation & instruments
- National recognition for achievements



- Energy efficiency + decarbonization technical assistance & training
- Facilitated peer-to-peer knowledge sharing
- National recognition for achievements



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



- Regional network of Onsite Energy Technical Assistance Partnerships (TAPs)
- Site screenings for multi-technology solutions and more advanced analysis
- Market analysis, outreach, and stakeholder engagement

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

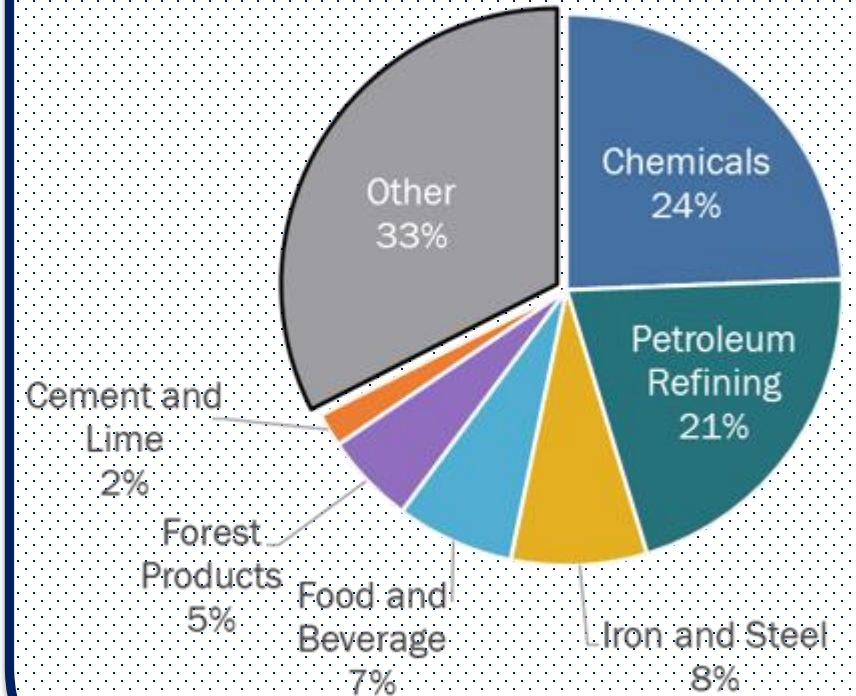
Multiplying Our Impact



Resources developed with partners

Disseminated to all of industry

US Industrial Sector
MMT CO₂ of energy related emissions annually



Analysis and Stakeholder Engagement

Better Plants & Better Climate Challenge

A leadership initiative for manufacturers and industrial organizations to set and achieve long-term energy, water, waste, and carbon reduction goals.

Resources for Better Plants partners include:

- Customized technical assistance
- Trainings
- Facilitated peer-to-peer knowledge sharing/networking
- Access to Innovation and Technology validation
- National Recognition



300+
partners

3,600+
plants

85 energy & water
goals achieved

14%
of industrial
energy use

> **\$11.8B**

> **2.4+ Quads**



Why Do Manufacturers Join?

Value = Transparency of Energy Savings & Decarbonization Reductions

Recognition

Developing Innovative, Replicable Solutions with Market Leaders

- National Recognition
- Peer to Peer Networking
- Better Building Solutions Center

Technical Assistance

Making Energy Efficient Investments Easier

- Software tools for Energy Management
- Financing Navigator
- Diagnostic Equipment Program
- Technical Publications
- Technical Webinars
- Energy Bandwidth Reports

Access to Innovation

Innovation to Drive Savings

- Technology Day Lab Visits
- Technology Validation

Workforce Development

Helping You Meet Your Challenges of Today, and Tomorrow

- In-Plant Trainings
- Virtual Trainings
- Energy & Decarbonization “Boot Camps”



50001 Ready and SEP 50001 Programs



The self-paced 50001 Ready program allows organizations to build a culture of structured energy improvement that does not require any external audits or certifications.



Facilities or organizations that achieve sustained excellence may get certified to the **Superior Energy Performance 50001™** program and receive elevated levels of DOE recognition.



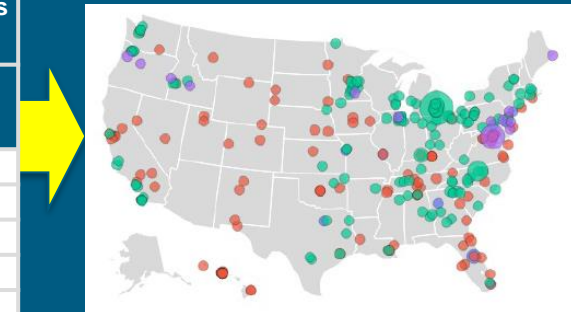
5,700+

are using DOE's 50001 Ready Navigator online tool.

<https://navigator.lbl.gov/>

50001 READY COHORTS receive 6 to 12 months of support from national ISO 50001 experts, delivered through monthly webinars, virtual one-on-one coaching sessions with each site, and peer-to-peer learning.

Office	Target	Number of Sites Engaged in Program			Participants
		Training Only	Implementation Track	Total	Total
BTO	80-120 Sites	0	12	12	19
FEMP	15-20 Sites	94	52	146	201
IEDO	50-72 Sites	7	149	152	292
SCEP	10-15 Sites	10	16	26	77
Total	145-212 Sites	111	229	336	589



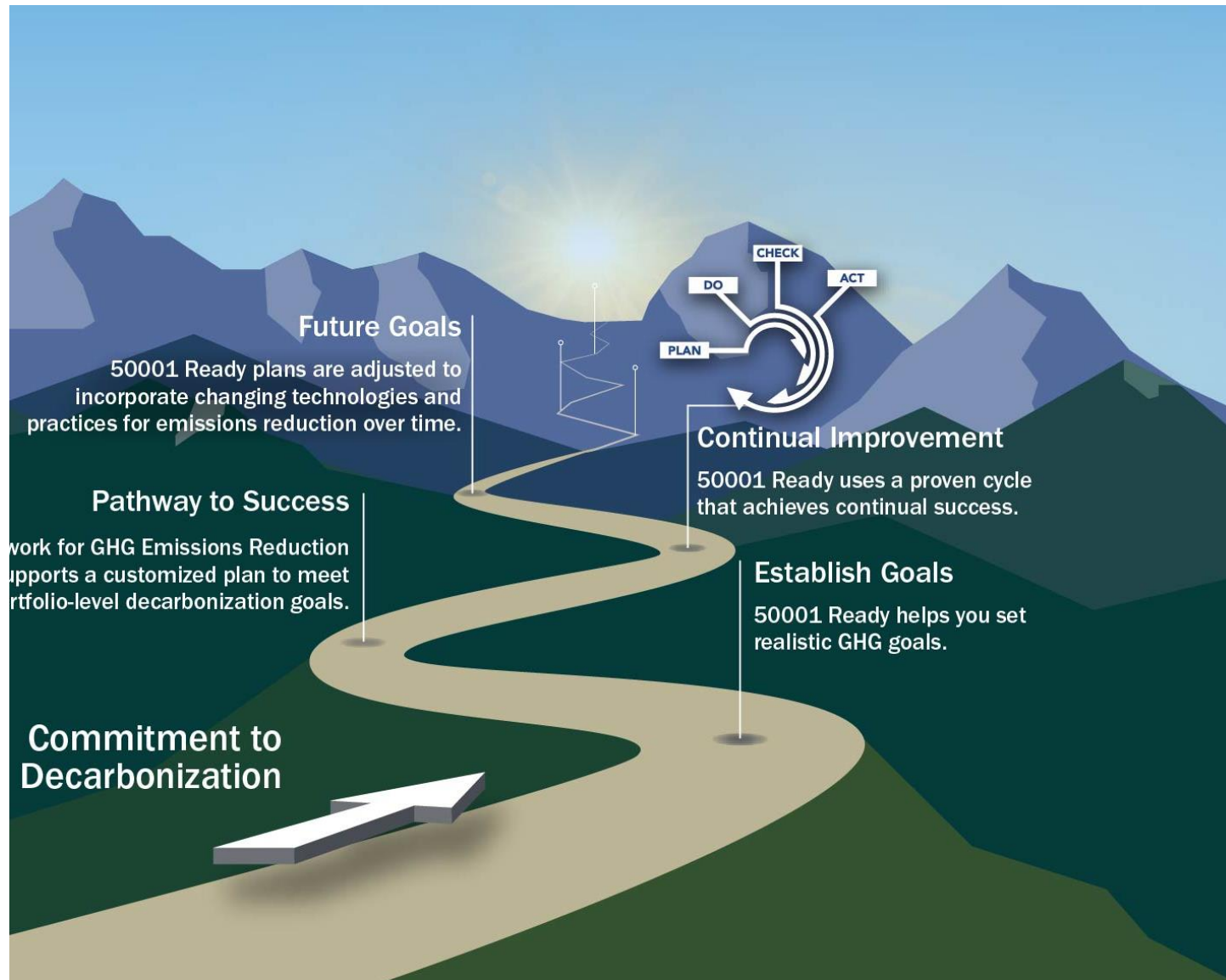
Energy Management Supports Decarbonization

ISO 50010:

- Guidance for using ISO 50001 to achieve decarbonization

ISO 50001 Prepares Users to Reduce Carbon Emissions:

- Management commitment & dedicated staff
- Data-driven approach to goal-setting, baseline creation and monitoring progress
- Identify Significant Energy Using applications
- Prevent backsliding (Operational Controls)
- Annual Management Reviews



Onsite Energy Program

The U.S. Department of Energy's (DOE) Onsite Energy Program provides technical assistance, market analysis, and best practices to help industrial facilities and other large energy users increase the adoption of onsite clean energy technologies.

battery storage | combined heat and power | district energy | geothermal | industrial heat pumps | renewable fuels | solar PV | solar thermal | thermal storage | wind



Onsite Energy Technical Assistance Partnerships (TAPs)

DOE's 10 regional Onsite Energy TAPs provide technical assistance to end users and other stakeholders about technology options for achieving clean energy objectives. Key services include:



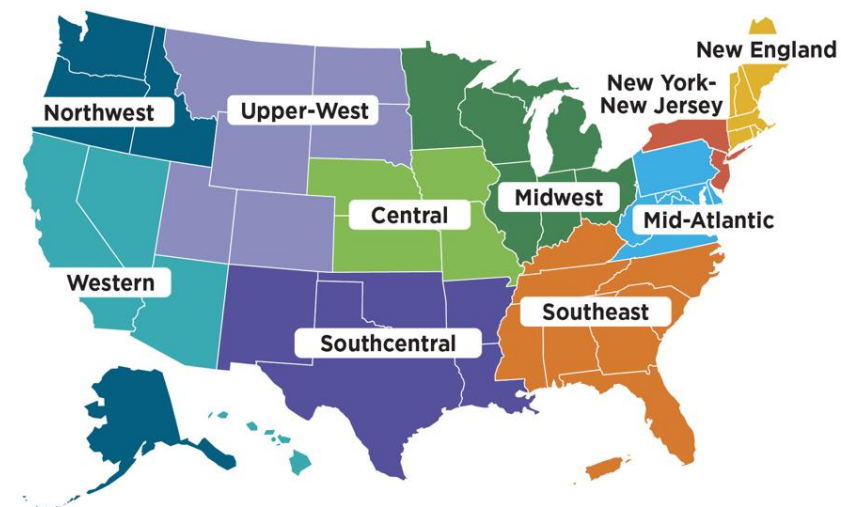
Technical Assistance: Screen sites for opportunities to implement onsite energy technologies and provide advanced services to maximize economic impact and reduce risk from initial screening to installation to operation and maintenance.



End-User Engagement: Partner with organizations representing industrial and other large energy users to advance onsite energy as a cost-effective way to transition to a clean energy economy.



Stakeholder Engagement: Engage with strategic stakeholders, including utilities and policymakers, to identify and reduce barriers to onsite energy through fact-based, unbiased education.



<https://betterbuildingsolutioncenter.energy.gov/onsite-energy/taps>

Technical Assistance: Software Tools

MEASUR Tools Suite

<https://www.energy.gov/eere/amo/measur>



[Steam/Boiler Systems](#)

[Pumping Systems](#)

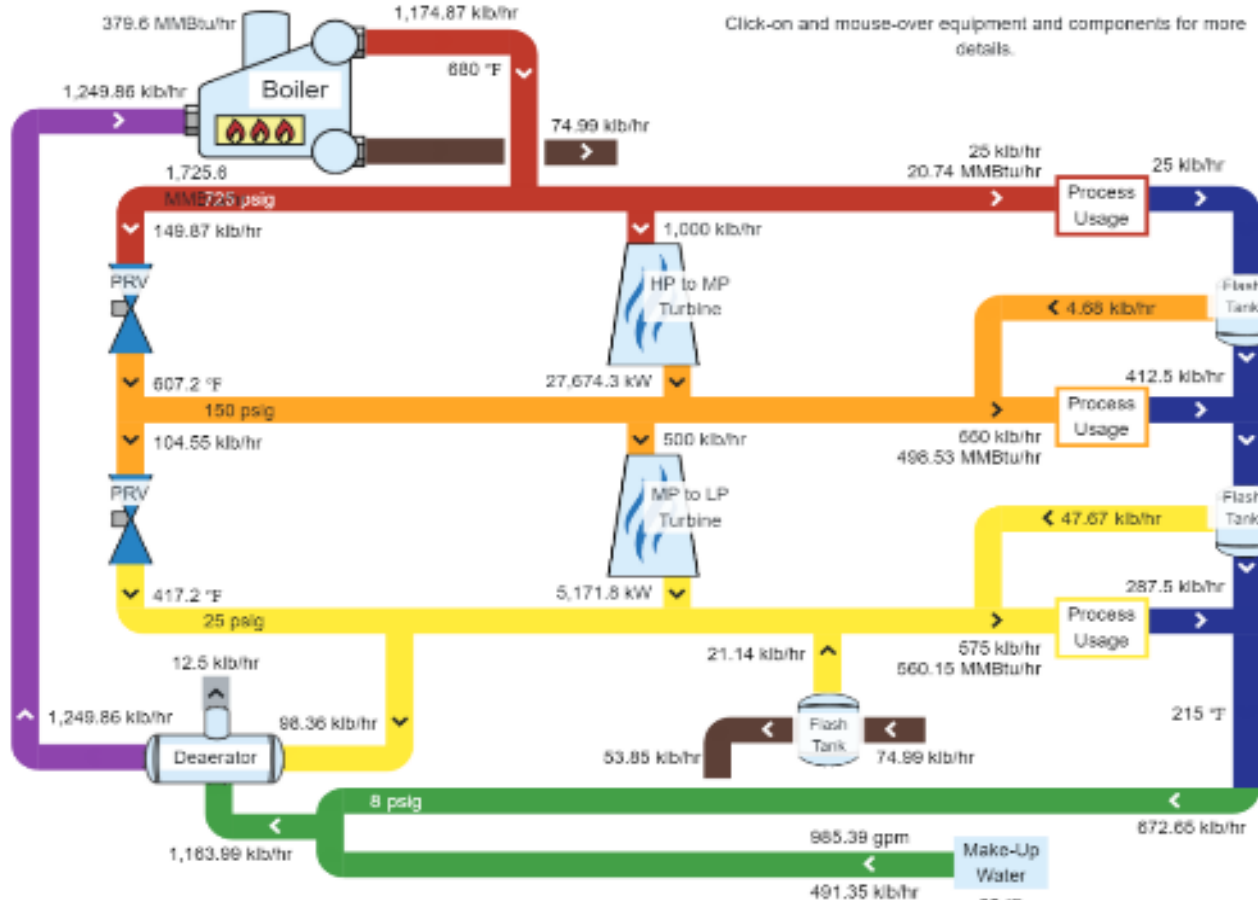
[Fan Systems](#)

[Motor Systems](#)

[Compressed Air](#)

[Process Heating/Furnace Systems](#)

[Energy Treasure Hunts](#)



Workforce Development: Resource Documents

Better Plants
U.S. DEPARTMENT OF ENERGY

Understanding Your Utility Bills:
Natural Gas

ORNL/TM-2021/1918

The cover features a close-up of a calculator and a document with handwritten notes and a pink sticky note that says "WE HAVE ALWAYS BEEN CLEAR ON OUR GOALS".

Better Plants
U.S. DEPARTMENT OF ENERGY

Plant Water Profiler: A Water Balance and True Cost of Water Calculator for Manufacturing Plants

ORNL/TM-2021/1918

The cover shows a photograph of the Oak Ridge National Laboratory building under a blue sky with clouds.

Better Plants
U.S. DEPARTMENT OF ENERGY

Practices Implemented by DOE Better Plants Program Partners to Mitigate COVID-19

ORNL/TM-2020/1777

The cover features a photograph of the Oak Ridge National Laboratory building.

Better Plants
U.S. DEPARTMENT OF ENERGY

Understanding Your Utility Bills:
Electricity

The cover features a close-up of a calculator and a document with handwritten notes and a pink sticky note that says "WE HAVE ALWAYS BEEN CLEAR ON OUR GOALS".

Better Plants
U.S. DEPARTMENT OF ENERGY

Trailblazers and Goal Achievers:
How Better Plants Partners Achieved Ambitious Energy Goals

AUGUST 2021

The cover features a photograph of a worker in a blue shirt and orange hard hat working on industrial machinery.

Better Plants
U.S. DEPARTMENT OF ENERGY

Understanding Your Utility Bills:
Water

2021

ORNL/SPR-2021/1767

The cover features a close-up of a calculator and a document with handwritten notes and a pink sticky note that says "WE HAVE ALWAYS BEEN CLEAR ON OUR GOALS".

Better Plants
U.S. DEPARTMENT OF ENERGY

Saving Energy: A QuickStart Guide for Small to Medium Manufacturers

OCTOBER 2020

ORNL/SPR-2020/1767
U.S. DEPARTMENT OF ENERGY
ENERGY

The cover features a photograph of industrial machinery with a robotic arm.

Better Plants
U.S. DEPARTMENT OF ENERGY

Energy Intensity Baseline and Tracking Guidance

2020

ORNL/SPR-2020/1566
U.S. DEPARTMENT OF ENERGY

The cover features a photograph of a yellow robotic arm in an industrial setting.

Workforce Development: In-Plant Trainings

- Teach plant workers how to assess systems, use DOE tools, and implement projects
- 200+ In-Plants, 2,800 participants since 2011
- Identified more than \$54M in energy savings
- In-Plant Trainings (INPLTs)
- Virtual trainings:

<https://bptraining.ornl.gov/>

- Pumping Systems
- Fans
- Compressed Air
- Steam
- Process Heating
- Process Cooling



In-Plant Training Topics:

- Industrial Refrigeration
- Water/Wastewater Treatment
- Energy Management
- Water Efficiency
- Energy Treasure Hunt

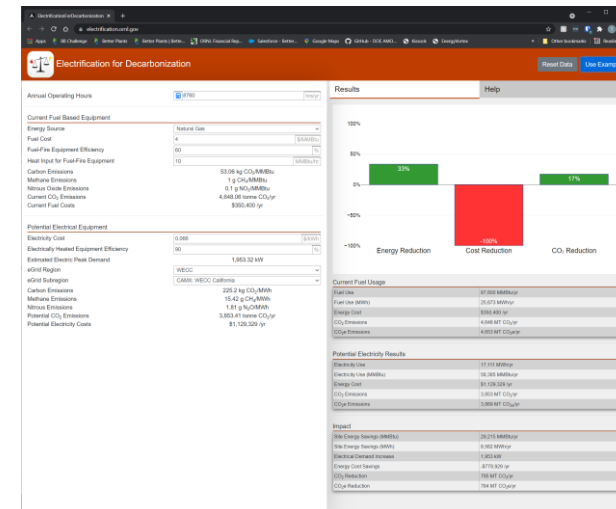
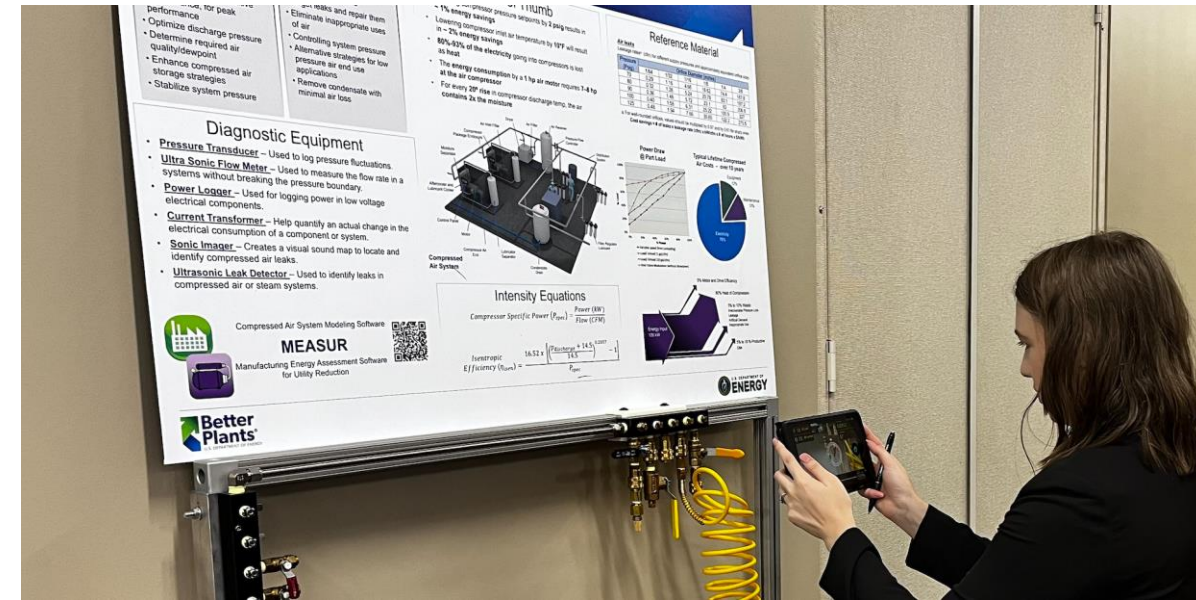
Workforce Development: Energy & Decarbonization Boot Camps

Energy Bootcamp: <https://bpebootcamp.ornl.gov/>

- Provides fundamentals on industrial systems, how to use DOE tools & diagnostic instruments
- In-Person at Oak Ridge National Laboratory
- Trainees able to use diagnostic instruments on bench models

Decarbonization Bootcamp:

- Carbon accounting basics & DOE tools
- How energy efficiency contributes
- Renewable technologies
- Low carbon fuels
- Electrification
- Carbon Capture and Storage



Access to Innovation: Technology Days



Partners visit DOE National Labs to:

- **Tour** World-Class Lab Facilities
- **View** Demonstrations of innovative Technologies
- **Hear** from Experts from the Lab and Industry
- **Learn** how to easily partner and leverage technology
- **Network** with BP partners and lab technologists

2024 at Oak Ridge, February 7 & 8



Financing: View a wide range of Financial Opportunities

Financing Navigator: <https://betterbuildingsolutioncenter.energy.gov/financing-navigator>



Connect: with Better Buildings Financial Allies

OCED Funding Opportunities:
<https://www.energy.gov/oced/industrial-demonstrations-program>

Funding & Incentives Resources Hub:
<https://betterbuildingsolutioncenter.energy.gov/funding-incentives-hub>

Industrial Technologies Funding and Technical Assistance to the EII website: <https://www.energy.gov/industrial-technologies/industrial-technologies-funding-and-technical-assistance>



Learn about 48C Tax Credits

<https://www.energy.gov/infrastructure/qualifying-advanced-energy-project-credit-48c-program>

Looking Forward

Top Priorities over next 5 years

- Expand Resources on decarbonization
- Implement new Onsite Energy Program
- Increase engagement with energy intensive manufacturers
- Upskill the manufacturing workforce
- New Resources - Non-Energy Benefits
- ★ • Become a connector for manufacturers to DOE opportunities

Areas for Further Inclusion in TAWD Programs

- Increase focus on tech-to-market activities
- Social/behavioral strategies to speed decarbonization implementation
- Strategies around equity and engaging disadvantaged communities
- Stakeholder engagement around new program activities (e.g., workshops, interviews, 1-on-1 meetings, etc.)



Thank you

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