

Energy Optimization & Rural Customers

Programs to support rural communities and customers

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Maximize what you can Manage!

1. Energy Management and Planning

2. Providing Workforce Support at a Distance

- **Situation...**
 - Most companies are self-contained and exist in the local ecosystem
 - Many are family run (and have been for a long time)
 - Many managers have learned on the job / grew with the company
 - Limited exposure to outside assistance (save requirements from govt/supplee)
 - Most managers have to wear too many hats!
 - Most managers are trying to stay in business and protect jobs

Manage Energy Like Managing Business

- Create a Vision and Plan for Energy
 - Leadership. Solutions come from identified wants or problems
 - Commitment. People follow and the actions get done
- Create a Energy Continuous Improvement Platform (similar to Kaizen/6 Sigma)
 - Data. Look at the data and find ways to save
 - Culture. Make saving part of corporate culture (job descriptions, treasure hunts)
- Use **50001 Ready** as Basis for Managing Energy
 - Available. Don't reinvent the wheel. Learn 50001 and socialize it with neighboring peers
 - Pride. Like Energy Star, get recognized for being best practice
 - Differentiate. Base on global voluntary standard that many suppliers will care about
 - Resilient. Established 50001 practice increases facility resiliency to energy disruptions
 - DIY. 50001 Ready is DIY, no cost program to implement 50001

Findings on typical US energy savings over time.

- Business-as-Usual [EIA] ~1%/yr
- Industry Leaders [EPA/DOE] ~ 2.5%/yr
- **ISO 50001 facilities** [DOE] ~**4.6%/yr**

“Not only is our ISO 50001 important to the environment, but any opportunity for us to conserve directly affects the bottom line. The money we saved, \$37 million, can be reinvested in the plant to create more jobs for the people here in Detroit.”

—Jeff Allen, **Detroit Diesel**

How 50001 Ready Works

1. Implement ISO 50001 principles

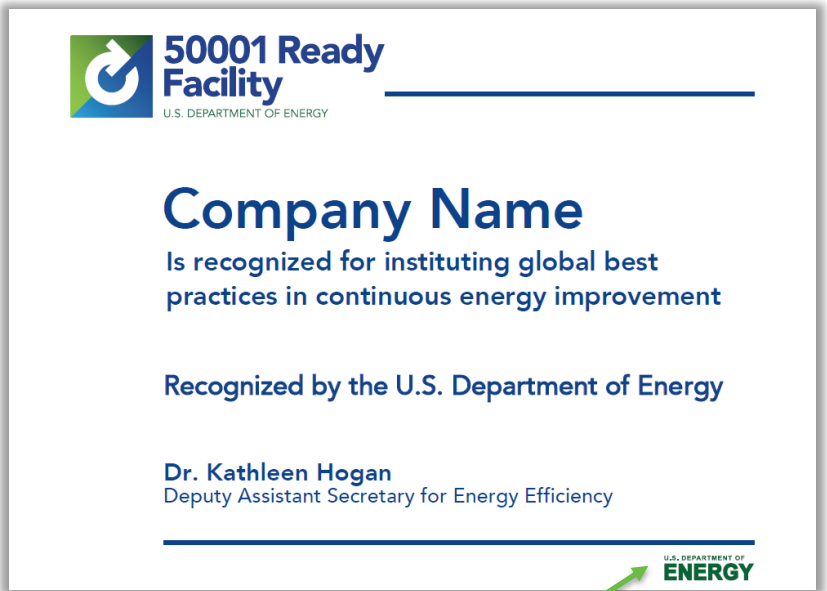
Complete 25 Tasks in US DOE's 50001 Ready Navigator free, self-guided online tool

2. Present energy performance

Submit energy performance data. May use EPA's Portfolio Manager, DOE's EnPI Lite or FEMP/OMB energy reporting data

3. Self-attest to 50001 Ready

Sign-off by management of 50001 Ready implementation and commitment



Ability for utilities, communities, states or others to co-brand!

energy.gov/50001Ready

Trained People Bring Value

1. Providing Workforce Support at a Distance

2. Energy Management and Planning

- **Situation...**
 - Most employees are locals, born and raised nearby
 - Most have high school or technical training
 - Many learn on the job in informal mentorship levels
 - Limited exposure to outside assistance (save the internet)
 - Most are asked to be experts in lots of things!

Energy System Tools Status

- Systems completed:
 - Process Heat (PHAST)
 - Pumps (PSAT)
 - Fans (FSAT)
- Under Development:
 - Steam (SSMT/SSAT)
 - Compressed Air (AirMaster+)
 - Motors (MotorMaster+) -
- <https://www.energy.gov/eere/amo/integrated-tool-suite>
- All Beta tools can be accessed:
 - <https://ornl-amo.github.io/>
- Ongoing Feedback link - <https://www.surveymonkey.com/r/DOE-AMO-TOOLS>

The screenshot shows the MEASUR web application interface. The top left corner features the U.S. Department of Energy logo and the text "Energy Efficiency & Renewable Energy". Below this is a blue "Add Assessment" button. A navigation menu on the left includes "Home", "All Assessments" (with sub-items "Example Pump", "Example Furnace", and "New Assessment = 9"), "All Calculators" (with sub-items "Motors", "Pumps", "Process Heating", "Compressed Air", and "General"), "Settings", "Tutorials", "About", "Contact", and "Acknowledgments". The version number "v0.2.7-beta" is displayed at the bottom of the menu. The main content area has a large "MEASUR" logo and a welcome message: "Welcome to the most efficient way to manage and optimize your plant's systems and equipment." Below this, it states: "Create an assessment to model your system and find opportunities for efficiency or run calculations from one of our many property and equipment calculators. Get started with one of the following options." Two curved arrows point to two main sections: "Create Assessment" (with the subtext "Model a system and explore multiple optimization scenarios.") and "Properties & Equipment Calculators" (with the subtext "Generate detailed properties and test a variety of adjustments."). Under "Create Assessment", there are two options: "Create Pump Assessment" (formerly DOE Pumping System Assessment Tool (PSAT)) and "Create Process Heating Assessment" (formerly DOE Process Heating Assessment and Survey Tool (PHAST)). Under "Properties & Equipment Calculators", there are five options: "Motors", "Pumps", "Process Heating", "Compressed Air", and "General". A "View All Your Assessments" link is located at the bottom of the "Create Assessment" section.



Integrated Energy Tool - MEASUR

- Functionalities
 - Full assessment tools and simple calculators
 - Built-in guided tutorials
 - Guided process to perform system assessment and field validation
 - Includes Novice and Expert Approaches
 - Dashboards for multi-system summary roll-ups
 - Ability to evaluate numerous “alternate scenarios”

Type	Assessments	Annual Energy Used	Annual Energy Cost
Pumps	2	1,401.60 kWh	\$77,088.00
Process Heating	1	152,076 MMBtu	\$1,216,605.51
Total	3	152,080 MMBtu	\$1,293,693.51

Metric	Baseline	Modification 2	Opportunities Modification	Opportunities Modification(1)	Change Pump type
Pump efficiency (%)	80.4	86.8	80.4	80.4	85.7
Motor rated power (hp)	200	100	200	200	100
Motor shaft power (hp)	101.2	93.8	28.9	38.5	94.9
Pump shaft power (hp)	101.2	93.8	28.9	38.5	94.9

Category	Baseline	Modification 2
Energy Input	~80	~75
Motor Losses	~5	~5
Drive Losses	~0	~0
Pump Losses	~18	~13
Useful Output	~76	~82

Other DOE Software Tools & Training

MEASUR

Energy Management & Performance Tracking

50001 Ready Navigator

Energy Footprint Tool

Automated Register of Implemented Actions

EnPI and EnPI Lite Tools

PEP (Plant Energy Profiler)

Corporate Energy Performance Tracking for Better Plants partnership

PWP (Plant Water Profiler)

Facility Energy Performance Tracking for Superior Energy Performance

Energy Systems Analysis

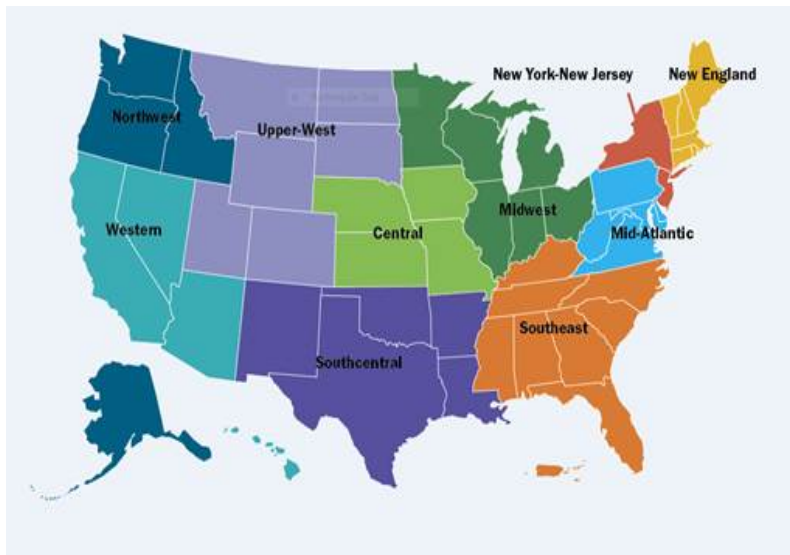
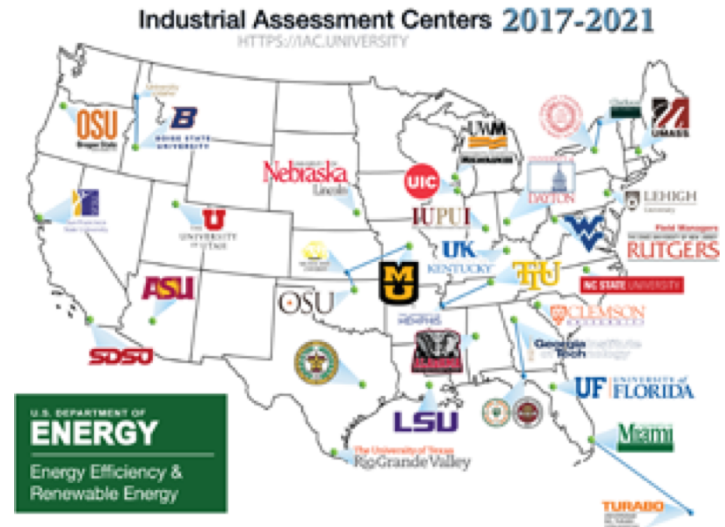
- Motors
- Pumps
- Fans
- Compressed Air
- Steam
- Process Heating
- Data Centers
- Simple Calculators

www.energy.gov/eere/amo/software-tools

Access Free DOE Resources

Industrial Assessment Centers

- Free energy, water, waste assessment for small and medium sized manufacturers
- Led by student-led teams at 28 universities around the country
- [Energy.gov/IAC](https://energy.gov/IAC)



CHP Technical Assistance Partnerships

- Free site support on Combined Heat and Power potential screening
- Free assistance in CHP installation process
- [Energy.gov/CHP](https://energy.gov/CHP)