



## Tech Partnership Overview

June 2017

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# Tech Partnerships Goals

- ✓ Public-Private Partnerships to support voluntary private action
- ✓ Field Validation of Energy Savings Opportunities
- ✓ Research and Develop the 'Profession' of Energy
- ✓ Develop Resources for Enhanced Energy Security and Independence



# Tech Partnerships 'How to'

- Voluntary engagement with industry
  - We partner with you and recognize the success for energy greatness
- Development of the resources not available commercially
  - We work to build the tools and training needed to manage energy
- Research and Develop the 'Profession' of Energy Nationally
  - We want to make American workers the best in the world
- Develop Resources for Enhanced Energy Security and Independence
  - We want you to understand and manage energy like any other resource





# Some AMO Tech Partners (and their Suppliers)



# Tech Partnerships Levels of Engagement

- **Executive Level**

- Develop the enduring ‘culture’ of energy
- Get recognized for achieving a corporate commitment

- **Plant/Facilities Manager**

- Get resources to determine where and how to save energy
- Technical support for prioritizing energy and getting training

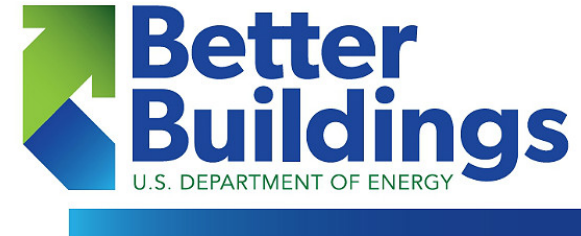
- **Facility Professional**

- Find tools to analyze specific energy systems
- Be part of the energy team to increase own value



# Executive Level: Better Buildings, Better Plants

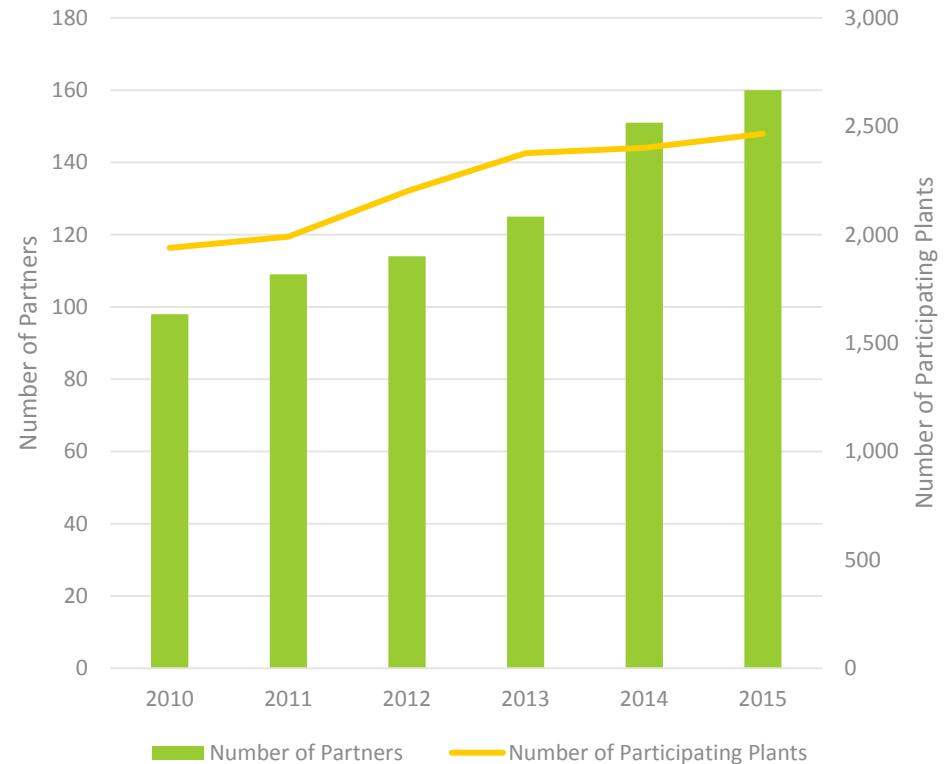
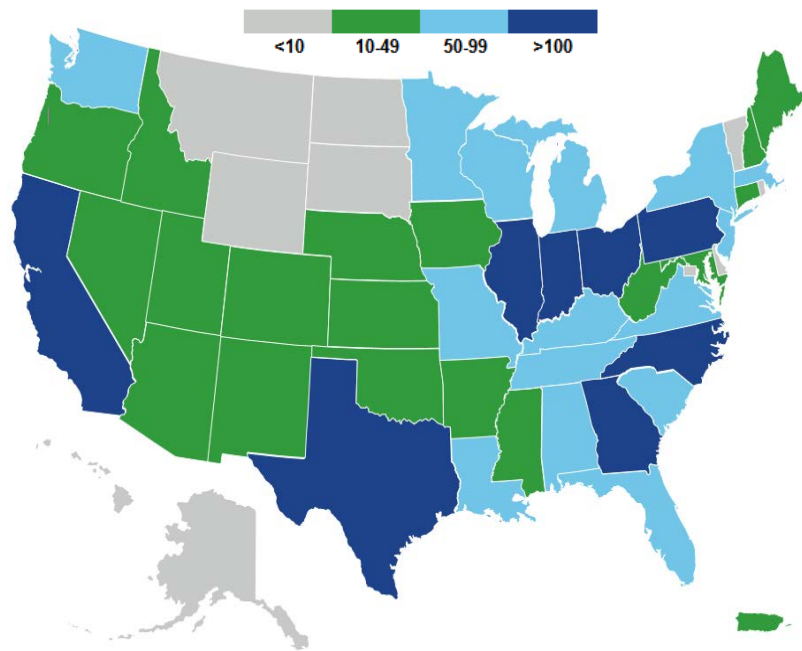
- Through Better Plants:
  - Organizations set long-term goals (25% energy intensity improvement over 10 years)
  - Receive technical assistance, national recognition & networking opportunities
  - Gain DOE recognition for success
- DOE will assign an expert Technical Account Manager to leverage DOE's energy-saving resources
- Manufacturers have two options to engage in Better Plants:
  1. Broader-based *Program* level
  2. Higher-leadership *Challenge*



# Better Plants Overview

## *Better Plants' Reach and Impact Continues to Grow*

### Regional Distribution of Better Plants Facilities



**190 partners; 2,600 plants; 11.5% of total U.S. manufacturing energy footprint  
\$3.1 Billion Cumulative Cost Savings**

## Partners benefit from...

- National corporate-level recognition
- Plant level recognition of energy performance
- DOE provided In-Plant Trainings
- Peer networking opportunities
- Expert technical support
- Enhanced access to DOE resources and opportunities

For more info go to [www.energy.gov/BetterPlants](http://www.energy.gov/BetterPlants)



# Executive Level: ISO 50001 – Energy Management Systems

International standard that draws from best practices around the world. Developed with input from 56 countries, many countries now adopting it as a national standard.

**ISO 50001 specifies guidelines for establishing, implementing, maintaining and improving an EnMS**

**It does not prescribe specific energy performance improvement criteria**



*Light blue text represents new data-driven sections in ISO 50001 that are not in ISO 9001 & ISO 14001*

# Executive Level: ISO 50001 – Energy Management Systems

*Create and instill the ‘culture’ of energy continuous improvement through ISO 50001 (similar to 9000 and 14000 but energy focus)*

- Executive level support for energy improvement
- Understand and Manage where and how energy is used
- Prioritize and convert engineering into financial decisions
- establish 50001 Ready and ISO 50001 as a cost effective, brand impacting pathway for sustained, verifiable energy efficiency improvement



**All Nissan's vehicle assembly plants in the United States are ISO 50001 certified**

# ISO 50001 in the U.S.



**Cummins**



**Google**

## Companies already adopting ISO 50001 in America

- 3M
- Aflac
- American Axle & Manufacturing
- BAE Systems
- BMW
- Bosch Rexroth
- Bridgestone
- Cargill
- Chrysler
- Coca-Cola
- Cummins
- Curtiss-Wright EMD
- Detroit Diesel
- Google
- HARBEC Inc.
- Hilton Worldwide
- IBM
- Intertape Polymer Group
- Land O'Lakes
- Johnson Controls
- Mack Trucks
- Marriott International, Inc.
- MedImmune
- NewGold
- Nissan North America
- Samsung
- Schneider Electric
- Titan America
- Volkswagen
- Volvo

# 50001 Ready Recognition

## Three Steps to Becoming 50001 Ready

### STEP 1

#### Start Implementation of ISO 50001 principles

##### Use the 50001 Ready Navigator Online Tool

- ✓ The Navigator walks you through the process of implementing an energy management system and prepares you to be 50001 Ready.

### STEP 2

#### Analysis of energy reductions

##### Adopt Valid Tool to Present Energy Performance

- ✓ DOE offers the EnPI Lite calculator for 50001 Ready.
- ✓ EPA's Portfolio Manager can also be used
- ✓ Other tools can be approved by DOE

### STEP 3

#### File for 50001 Ready recognition

##### Submit information to DOE for Review

- ✓ Self-attestation of completion of Navigator, executed by team leader and executive
- ✓ Submit energy performance data



***Energy.gov/50001Ready***



# SEP: Certifying Energy Savings of ISO 50001

- Superior Energy Performance is a DOE program to get third-party verification of energy performance improvement
- A voluntary continual energy performance improvement certification program recognizing excellence in organizational energy management practices.
- SEP certification based upon third-party verification of:
  - Energy management system (ISO 50001) and
  - Energy performance improvement (ANSI/MSE 50021)



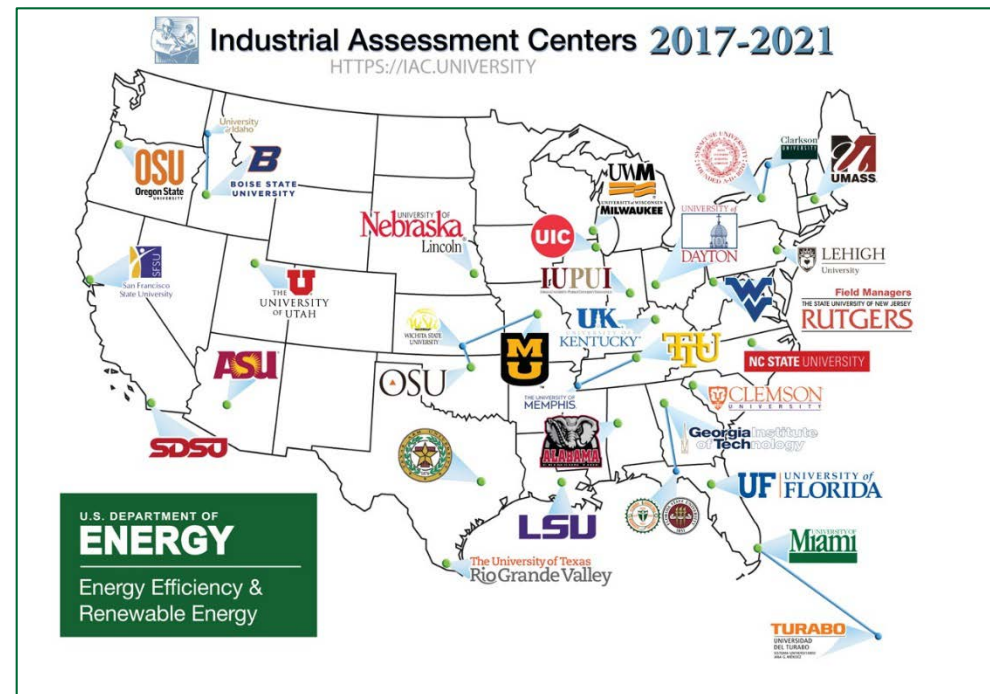
# Plant/Facilities Manager: Industrial Assessment Center

- Started in 1976, the IAC program identifies energy saving and productivity improving recommendations for small and medium-sized manufacturers
- The program is based in, and utilizes engineering students of, local universities to:
  - Train engineering students to be the next generation of energy engineers
  - Provide hands-on assessment experience to supplement traditional learning
  - Advance specialized energy engineering curriculum at their respective host universities



# IAC Overview

- Clients served
  - Plant normally located within a 150 miles of an IAC
- Directed at small and medium sized manufacturers – primary customers:
  - Have gross annual sales of  $\leq$  \$100 million
  - Consume energy at a cost between \$100,000 and \$2.5 million/year
  - Employ no more than 500 people
  - Have no technical staff whose primary duty is energy management



# IAC Results

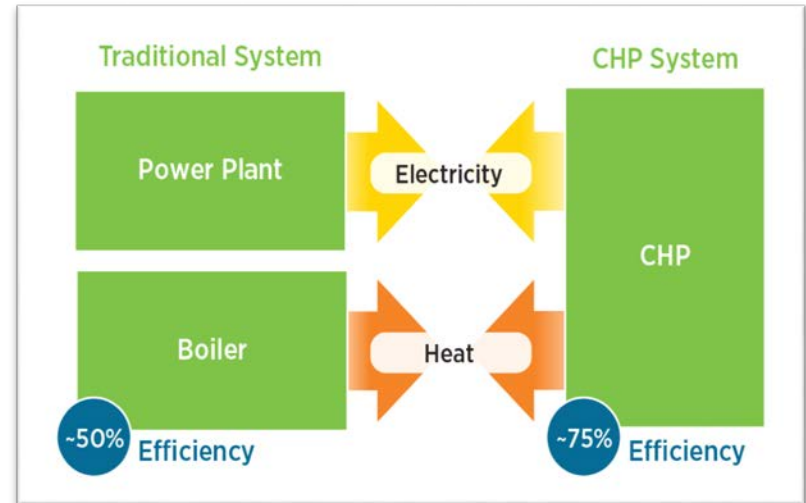
- On average, an IAC client saves more than \$47,000 in energy savings, productivity enhancements, and water use and waste reduction per assessment in one year
- Access to great employees
  - IAC students have hands on industrial experience
  - Many are available and looking for internships
  - Post-graduation, make great employees



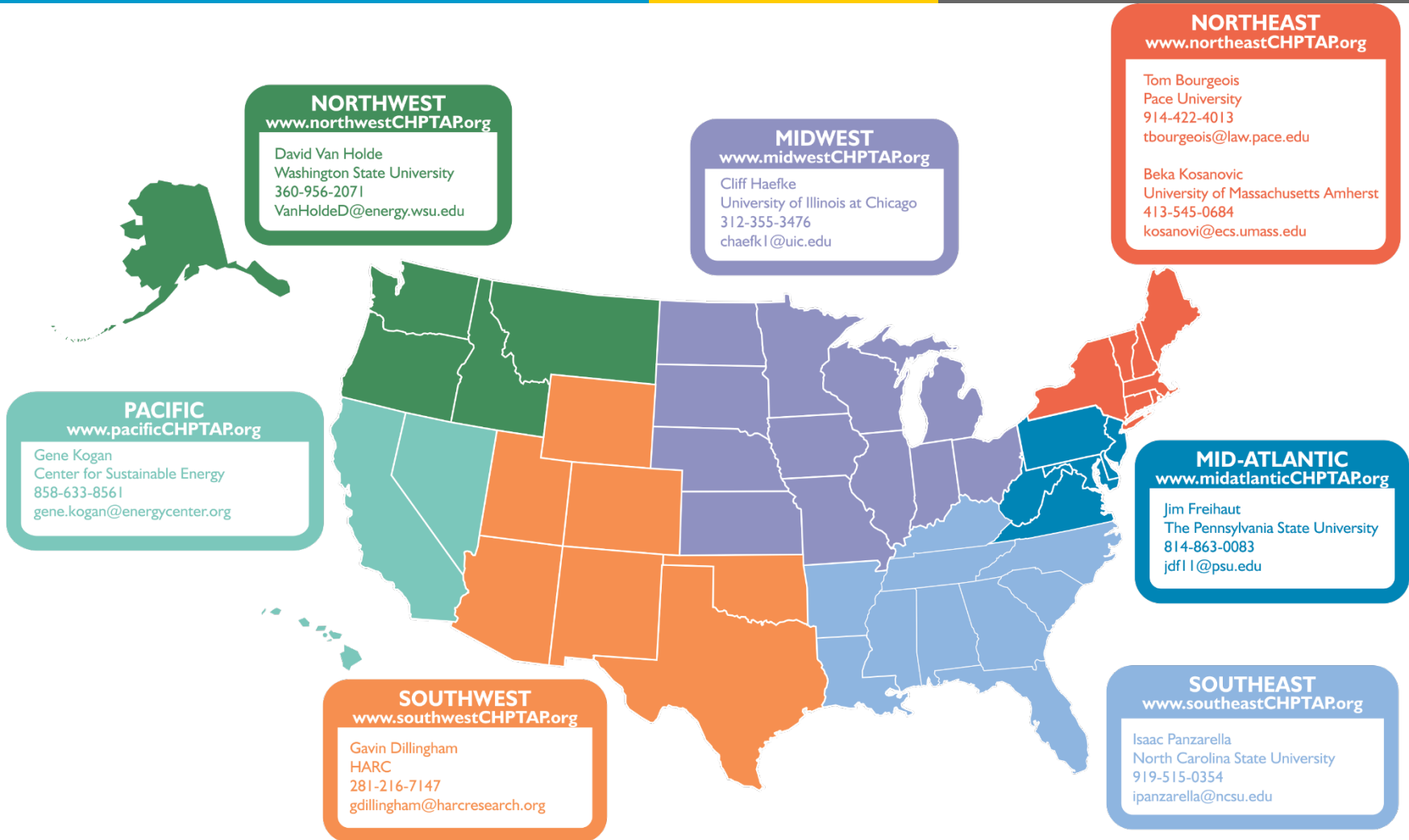


# Plant/Facilities Manager: Combined Heat & Power

- An integrated Distributed Generation (DG) system
- Located at or near a building / facility (on-site, Microgrid, District Energy)
- Provides at least a portion of the electrical load
- Uses thermal energy for:
  - Space Heating / Cooling
  - Process Heating / Cooling
  - Dehumidification
- **Benefits:**
  - Economic Development (rural/urban)
  - Energy security
  - Grid stability, particularly in constrained areas
  - Job Creation/Retention
  - Industrial Competitiveness
- **Market Barriers/Opportunities:**
  - Lack of Information
  - Complexity of installation process
  - Perceived Risk
  - Economics – spark spread
  - Utility business case



# CHP Technical Assistance Partners



## DOE CHP Deployment Program Contacts

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# Facility Professional: AMO Energy System Software Tools

- Provide low-cost access to industrial end-users / plant personnel to understand facility energy use and identify opportunities to optimize energy use
- Designed to reach a wide audience
- Consistently valued by end-use partners
- On-going foundation of many AMO Technical Assistance activities
- Working to modernize and improve

## Energy Systems Analysis

- **Motors**
- **Pumps**
- **Fans**
- **Compressed Air**
- **Steam**
- **Process Heating**

# Facility Professional: Energy System Tools Training

In light of the tool revamp and modernization we are revisiting our corresponding training curriculum

- Tool use tutorials will be developed for each tool (online, video)
- Expand deployment of In-Plant training curriculum (classroom/in-person) and online curriculum
  - System based fundamentals with tool introduction
  - Energy Management Training
- Explore 3<sup>rd</sup> party development and implementation of professional certifications in key systems
  - Hydraulic Institute is completing a Pump System certification w/ associated curriculum
  - *Compressed Air Challenge* has Compressed Air System curriculum





# Questions & Discussion



**NISSAN**

## AMO TA links

[Energy.gov/BetterPlants](http://Energy.gov/BetterPlants)

[Energy.gov/50001Ready](http://Energy.gov/50001Ready)

[Energy.gov/ISOSEP](http://Energy.gov/ISOSEP)

[Energy.gov/IAC](http://Energy.gov/IAC)

[Energy.gov/CHP](http://Energy.gov/CHP)

