Using 50001 Ready to Help Meet Your Energy Goals

Jay Wrobel, U.S. DOE
Prakash Rao, Lawrence Berkeley National Laboratory

Energy Exchange 2018, August 22, 2018
Agenda

1. Overview of 50001 Ready
2. Walk through Navigator
3. BREAK
4. In-depth instruction
5. Coming soon to 50001 Ready
6. Discussion

You will earn 0.2 CEU credits for this workshop upon successful completion of your quiz. Slides marked with this star have important information for your quiz.
What is ISO 50001?

• ISO 50001 is a voluntary standard for establishing an energy management system
  – Known globally and transferable across multiple facilities/bases in every sector
  – Not a ‘project by project’ system but full organizational culture
  – Think ISO 14001 but focusing on energy

• ISO 50001 is an Energy Continuous Improvement Platform
  – Commitment. Leadership commitment and empowerment to energy team
  – Data. Collection and analysis of energy performance in facility and large energy users
  – Culture. Change management process transferable across facilities and staff
  – Scalable, Can start small, get the system up and running and add more

“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
Value of ISO 50001?

• **50001 Supports Resiliency**
  – **Staff turnover** is eased by having written practice in place with roles and responsibilities
  – **Top management turnover** is managed as new manager inherits the practice as part of job
  – Established 50001 practice **increases facility resiliency** to energy disruptions
  – Allows trained staff to walk into any facility and **instantly pick up the energy** practice

• **50001 Supports Efficiency**
  – Establishes a **continuous improvement** practice across part or many facilities
  – DOE data shows **savings persistent** through the life of the 50001 practice
  – Follows proven **plan-do-check-act** cycle for continuous improvement
  – Identifies a **list of energy opportunities** to be evaluated over time

“We have found that both ISO 50001 and SEP are very beneficial for our company. We’ve seen energy savings of over $3.5 million with a program implementation payback period of about 12 months. This is a good investment with really strong returns.”
—Mark Dhennin, **Cummins**
50001: Increased Energy Performance

Multi-sites in 3M & Schneider-Electric showed a 2x improvement vs internal BAU

“ISO 50001 is a standard that drives results directly to the bottom line. ISO 50001 systematically drives down energy costs and improves competitiveness through the assignment of responsibilities and raising the visibility of energy management within the organization.”

—Andrew Hejnar, 3M

US DOE Partners in 50001

Industrial
- 3M
- Arcelor Mittal Steel
- Bridgestone
- Cummins
- Detroit Diesel
- General Motors
- HARBE Inc.
- Intertape Polymer Group
- Johnson Controls
- Mack Trucks
- MedImmune
- NewGold
- Nissan North America
- Schneider Electric
- Titan America
- Volvo

Other Sectors
- Des Moines Wastewater
- Hilton Worldwide
- Marriott International, Inc.
- Tinker Air Force Base

Other Partners
- American Chemistry Council
- American Forestry and Paper Association
- Council for Industrial Boiler Owners
Available 50001 training

50001 Certified Practitioner In Energy Management Systems (50001 CP EnMS):

• Learn the ins and outs of ISO 50001 implementation
• Become a professional to assist organizations in implementing 50001
• Create in house expertise for adoption of ISO 50001
50001 Ready: DOE recognition for excellence

- **50001 Ready Program that provides**...
  - **Recognition** Program from UD DOE for **conformance** to ISO 50001
  - Provides a tool to build your **custom EnMS**
  - Does **not require certification** from third parties
  - Comes with **free resources** (web, video, help desk) to streamline adoption
  - Applicable for **all sectors of all sizes**
  - **Technical assistance available** from FEMP, BTO and AMO
  - Means to **coordinate and streamline** your energy performance
  - **Recognition** is annual allowing for system maintenance and updating

Since May 2017, over 700 projects and 900 accounts in the 50001 Ready Navigator and 9 energy utilities are partnering with DOE to offer 50001 Ready to customers!
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

energy.gov/50001Ready

Company Name
Is recognized for instituting global best practices in continuous energy improvement

Recognized by the U.S. Department of Energy
Dr. Kathleen Hogan
Deputy Assistant Secretary for Energy Efficiency

DOE and others recognize 50001 Ready achievement
50001 Ready Navigator - Overview

- Free online ‘Turbo Tax-like’ tool, with step-by-step approach to ISO 50001 implementation
- Guidance broken into straightforward sections, including:
  - Getting It Done – what specifically needs to be accomplished
  - Task Overview – how does this task connect with ISO50001
  - Full Guidance – comprehensive guidance about the task
  - Transition Tips – from other ISO management systems
- Form teams and assign tasks
- Download guidance
- Create multiple projects
- Access over 100 related resources

Guidance in Navigator is based on ISO 50001 principles. There is no fee to use the tool.
Having a **Continuous Energy Improvement** or **Energy Mgmt. System** means you are already at least **HALF WAY DONE**
Summary: 50001 Ready is...

- Getting recognized for best in class energy management
- A tool for onboarding new staff
- Institutionalizes energy management that can survive leadership change
- Builds off of current energy efforts
- Supports your efforts to meet mandates
- A way to develop and prioritize a list of continuous improvement opportunities
- Can be delivered by utilities, contractors, ESPCs
- Enhances resiliency by surviving staff disruptions
- Can break down internal stovepipes by creating collaboration
Next Steps & Opportunities

1. Go to energy.gov/50001Ready for more information

2. Review the 50001 Ready Navigator (don’t have to register)

3. DOE offering free staff and informational resources to implement/pilot in one or more of your sites

4. DOE will coordinate with you on how 50001 Ready links to federal energy data reporting and energy audit requirements

Contact Jay.Wrobel@ee.doe.gov or David.Boomsma@ee.doe.gov for more info or to get started
50001 Ready events at Energy Exchange

- **Wednesday**
  - 9:00 am: Second workshop, Room 24 (invite those that may have missed this one!)
  - 3:30 pm: Ask-an-expert, entry to trade show
  - 4:00 pm: ISO 50001 Federal session, Room 21
    - Tinker AFB, Honeywell, DOE

- **Thursday**
  - 8:30-10am: Ready to Save Energy: Using DOE’s Free 50001 Ready Tool, Room 23
    - ArcelorMittal, Strategic Energy Group, Des Moines Water Works
50001 Ready Free Resources

• Help Desk:
  – Free email and phone support from LBNL’s EnMS experts at: 50001Ready@lbl.gov
  – Can also use “contact us” feature in Navigator

• Reach out to LBNL directly:
  – Chris Payne: CTPayne@lbl.gov
  – Prakash Rao: PRao@lbl.gov
  – Paul Sheaffer: Psheaffer@lbl.gov
  – Peter Therkelsen: Ptherkelsen@lbl.gov

• Reach out to DOE:
  – David Boomsma: David.Boomsma@ee.doe.gov
  – Pete Langlois: Pete.Langlois@ee.doe.gov
  – Paul Scheihing: Paul.Scheihing@ee.doe.gov
  – Jay Wrobel: Jay.Wrobel@ee.doe.gov
**Federal 50001 Ready Community of Practice**

- **Kick-off yesterday working with federal agencies to:**
  - Provide feedback on 50001 Ready resources
  - Pilot and test multisite, workbook
  - Implement 50001 Ready in facilities
  - Share stories and lessons learned

- **Current members include:**
  - NASA
  - Air Force
  - USACE
  - NOAA
  - TVA
Walk through Navigator

- Setting up a team
- Walking through a task
In-depth instruction
Overview

• Through meeting federal mandates you have
  – completed many of the Navigator tasks
  – close to completing many others
  – will advance existing activities to realize greater benefit

• Two types of tasks will be presented
  • Shoe-in
  • Deep dive

• Our goal: Demonstrate value of 50001 Ready and empower you with the knowledge and tools to complete many of the tasks when you return to the office
In-depth instruction: Shoe-in tasks
Task 8: Significant Energy Uses (SEUs)

We have determined our Significant Energy Uses (SEUs) and their energy consumption.

Tips:

- You know where you use the most energy
- Do you know which energy systems have the most opportunities (e.g., HVAC, fleet, steam/hot water)?
- For 50001, choose only 1 or 2 systems to start:
  - Navigator will reference the SEUs throughout
  - Pick something you have a good handle on (e.g. HVAC)
  - Can add SEUs later

Annual energy consumption and intensity by end use for all commercial buildings in the US. From CBECS 2012
Task 1: Scope and Boundaries

We have defined, documented and approved the Scope and Boundaries of our 50001 Ready energy management program.

Tips:

• Are you considering your whole facility/base? If not, what are you not including?

• Can you use the same scope and boundary that you calculate and report your energy intensity around?

• Can go smaller if you like; there is no strict requirement but you probably already have this defined!

50001 Ready is done across a scope and boundary, not each individual energy efficiency project.
Task 10: Performance Indicators (EnPIs)

We have identified energy performance indicators (EnPIs) and developed a methodology for determining and updating them.

Tips:
- 50001 only requires one, but can have more if you want
- Use energy consumption/ft²
- Federal facilities use this to report energy intensity
- Also used in Portfolio Manager
- Developing additional EnPIs at the facility, sub-facility, and/or SEU-level, is good practice, but not a requirement

Change in energy intensity of commercial building energy end uses between 2003 and 2012. From EIA.
Task 11: Baseline, Objectives, and Targets

We have established an energy baseline(s), approved objectives and energy performance improvement targets, and timeframes for their achievement.

Tips:
- 50001 requires >0% improvement
- Top management already set in Task 3!
- OMB Scorecard and federal mandates require annual 2.5% reduction in BTU/ft²
- Can set others baselines, objectives and targets to help improve energy performance

Cleveland, OH (Better Buildings Challenge partner) progress towards meeting goal of 20% reduction in kBtu/ft² by 2020 against a 2010 baseline. From Better Buildings Initiative website.
Task 12: Improvement Opportunities

We have identified and prioritized energy performance improvement opportunities, and have a process in place to continue to update them.

Tips:
- 50001 Ready requires a prioritized list of opportunities
- You are done with this task
- Your facility gets an energy (and water) audit every four years
- Site is free to prioritize as desired: Cost-effective? Lowest first cost? Increases resiliency? Operational importance?
- Create a mechanism to continually identify opportunities

Do you or your staff look for energy opportunities? Can be formal (like a Kaizen or treasure hunt) or simple (like suggestion boxes)

By Majo statt Senf - Own work, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=38767688
Task 22: Procurement

We have established energy performance criteria spanning the operating life for purchases affecting energy performance, informed supplies that this is a factor in procurement, and have defined and currently use specifications for energy supply purchases.

Tips:
- 50001 Requires consideration of energy impact of procured products and energy
- You are already doing more than this task requires
- Already required to purchase ENERGY STAR and/or FEMP Designated Products
- Already have procurement goals (for renewable energy and clean energy)
- Attention must be given to impact on SEUs

Learn more at energystar.gov
Task 24: Calculate Energy Savings

We have determined our energy performance improvement.

Tips:
• 50001 Ready requires documentation of annual energy consumption
• You’re done! Your FEMP/OMB reporting satisfies this requirement
• Federal facilities already calculate their energy performance using Portfolio Manager, an 50001 Ready-approved reporting mechanism

<table>
<thead>
<tr>
<th>Company/Location</th>
<th>Latest Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hilton San Diego Bayfront</td>
<td>22.7% over 3 years</td>
</tr>
<tr>
<td>Waldorf Astoria La Quinta Resort &amp; Club</td>
<td>17.6% over 3 years</td>
</tr>
<tr>
<td>JW Marriott Hotel</td>
<td>16.5% over 3 years</td>
</tr>
<tr>
<td>Des Moines Water Works</td>
<td>2.7% over 1 year</td>
</tr>
</tbody>
</table>

Energy savings from companies pursuing ISO 50001
In-depth instruction: Deep dive into other tasks
Task 4: Energy Team

We have established an energy team that meets regularly and includes a management representative. Roles and responsibilities have been defined for the energy team and all affected personnel.

Tips:
• 50001 requires formalization of the energy team (on the org chart)
• Management empowers the team as part of the job responsibilities
• Formalizes dialogue between top management and facility on energy

Joseph Cecrle and Kenneth McKuen
Oklahoma City Air Logistics Complex
Tasks 14-16: Monitoring, Measurement, and Operational Control

- Sustains energy savings
- Delivers continual improvement
- Makes day-to-day energy management an ongoing activity for more than just the energy manager
- Raises energy readiness
- Prepares for the unexpected

ISO 14001 tip:
Many Navigator tasks can be implemented by leveraging your ISO 14001 EMS. These include monitoring, measurement, and operational control. Adding energy-related activities to these existing practices can quickly complete these tasks.
Tasks 14: Monitor

• You already:
  – Benchmarking facility using Portfolio Manager (42 USC 8253(f)(8))
  – Follow-up on implemented measures (42 USC 8253(f)(5))
  – Web-based certification (42 USC 8253 (f)(7))

• Add:
  – Monitoring of SEUs, Relevant Variables, and anything else that effects energy performance
  – Keep looking for energy opportunities
Tasks 15: Measure

• You already
  – Benchmarking of federal facilities (42 USC 8253(f)(8))

• Add:
  – Create a procedure for ongoing measurement of overall energy consumption, specifically of SEUs
  – Measurement should be specific to equipment: lighting and HVAC will have different measurement procedures
  – Set a schedule for ongoing measuring
Tasks 16: Operational Control

• You already:
  – Electric motors and air conditioning maintenance (42 USC 8259b(d))

• Add:
  – Operational control is an established procedure for ensuring proper O&M of equipment (SEU)
  – Assign someone on energy team to be responsible for the O&M
  – Pay special attention to SEUs. Ex:
    • If HVAC is your SEU: An established plan for ongoing monitoring of temp set points, checking controls/dampers, filter status, procurement of maintenance contract, etc.

This is the continuous energy improvement aspect of 50001 that DOE has shown to return 4.5% annual improvement through 70-80% low/no-cost opportunities
Getting recognized

- Requires
  - Self-attestation by energy lead and management representative

- One year DOE (and other) recognition
  - 1st year does not require positive energy performance improvement

- Subsequent years requires
  - Re-attestation
  - Sign off on positive energy performance improvement

- DOE plans to allow other actors to provide the recognition: Ex: USACE, NASA HQ, ESPC, utility
Coming soon to 50001 Ready
50001 Ready Playbook

- 50001 Ready Navigator is a personnel management and tracking tool
  - Bring in energy team and consultants (ESPCs)
  - Assign to Tasks and track feedback
  - Leave notes and Sharepoint locations for the needed deliverables

- Under development is a Companion Playbook with Task worksheets
  - Fill out the worksheets for each Task
  - Living document (spreadsheet) that contains the energy data and system
  - Step-by-step guide to establishing and improving energy use
  - On boarding tool for new energy personnel (management or staff)
  - Will contain sample completed forms to show end product example
Multi-Site Platform!

• Multi-site functionality – central office involvement to coordinate and support activities at multiple linked facilities
• Reduces time and effort to implement 50001 Ready across multiple facilities
• Standardizes 50001 Ready system across facilities
• Centralized repository for understanding how your facilities manage energy
• Best practice for 50001 leaders: Hilton, 3M, Cummins, Nissan, Schneider Electric
50001 Ready Navigator Multisite features

- Track overall 50001 Ready implementation across multiple sites
- Platform for communicating with sites on 50001 Ready
50001 Ready Navigator Multisite features

- Establish role of Central Office in 50001 Ready implementation
50001 Ready Navigator Multisite features

- Track 50001 Ready implementation across multiple sites for each task

![Image of 50001 Ready Navigator Multisite features](image)

Task 1: We have defined, documented and approved the Scope and Boundaries of our 50001 Ready energy management system.

Central Office role for this task: Support

Looking for more guidance to complete this task?
- Ask the EnMS experts at the 50001 Ready Help Desk
- View Learning Module

### Site Progress

<table>
<thead>
<tr>
<th>Site Name</th>
<th>Location</th>
<th>Task Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lincoln</td>
<td>Lincoln, NE</td>
<td>Not Started</td>
</tr>
<tr>
<td>Atlanta</td>
<td>Atlanta, CA</td>
<td>Completed</td>
</tr>
<tr>
<td>akjdsdhf</td>
<td></td>
<td>Site setup not yet complete.</td>
</tr>
</tbody>
</table>
50001 Ready Navigator Multisite features

- Collaborate with sites on implementing tasks
## Discussion

**Planning**
1. Scope and Boundaries
2. Energy Policy
3. Management Commitment
4. Energy Team
5. Legal Requirements

**Energy Review**
6. Data Collection
7. Data Analysis
8. Performance Indicators (EnPIs)
9. Significant Energy Uses (SEUs)
10. Relevant Variables
11. Baselines, Objectives and Targets
12. Improvement Opportunities
13. Improvement Projects

**Continual Improvement**
14. Monitoring
15. Measurement
16. Operational Controls
17. Corrective Actions
18. Energy Consideration in Design

**System Management**
19. Documentation and Records
20. Communications
21. Training
22. Procurement
23. Internal Audit
24. Calculate Energy Savings
25. Management Review

---

Jay Wrobel: [Jay.Wrobel@ee.doe.gov](mailto:Jay.Wrobel@ee.doe.gov)
Prakash Rao: [Prao@lbl.gov](mailto:Prao@lbl.gov)