Leveraging your Environmental Management System for Energy Savings

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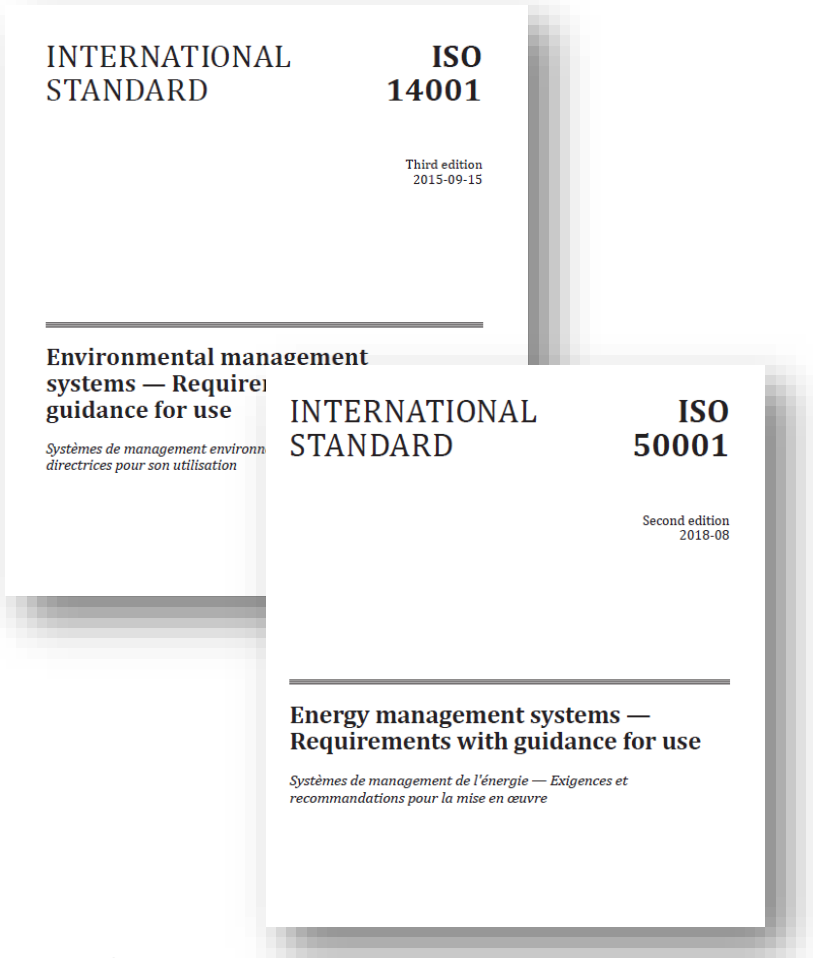
Office of Environment, Health, Safety and Security

Agenda

- Background on ISO 14001 and ISO 50001
- Similarities and differences between the standards
- Toolkit for implementation
- Examples from the ISO 14001/ISO 50001 crosswalk
- Case studies
- Summary

What are ISO 14001 and ISO 50001?

- International Organization for Standardization (ISO)
- ISO 14001:2015
  - Standard for Environmental Management Systems (EMS)
- ISO 50001:2018
  - Standard for Energy Management Systems (EnMS)
- Two of a suite of management system standards



Why implement ISO 14001?

ISO 14001 helps organizations actively manage their environmental aspects and impacts by providing an iterative process for:

- Establishing necessary environmental objectives and processes
- Implementing processes as planned
- Monitoring, measuring, and reporting on processes
- Taking actions to continually improve processes and the EMS

Federal Use of EMSs and ISO 14001

- Federal use of EMS has been reaffirmed in multiple sustainability Executive Orders (EOs)
- Executive Order 13834, *Efficient Federal Operations*
  - Directs Federal agencies to manage their buildings, vehicles, and overall operations to optimize energy and environmental performance, reduce waste, and cut costs
  - Implementing Instructions recognize the value of an effective EMS

ISO 14001 and ISO 50001

Similarities

- Process for defining scope and boundaries
- Most management responsibilities
- Process for determining legal and other requirements
- Process for establishing objectives
- Communication processes
- Corrective action processes
- Identification and maintenance of documented information
- Training and awareness processes
- Management review process

Differences

- Requirement of improvement of energy performance in ISO 50001
- Responsibilities of top management to establish scope
- Establishment of an Energy Management Team
- Energy objectives and targets
- Energy review
  - Energy Performance Indicators (EnPIs) and Energy Baselines (EnBs)
- Collection of energy data

ISO Standard Compatibility

Unique data-driven approach

Leverage **common** and **similar** elements

ISO 50001

Energy Policy
Energy Review
Energy Performance Indicators (EnPIs)
Energy Baselines (EnBs)

ISO 14001

Environmental Policy
Environmental aspects
Emergency preparedness
Environmental management program

Energy Management
Management Commitment
Roles, responsibility, and authority
Competence, training, and awareness
Communication
Operational control
Monitoring and measurement
Documentation
Internal audit
Corrective and preventative action
Management review
Design and procurement

Toolkit for Implementation

ISO 14001/ISO 50001 Crosswalk

Including notes and transition tips on how to leverage your EMS to implement an EnMS

50001 Ready Navigator

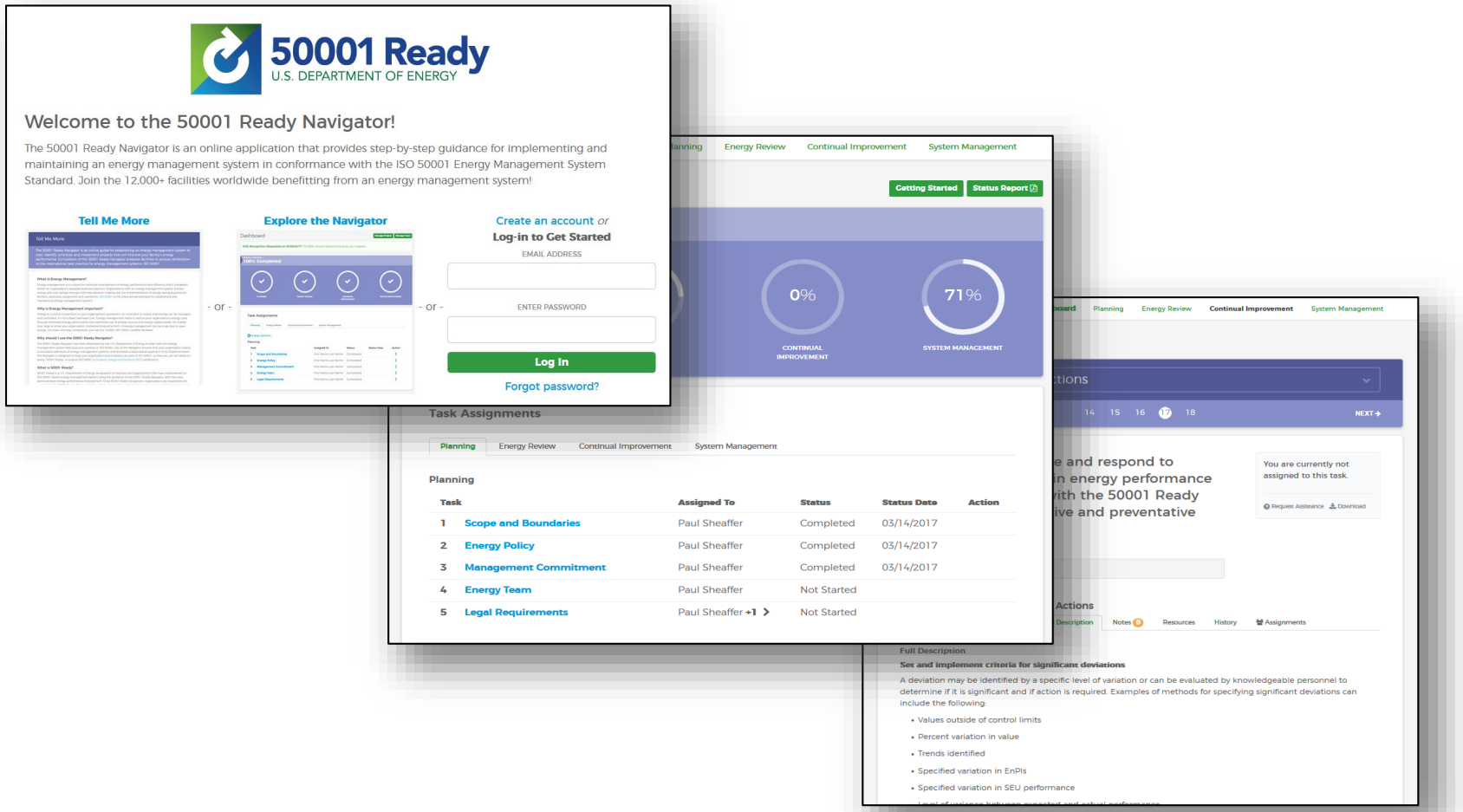
Task-by-task transition tips guide for leveraging your EMS to implement an EnMS

Case Studies

Sites that have used the 50001 Ready Navigator

These tools will be posted to the Better Buildings Solution Center at https://betterbuildingsinitiative.energy.gov/iso-50001/50001Ready

50001 Ready Navigator



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ISO 14001/ISO 50001 Crosswalk

ISO 14001:2015	ISO 50001:2018	Notes	Transition Tips
6 Planning	**6 Planning**		No action needed
6.1 Actions to address risks and opportunities	6.1 Actions to address risks and opportunities		The processes used to identify and assess environmental risks may be suitable for assessing risks in 50001:2018. Different personnel may be involved in identifying to best way to address risks, but the overall process could be the same. Note that risks in 50001 pertain to achieving performance improvement, while in 14001 they pertain to environmental emergencies.
6.1.1 General Shall determine possible emergency situations	This section exists in 50001, but is unlabeled.	Due to the nature of environmental aspects and impacts, it is important to determine possible emergency situations, including the environmental impacts that can occur, within an EMS. This is not a requirement of an EnMS.	No action needed.
6.1.2 Environmental aspects		These two sections are specific to an EMS, due to the nature of how the EMS manages the impact an organization has on the environment.	No action needed.
6.1.3 Compliance obligations			
6.1.4 Planning action	This section exists in 50001, but is unlabeled		No action needed
6.2 Environmental objectives and planning to achieve them	6.2 Objectives, energy targets and planning to achieve them 50001 requires the development of targets, while 14001 does not. The requirements for targets are the same as those for the objectives, which map fairly directly between the two standards.	14001 requires that environmental objectives be established, but 50001 also requires that targets be established (i.e., not only state that energy consumption be reduced, but that the target is to reduce it to a specific measureable level).	The processes used to establish environmental and/or quality objectives may be suitable for setting energy objectives and targets for the ISO 50001:2018 system. Different personnel may be involved but the overall objectives-setting process could be the same. Often, the setting of quality, environmental, safety and health and energy objectives are part of the outcome of the organization's annual process for setting its overall business objectives. Note that unlike ISO 50001, ISO 14001 does not use the construct of "targets."
6.2.1 Environmental objectives	This section exists in 50001 but is unlabeled		No action needed
6.2.2 Planning actions to achieve environmental objectives	This section exists in 50001 but is unlabeled. Specifies that objectives and targets shall take into account opportunities to improve energy performance.	50001 specifies that opportunities to improve energy performance be taken into account and 14001 does not.	No action needed
	6.3 Energy review Due to the focus on actual energy performance improvement, 50001 has much more robust requirements for the review of performance, which are listed in these sections.	The organization should analyze energy use and consumption (past and present), including types of energy, determine significant energy uses (SEUs) and their relevant variables, determine and prioritize opportunities for improving performance, and estimate future use and consumption.	Organizations with ISO 14001:2015 EMSs may be able to identify their energy sources and energy uses from their environmental aspects information. However, even if you start with the environmental aspects information, your team should reality-check the comprehensiveness of that information to ensure that all energy sources and energy uses have been identified for the EnMS. It is recommended that the energy review be maintained separately from the environmental aspects information.
	6.4 EnPIs	Energy Performance indicators should be appropriate for measuring and monitoring performance, and enable the organization to demonstrate improvement. Shall be reviewed and compared to the respective EnBs.	Processes used in ISO 14001:2015 to determine appropriate indicators for environmental or quality likely could be applied to determining EnPIs appropriate for an ISO 50001:2011 EnMS. Indicators in ISO 50001:2018 are quantitative values or measures of energy performance.
	6.5 EnBs	Energy Baselines will be established based on the energy review. These	Recommended actions include:

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ISO 14001:2015	ISO 50001:2018	Notes	Transition Tips
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ISO 14001:2015

- Process for determining
  - Aspects
  - Significant Aspects

ISO 50001:2018

- Process for determining
  - Energy Uses
  - Significant Energy Uses (SEUs)

6.2 Objectives, energy targets and planning to achieve them

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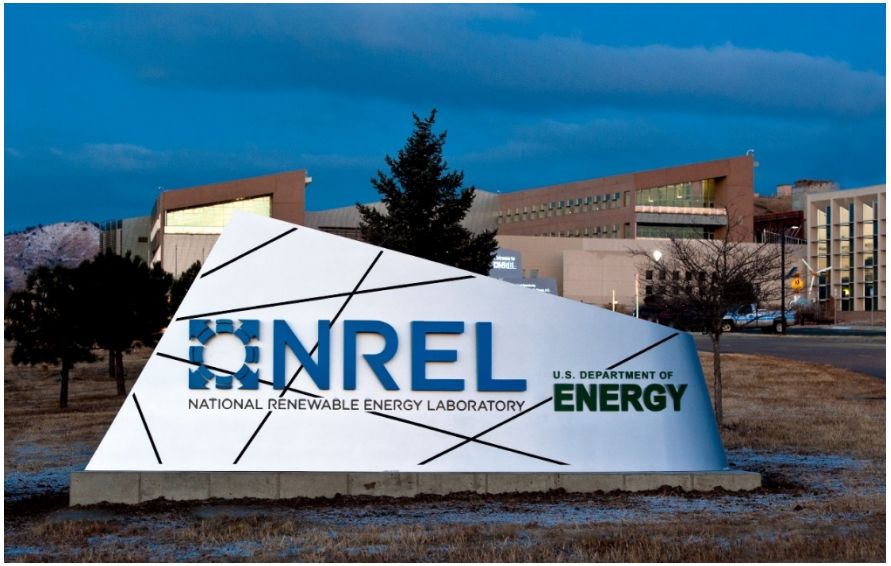
ISO 50001 Case Studies

Site	Scope of Management System	Types of Buildings
National Renewable Energy Laboratory (NREL)	All of NREL: • 63 Buildings • 1,128,596 ft^2	Laboratories Office Buildings Cafeteria Storage Facilities High Performance Computing
Oak Ridge National Laboratory (ORNL) Facilities Management Division (FMD)	Approximately 56% of ORNL: • 65 Buildings • 3,032,770 ft^2	Laboratories Office Buildings Mixed Use Buildings High Performance Computing Storage Facilities Support Services Accelerator Facilities Cafeteria
Lawrence Berkeley National Laboratory (LBNL)	All of LBNL: • 130 Buildings • 2,219,198 ft^2	High Performance Computing Specialty Research Laboratories Accelerator Facilities Office Buildings Cafeteria Mixed Use Buildings

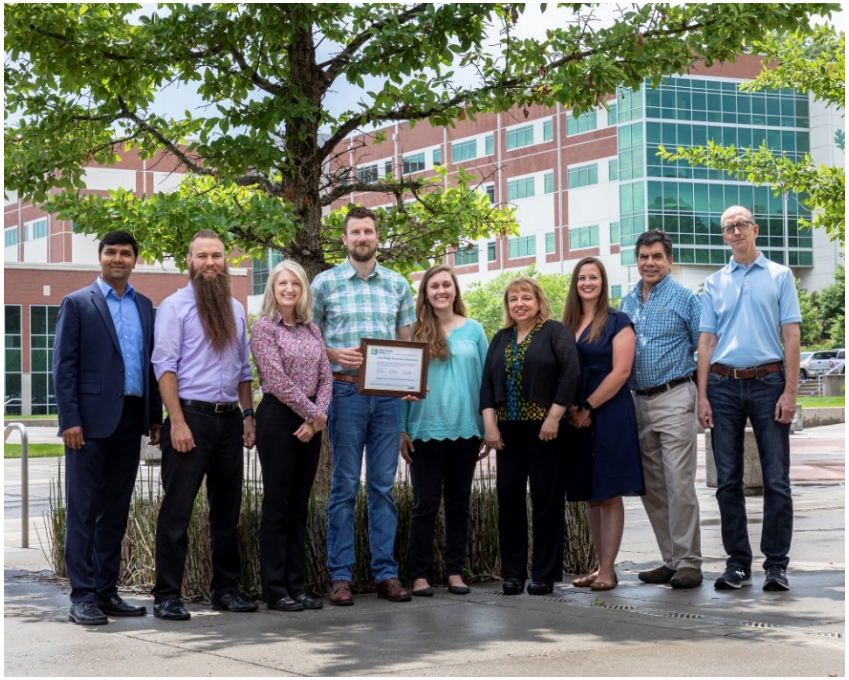
NREL

- Acquired ISO 50001 certification two years ago
  - No plans to continue certification, but will retain 50001 Ready recognition
- Benefits:
  - Developing a strategy that was understood by management and staff
  - Implementing a structure that allowed DOE-driven objectives and targets to be met
  - ISO 50001 structure helped communication processes and filling gaps in the existing EnMS
- Challenges:
  - Structuring documentation to demonstrate that requirements are met during the audit
    - Using the EMS documentation structure was very helpful for this



Credit: Dennis Schroeder / NREL

ORNL FMD



Credit: Carlos Jones, Oak Ridge National Laboratory

- Received DOE 50001 Ready recognition at the end of May 2019
  - Decided to use 50001 Ready to develop clear formal processes – and realized additional benefits as well
- Benefits:
  - Helped systematize approach to energy management and develop formal processes
  - Using 50001 Ready ECM ranking process to include an environmental impact factor when ranking potential ECMs
- Challenges:
  - Energy review and the rigorous data collection and analysis required
  - The Excel EnPI tool was helpful in this regard
- The 65 buildings covered in this project are included in the ORNL FMD
  - Considering expanding to other ORNL facilities

LBNL

Credit: Photo courtesy of Lawrence Berkeley National Laboratory

- Currently completing their 50001 implementation, with plans to certify shortly
  - Also being recognized as 50001 Ready since they used the tool to prepare for certification
- Benefits:
  - Insurance of persistent savings, regardless of staff or management changes
  - Team must be systematic and conform to the rigor of ISO 50001, ensuring intended outcomes
  - Management review for both ISO 14001 and ISO 50001 is integrated
- Challenges:
  - Implementing comprehensive documentation practices took effort, but this effort has paid off
- The online manual developed as a result has become an essential resource for the team

Summary

- Implementing a 50001 Ready EnMS can be beneficial to agencies and their sites in efficiently meeting their missions.
  - Bolster existing energy management initiatives that are part of the EMS in place
  - Develop processes that will persist through management and staff changes
  - Establish a structure that allows objectives and targets to be met
- Agencies and their sites can leverage many elements from the 14001 framework to implement a 50001 Ready EnMS

Contacts

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