Better Plants
U.S. DEPARTMENT OF ENERGY

Strategic Energy Management (SEM) with ISO 50001 and 50001 Ready

ORNL 50001 Ready Training
Webinar Series, Session 1
February 9, 2021
10:00 a.m. to 12:30 p.m.

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Agenda – Session ONE

- Welcome, Safety, and Housekeeping
- Introductions
- Today's Content – *Introduction and Overview*
  - Why Strategic Energy Management (SEM)
  - Why 50001?
  - Introduction to the 50001 Ready Navigator
- Webinar Training Schedule
- Resources
- Q&A

Polling Question 1

Polling Question

1) Why did you decide to attend this training on 50001 Ready and energy management?
   - A. Curiosity
   - B. My boss signed me up
   - C. It is free
   - D. I have a corporate mandate to improve energy management
   - E. I am in a new role requiring better energy management skills
   - F. I need professional development hours
   - G. I heard Mike Stowe was the best instructor ever
   - H. Other

Welcome

- Welcome to the Virtual INPLT *50001 Ready* webinar training series
- Eight, 2-1/2 hour webinars, focused on Strategic Energy Management (SEM), in general, and the ISO 50001 standard and *50001 Ready Navigator,* in particular
- The webinars will help you understand the why and how of SEM and the *50001 Ready Navigator* tool
- Thank you for your interest!

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Safety and Housekeeping

- Please make sure that your surroundings are safe:
  - If you are driving, please use hands free mode
  - If you are in a building, be sure you know the exit paths
  - If you are at home, be sure there are no distractions
- You are welcome to ask questions at any time during the webinar
- When you are not asking a question, please MUTE your mic and this will provide the best sound quality for all participants
- We will be recording all these webinars and by staying on-line and attending the meeting you are giving your consent to be recorded
  - A link to the recorded webinars will be provided, afterwards

Introduction of Attendees

- Please introduce yourself:
  - Your name
  - Your role
  - Your organization/sites and locations
  - One thing that you want to learn from the webinars

Our 50001 Ready Training Group

- Information on our 50001 Ready Training Group:
  - 24 different organizations, many with multiple sites
  - Many with global footprints
  - Size of sites range from 100,000 square feet up to 586 acres
  - A wide range of products and markets:
  - Primary Energy types:
    - Electricity
    - Natural Gas
    - Liquid Propane
    - Diesel and other Fuel Oils
    - Some solar, some biogas, and some CHP

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Energy Consulting
Cheese & Whey
Plastics
Composites
Chemicals
Automotive vehicles
Automotive batteries
Automotive fuel systems
Electronics
Fiberglass
Organic foods
Packaging
Glass
Brewery beverages
City government
Wastewater treatment
Industrial machinery
Shrimp peeling equipment
Filtration media
Tape
Medical

Advanced Energy – C&I Group

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Today's Topics

- Quick List of Acronyms
- Why Strategic Energy Management (SEM)?
- Why 50001?
- Overview of 50001 Ready Navigator Tool

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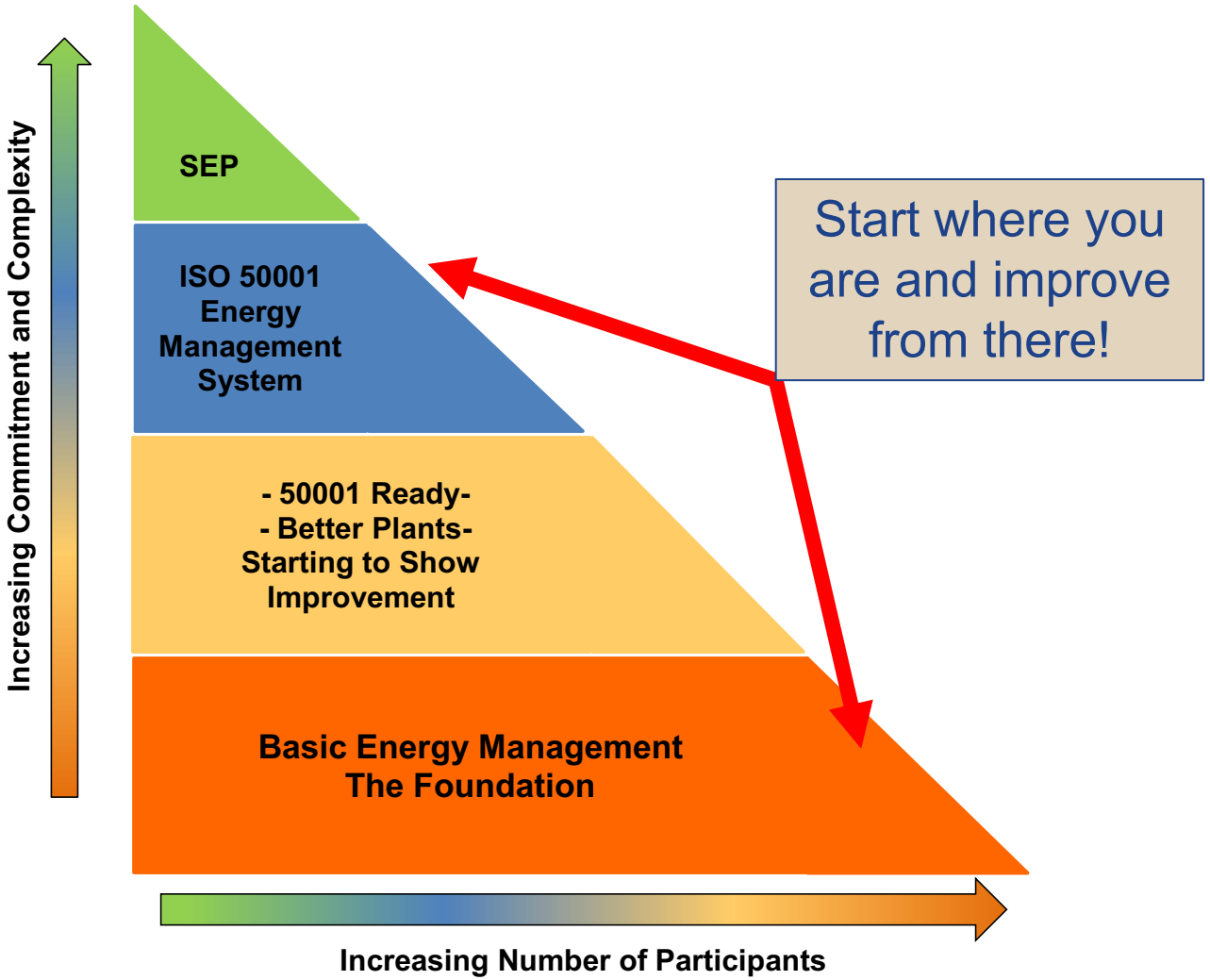
Quick List of Acronyms

- SEM = Strategic Energy Management
- EnMS = Energy Management System
- SEU = Significant Energy Use
- EnPI = Energy Performance Indicator
- EnB= Energy Baseline
- PDCA = Plan, Do, Check, Act
- Glossary

Why SEM? - The Continuum

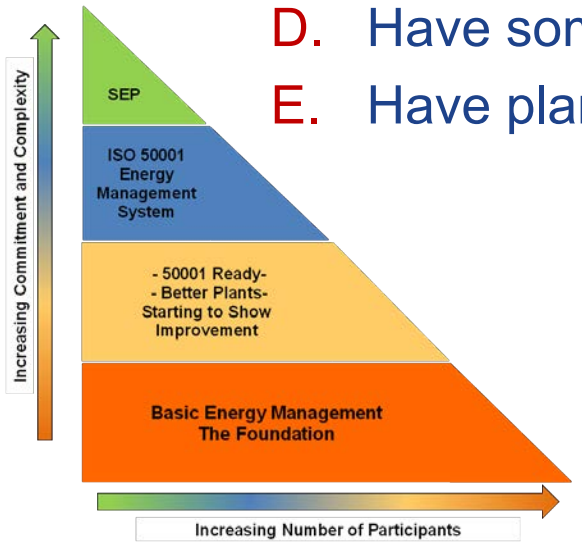


Polling Question 2

Polling Question

2) Based on the SEM Continuum on the previous slide, where do you feel your company is?

A. Just starting with the basics
B. Have been working with Better Plants and ready to engage more with 50001 Ready
C. Have some sites with 50001 Ready Recognition and plan to do more
D. Have some sites with ISO 50001 certification and plan to do more
E. Have plans to pursue Superior Energy Performance (SEP) at one or more sites



Why SEM?

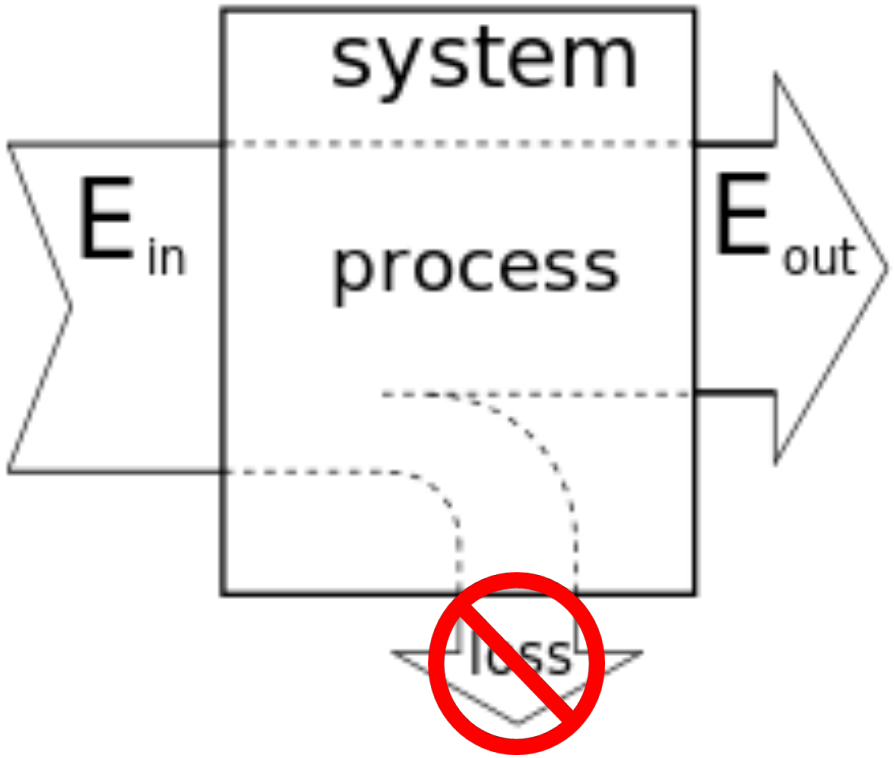
- 33.63 Quadrillion BTUs
- Make more with less
  - Lean Principles
- Reduce energy intensity
  - LESS MMBTU/ton
  - LESS MMBTU/linear yard
  - LESS MMBTU/widget
  - LESS MMBTU/square foot

- Cleaner and Greener:
  - Reduce carbon footprint and greenhouse gases

Why SEM? - Energy Efficiency

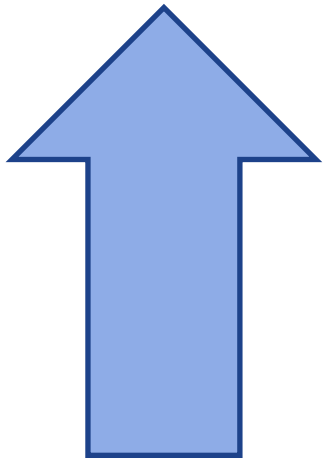
- Make MORE with LESS:

This is what you pay for



This is value added

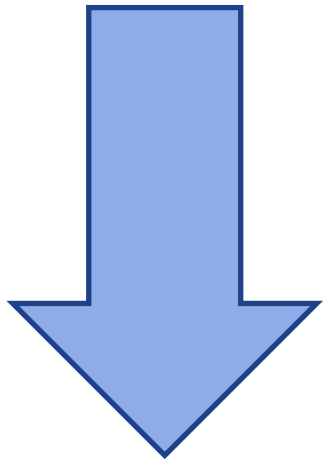
Why SEM? – EE & EI



INCREASE Energy Efficiency (EE)

TO

REDUCE Energy Intensity (EI)
&
REDUCE Energy Costs $$$

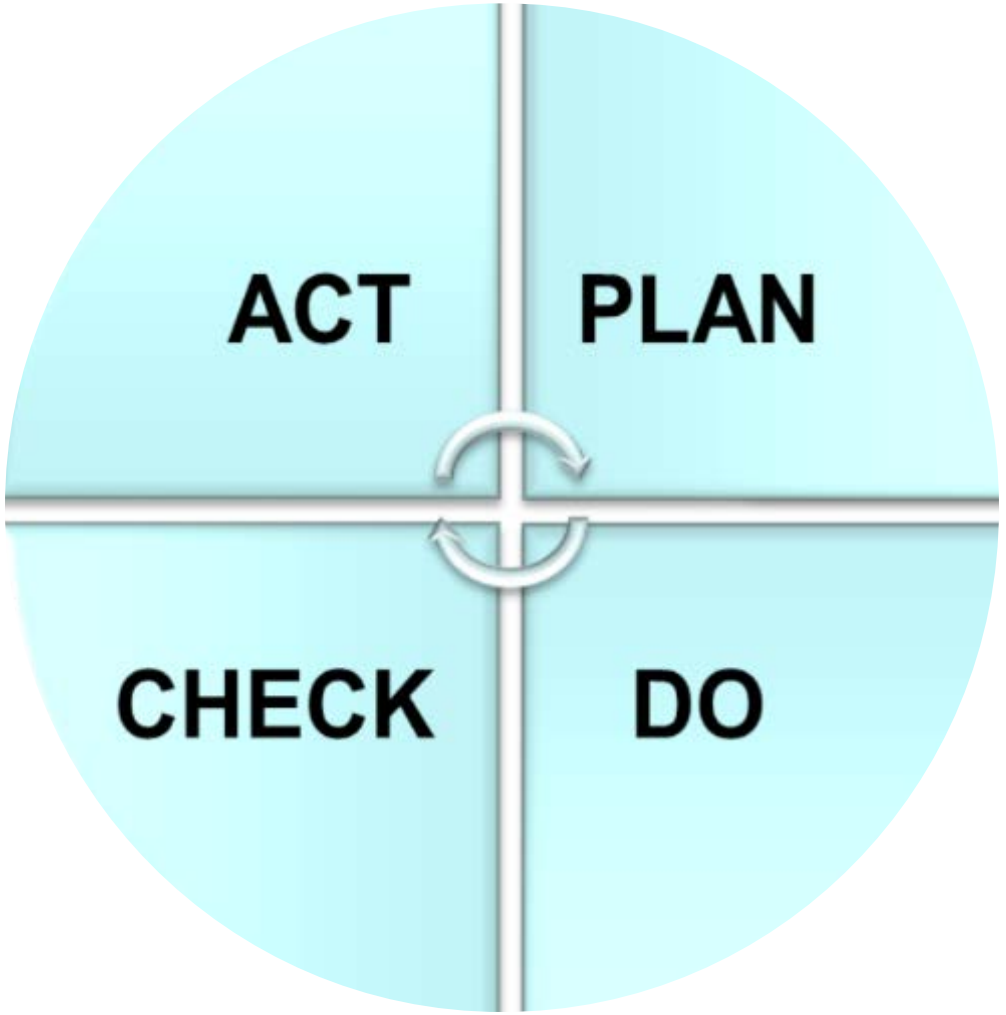


Why SEM? - Non-Energy Benefits

Non-Energy Benefits of Energy Projects:

- Increase plant productivity
- Improve product quality
- Reduce scrap
- Break a process bottleneck
- Reduce overtime
- Improve worker comfort
- Increase available floor space
- Improve work-flow
- Reduce emissions
- Improve safety

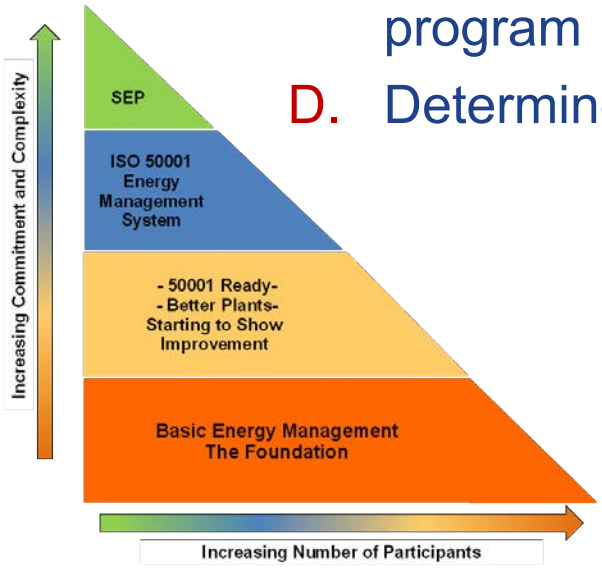
Why SEM? - Continual Improvement



Review Question 1

Review Question

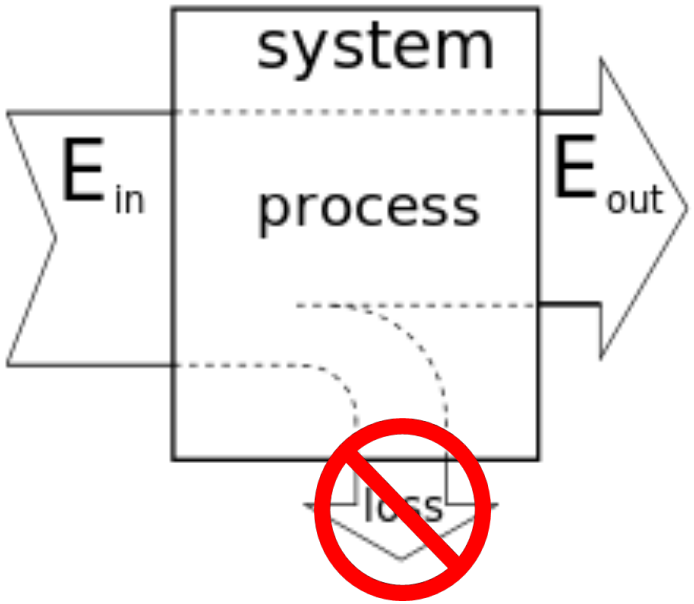
1) Based on the SEM continuum pyramid, how should you approach getting started with SEM?
   A. Immediately apply for Superior Energy Performance (SEP) certification
   B. Start wherever you are and improve from there
   C. Call Oak Ridge National Lab for guidance on the Better Buildings/ Better Plant program
   D. Determine the number of lighting fixtures in your facility



Review Question 2

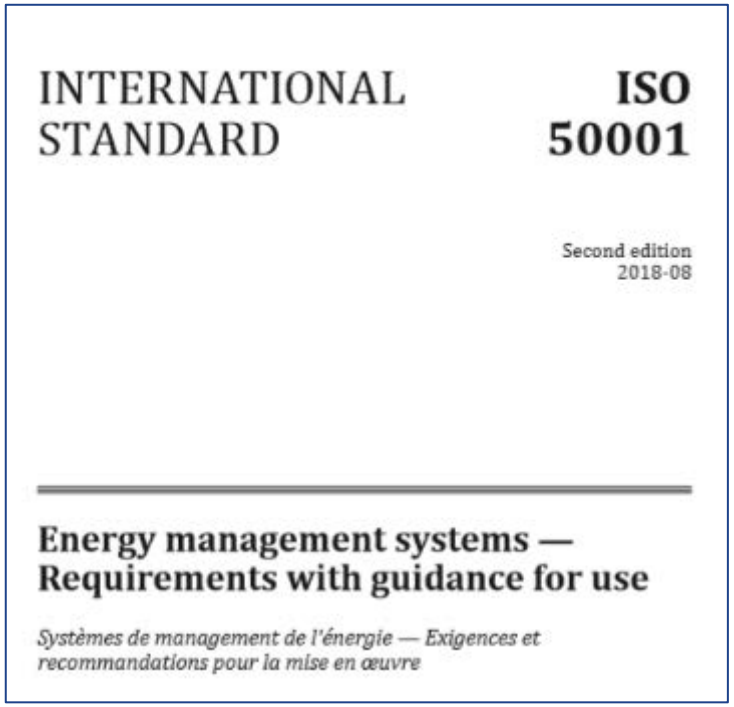
Review Question

2) It is possible for energy to be transferred at 100% efficiency with no losses:
   A. TRUE
   B. FALSE



Why 50001?: Background

50001 Ready is a recognition program based on the ISO 50001 Standard


INTERNATIONAL STANDARD

ISO 50001

Second edition
2018-08

Energy management systems — Requirements with guidance for use

Systèmes de management de l'énergie — Exigences et recommandations pour la mise en œuvre

ISO International Organization for Standardization

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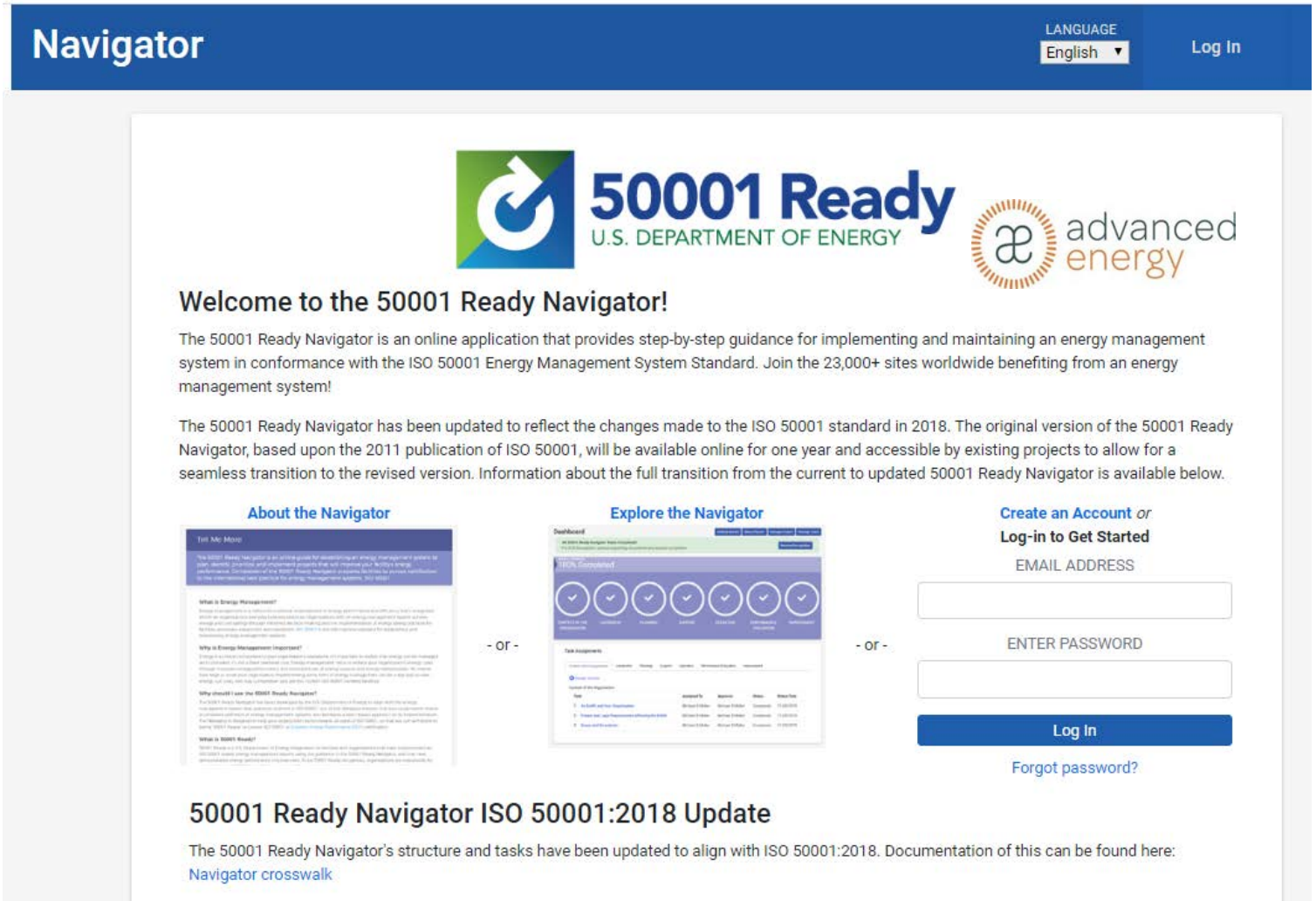
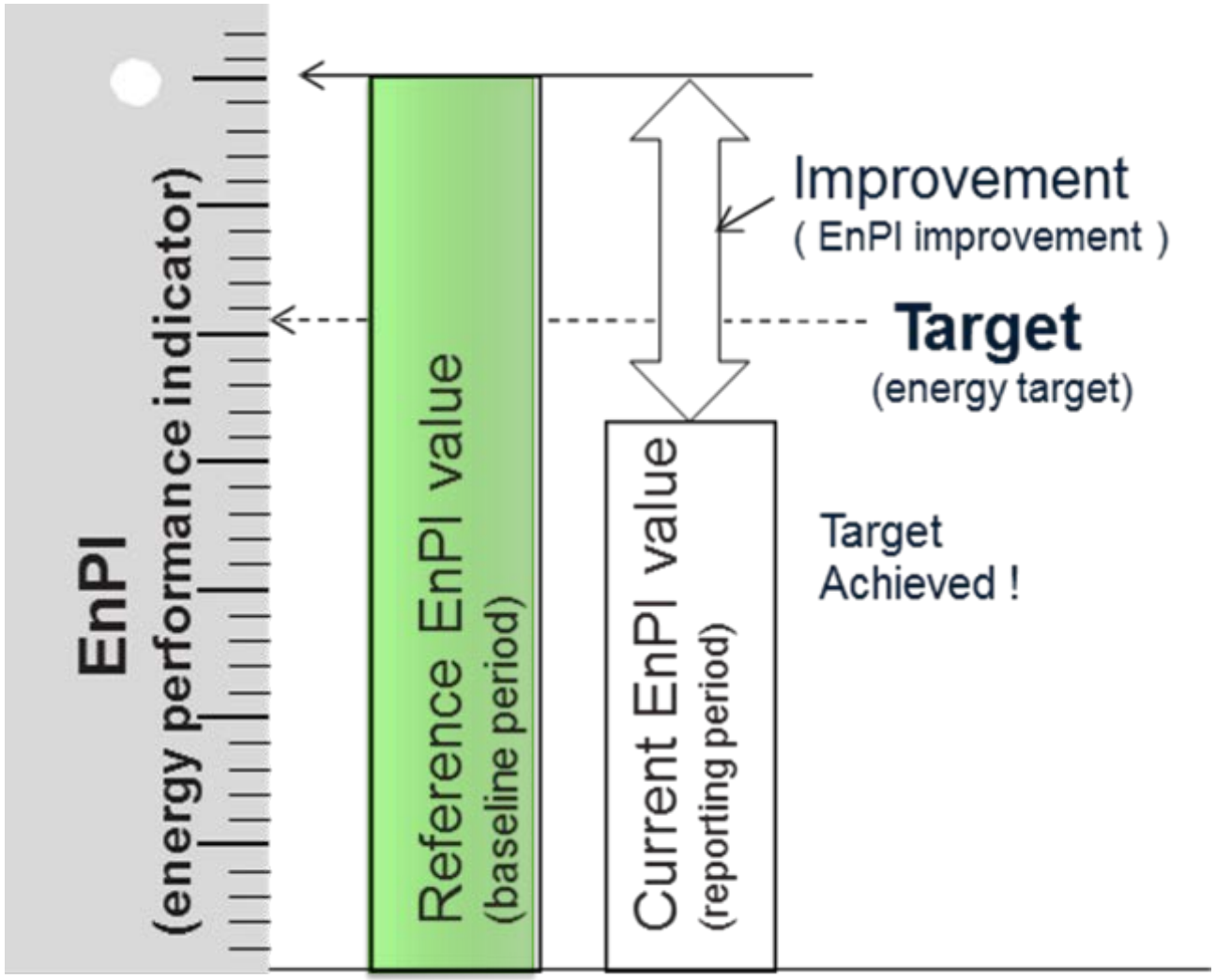
Why 50001?: A System



Why 50001?: Goal Oriented & Data Driven



Why 50001?: Proven Results

- Companies with formal SEM systems have better energy performance improvement:
  - Schneider Electric
    - 19% average improvement with ISO 50001
    - Versus 11.5% without
  - 3M
    - 10.5% average improvement with ISO 50001
    - Versus 6.5% without

Continual Improvement

Energy & Cost Reduction Over Time

- ISO 50001 will help formalize your energy management into a system

Why 50001?: Requires Commitment

STRONG management commitment is essential:

- Allow time for energy team participation
- Allow time for EnMS development
- Provide resources needed to succeed
- Provide resources for travel to trainings, as needed
- Provide capital funding for energy improvement
- Communicate energy policy and its importance
- Provide resources for internal auditing
- Conduct meaningful management reviews

Why 50001?: Leverage

Previous experience with other ISO management systems is a plus:

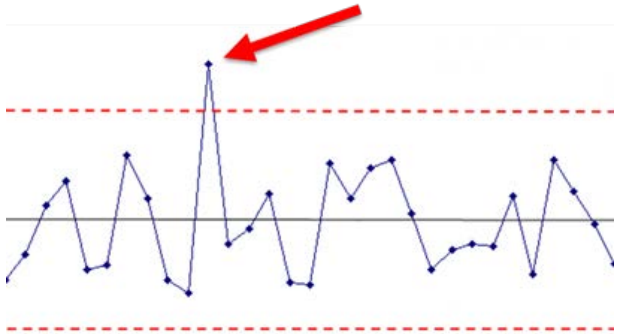
- ISO 9001 for Quality
- ISO 14001 for Environmental
- OSHAS 18001, now ISO 45001: for Occupational Health and Safety

…but not a requirement.

50001 Ready supports starting from scratch also.

Why 50001?: Similarities to Other ISOs

- Similarities to ISO 9001, 14001 & 45001
  - Many processes are the same
  - Management systems topics are similar
  - Energy specific topics are unique for 50001
- Basics for all management systems
  - Scope and boundaries
  - Top management commitment
  - A related policy with objectives/targets
  - Awareness and communications
  - Documents and records
  - Internal auditing
  - Corrective action process
  - Management review
  - A continual improvement process



Why 50001?: A Pathway to Meet YOUR Organizations Goals

50001 Ready is part of a Pathway toward ISO 50001 Certification and (if desired) Validated Energy Savings in SEP

Why 50001?: Summary

- Worth the effort
- An alternative
- Help for the weary
- A heavy lift needs leverage
- The right tools
- Step-by-step
- Proven improvement
- Dashboard tracking
- Great resources
- Self attesting
- Lots of FREE support

Review Question 3

Review Question

3) The ISO 50001 standard and 50001 Ready provide an approach to energy management that:
   A. Is goal oriented
   B. Is data driven
   C. Requires energy performance improvement
   D. Can readily integrate with other ISO management systems
   E. Provides a pathway to recognition and/or certifications
   F. All the above

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Review Question 4

Review Question

4) If an organization decides to apply for 50001 Ready Recognition, it is through self-attestation and requires no third-party auditing:

A. TRUE
B. FALSE

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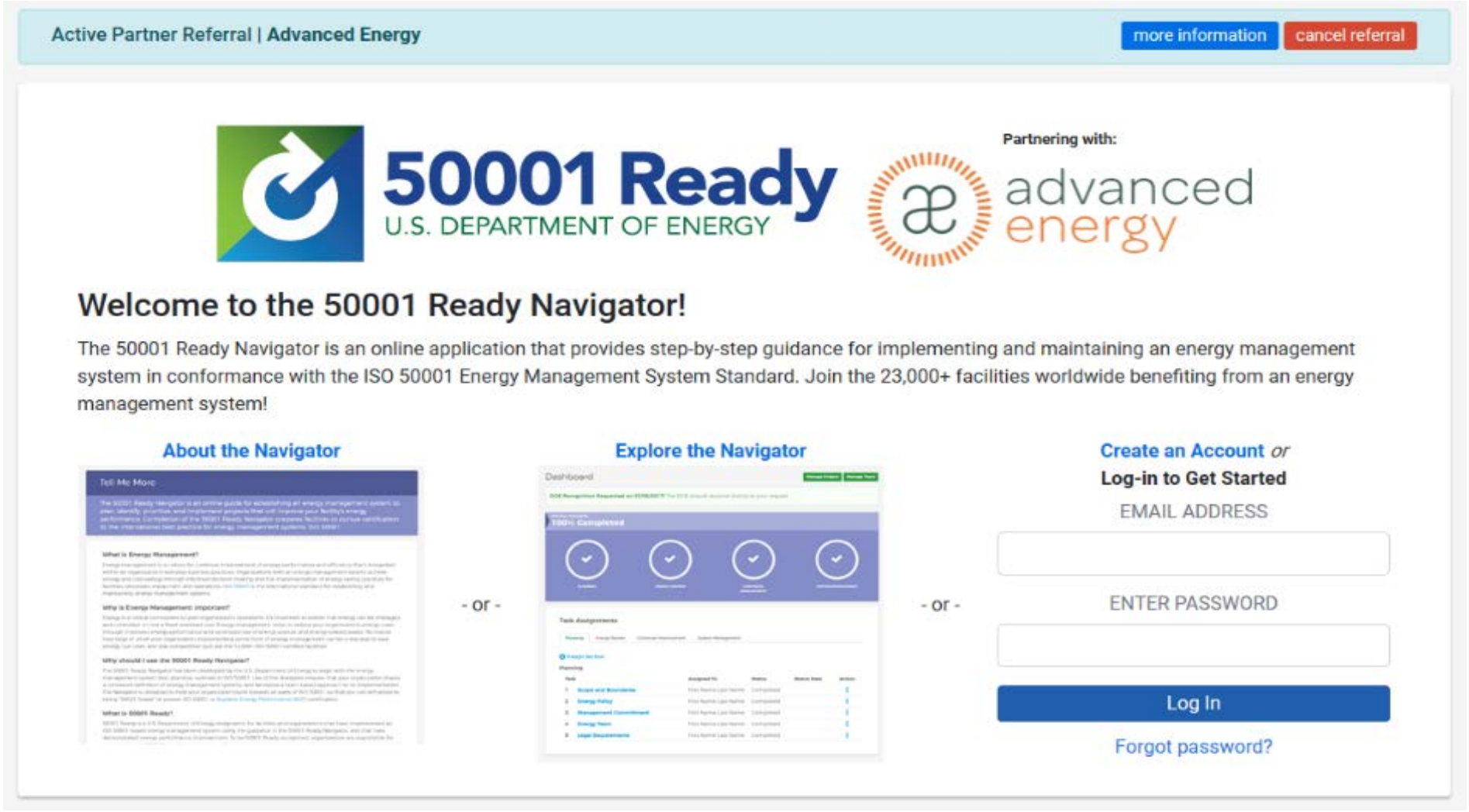
The 50001 Ready Navigator

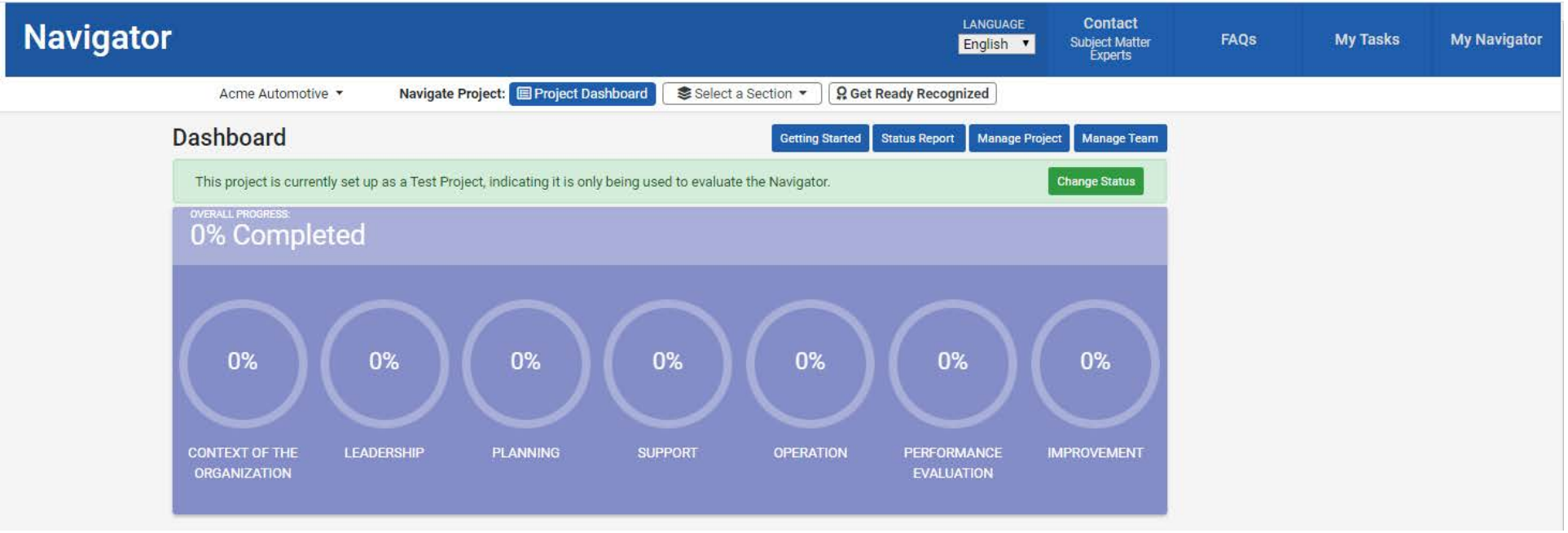


Overview of 50001 Ready - The Tool

1. Recognition for self-attesting to implementation of an EnMS based on the structure of ISO 50001
2. No certification required from third-parties
3. Open-source software tools, designed to be adopted by implementers
4. Suite of resources to support continual improvement in institutional, commercial and industrial facilities
5. Able to support enterprise or multi-facility companies

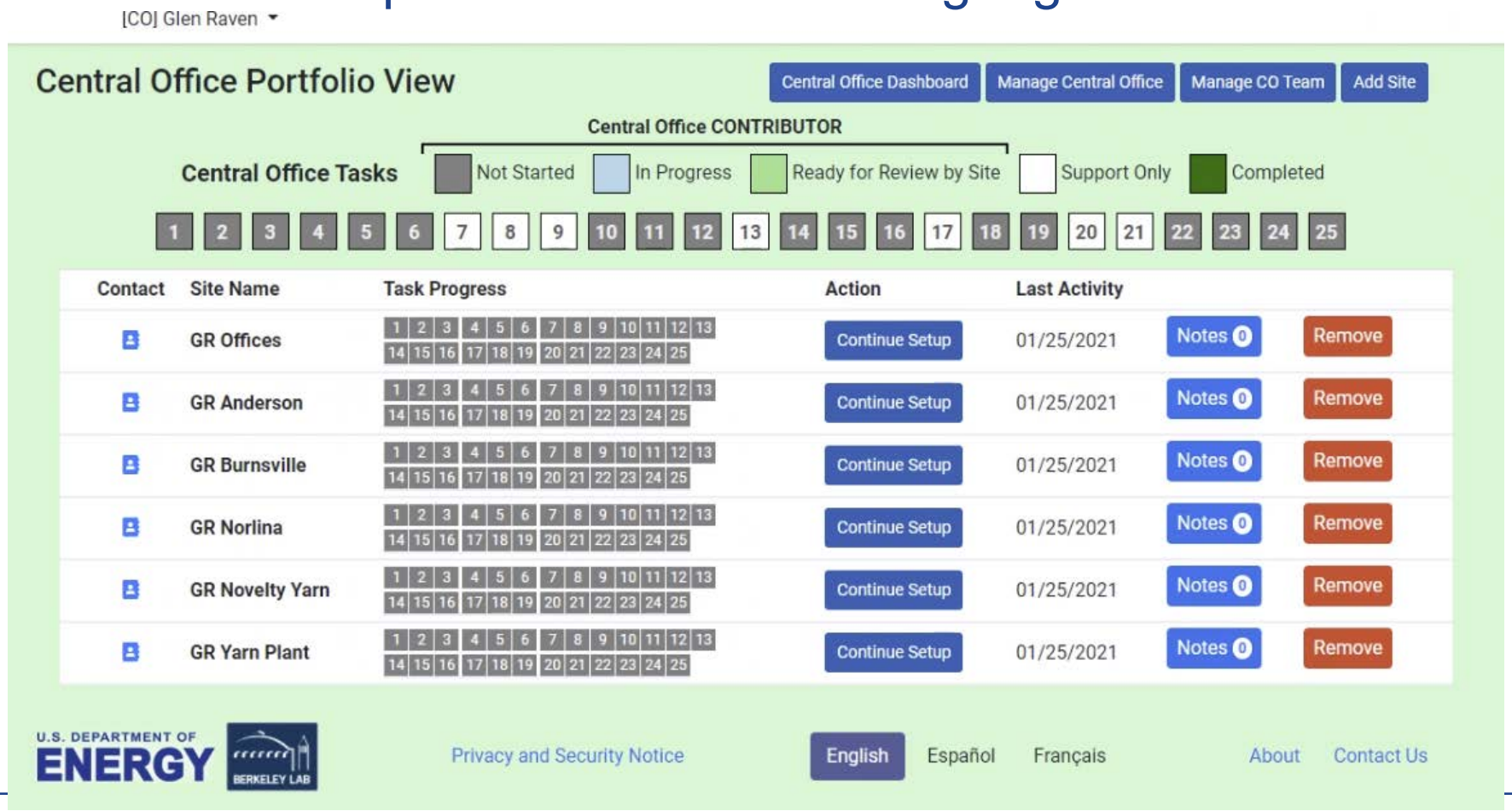
Overview of 50001 Ready - Dashboard

50001 Ready is an online, web-based 25 task process for energy management



Overview of 50001 Ready - Multisite

There is functionality for tracking a multisite effort with a central office with many separate locations working together



50001 Ready Navigator Tasks

Context of the Organization	Leadership	Planning	Support	Operation	Performance Evaluation	Improvement
1. An EnMS and your Organization 2. People and Legal Requirements 3. Scope and Boundaries	4. Management Commitment 5. Energy Policy 6. Energy Team and Resources	7. Risks to EnMS Success 8. Energy Data Collection and Analysis 9. Significant Energy Uses 10. Improvement Opportunities 11. Energy Performance Indicators (EnPIs) and Baselines (EnBs) 12. Objectives and Targets 13. Action Plans for Continual Improvement	14. Competence and Training 15. Awareness and Communication 16. Documenting the EnMS	17. Operational Controls 18. Energy Considerations in Design 19. Energy Considerations in Procurement	20. Monitoring and Measurement of the EnMS 21. Monitoring and Measurement of Energy Performance Improvement 22. Internal Audit 23. Management Review	24. Corrective Action 25. Continual Improvement

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Context of the Organization (3)

Building a foundation for your EnMS

Regarding my EnMS, what are the:

- *Risks, opportunities and strategic issues;*
- *Legal and other requirements;*
- *Interested parties;*
- *Scope and boundaries?*

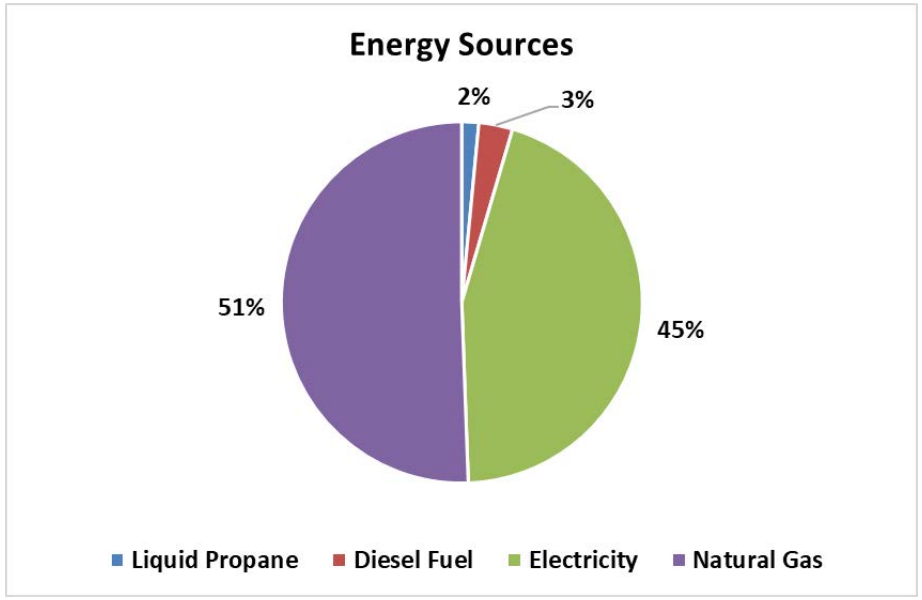
Leadership (3)

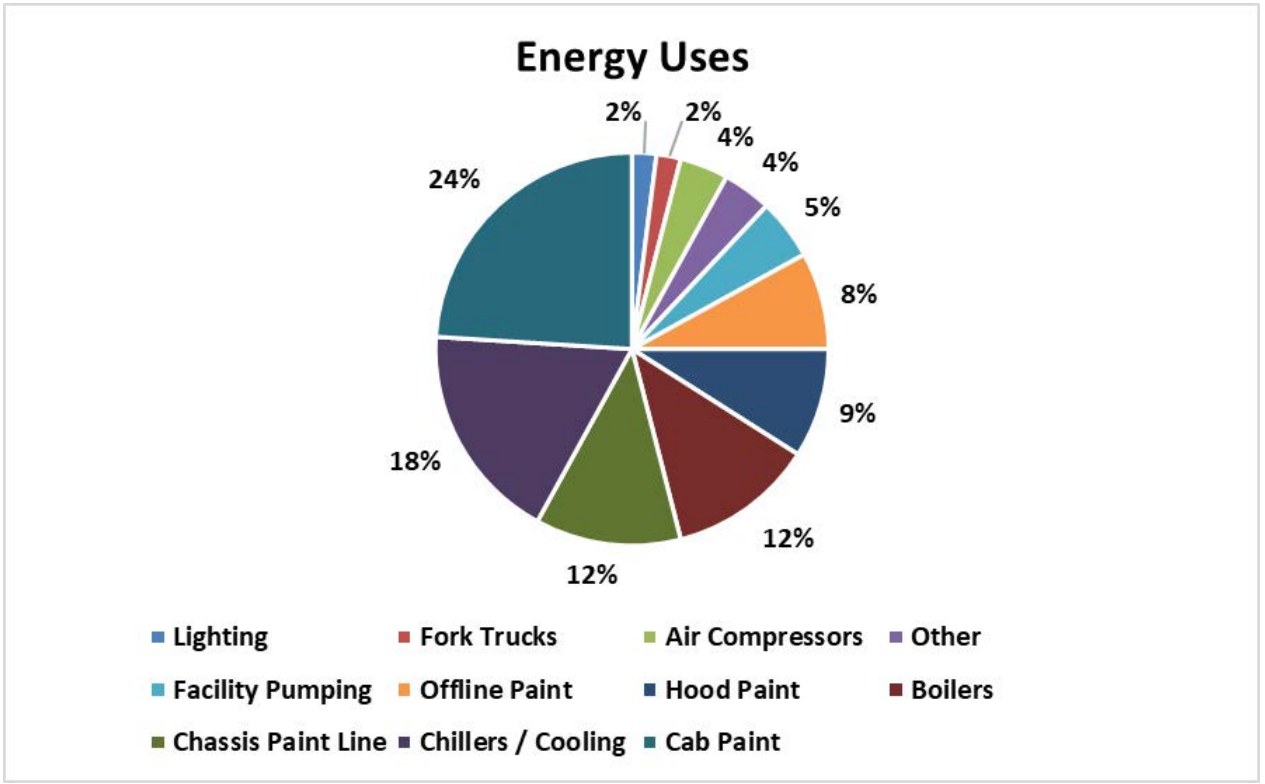
Commitment and guidance from the top

Is there strong top management commitment to the EnMS?
Is there a clear and well-communicated energy policy?
Are there adequate resources for the energy team to carry out the implementation of the EnMS?

Planning (7) – Two Key Pies

Understanding your energy performance





What energy comes into my site?
Where does all this energy go? [SEUs]
What are my EnPIs and EnBs?
What are my objectives, energy targets & action plans?

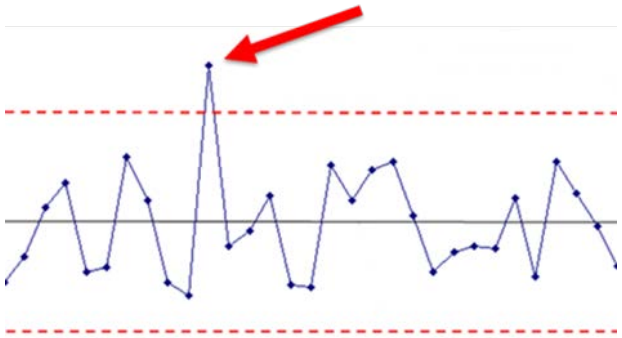
Support (3)

Ensure all team members who impact energy performance understand their role

Who impacts energy performance and our EnMS?
Are they aware, competent, trained, documented?
Is our training for them effective?
Do we maintain good documentation and records of our EnMS?

Operation (3)

Operate, maintain, design and procure to optimize energy performance



Do I have good operational and maintenance controls for my SEUs and action plans?
Do my operators know what to do when energy expectations are not met?
Are design and procurement teams are engaged?

Performance Evaluation (4)

Check on how you are doing for both your EnMS and your energy performance improvement

Are you effectively monitoring and measuring your EnMS and your energy performance improvement?
How are your tracking systems working?
Are internal audits and management reviews all set up?

Continual Improvement (2)

When we check, if things are not okay, then we act to fix them, and we do this in an ongoing method

Do you have a strong corrective action program to fix and follow up on nonconformities to your EnMS?
Do you continually improve both your EnMS and your energy performance?

Overview of 50001 Ready - Measured

Must measure energy performance for 50001 Ready recognition

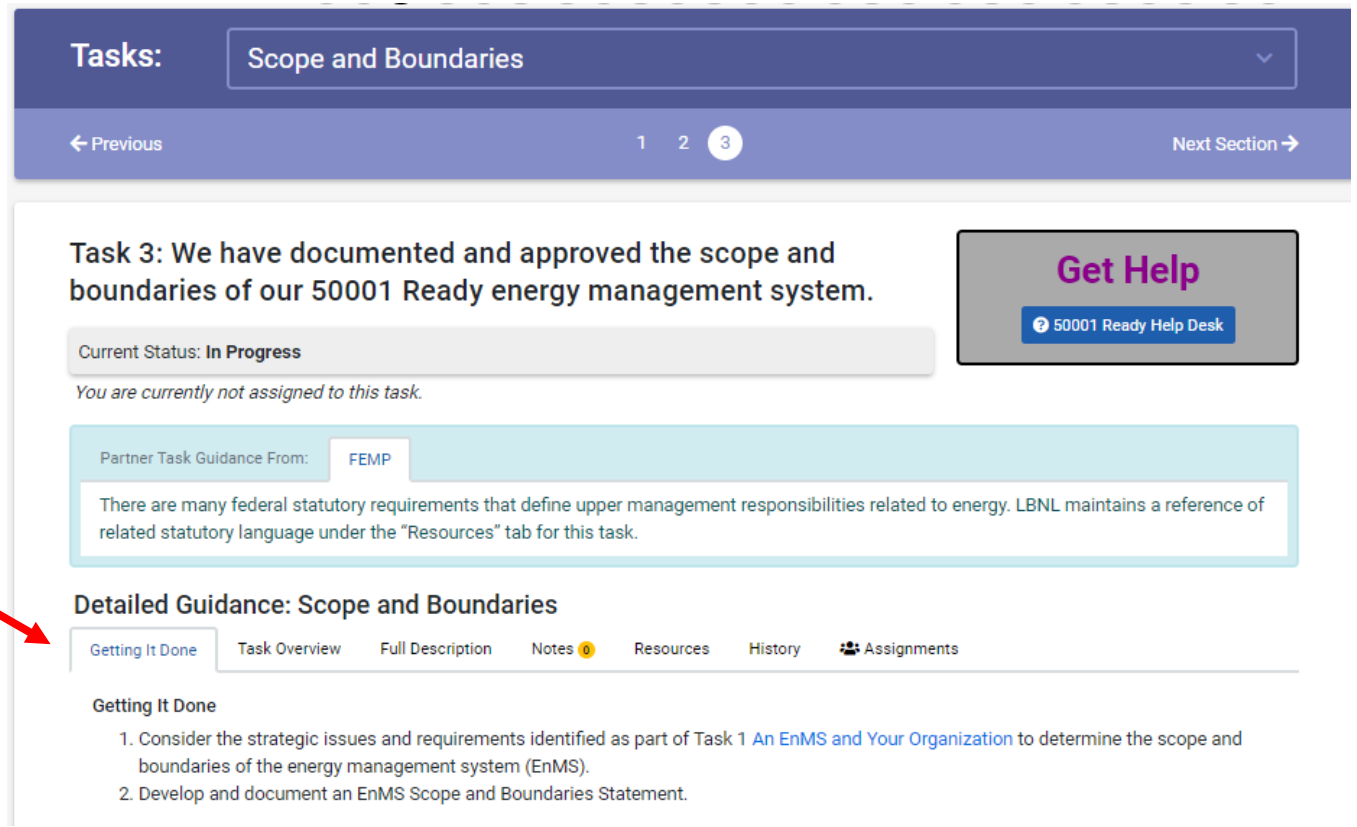
Activity: Walkthrough of the 50001 Ready Navigator

- Creating an account
- Creating a project and the multi-site function
- Explore the 50001 Ready Navigator
  - My Navigator Pull Down Menu
  - FAQs
  - Review the tabs on the tasks
  - Review playbooks
  - Notes, history and assignments tabs
  - Updating your site task status
  - Help

Overview of 50001 Ready - Guidance

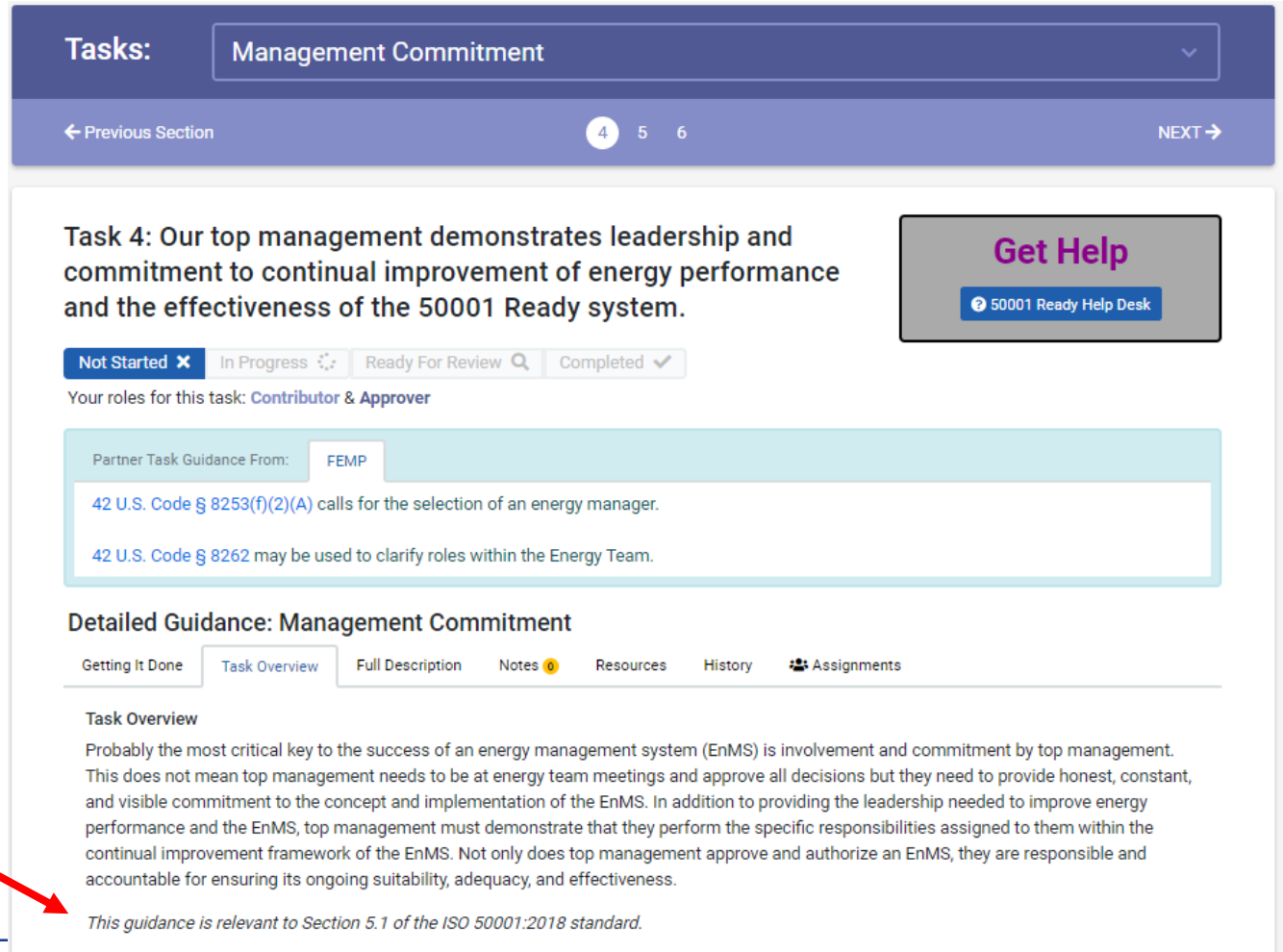
Use the task completion guidance:

Start with the “Getting It Done” Tab



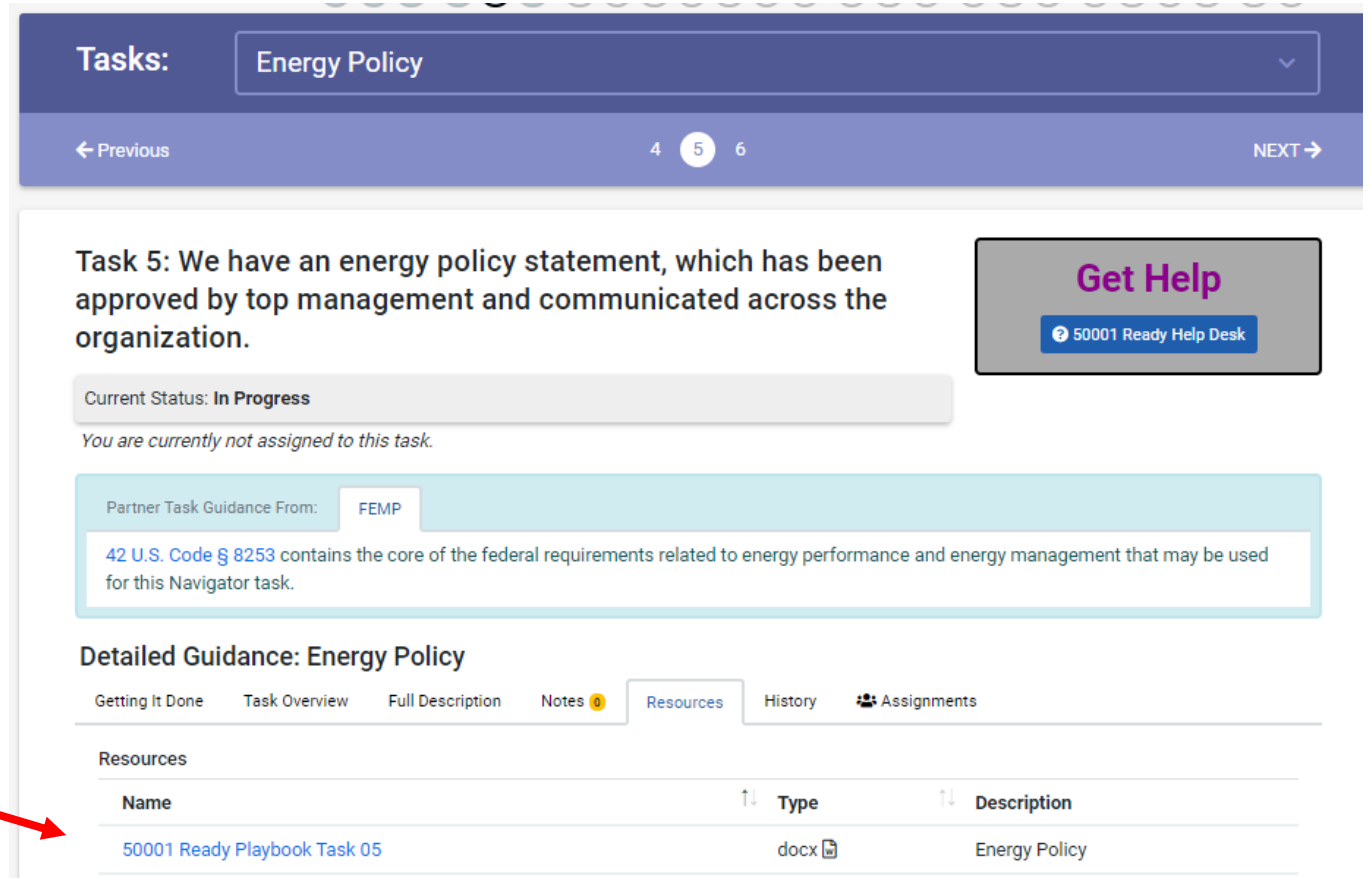
Overview of 50001 Ready – Cross Reference

Use the cross-reference to ISO 50001



Overview of 50001 Ready - Playbooks

Download and use the “playbook” resource for each task. These are word documents that can be filled in with your information.



Task 9: Playbook - EXAMPLE

Activity

- Look at Task 9 in 50001 Ready
- Look at the Task 9 Playbook

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50001 Ready Navigator Playbook

Task 9: Significant Energy Uses (SEUs)

Date last modified/updated: Click here to enter a date.
Who last modified/updated: Click here to enter text.
Internal audit: Click here to enter a date.
Management review: Click here to enter a date.

This part of the Navigator Playbook is completed when you have:

1. **Identified the energy uses that consume the most energy within your boundaries.**
2. **Identified factors and persons that affect the energy consumption of identified energy uses.**
3. **Established selection criteria for identifying which of these energy uses should be a significant energy use (SEU).**
4. **Determine SEU energy performance based upon energy consumption and relevant variables as appropriate.**
5. **Review the SEU selection criteria as part of the SEU update process.**

1. Identify the energy uses that consume the most energy within your boundaries.
2. Identify factors and persons that affect the energy consumption of identified energy uses.

Overview of 50001 Ready - Goals

- Gain an understanding of ISO 50001
- Use the 50001 Ready Navigator tool to complete the 25 tasks
- Gain DOE recognition for self-attesting to this completion
- Demonstrate continual energy performance improvement (now a "shall" in ISO 50001: 2018)
- Improve overall plant operations

Overview of 50001 Ready – Goals - Recognition

STEP 1
Complete the 25 tasks in the 50001 Ready tool

STEP 2
Prepare your signed self-attestation form

STEP 3
Determine your energy performance improvement

STEP 4
File for 50001 Ready recognition

DOE Recognizes 50001 Ready Completion

Overview of 50001 Ready - Resources

- 50001 Ready Program
  - https://www.energy.gov/eere/amo/50001-ready-program
- 50001 Ready Navigator
  - https://navigator.lbl.gov/
- Energy Footprint Tool
  - https://www.energy.gov/eere/amo/downloads/energy-footprint-tool
- EnPI Lite Tool
  - https://enpilite.lbl.gov/
- 50001 Ready at Better Building
  - https://betterbuildingssolutioncenter.energy.gov/better-plants/software-tools

Overview of 50001 Ready: Summary

Utilities

DOE Programs

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Superior Energy Performance
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DEKRA

Verification Body Partners

YOUR COMPANY

SEM/ISO/SEP Consultants

DOE Resources

Energy Tools

Training Partner

Georgia Tech Enterprise Innovation Institute

Survey Says…..

4 out of 5 energy consultants surveyed* recommend you use

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To prevent this from happening to your energy team

*No actual survey was taken. This is just used to make a point.

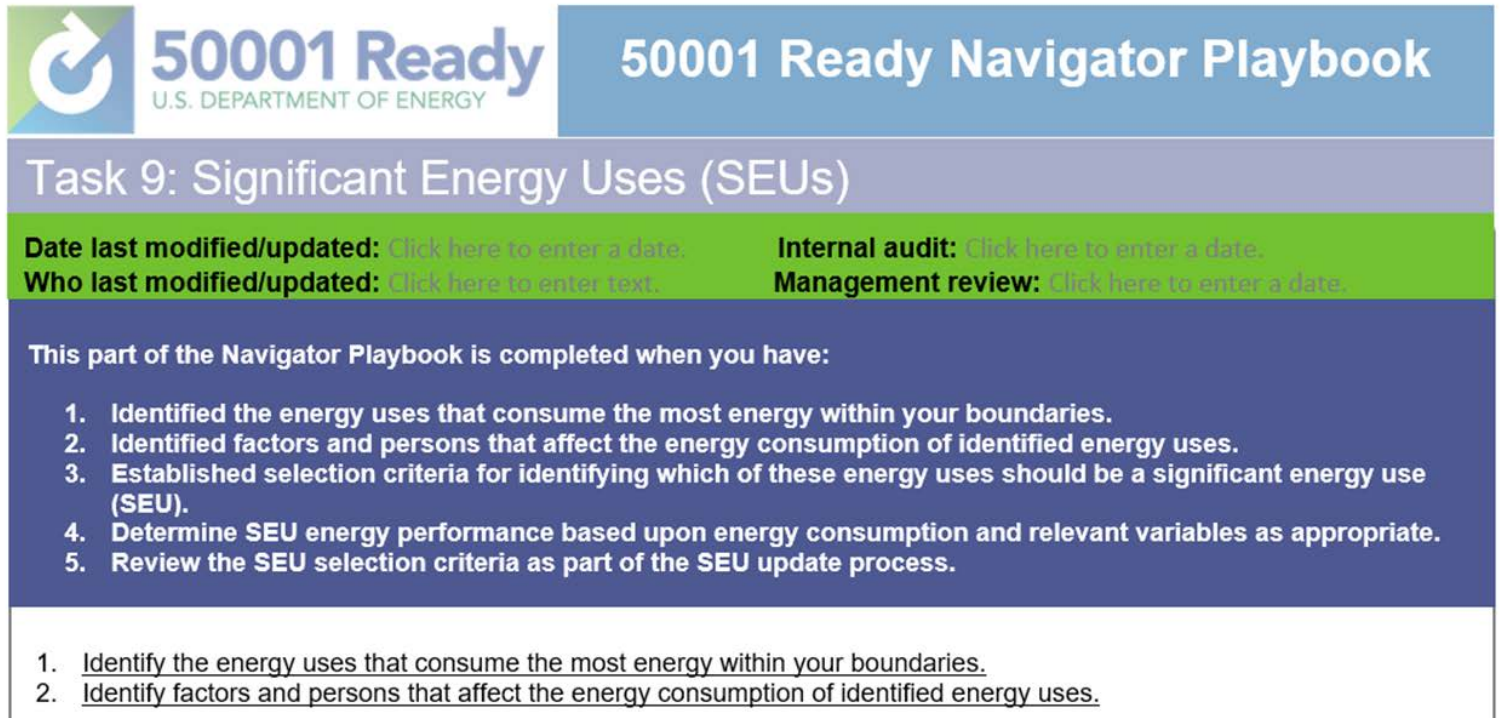
Review Question 5

Review Question

5) The 50001 Ready playbooks are MS Word documents and can be modified to suit your organizations specific needs:

A. TRUE

B. FALSE



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50001 Ready Navigator Playbook

Task 9: Significant Energy Uses (SEUs)

Date last modified/updated: Click here to enter a date. **Internal audit:** Click here to enter a date.
Who last modified/updated: Click here to enter text. **Management review:** Click here to enter a date.

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3. **Established selection criteria for identifying which of these energy uses should be a significant energy use (SEU).**
4. **Determine SEU energy performance based upon energy consumption and relevant variables as appropriate.**
5. **Review the SEU selection criteria as part of the SEU update process.**

1. Identify the energy uses that consume the most energy within your boundaries.
2. Identify factors and persons that affect the energy consumption of identified energy uses.

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Review Question 6

Review Question

6) Among many other items, one of the key requirements of the ISO 50001: 2018 version is that organizations shall:

A. Get third party certification at all their sites
B. Sub-meter every electric motor over 100 hp
C. Demonstrate continual energy performance improvement
D. Conduct management reviews every quarter
E. Replace all site lighting with LEDs by 2025

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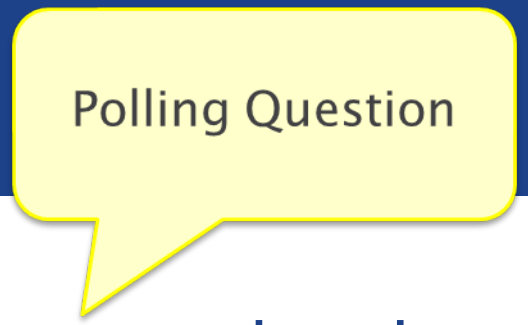
Polling Question 3



3) After listening to today's webinar session, how do you feel about 50001 Ready helping you with your energy management plans:
   A. Overwhelmed
   B. Cautiously optimistic
   C. Encouraged
   D. Ready to get Ready
   E. I want my money back. Oh, wait. It was free!

Review the Webinar Schedule

- Next Tasks
- Calendar
- Preparations

50001 Ready Navigator Tasks: Webinar #2

Context of the Organization	Leadership	Planning	Support	Operation	Performance Evaluation	Improvement
1. An EnMS and your Organization 2. People and Legal Requirements 3. Scope and Boundaries	4. Management Commitment 5. Energy Policy 6. Energy Team and Resources	7. Risks to EnMS Success 8. Energy Data Collection and Analysis 9. Significant Energy Uses 10. Improvement Opportunities 11. Energy Performance Indicators (EnPIs) and Baselines (EnBs) 12. Objectives and Targets 13. Action Plans for Continual Improvement	14. Competence and Training 15. Awareness and Communication 16. Documenting the EnMS	17. Operational Controls 18. Energy Considerations in Design 19. Energy Considerations in Procurement	20. Monitoring and Measurement of the EnMS 21. Monitoring and Measurement of Energy Performance Improvement 22. Internal Audit 23. Management Review	24. Corrective Action 25. Continual Improvement

50001 Ready
U.S. DEPARTMENT OF ENERGY

Training Schedule: By Session

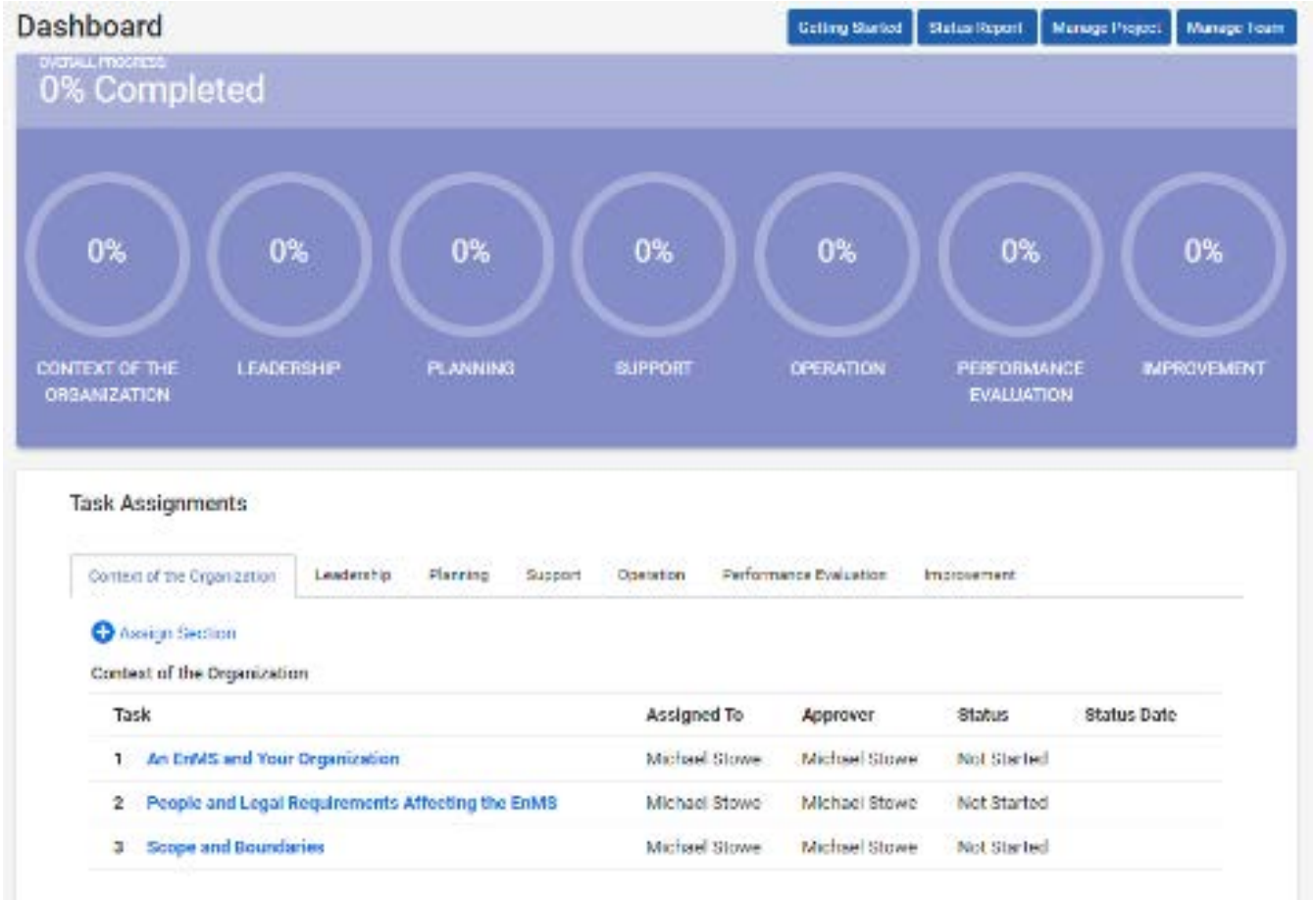
1. An Overview – TODAY – February 9
2. Laying the Foundation of 50001 – **NEXT Webinar**
   a) February 16, 10:00 a.m. to 12:30 p.m.
3. Where does all the Energy Go? – February 23
4. Sorting out the Energy Data – March 2
5. Engaging Other Functions – March 9
6. Evaluating Performance – March 16
7. Ensuring Continual Performance – March 23
8. Wrap Up and Next Steps – March 30

Preparation for Session TWO

- If desired, purchase the ISO 50001: 2018 standard
- Set up your 50001 Ready account
- Prepare for Session TWO:
  - Review task 1-7 in the 50001 Ready navigator
  - Download 50001 Ready playbooks for tasks 1-7
  - Consider your legal requirements (2).
  - Consider your scope and boundaries (3).
  - Do you have top management commitment (4)?
  - Do you have an energy policy (5)?
  - Do you have an energy team (6)?

Between Sessions

As a routine, use the 50001 Ready Navigator to assign tasks and update task completion status



Please Contact Us With Any Questions

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