




Applying ISO 50001 and 50001 Ready for Strategic Energy Management (SEM)

Tuesday, August 17, 2021

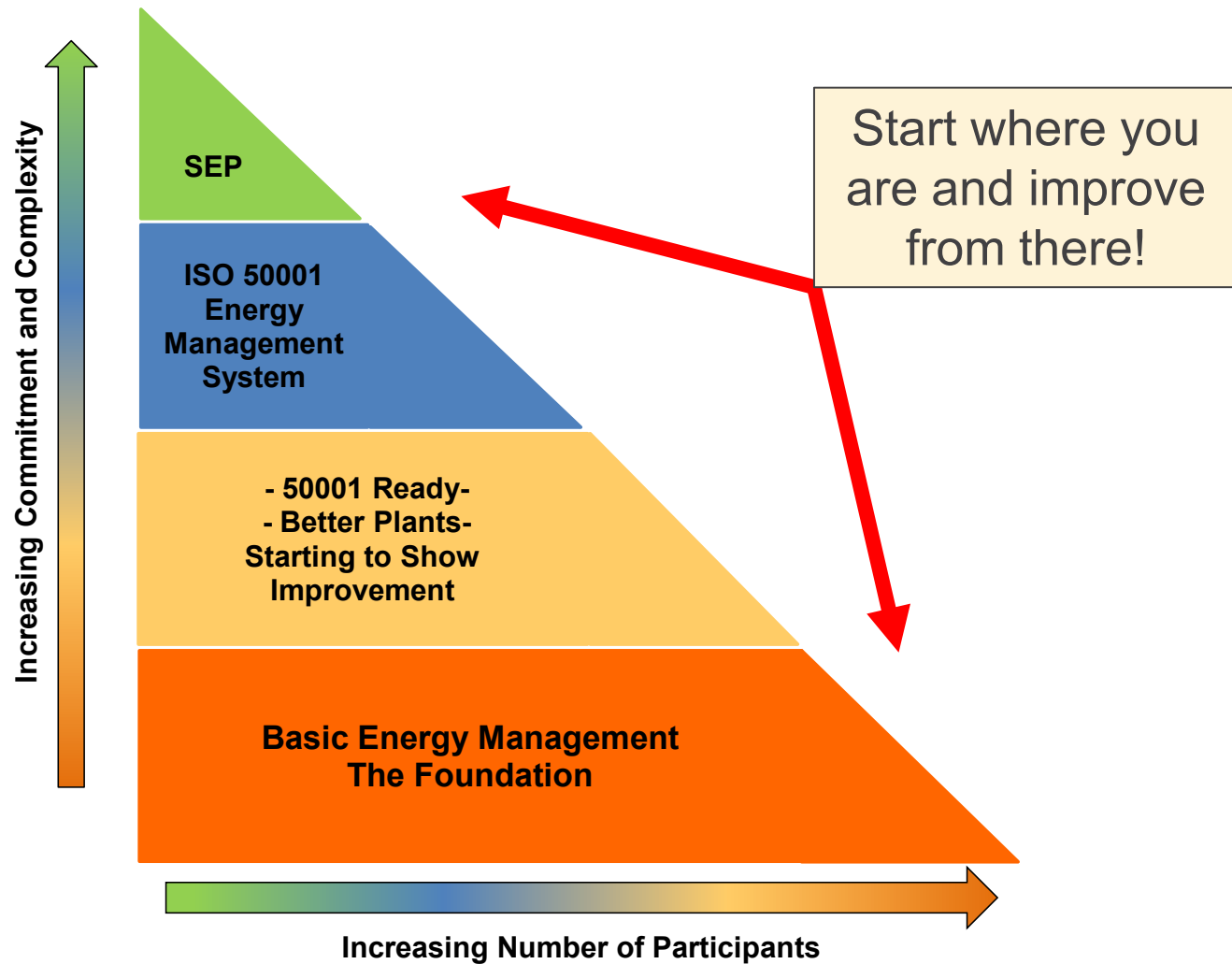
6:00 p.m. - 7:00 p.m.

A 50001 Ready Overview

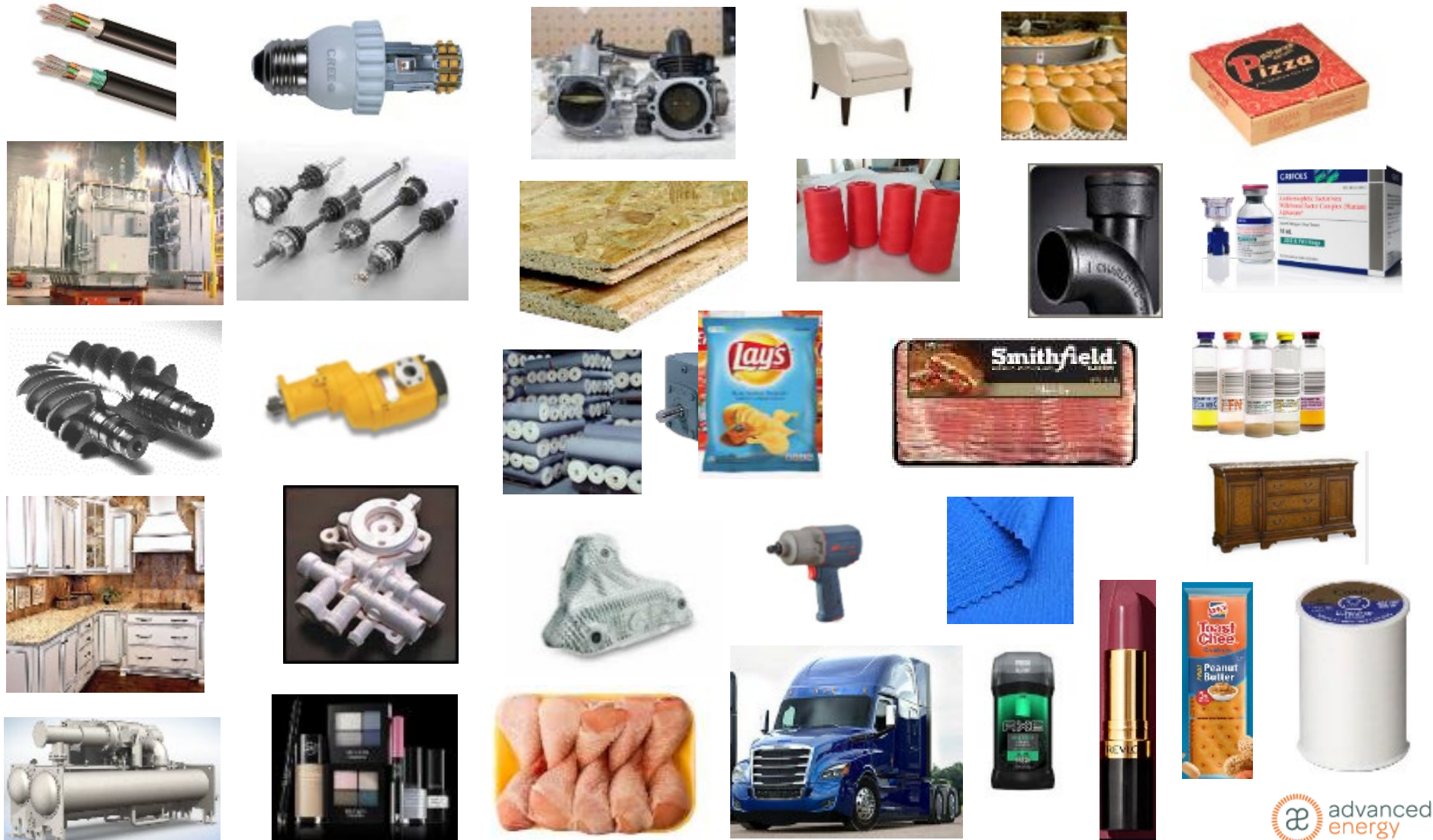
Topics and Learning Objectives

- Why Strategic Energy management (SEM)?
 - The SEM Continuum
- Why 50001 Ready?
 - The business case
- Overview of the 50001 Ready Navigator Tool
 - The system
 - The 25 tasks
 - The seven sections
 - A look inside 50001 Ready
 - Resources
 - Recognition
- 50001 Ready and the Cohort Model

Why SEM? - The Continuum



Why SEM? - Made in NC



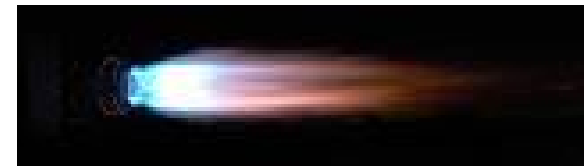
Why SEM: Transformation Takes Energy

Transformation examples:



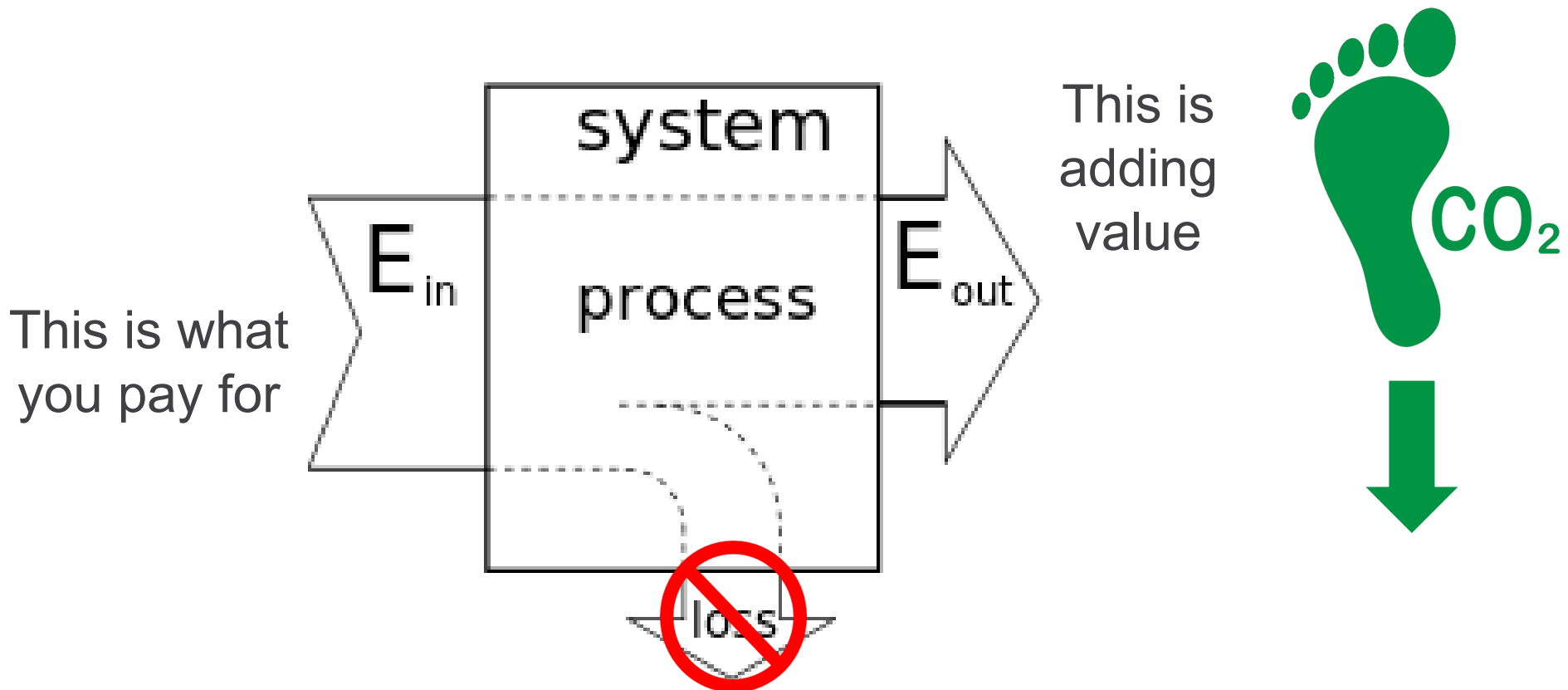
Why SEM? There is a lot of “E”

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

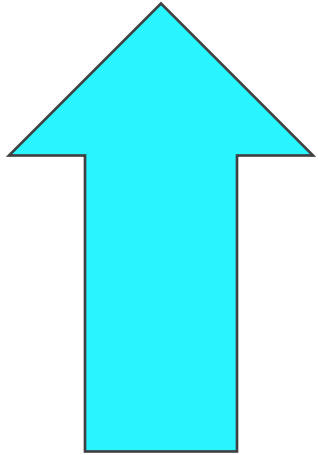


Why SEM? - Energy Efficiency

- Make MORE with LESS:



Why SEM? – EE & EI



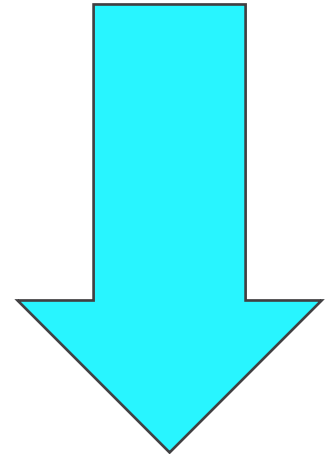
INCREASE Energy Efficiency (EE)

TO

REDUCE Energy Intensity (EI)

&

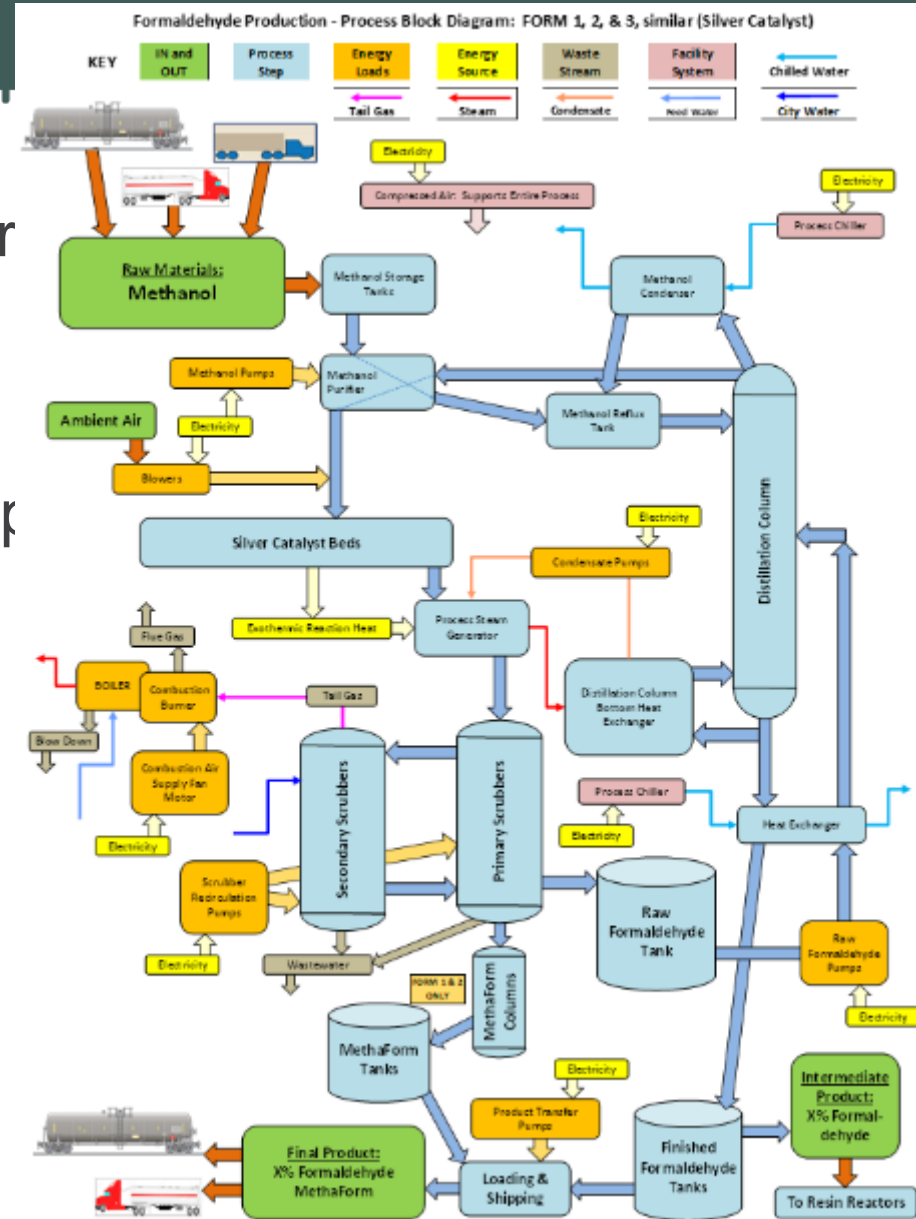
REDUCE Energy Costs \$\$\$



Why SEM? - Process Block Diagram

Using the process block diagram

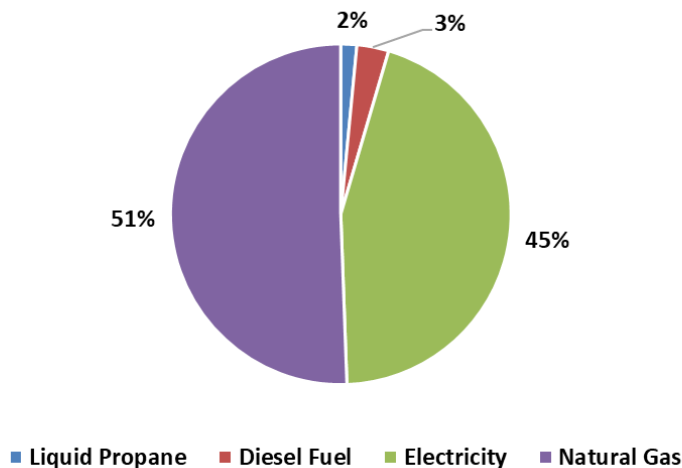
- Energy sources
- Significant energy users
- Process versus Facility Support
- Intermittent loads
- Operational parameters



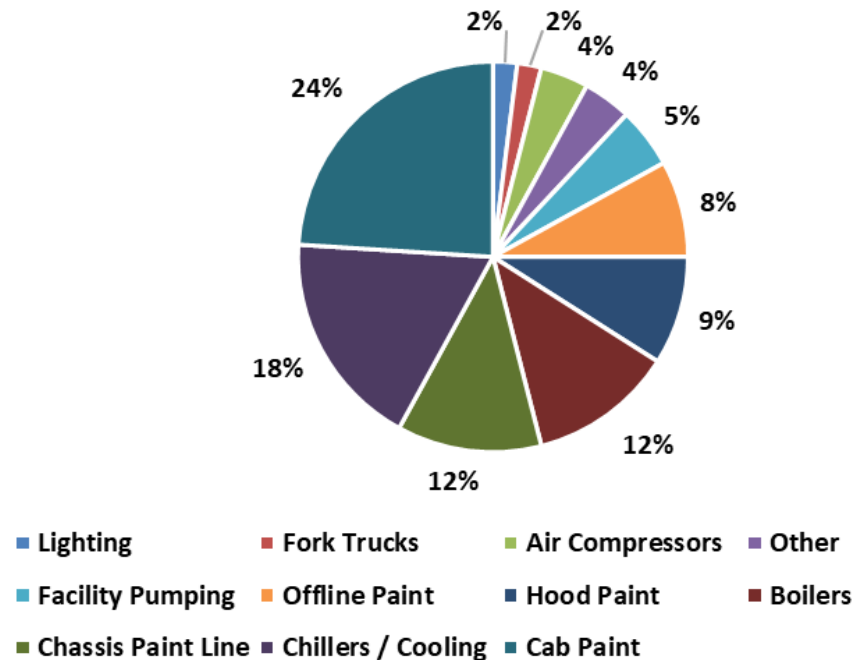
Why SEM? – Two Key Pie Charts

Understanding your energy consumption

Energy Sources



Energy Uses



*What energy comes into my site?
Where does all this energy go?*

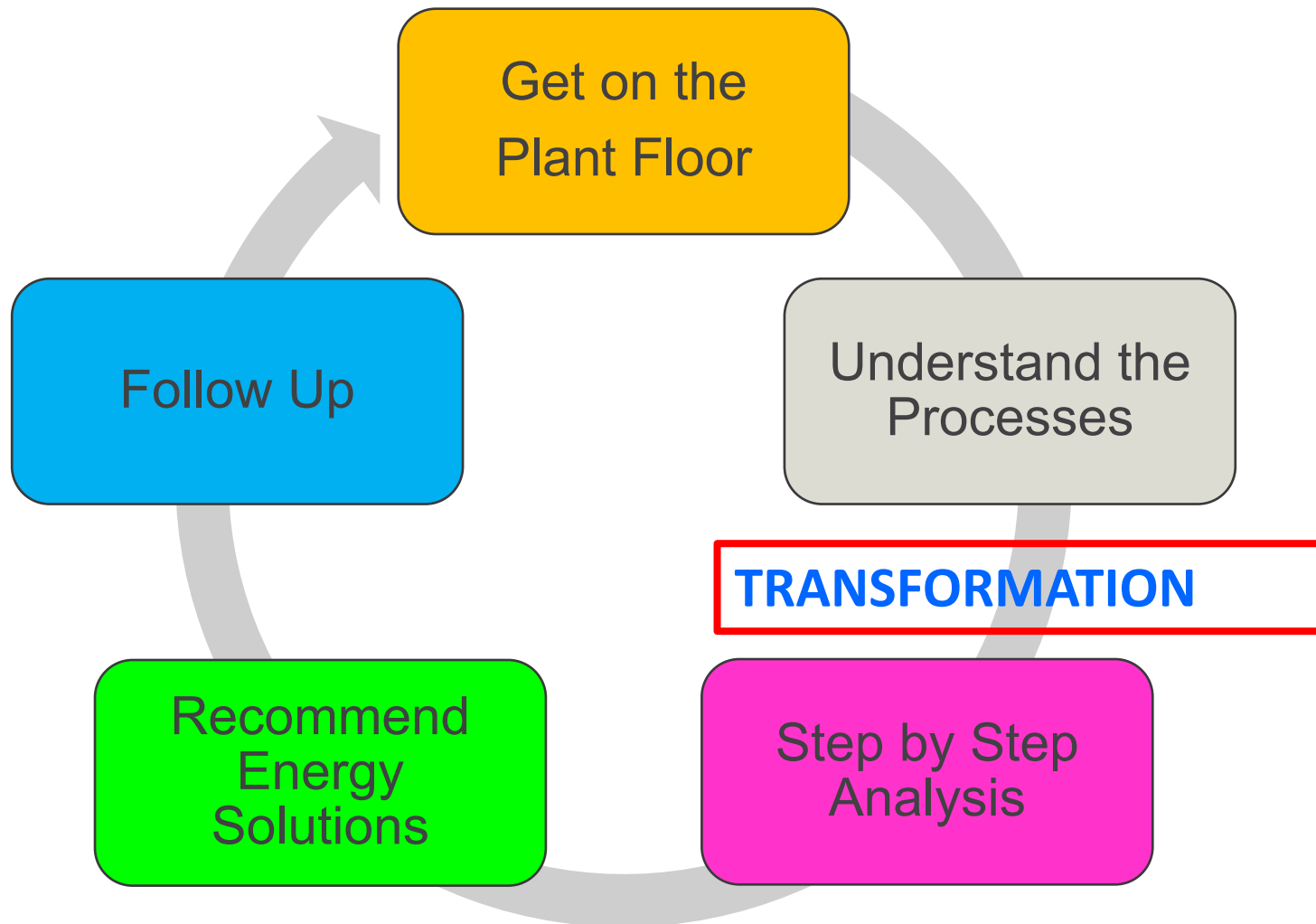
Why SEM? - Non-Energy Benefits

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



SEM and Carbon Reduction

- Goals to   lead organizations to SEM
AND

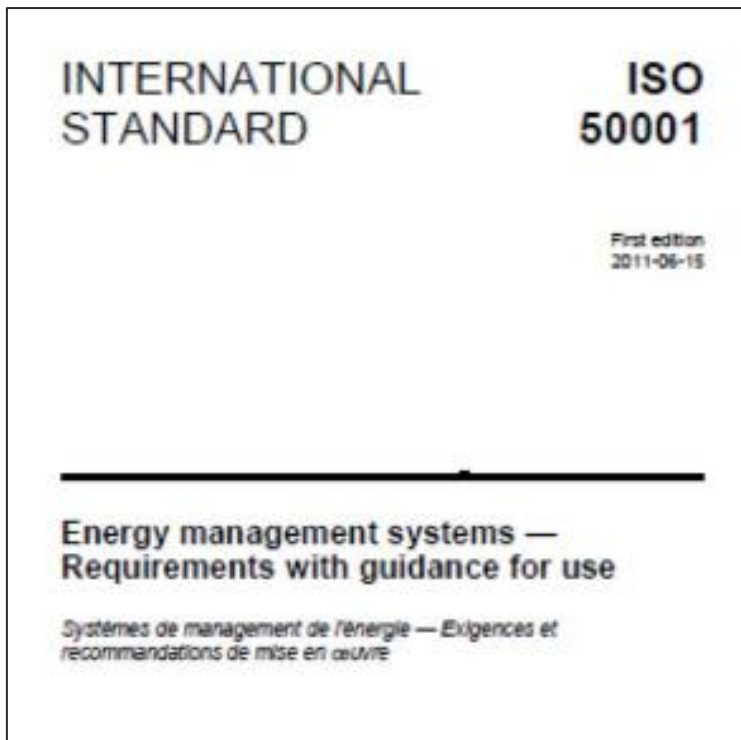
- SEM leads organizations to  

 **50001 Ready** provides a pathway to achieve BOTH!
U.S. DEPARTMENT OF ENERGY

Why 50001 Ready? - Background



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



Why 50001 Ready? – A System

Active Partner Referral | Advanced Energy

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Partnering with:

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energy**

Welcome to the 50001 Ready Navigator!

The 50001 Ready Navigator is an online application that provides step-by-step guidance for implementing and maintaining an energy management system in conformance with the ISO 50001 Energy Management System Standard. Join the 23,000+ facilities worldwide benefiting from an energy management system!

About the Navigator

Tell Me More:

The 50001 Ready Navigator is an online guide for establishing an energy management system to plan, identify, monitor, and implement policies that will improve your facility's energy performance. Completion of the 50001 Ready Navigator creates a facility to pursue certification to the international best practice for energy management systems, ISO 50001.

What is Energy Management?

Energy management is an objective, continual improvement of energy performance and efficiency that is designed within an organization's strategic business plan. Organizations with an energy management system achieve energy and cost savings through informed decision making and the implementation of energy saving practices. The facility develops, implements, and maintains the system to the international standard for establishing and maintaining energy management systems.

Why is Energy Management Important?

Energy is a critical component to your organization's operations. It is important to realize that energy can be managed and controlled. It is not a fixed overhead cost. Energy management helps to reduce your organization's energy waste. Through constant energy performance and continual use of energy audits and energy management, the facility can help to reduce your organization's energy costs and improve energy management. For a step-by-step guide, visit our website and see the 50001 Ready Navigator.

Why should I use the 50001 Ready Navigator?

The 50001 Ready Navigator has been developed by the U.S. Department of Energy to align with the energy management system best practice outlined in ISO 50001. Use of the Navigator allows the user to implement a complete definition of energy management systems and facilities a user to pursue certification to the international standard for energy management systems, ISO 50001. The Navigator is designed to help your organization comply with all parts of ISO 50001, so that you can be certified to using 50001 Ready or pursue ISO 50001 or ISO 50001 or ISO 50001 certification.

What is 50001 Ready?

50001 Ready is a U.S. Department of Energy initiative for facilities organizations that have implemented an ISO 50001-based energy management system using the guidance in the 50001 Ready Navigator, and that have demonstrated energy performance improvements. To be 50001 Ready recognized, organizations are responsible for

Explore the Navigator

Dashboard

ISO Recognition Required on 03/03/2017. The ISO should respond directly to your request.

100% Completed

Task Assignments

Item	Assigned To	Status	Status Date	Action
1. Scope and Boundaries	John Name Last Name	Completed		
2. Energy Policy	John Name Last Name	Completed		
3. Management Commitment	John Name Last Name	Completed		
4. Energy Team	John Name Last Name	Completed		
5. Legal Requirements	John Name Last Name	Completed		

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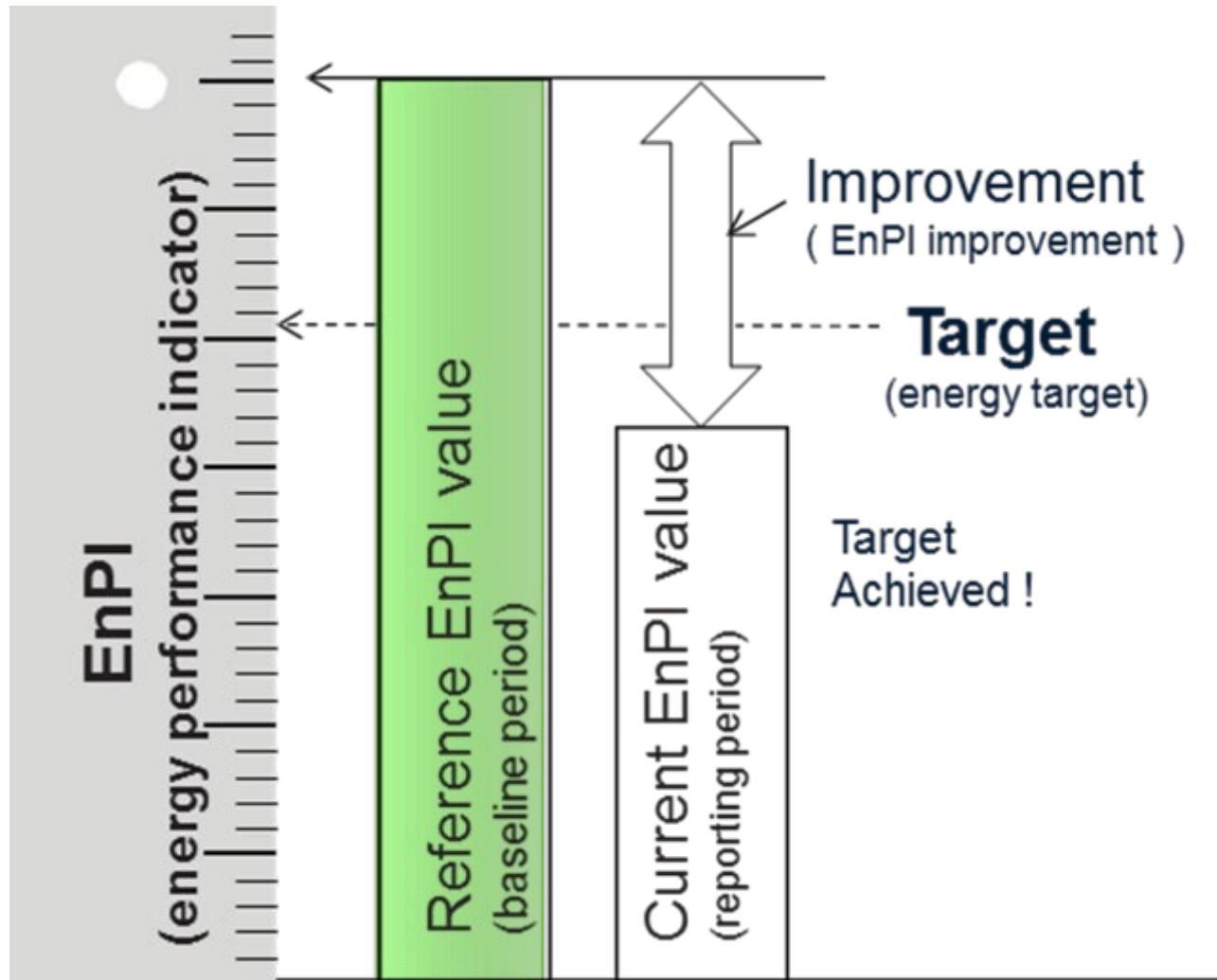
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Why 50001 Ready?: Goal Oriented



Why 50001 Ready? – Proven Results

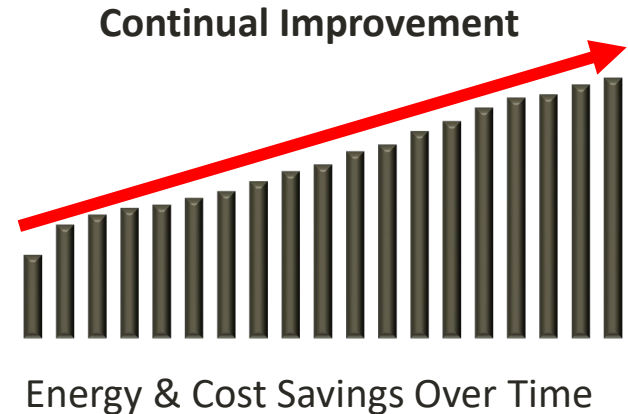
- Companies with a formal SEM system have better energy performance improvement:

- Schneider Electric

- 19% average improvement with SEM
- Versus 11.5% without

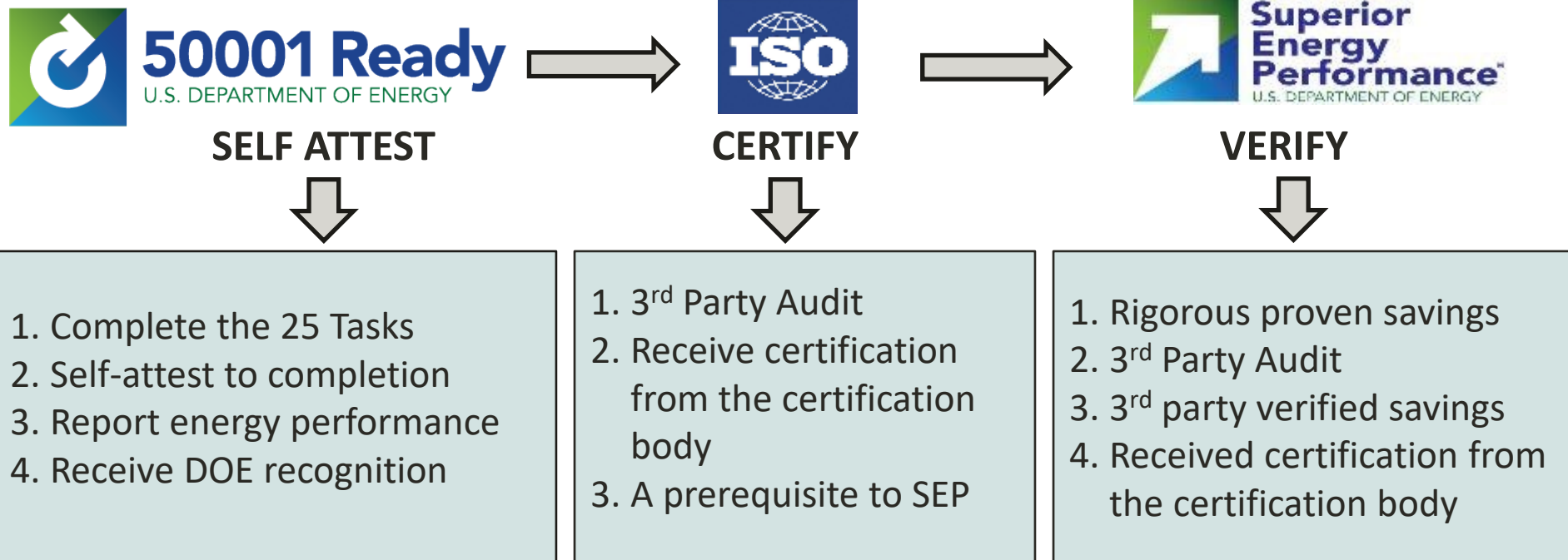
- 3M

- 10.5% average improvement with SEM
- Versus 6.5% without



- 50001 Ready will help formalize you SEM

Why 50001 Ready? – A Pathway



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

Why 50001 Ready?: 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 Ready? – Key Items

- Continual Improvement - similar to Lean, Kaizen, 6 Sigma
- Company Culture Impact - Involves everyone in energy
- Commitment - Leadership driven, resources provided
- Data Driven - Collection & analysis of energy performance info
- Performance Driven – Actual improvement is required
- Adds Value - Incorporates energy decisions into all operations



Why 50001 Ready?

- Practical
- Implementation focused
- User friendly
- Data driven
- Performance based
- An alternative to certification
- 25 tasks to guide efforts
- Dashboard tracking
- Excellent integration with other ISOs
- Great resources
- Self attesting
- Lots of FREE support
- Continual improvement
- Leverage



The 50001 Ready Navigator



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Partnering with:



**advanced
energy**

Welcome to the 50001 Ready Navigator!

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About the Navigator

Tell Me More:

The 50001 Ready Navigator is an online guide for establishing an energy management system to plan, identify, activate and implement projects that will improve your facility's energy performance. Completion of the 50001 Ready Navigator projects results in your certification as the International level provider for energy management systems. See below.

What is Energy Management?

Energy management is a process for continual improvement of energy performance and efficiency that is designed within an organization's strategic business plan. Organizations with an energy management system achieve energy efficiency through informed decision making and the implementation of energy saving practices for facilities, operations, equipment and resources. ISO 50001 is the international standard for establishing and maintaining energy management systems.

Why is Energy Management Important?

Energy is a critical component to your organization's operations. It is important to realize that energy can be managed and controlled. It's not a fixed overhead cost. Energy management helps to reduce your organization's energy costs. Through improved energy performance and optimized use of energy assets, and energy related costs. No matter how large or small your organization, implementing some form of energy management can be a key step to save energy, cut costs, and stay competitive. See the ISO 50001-ISO 50001 certified facilities.

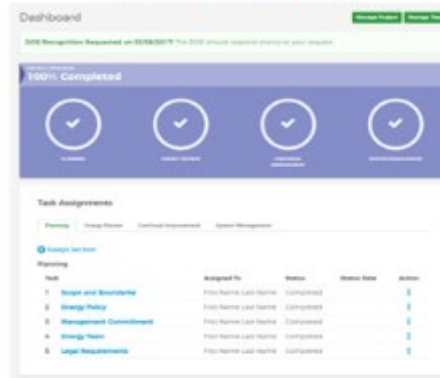
Why should I use the 50001 Ready Navigator?

The 50001 Ready Navigator has been developed by the U.S. Department of Energy to align with the energy management system best practices outlined in ISO 50001. Use of the Navigator enables the user organization to obtain a consistent methodology of energy management systems, and maintain a team-based approach to its implementation. For detailed information, see your organization's energy management system or ISO 50001, or that can be used to help energy cut costs, and stay competitive. See the ISO 50001-ISO 50001 certified facilities.

What is 50001 Ready?

50001 Ready is a U.S. Department of Energy designation for facilities and organizations that have implemented an ISO 50001-based energy management system operating in accordance with the 50001 Ready Navigator, and that have demonstrated energy performance improvement. For the 50001 Ready designation, organizations are responsible for

Explore the Navigator



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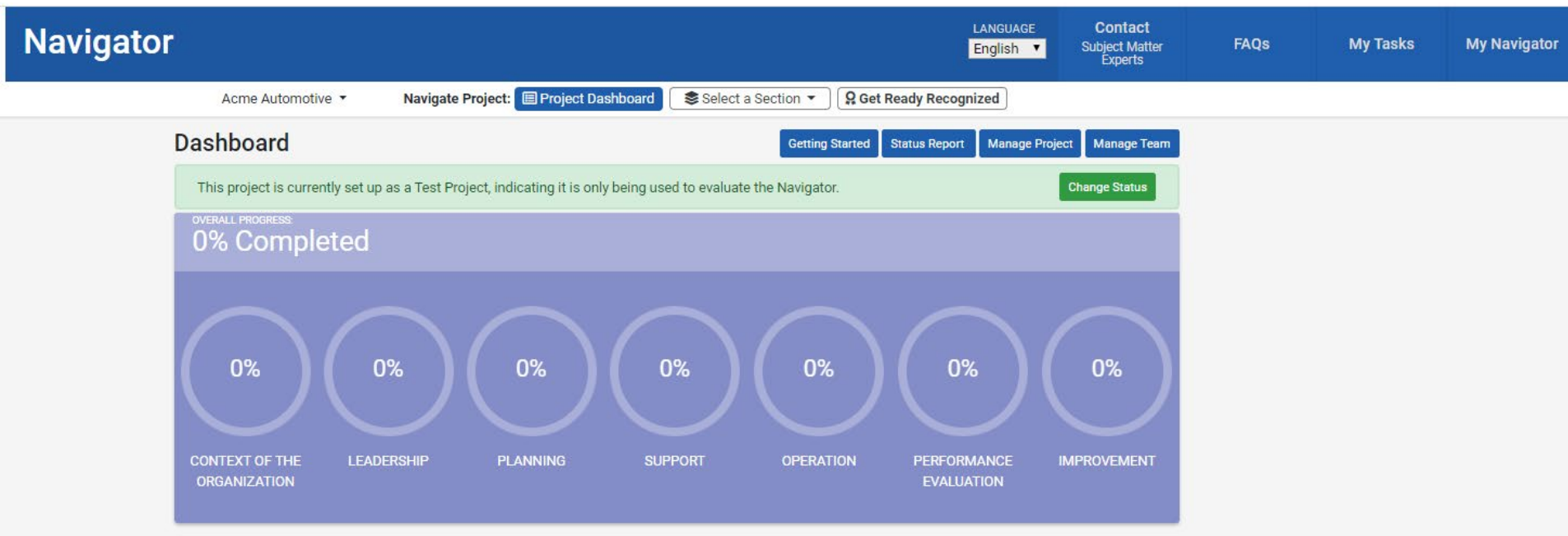
Overview of 50001 Ready - The Tool

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

[CO] Glen Raven ▾

Central Office Portfolio View

Central Office DashboardManage Central OfficeManage CO TeamAdd Site

Central Office CONTRIBUTOR

Central Office Tasks

Not Started

In Progress

Ready for Review by Site

Support Only

Completed

1

2

3

4

5

6

7

8

9

10

11

12

13

14

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19

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24

25

Contact	Site Name	Task Progress	Action	Last Activity
	GR Offices	<div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div><div>6</div><div>7</div><div>8</div><div>9</div><div>10</div><div>11</div><div>12</div><div>13</div><div>14</div><div>15</div><div>16</div><div>17</div><div>18</div><div>19</div><div>20</div><div>21</div><div>22</div><div>23</div><div>24</div><div>25</div></div>	<div>Continue Setup</div>	01/25/2021 <div>Notes 0</div> <div>Remove</div>
	GR Anderson	<div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div><div>6</div><div>7</div><div>8</div><div>9</div><div>10</div><div>11</div><div>12</div><div>13</div><div>14</div><div>15</div><div>16</div><div>17</div><div>18</div><div>19</div><div>20</div><div>21</div><div>22</div><div>23</div><div>24</div><div>25</div></div>	<div>Continue Setup</div>	01/25/2021 <div>Notes 0</div> <div>Remove</div>
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	GR Norlina	<div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div><div>6</div><div>7</div><div>8</div><div>9</div><div>10</div><div>11</div><div>12</div><div>13</div><div>14</div><div>15</div><div>16</div><div>17</div><div>18</div><div>19</div><div>20</div><div>21</div><div>22</div><div>23</div><div>24</div><div>25</div></div>	<div>Continue Setup</div>	01/25/2021 <div>Notes 0</div> <div>Remove</div>
	GR Novelty Yarn	<div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div><div>6</div><div>7</div><div>8</div><div>9</div><div>10</div><div>11</div><div>12</div><div>13</div><div>14</div><div>15</div><div>16</div><div>17</div><div>18</div><div>19</div><div>20</div><div>21</div><div>22</div><div>23</div><div>24</div><div>25</div></div>	<div>Continue Setup</div>	01/25/2021 <div>Notes 0</div> <div>Remove</div>
	GR Yarn Plant	<div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div><div>6</div><div>7</div><div>8</div><div>9</div><div>10</div><div>11</div><div>12</div><div>13</div><div>14</div><div>15</div><div>16</div><div>17</div><div>18</div><div>19</div><div>20</div><div>21</div><div>22</div><div>23</div><div>24</div><div>25</div></div>	<div>Continue Setup</div>	01/25/2021 <div>Notes 0</div> <div>Remove</div>

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50001 Ready Navigator Tasks

Context of the Organization

1. An EnMS and your Organization
2. People and Legal Requirements
3. Scope and Boundaries

Leadership

4. Management Commitment
5. Energy Policy
6. Energy Team and Resources

Planning

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

Support

14. Competence and Training
15. Awareness and Communication
16. Documenting the EnMS

Operation

17. Operational Controls
18. Energy Considerations in Design
19. Energy Considerations in Procurement

Performance Evaluation

20. Monitoring and Measurement of the EnMS
21. Monitoring and Measurement of Energy Performance Improvement
22. Internal Audit
23. Management Review

Improvement

24. Corrective Action
25. Continual Improvement



50001 Ready
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Context of the Organization (3)

1) 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)

2) Commitment and guidance from the top



Is there strong top management commitment to the EnMS?

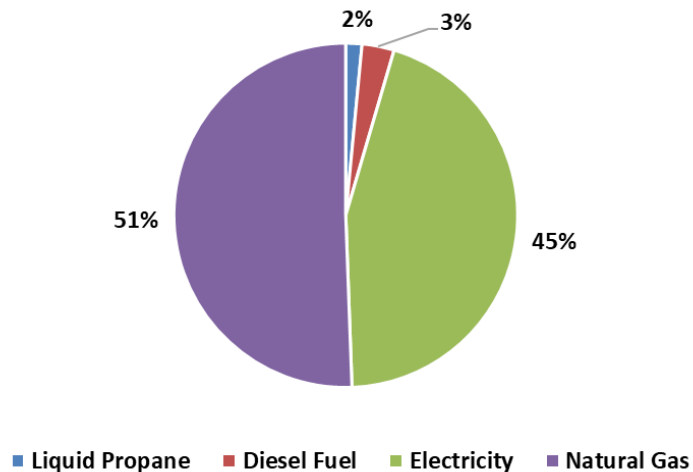
Is there a clear and well-communicated energy policy?

Are there adequate resources for the energy team to carry out the implementation of the EnMS?

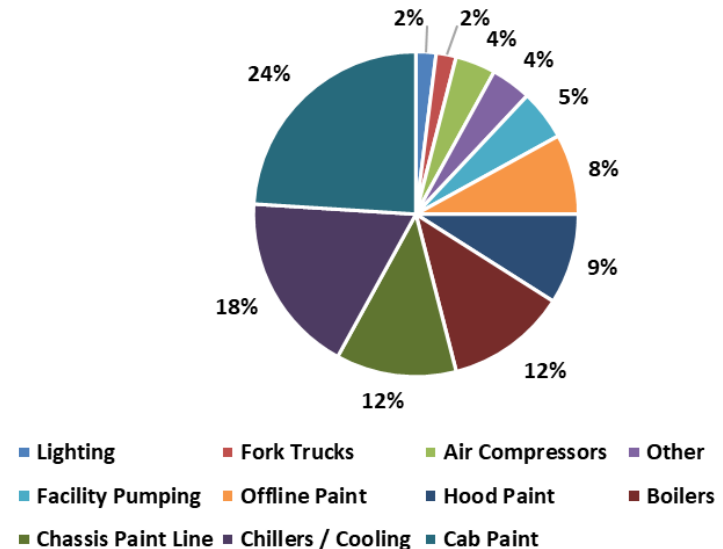
Planning (7) – Two Key Pies

3) Understanding your energy performance

Energy Sources



Energy Uses



What energy comes into my site?

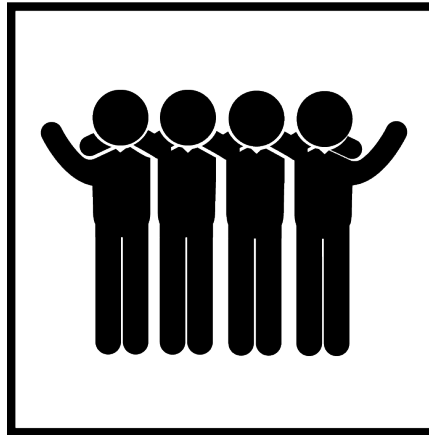
Where does all this energy go? [SEUs]

What are my EnPIs and EnBs?

What are my objectives, energy targets & action plans?

Support (3)

4) Ensure all team members who impact energy performance understand their roles



Who impacts energy performance and our EnMS?

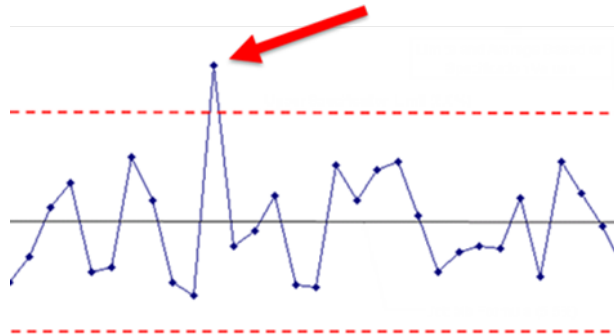
Are they aware, competent, trained, documented?

Is our training for them effective?

Do we maintain good documentation and records of our EnMS?

Operation (3)

5) 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)

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



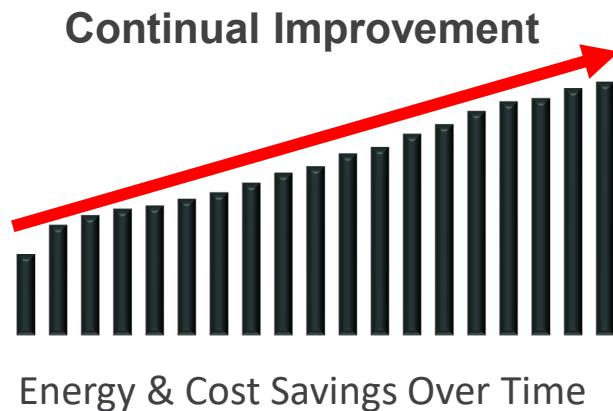
Are you effectively monitoring and measuring your EnMS and your energy performance improvement?

How are your tracking systems working?

Are internal audits and management reviews all set up?

Continual Improvement (2)

7) 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?

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



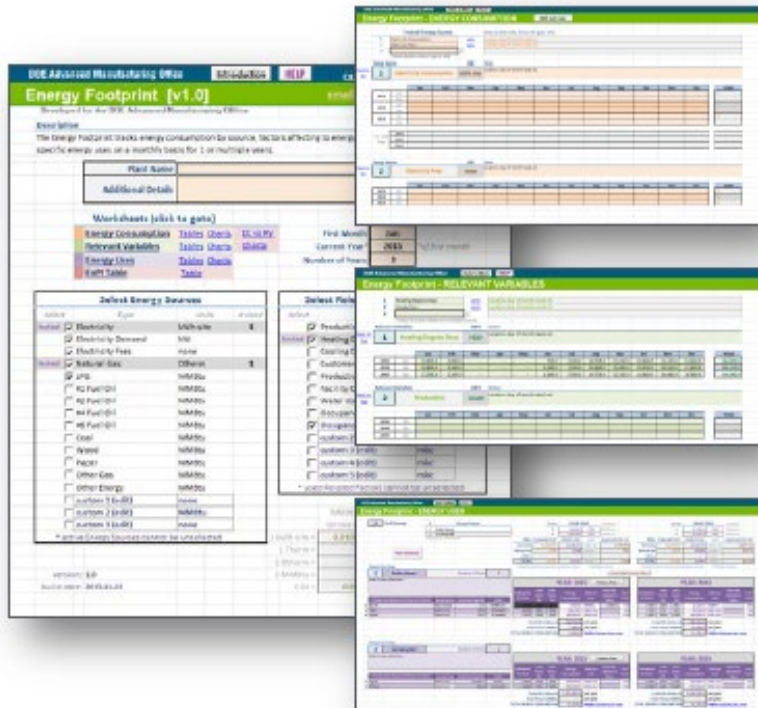
Overview of 50001 Ready - Measured

Must measure energy performance for 50001 Ready recognition



Overview of 50001 Ready - Resources

Energy Footprint Tool



Easily track and analyze:

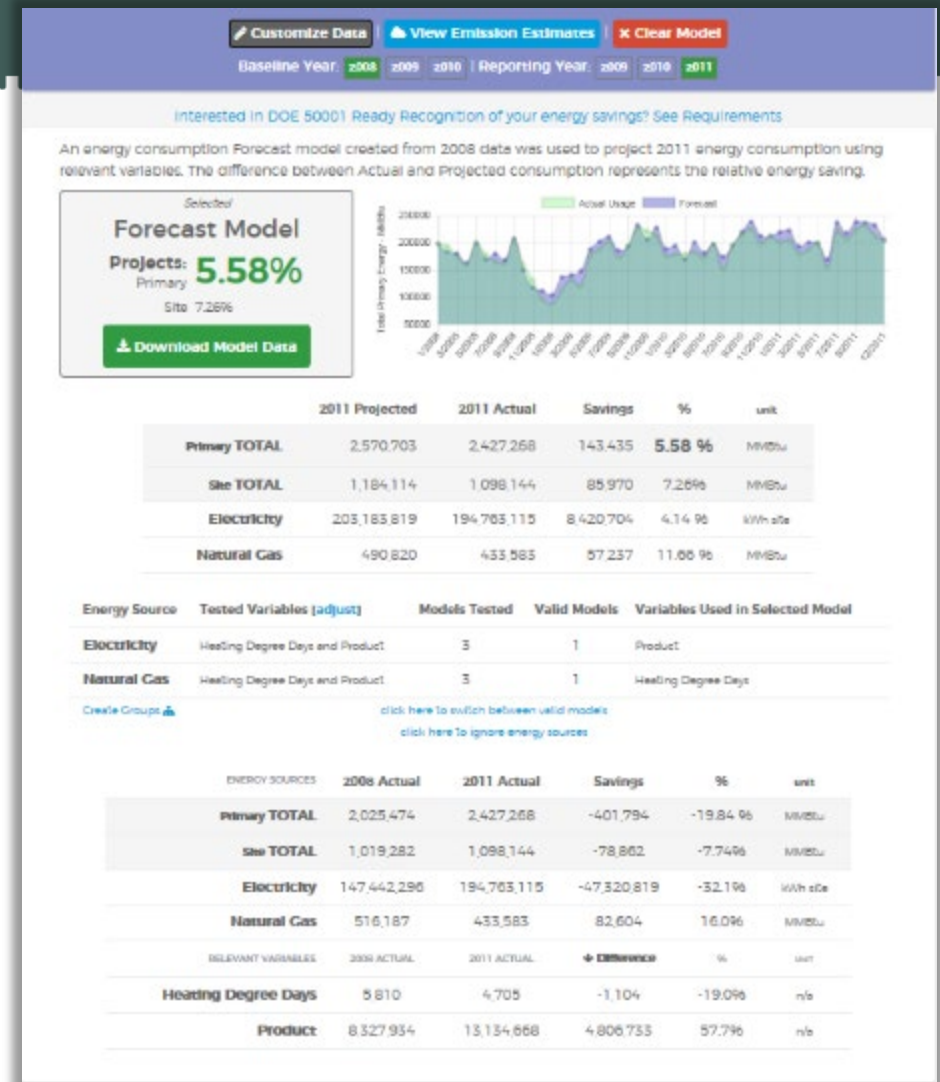
- Energy consumption
Electricity, natural gas, etc.
- Relevant variables
Production levels, degree days, operating hours, occupancy rates, etc.
- Energy Uses
- Calculates energy-related greenhouse gas emissions
- Easily exports to DOE EnPI Tool

Overview of 50001 Ready - Resources

EnPI Lite

Navigator's companion online tool for facility-level energy performance

- Enter or upload energy use data and relevant variables
- Top-down regression analysis calculates energy change from baseline year
- Accepts input from DOE Energy Footprint tool and ENERGY STAR Portfolio Manager
- The EnPI Lite Output file is one option for reporting energy performance for DOE recognition



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://betterbuildingsolutioncenter.energy.gov/better-plants/software-tools>

Overview of 50001 Ready - Outcomes

- Gain an understanding of ISO 50001
- Use the 50001 Ready navigator tool to complete the 25 tasks
- Gain DOE recognition for self-attesting to completion
- Increase energy performance improvement!
- Improve overall plant operations



Overview of 50001 Ready –Recognition

STEP 1

Complete the 25 tasks in the 50001 Ready tool

STEP 2

Prepare your signed self-attestation form

STEP 3

Determine energy performance improvement

STEP 4

File for 50001 Ready recognition



DOE Recognizes
50001 Ready
Completion

Overview of 50001 Ready – Summary

- To paraphrase, 50001 Ready puts the Plan, Do, Check, Act process into simple, clear steps:
 - Say what you will do (PLAN)
 - Do what you said (DO)
 - Verify that you did it (CHECK)
 - Review and improve it (ACT)







What is a Cohort Anyway?



COHORT: /'kō,hôrt/

- 1) An ancient Roman military unit, comprising six centuries, equal to one tenth of a legion
- 2) A group of people banded together or treated as a group

	Smyrna, TN	17.7%
	Ontario, NY	16.5%
	Whitakers, NC	12.6%
	Dunedin, FL	12.2%
GENERAL DYNAMICS	Scranton, PA	11.9%
	Wilson, NC	15.1% / 10 yrs
	Gilroy, CA	9.8%
	Gaithersburg, MD	8.5%
	Cheswick, PA	7.6%
	Carlisle, PA	5.7%

What is a Cohort Anyway?

- Five to seven companies with similar SEM goals and experience levels
- Ideally, non-competing companies
- Willing to openly share info and best practices
- **STRONG** management commitment is essential
 - Allow time for participation
 - Allow time for homework
 - Provide resources needed to succeed
 - Provide resources for travel to trainings



What is a Cohort Anyway?

- Previous experience with other ISO management systems is a plus, but is not required:
 - ISO 9001 for Quality
 - ISO 14001 for Environmental
 - OSHAS 18001, now ISO 45001: for Occupational Health and Safety



I am in a Cohort, Now What?

- What participants will RECEIVE:
 - Kick-off cohort **webinar** to include:
 - Cohort introductions
 - The business case for SEM
 - Who, what, where, why and when of the program
 - Initial homework assignments
 - A list of things to download, review, and gather
 - Review of roles and responsibilities
 - Goals and desired outcomes

I am in a Cohort, Now What?

- What participants will RECEIVE (continued):
 - **Eight full-cohort webinar sessions**
 - Review the fundamentals of ISO 50001 and the Plan, Do, Check, Act (PDCA) model
 - Demonstration of the basics of the *50001 Ready* navigator
 - Review the available tools associated with the *50001 Ready* navigator
 - Work through the 25 tasks in the *50001 Ready* navigator

I am in a Cohort, Now What?

- What participants will RECEIVE (continued):
 - Homework assignments and session preparations
 - Monthly check in calls with each company site
 - One on one
 - Example playbooks
 - Technical assistance with tools and resources



I am in a Cohort, Now What?

- What participants are expected to PROVIDE:
 - Attendance at all events
 - Proper preparation for all events
 - Proper completion of homework
 - Set up a 50001 Ready account
 - Download the tools
 - Play with the tools
 - Gather and provide data
 - Monthly consumption for ALL site energy sources
 - Monthly production data (pounds, gallons, widgets, etc.)



Current Cohort Opportunities

- Local North Carolina cohorts
 - Utility funded
 - Typically, one and possibly two per year
- Department of Energy, Advanced Manufacturing Office 50001 Ready Implementation Cohorts
 - Funded by DOE AMO
 - Recruitment is on going
- Self-funded cohort
 - Cost of cohort is shared by all the cohort members



U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

ADVANCED MANUFACTURING OFFICE

<https://betterbuildingssolutioncenter.energy.gov/iso-50001/tools-expertise-training>

Survey Says.....

- 4 out of 5 energy consultants surveyed* recommend



- To prevent this from happening to your Energy Team



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

Questions & Answers



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Featured Presenter

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Bio Highlights:

- Senior Energy Engineer with Advanced Energy in Raleigh, NC.
- Has over 30 years experience in manufacturing with roles as a production manager, maintenance manager and plant engineer.
- Worked with many industrial processes and all types of plant facility systems.
- Industrial energy efficiency expert, consultant and trainer.
- Holds ISO 50001 certifications and is a DOE recognized instructor for 50001 related topics.