



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

ORNL 50001 Ready Training  
Webinar Series, Session 8  
May 16, 2024  
10:00 a.m. to 12:30 p.m.

# Agenda – Session EIGHT

- Welcome, Safety, and Housekeeping
- Today's Content: Wrap Up and Next Steps
  - Review of all 25 task for 50001 Ready
  - Remember to use the 50001 Ready navigator
  - Where can we go from here?
- Webinar Wrap Up
- Kahoot Quiz Game
- Q&A

In Participants list:  
First Name,  
Last Name,  
Company



But first,  
a POLL!

# Polling Question 1

Polling Question

- 1) On a scale of one to five, how would you rate the value of this Better Plants training on 50001 Ready based energy management?
  - A. FIVE – Excellent and we will apply most of this.
  - B. FOUR – Very good and we plan to use some of this.
  - C. THREE – Okay, and we may implement a few things.
  - D. TWO – Not what I expected and of limited value.
  - E. ONE – No value to my organization.

# 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!





# Safety and Housekeeping

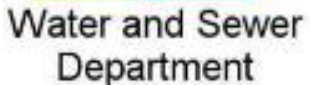
- Please make sure that your surroundings are safe:
  - If you are driving, please use hands free mode
  - If you are in a building, be sure you know the exit paths
  - If you are at home, be sure there are no distractions
- You are welcome to ask questions at any time during the webinar
- When you are 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



# Our 50001 Ready Training Group



ESTÉE LAUDER



- Today's Content

# Review Tasks 1 - 25

# 50001 Ready: Review Previous 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





## Building a foundation for your EnMS



*Regarding my EnMS, what are the:*

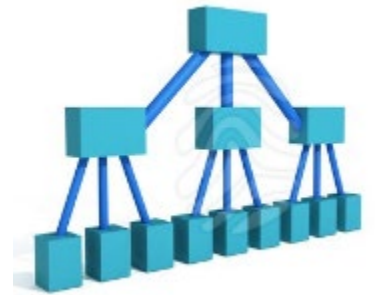
- *Risks, opportunities and strategic issues;*
- *Legal and other requirements;*
- *Interested parties;*
- *Scope and boundaries?*

# Section 1: Context of the Organization

## Section 1: Context of the Organization

### Task 1 An EnMS and Your Organization

We determine the strategic issues that affect our ability to improve energy performance and achieve the goals of our 50001 Ready energy management system.



### Task 2 People and Legal Requirements Affecting the EnMS

We determine the interested parties and energy-related legal and other requirements relevant to our energy performance and the energy management system. At defined intervals, we review these requirements and evaluate our compliance with them.

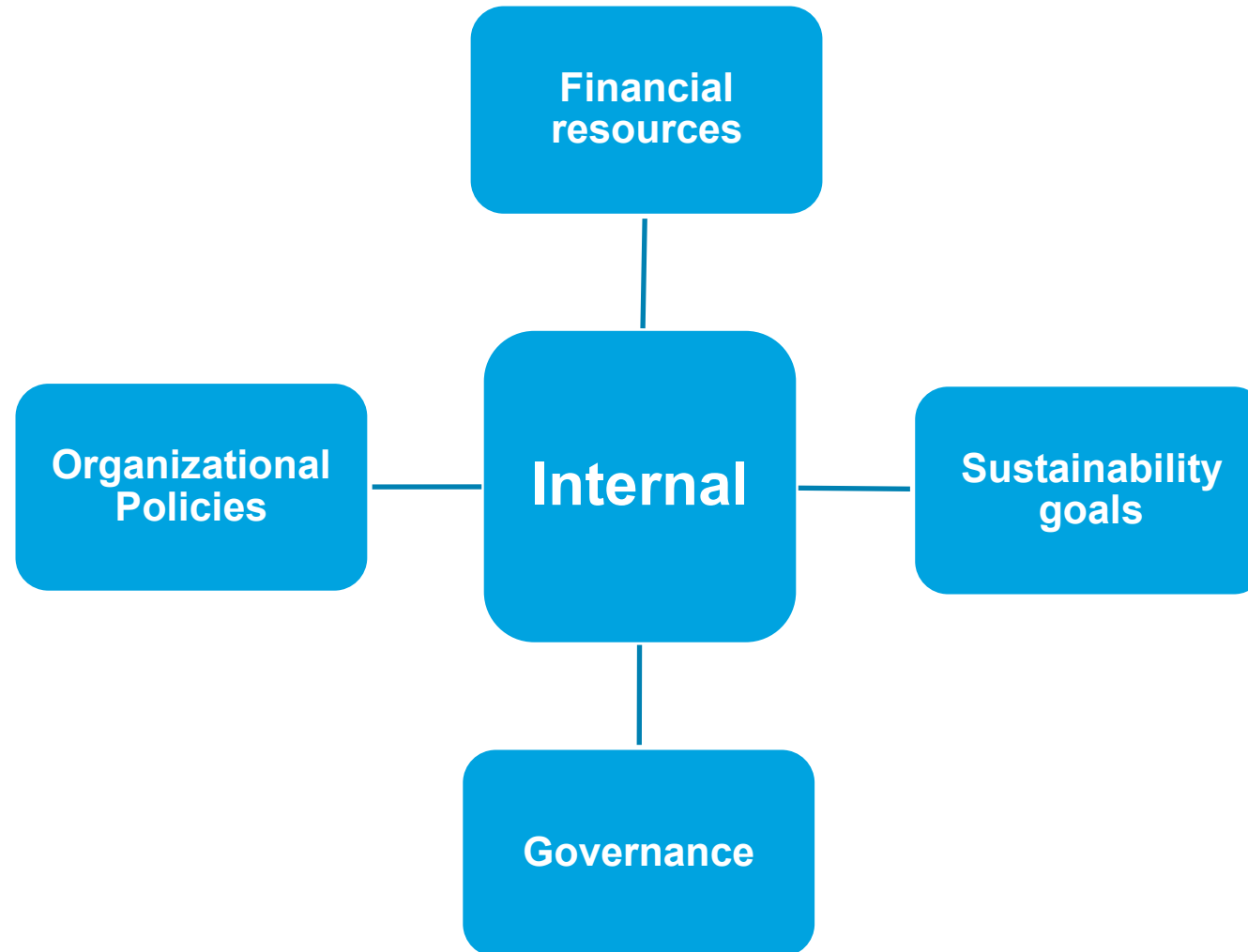


### Task 3 Scope and Boundaries

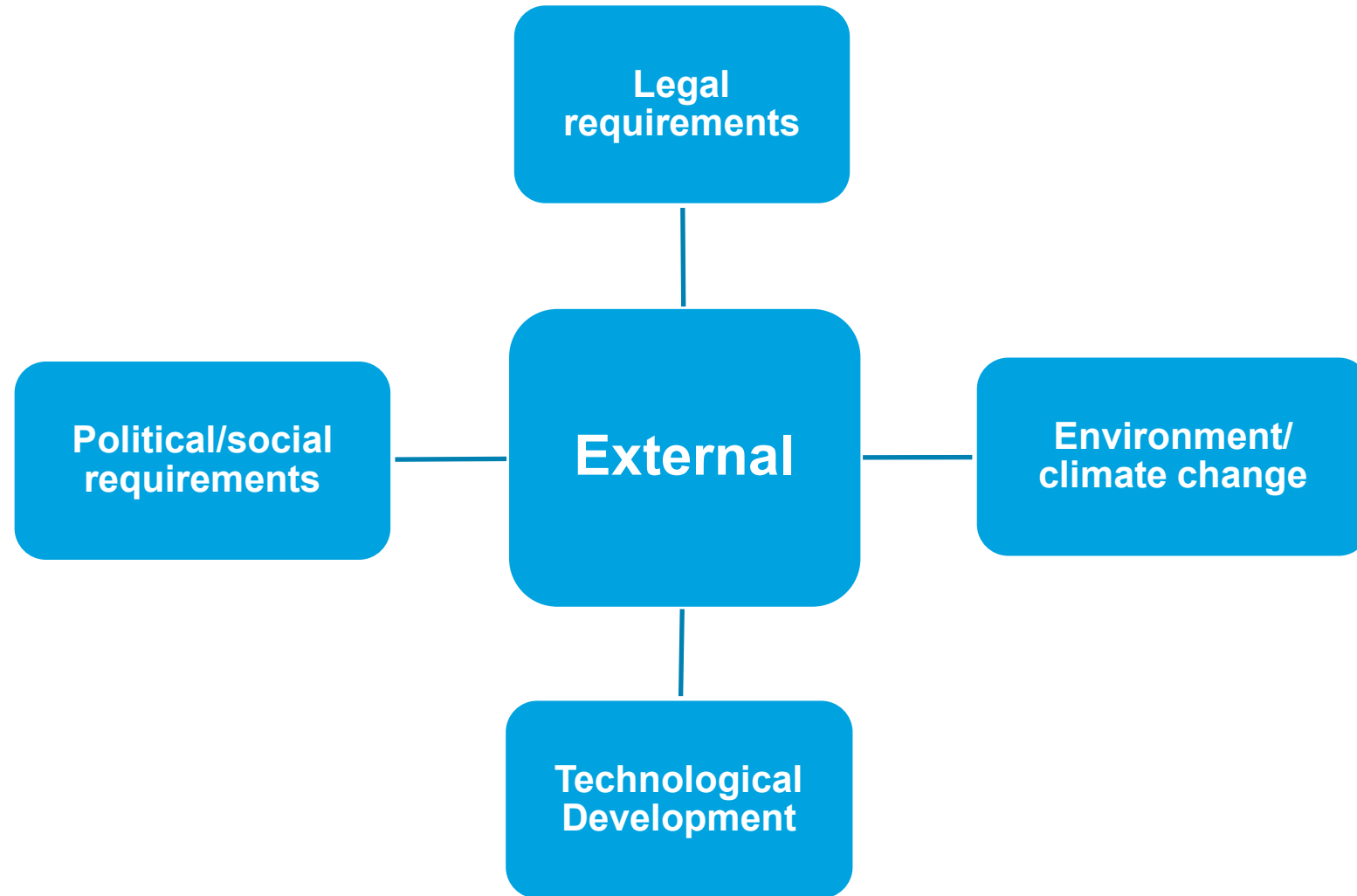
We have documented and approved the scope and boundaries of our 50001 Ready energy management system.



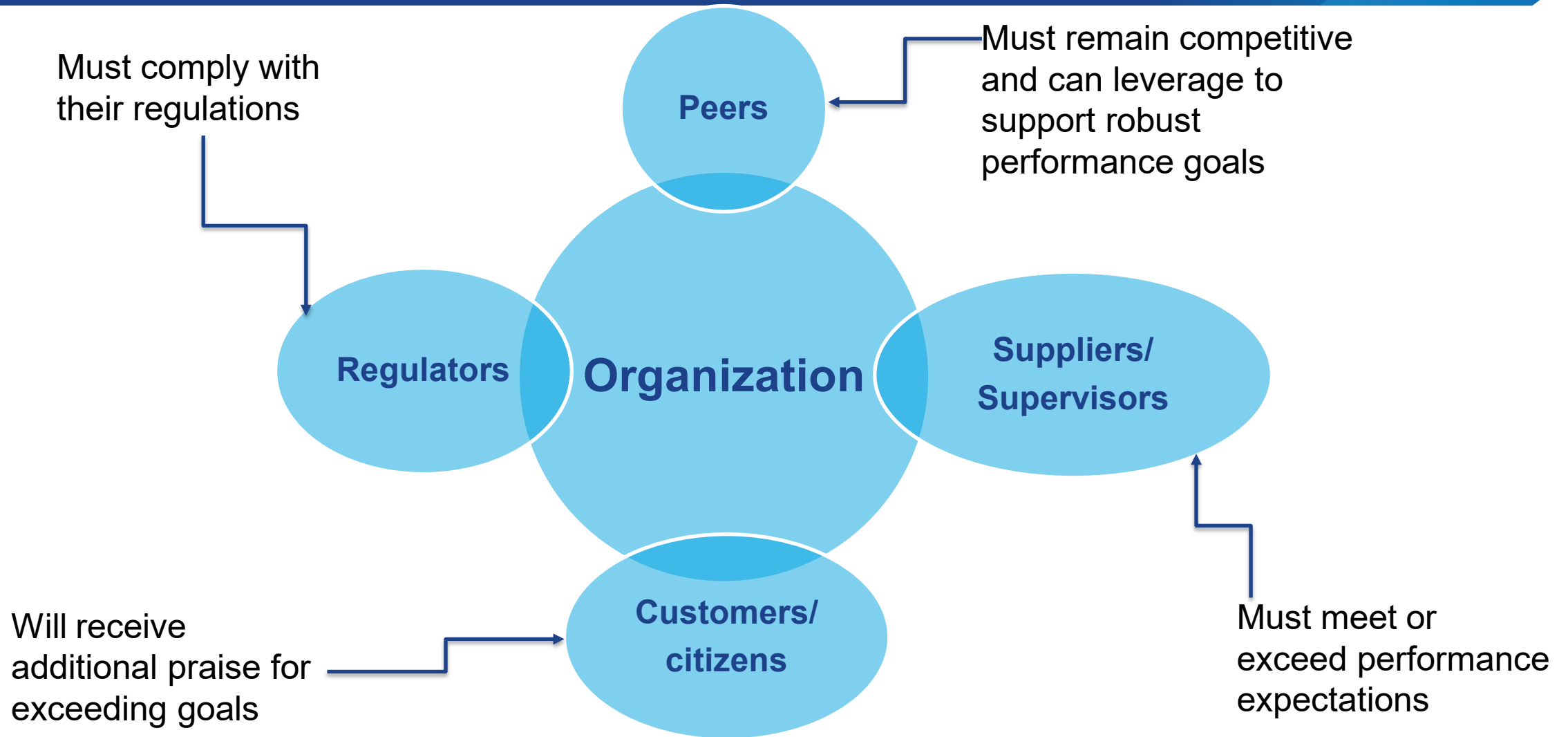
# Task 1: Internal Issues



# Task 1: External Issues



# Task 2: Interested Parties, Plus Requirements





# Task 3: Scope and Boundaries



# Section 2: Leadership (Task 4 - 6)

## 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?*

# Section 2: Leadership

## Section 2: Leadership

**Task 4 Management Commitment** Our top management demonstrates leadership and commitment to continual improvement of energy performance and the effectiveness of the 50001 Ready system.



**Task 5 Energy Policy** We have an energy policy statement, which has been approved by top management and communicated across the organization.



**Task 6 Energy Team and Resources** We have an energy team authorized by top management to oversee the energy management system. Responsibilities and authorities are assigned and communicated, and processes are in place to identify and provide resources.



# Task 4: Questions to Ask

- Where does top management reside?
  - At an individual sites?
  - At a central office?
  - At a level above the central office?
- Who sets the energy policy?
- Who will do the management review?
- Who will establish and confirm management commitment?
  - Use the 50001 Ready Navigator Task 4 playbook resource

# Task 4: Management Responsibility

- ✓ Ensure that scope and boundaries are established
  - ✓ Ensure the energy policy and objectives and targets are established
  - ✓ Ensure integration of EnMS requirements into business process.
  - ✓ Ensures that actions plans are approved and implemented
  - ✓ Ensure adequate resources are available
  - ✓ Communicate the importance of effective energy management and conforming to EnMS requirements
  - ✓ Ensure the EnMS achieves intended outcomes
- ✓ Promote continual improvement of energy performance and the EnMS
  - ✓ Ensure the formation of the energy team
  - ✓ Direct and support persons to contribute to the effectiveness of the EnMS and energy performance improvement
  - ✓ Support other management roles to demonstrate leadership
  - ✓ Ensure that EnPI(s) appropriately represent energy performance
  - ✓ Ensure that processes are established and implemented to identify and address changes affecting the EnMS and energy performance



# Task 5: Energy Policy Requirements



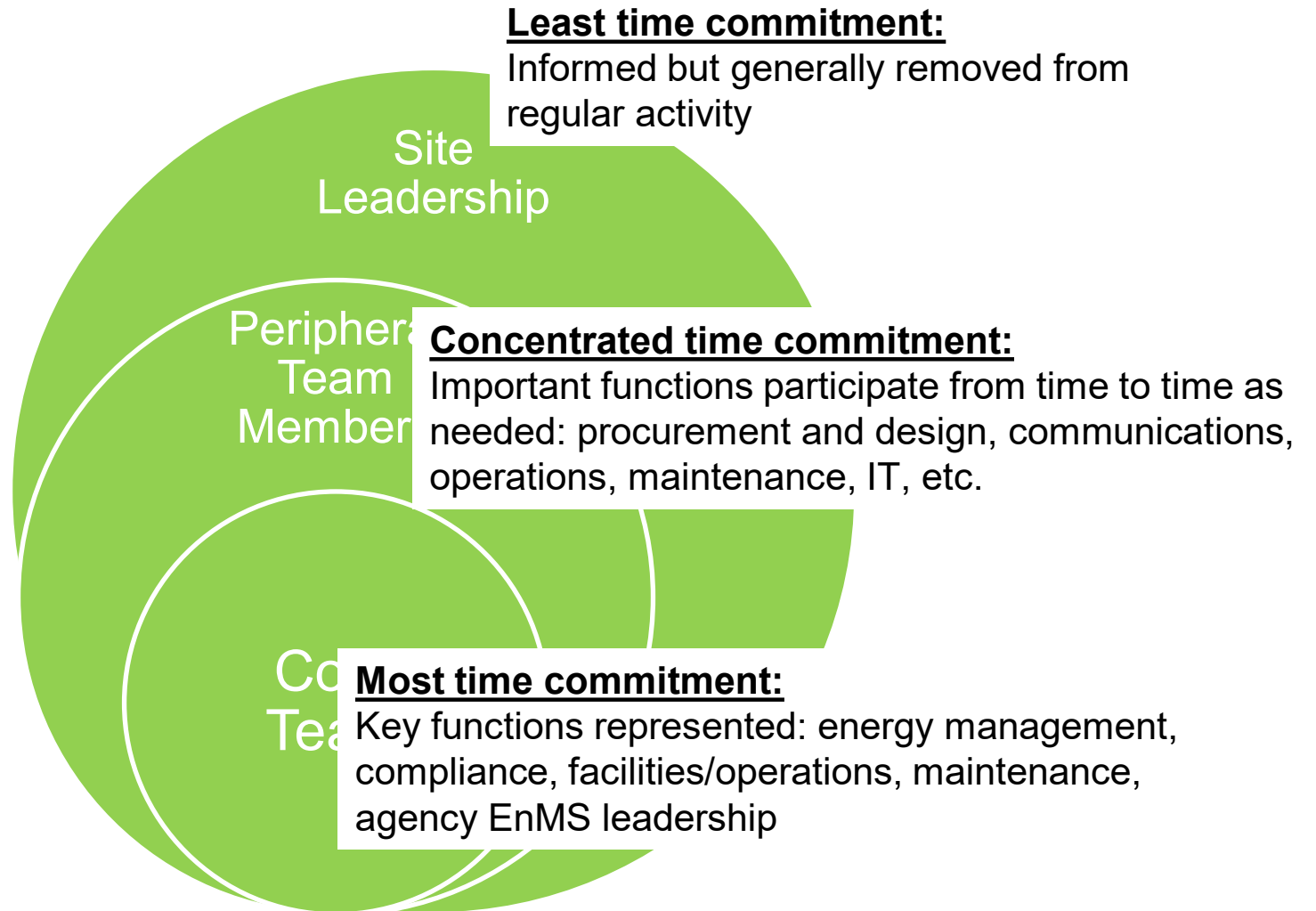
- Is appropriate to the purpose of the organization
- Provides a framework for setting and reviewing objectives and energy targets
- Includes a commitment to ensure the availability of information and necessary resources to achieve objectives and energy targets
- Includes a commitment to satisfy applicable legal requirements and other requirements
- Includes a commitment to continual improvement of energy performance and the EnMS
- Supports the procurement of energy efficient products and services that impact energy performance
- Supports design activities that consider energy performance improvement.



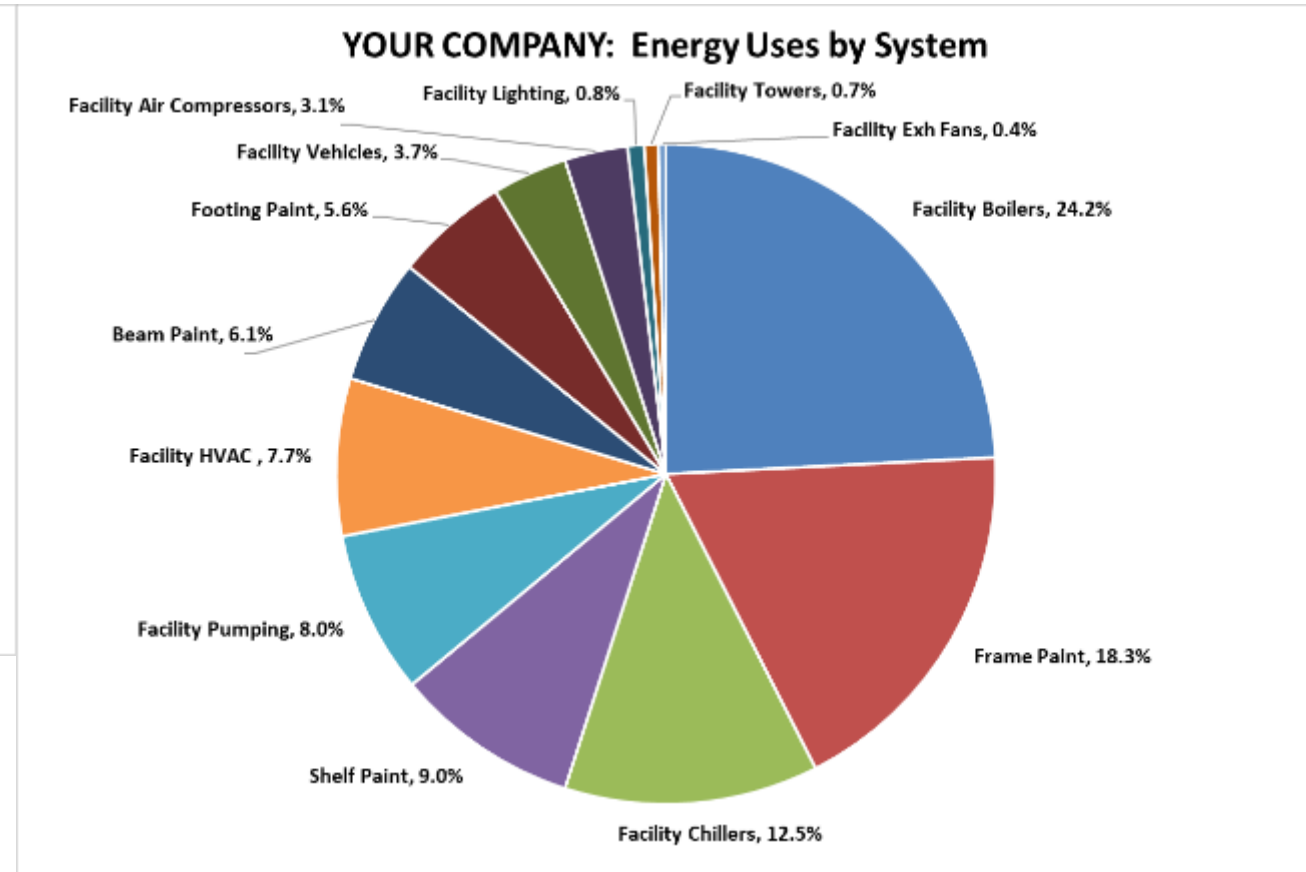
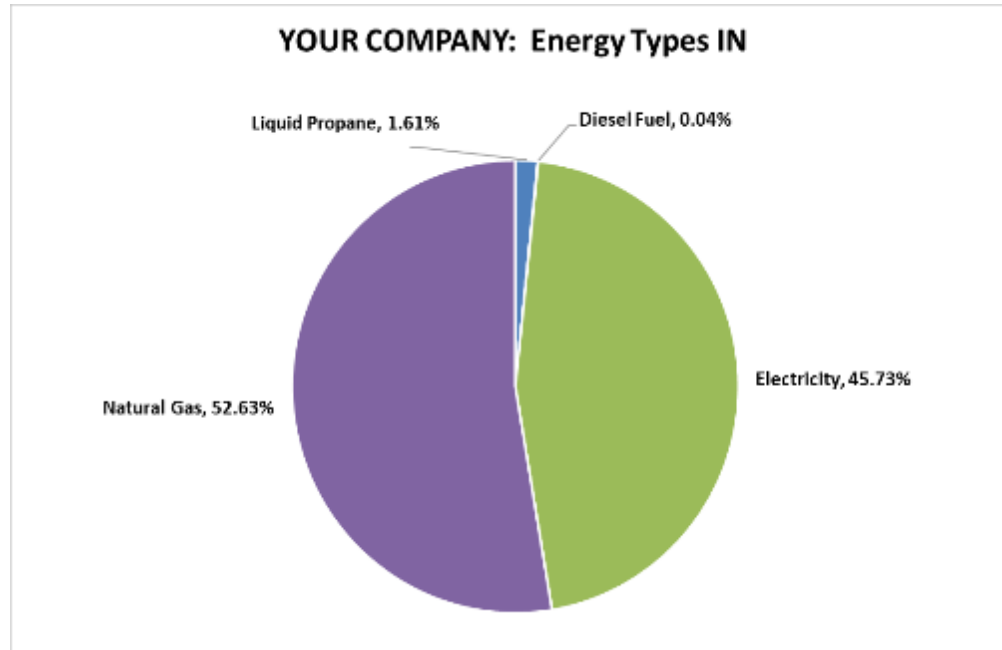
# Task 6: Energy Team Roles and Time Commitment



Where does the central office fit in?



## 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?*

# Section 3: Planning

## Section 3: Planning

### **Task 7** Risks to EnMS Success

We determine strategic risks and opportunities to ensure that our organization can achieve the intended outcomes of our energy management system and energy performance improvement. We plan and implement actions to address these risks and opportunities and evaluate the effectiveness of the actions taken.



### **Task 8** Energy Data Collection and Analysis

We identify our energy sources and energy uses, have a data collection plan in place, and collect related energy and relevant variable data. We ensure the accuracy and repeatability of measurements. We analyze our energy use and consumption data.



### **Task 9** Significant Energy Uses (SEUs)

We determine our significant energy uses (SEUs), identify and monitor their relevant variables and energy performance, and identify the persons that affect the SEUs. We have a process to review and update SEU data and related information, including our methods and criteria to determine that an energy use should be an SEU.



# Task 7: Key Terms

- Risk: Something that poses a threat
- Opportunity: Something that has the potential for a positive impact



The Energy Team defines methods for identifying and assessing these items



# Task 8: Key Terms



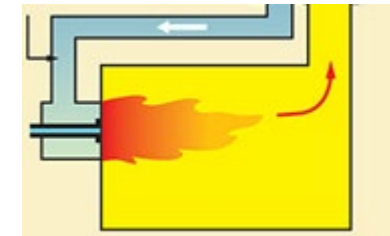
- Energy Source

- Electricity, natural gas, fuel oil, diesel fuel, liquid propane, renewables, etc.



- Energy Use (or user)

- Machinery, equipment, processes: Boiler, chiller, fan, pump, lighting, air compressor, paint booth, air handling unit, motors, etc.



# Task 8: Key Terms (continued)

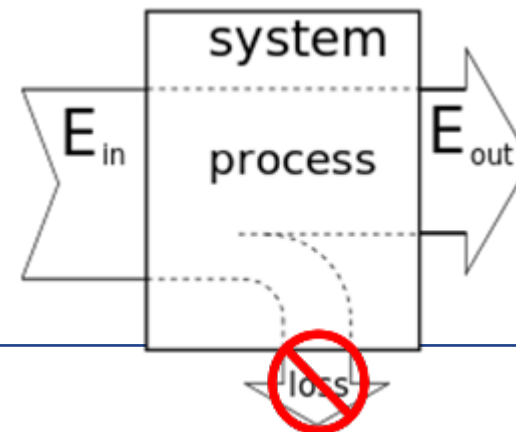
- Energy Consumption

- A quantity of energy: kilowatt hours, dekatherms, gallons, MMBTUs, etc.



- Energy Efficiency

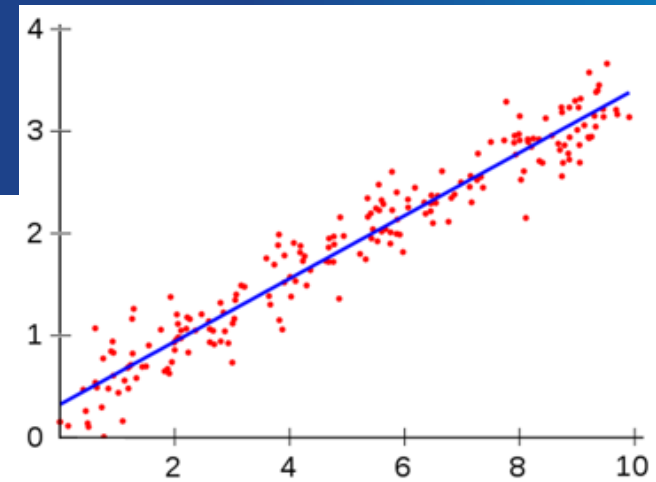
- A ratio of energy output to energy input, typically expressed as a percentage



# Task 8: More Key Terms

## ■ Relevant Variables

- Impacts energy performance, i.e., relevant
- Typically changes, i.e., variable
- Examples: weather conditions (heating degree days, cooling degree days, average outside temperature, humidity, working hours, occupancy, production output, etc.)



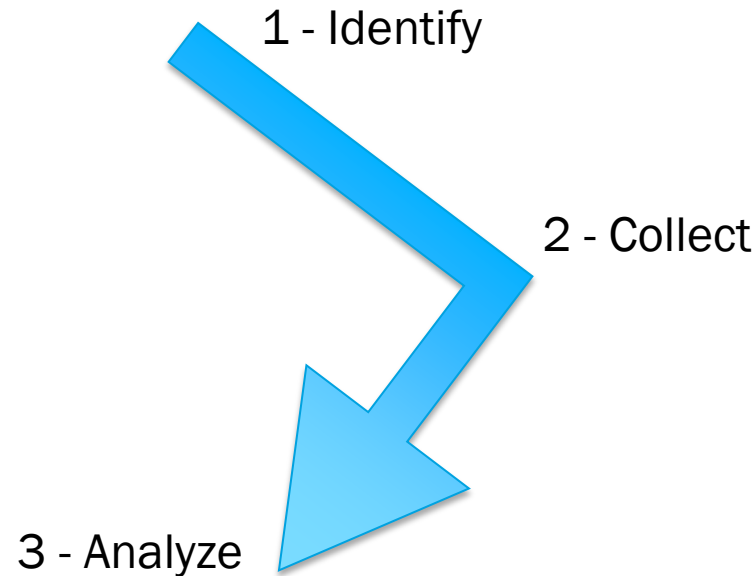
## ■ Normalization

- Allows for comparison of apples to apples
- Accounts for changes so that you can properly compare energy performance to energy baselines



# Task 8: Delegating Roles

- Types of data needed
  - Total energy consumption for all sources
  - Energy consumption by users
  - Square footage & occupancy
  - Relevant variables
  - Product volumes



- Sources of data
  - Utility bills
  - Sub-metering
  - Site floor plans
  - Weather data
  - Process flow charts
  - Production data
  - End user equipment specs

*Who will be responsible for attaining this information?*

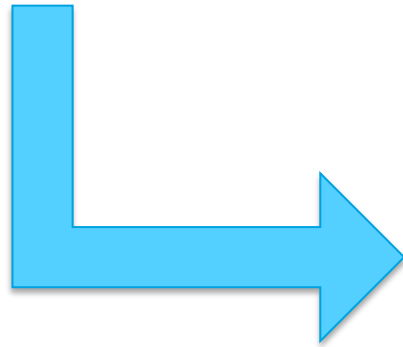
*Who will be responsible for cleaning/analyzing the data?*

*Where will we store the data?*

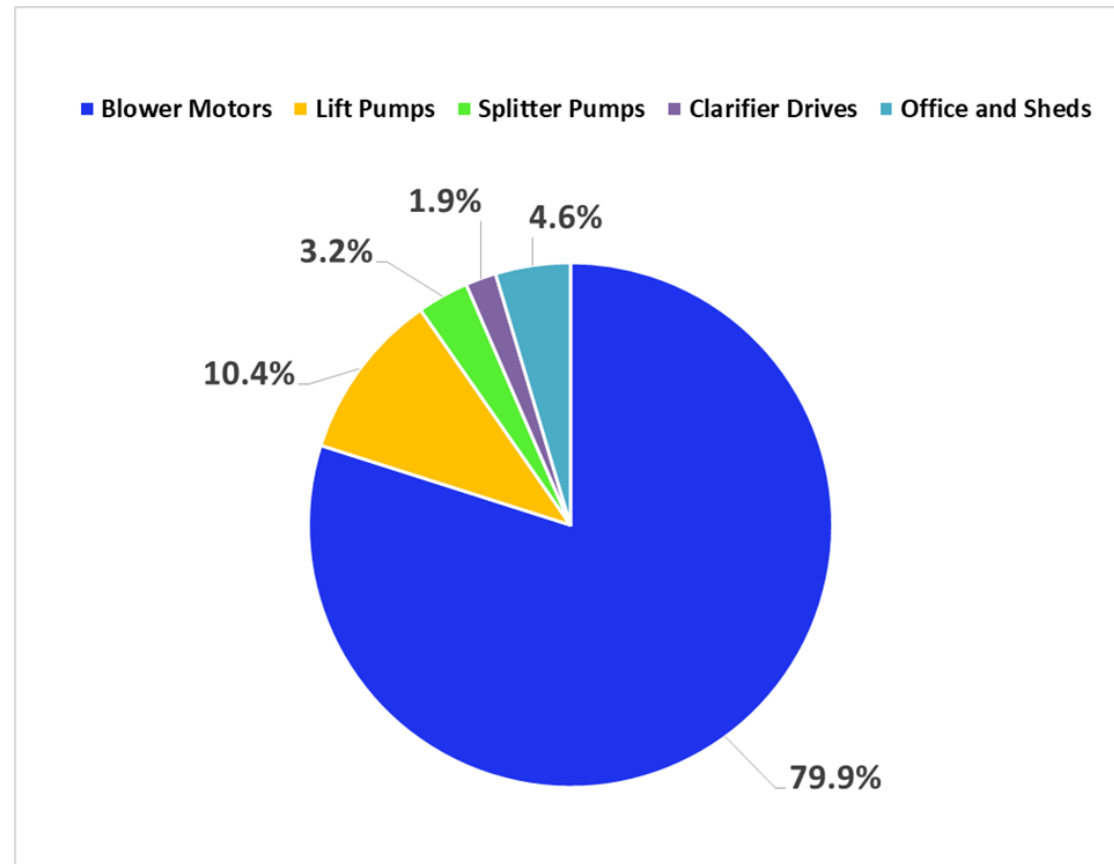
*What is our naming convention to avoid misunderstandings about most current information?*

# Task 9: Key Terms

- Significance is determined by your organization



- 1) SEUs can be facilities, systems, processes, or equipment.
- 2) SEUs – Consider consumption AND opportunity for improvement





# Task 9: SEUs Require Lots of Work

- Each selected SEU will require work in these areas:
  - Task 12, ISO section 6.2.2 Objectives and energy targets
  - Tasks 8 & 9, ISO section 6.3 Energy review (3x)
  - Task 8, ISO section 6.6 Planning for collection of energy data (3x)
  - Task 17, ISO section 8.1 Operational planning and control (2x)
    - This entire section is focused on SEUs
  - Task 19, ISO section 8.3 Procurement
  - Task 20 & 21, ISO section 9.1 Monitoring, measuring, analysis and evaluation of energy performance, General
    - Must include the operation of SEUs

There are at least 11 things to do for each selected SEU!!

# Section 3: Planning (continued)

**Task 10 Improvement Opportunities** We identify and prioritize energy performance improvement opportunities and have processes in place to update them.



**Task 11 Energy Performance Indicators (EnPIs) and Baselines (EnBs)** We identify energy performance indicators and energy baselines to measure and monitor our energy performance and to demonstrate energy performance improvement. We have a methodology for determining and updating them.



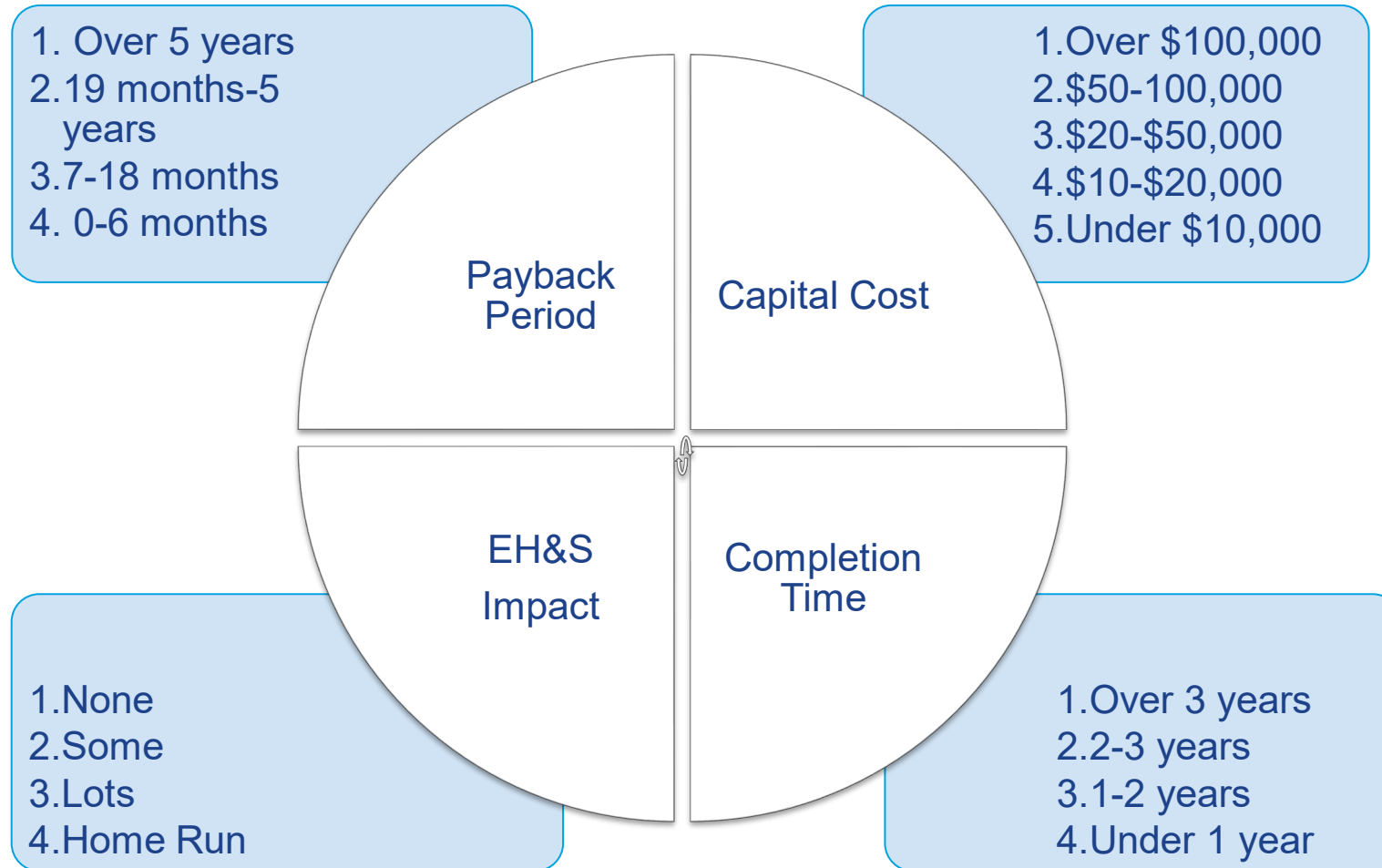
**Task 12 Objectives and Targets** We establish objectives and energy performance targets.



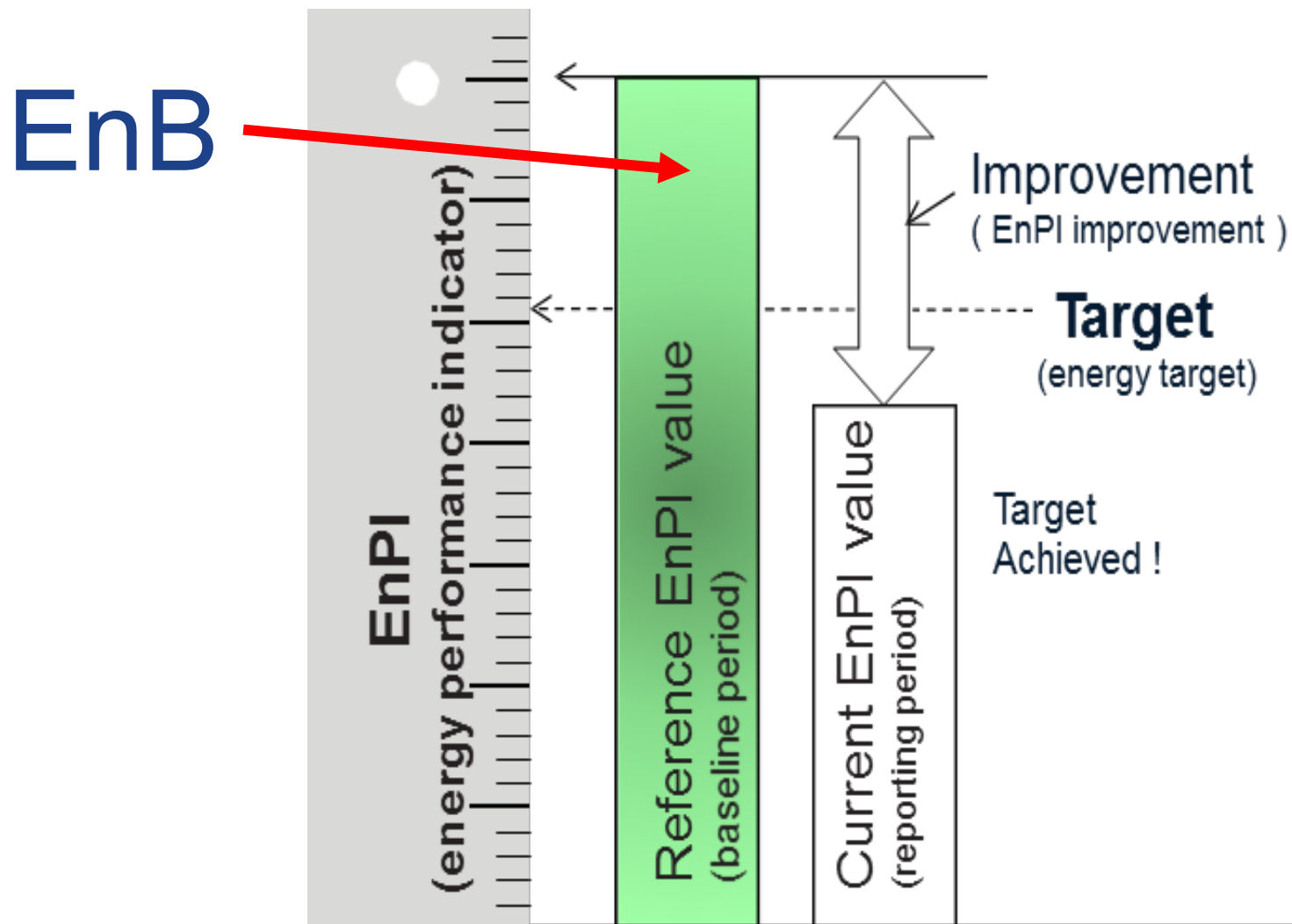
**Task 13 Action Plans for Continual Improvement** We develop action plans and implement improvement projects to achieve our objectives and energy targets.



# Task 10: Example of Ranking Criteria

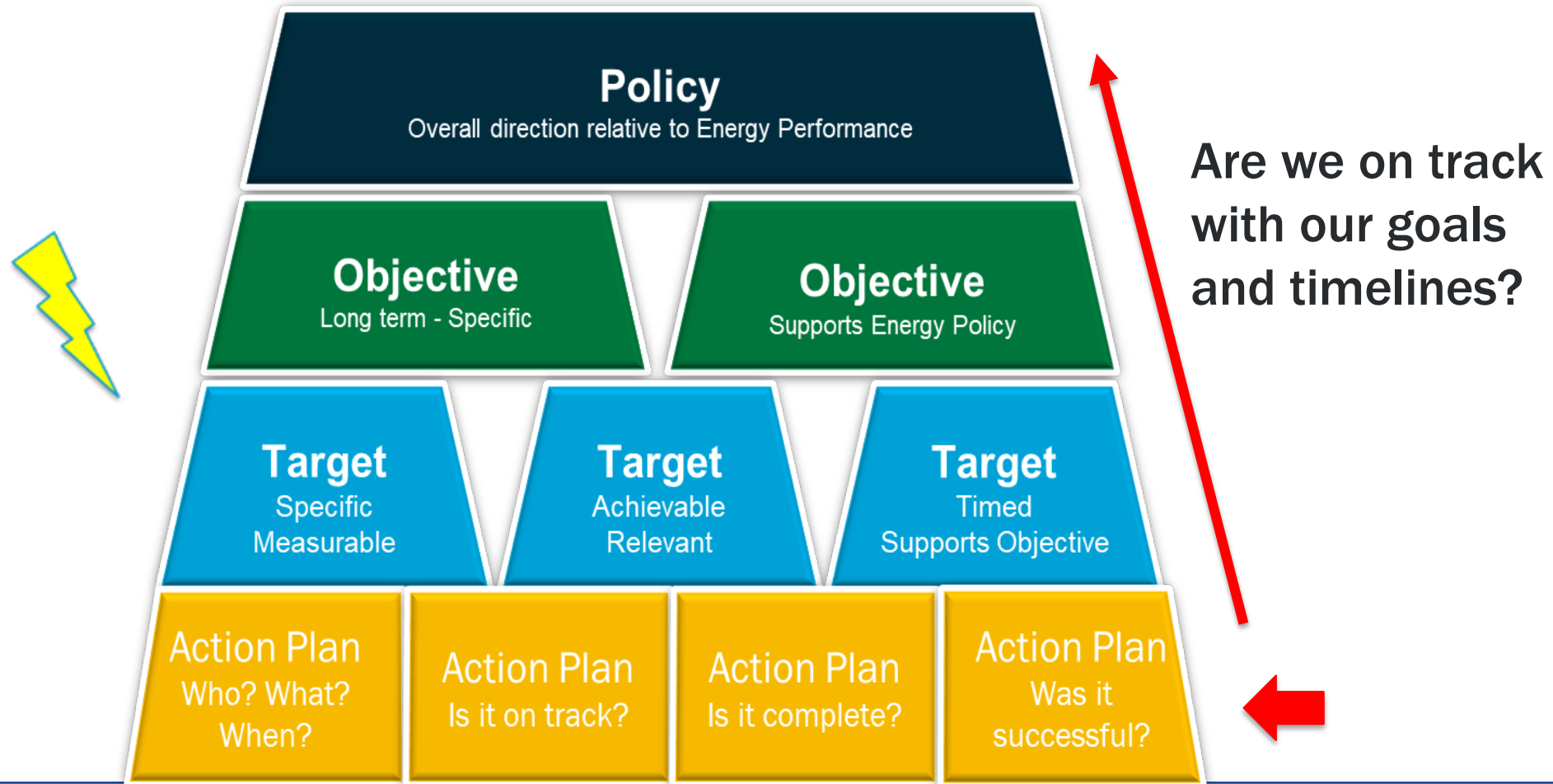


# Task 11: EnPIs Relative to EnBs



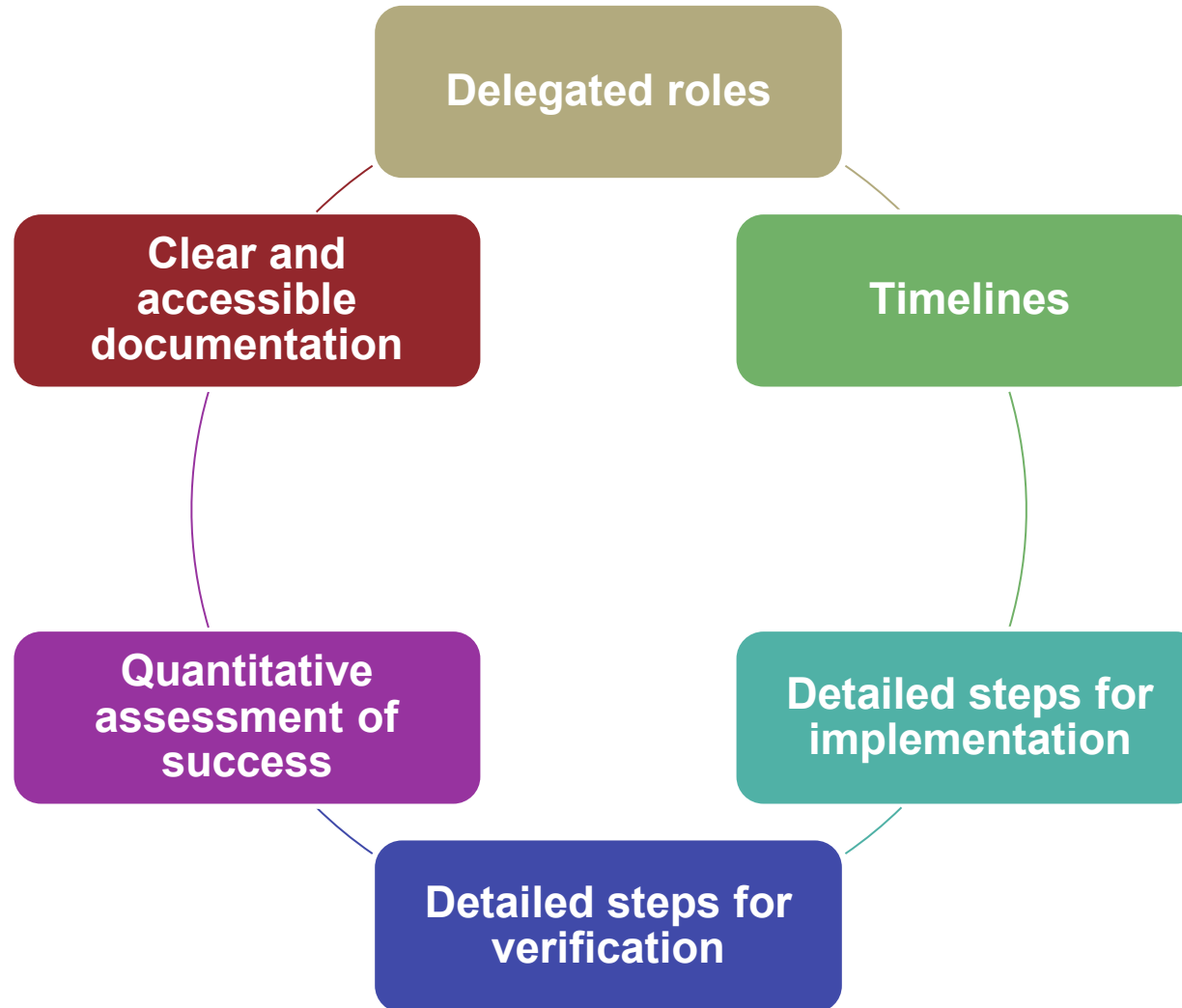
# Task 12 & 13: Building the Pyramid

Planning our energy improvement pyramid:



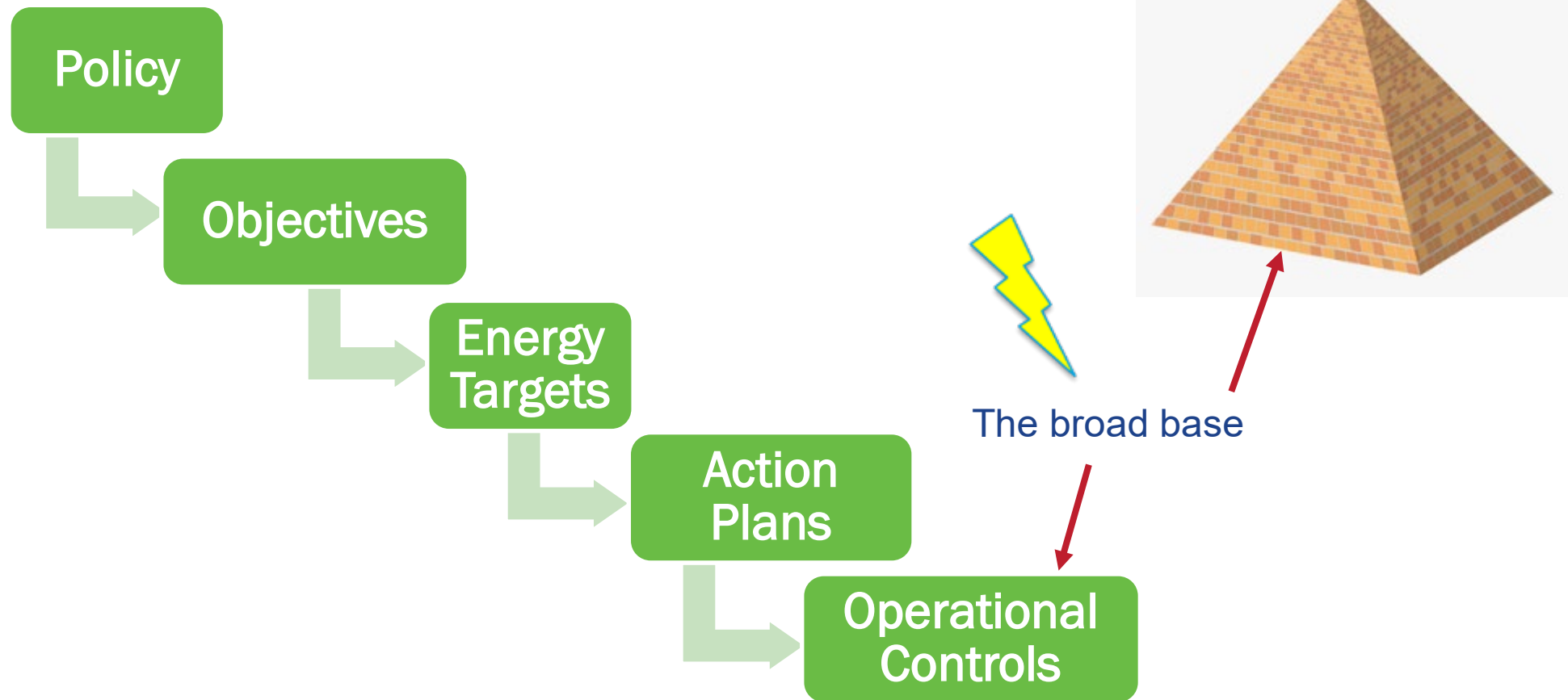


# Task 13: What makes a robust action plan?



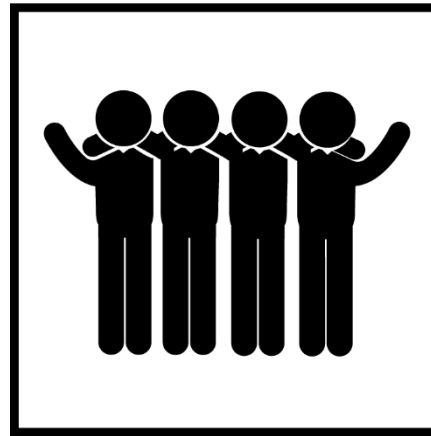
# Tasks 10 - 13: The Big Picture

- Building the energy success pyramid starts with a wide base of small actions that build to the completion of energy policy



# Section 4: Support (Tasks 14 – 16)

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?*

# Section 4: Support

## Section 4: Support

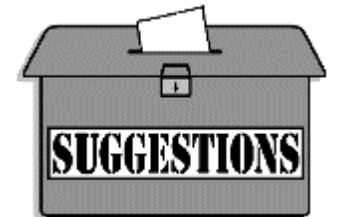
### **Task 14**   **Competence and Training**

We ensure the competence of personnel whose work affects our energy performance and energy management system. We evaluate the effectiveness of actions taken to acquire competencies. We retain appropriate records of competencies and training.



### **Task 15**   **Awareness and Communication**

Our personnel and on-site contractors are aware of our energy policy and their energy-related roles and responsibilities. We have processes in place for internal and any applicable external energy management system communications.



### **Task 16**   **Documenting the EnMS**

We document information we determined is needed to ensure energy management system effectiveness and demonstrate energy performance improvement, as well as that suggested by the guidance of the 50001 Ready Navigator. We have processes in place for creating, updating, and controlling our documented information.

**Think Missouri...  
The “Show Me”  
State**

# Task 14: Who Needs Competence

including  
tion, etc.

- Boiler Technicians
- HVAC Technicians
- Process Operators
- Energy team members
- Data collectors
- Others



# Task 15: Communications Are Ongoing

## Ongoing Communication Topics:

- Energy policy
- Importance of energy management
- Energy management responsibilities and authorities
- Energy objectives
- Energy performance successes



## GET INPUT:

Have a method or system to get input on the EnMS from employees and contractors.





# Task 16: Key Terms

## Document:

Information that guides action or communicates expectations

## Record:

Captures activities performed as evidence of the activity

3.3.5

### documented information

information required to be controlled and maintained by an organization (3.1.1) and the medium on which it is contained

# Task 16: Documentation

- ISO 50001 tells you what needs to be documented
- The new term is:
  - **DOCUMENTED INFORMATION**

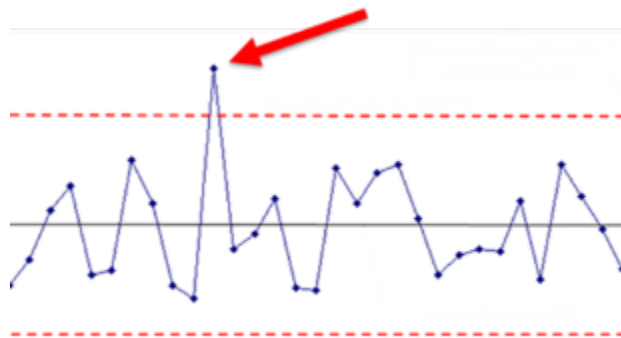
This appears 18 times in the ISO 50001 standard:

...shall retain documented information (see [7.5](#))...



# Section 5: Operation (Tasks 17 – 19)

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?*

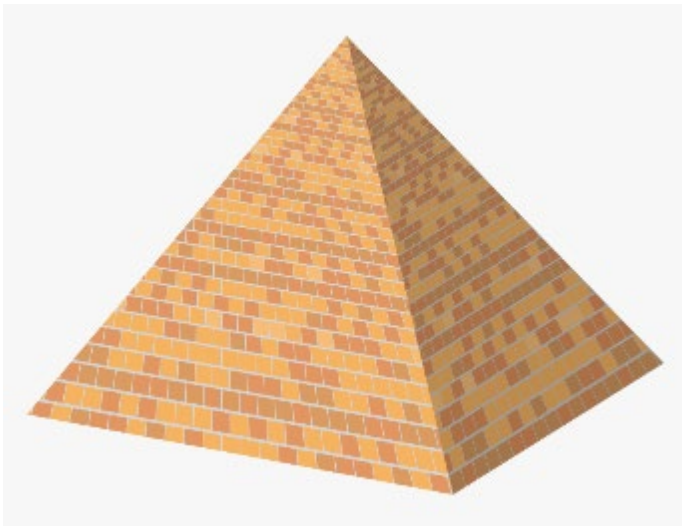
# Section 5: Operation

## Section 5: Operation

### **Task 17**      **Operational Controls**

We plan and control the processes related to our significant energy uses (SEUs) and action plans and set operation and maintenance criteria where there are risks of significant deviations in energy performance.

We operate the SEU and action-plan related processes in accordance with the criteria and communicate the criteria to relevant personnel. We control planned changes, along with outsourced processes related to SEUs.



# Section 5: Operation (continued)

## Section 5: Operation

**Task 18 Energy Considerations in Design** We consider energy performance improvement opportunities and operational controls when designing new, modified, or renovated sites, equipment, systems, and processes.

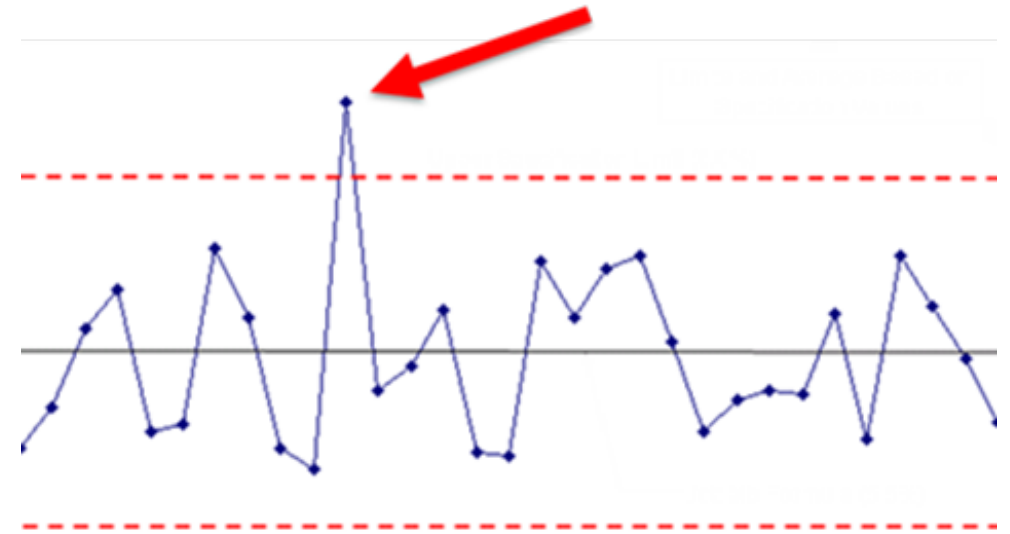


**Task 19 Energy Considerations in Procurement** We establish energy performance criteria spanning the operating life for purchases affecting energy performance, inform suppliers that this is a factor in procurement, and define and use specifications for energy supply purchases.



# Task 17: Determining Appropriate Controls

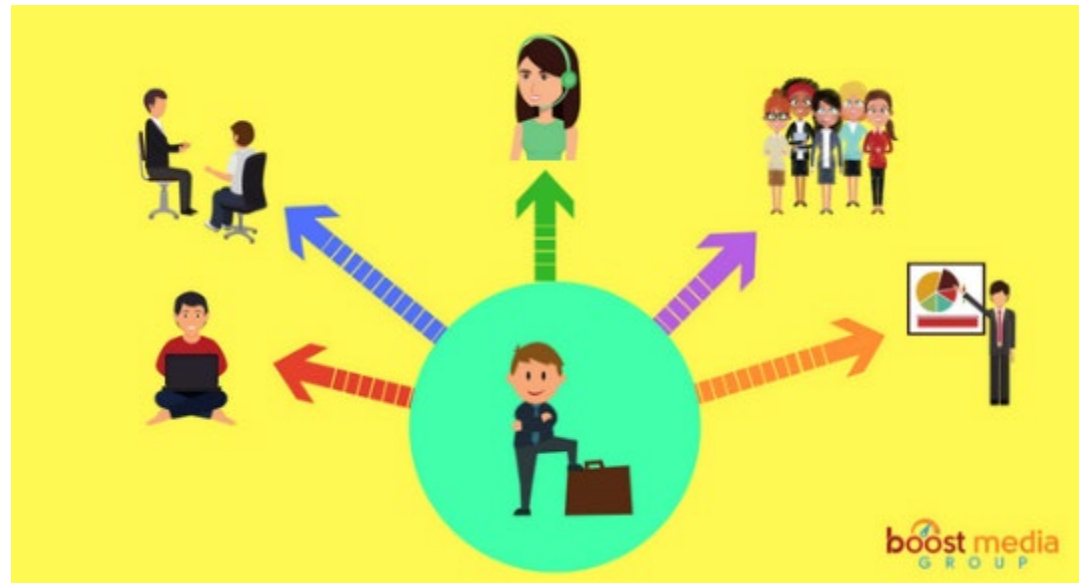
1. Document all current official operating practices for each SEU.
2. Map processes that use SEUs or have related action plans for improvement.
3. Identify opportunities for streamlining SEU controls.





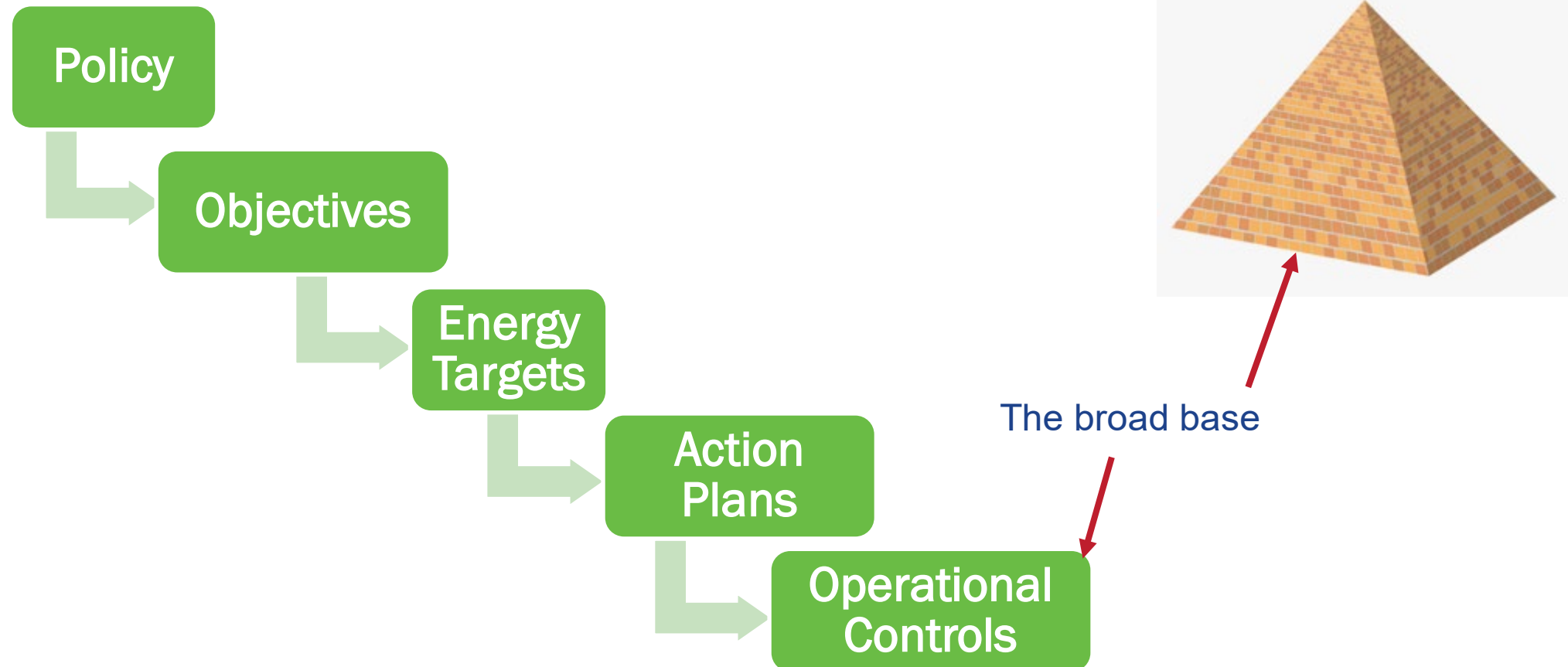
# Task 17: Delegate Responsibilities

- Communications and training for all related personnel
- Verification that best operations practices are followed
- Data collection for verification process



# Tasks 1-17: The Big Picture

- Building the energy success pyramid starts with a wide base of small actions that build to the completion of energy policy



# Task 18: Considerations in Design

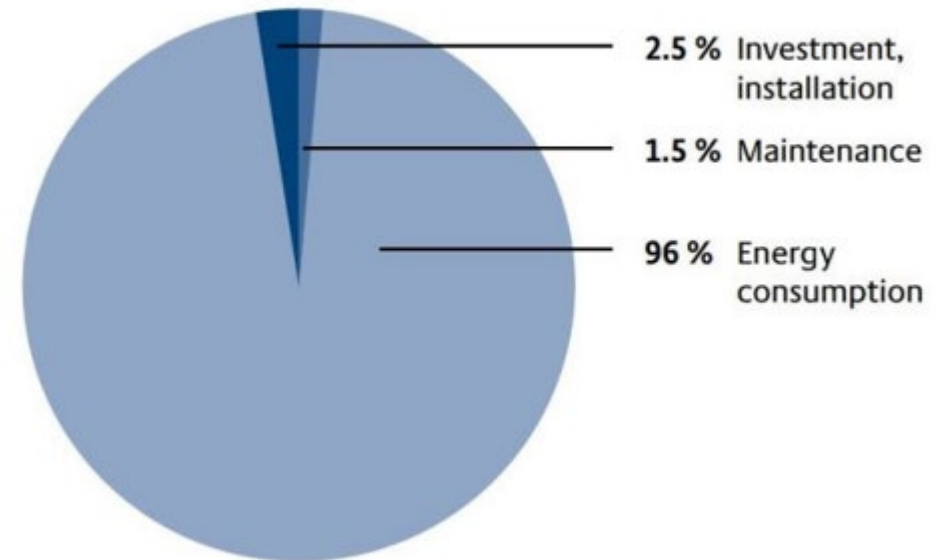
- Consider energy performance improvement and operations in the design of new, modified and renovated facilities over the lifetime
- Design the facility to be efficient right from the start and ongoing
- Include these items in the design specifications that are sent out for quote



# Task 19: Procurement Specific Actions

- Inform suppliers that energy performance is an evaluation factor for SEU-related purchases
- Establish operating lifetime energy performance criteria for purchases that can significantly affect energy performance
- Develop documented specifications for:
  - the purchase of energy supply
  - ensuring the energy performance of procured equipment and services

Lifecycle costs of an electric motor



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?*

# Section 6: Performance Evaluation

## Section 6: Performance Evaluation

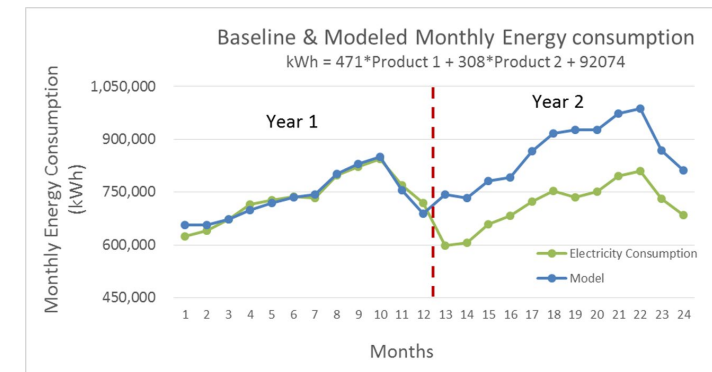
### Task 20 Monitoring and Measurement of the EnMS

We monitor trends in energy management system (EnMS) performance and evaluate the effectiveness of the EnMS in achieving intended outcomes and planned results. The methods used, the frequency of the monitoring, and when the results are analyzed and evaluated are defined.



### Task 21 Monitoring and Measurement of Energy Performance Improvement

We monitor and measure the key characteristics of processes that affect our energy performance. We define the methods used, the frequency of the monitoring and measurement, and when the results are analyzed and evaluated. We evaluate our energy performance improvement and investigate and respond to significant deviations in energy performance.





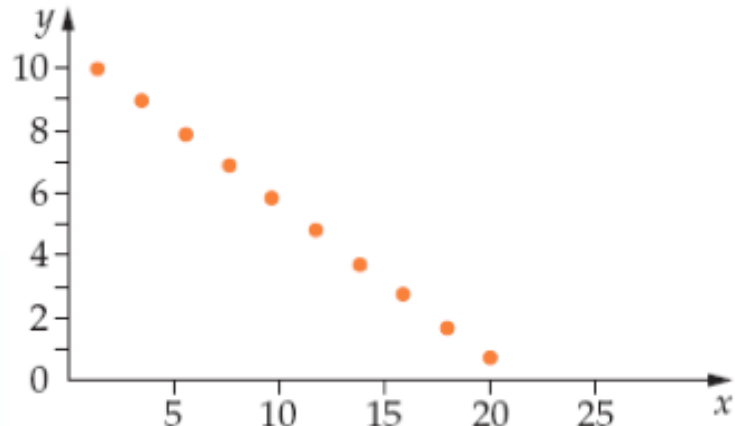
# Performance Evaluation: The Big Picture

Monitoring and Measuring focuses on TWO areas:

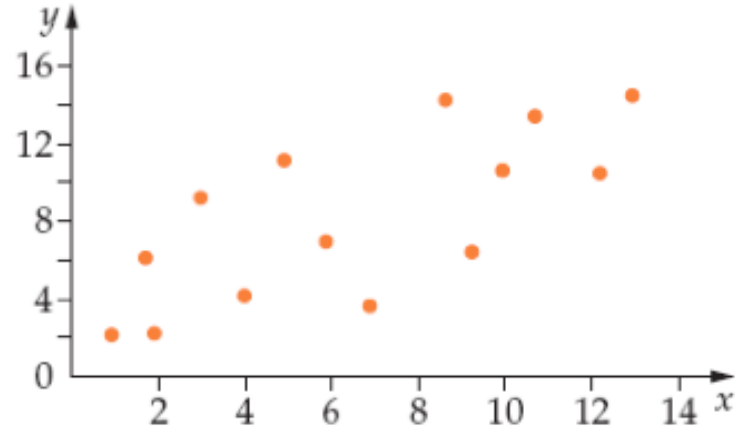
The EnMS

Energy  
Performance  
Improvement

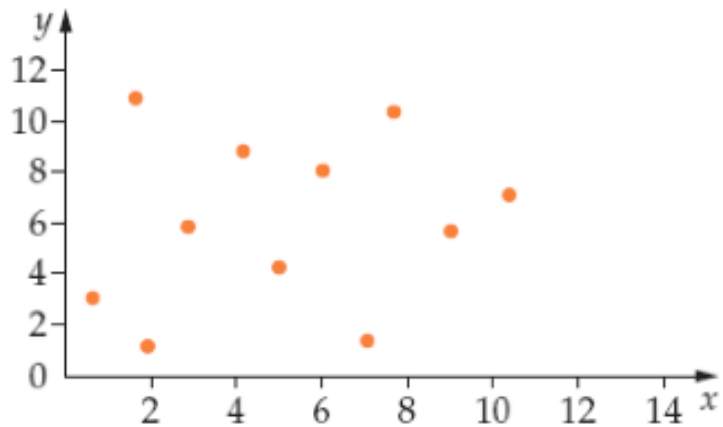
# Task 20: Track Measurements to Monitor Trends



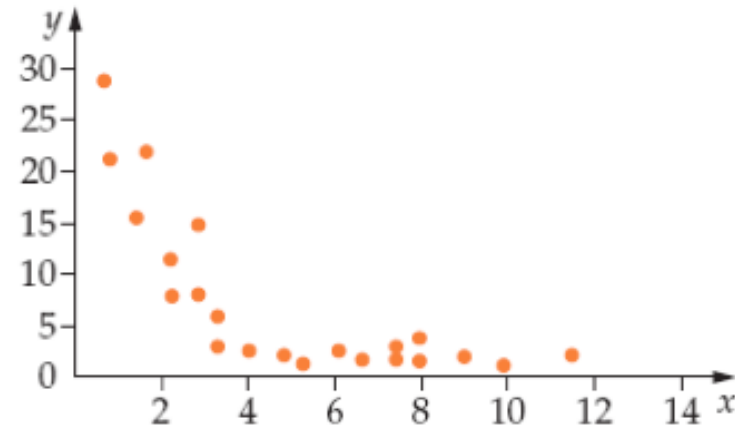
A strong, negative linear trend



A weak, positive linear trend



No trend



A weak, negative non-linear trend

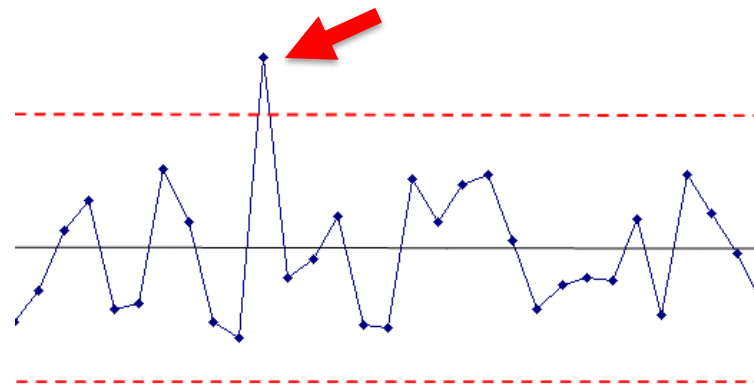
Plotting and trending systematic results is a GREAT method for evaluating the operations of your EnMS.

# Task 21: Key Term

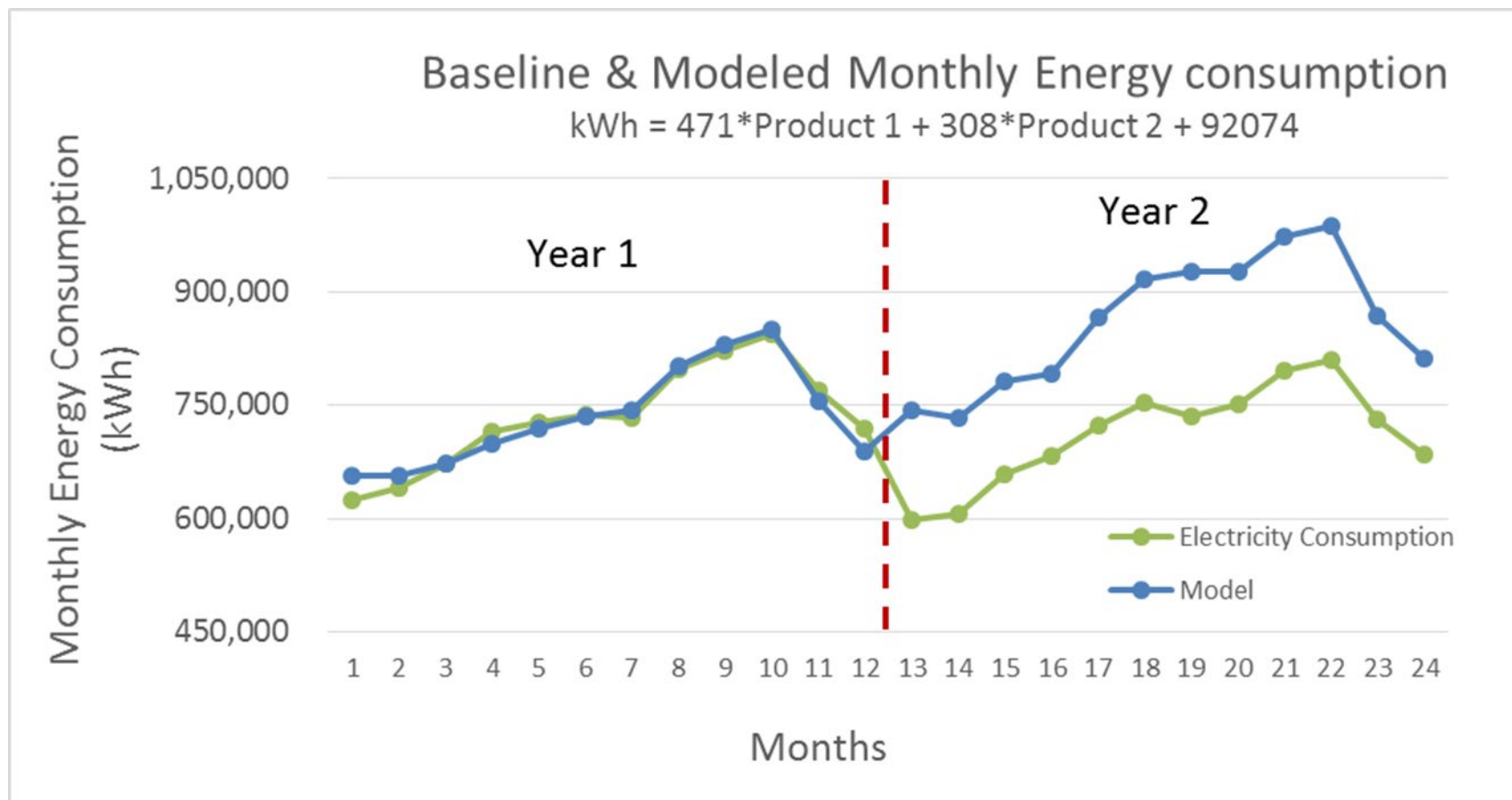
- Significant deviation:
  - “The organization shall investigate and respond to significant deviations in energy performance.” (ISO 50001: 2018, 9.1.1)
  - When to respond and how to respond will be determined and appropriate personnel will be trained
  - Maintain records of the results of the responses and investigations into significant deviations



***Your energy team  
defines what  
amount of deviation  
becomes significant***



# Task 21: MMA&E Energy Performance



# Polling Question 2

Polling Question

- 2) Based on previous work and what you have learned during these energy management sessions, what method do think you will used to determine your energy performance?
- A. Month of current year versus month of previous year (no relevant variables).
  - B. Combined total energy consumption per unit of production.
  - C. Actual total energy consumption per month versus budget.
  - D. Linear regression with relevant variables.
  - E. I do not know where our organization is with respect to the methodology for determining energy performance improvement.

# Section 6: Performance Evaluation (continued)

## Section 6: Performance Evaluation

### **Task 22 Internal Audit**

We conduct internal audits of the 50001 Ready energy management system at specified intervals and report the results to relevant management. We identify trends in internal audit results for consideration in management review.



### **Task 23 Management Review**

Top management periodically reviews the 50001 Ready energy management system and our organization's energy performance to ensure its continuing suitability, adequacy, and effectiveness.



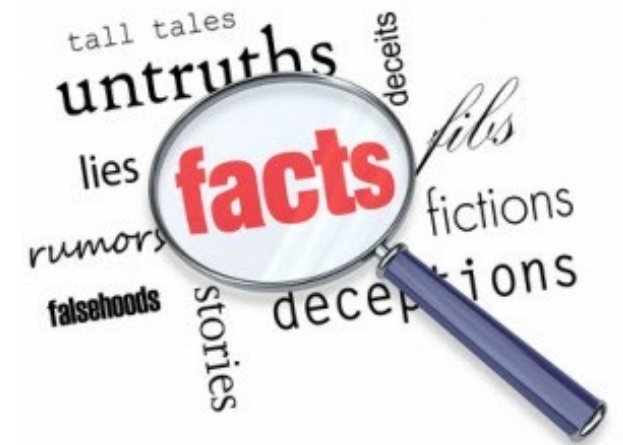
# Task 22: The Internal Audit Process





# Task 22: The Internal Audit Process

- Findings need to be based on facts and not opinion
- Findings should include:
  - Direct observations
  - Statement of facts, first-hand only, not hearsay
  - Documents, data, and records
  - Evidence
- First-hand, verifiable
- Touch it, see it , read it, hear it




# Task 22: The Internal Audit Process

- REMEMBER THESE!
- Anything that you invoke on yourself from your own EnMS requirements, processes, or procedures, are auditable under your internal audit program
- To ensure objectivity and the impartiality of the internal auditing process, personnel should not audit items that they developed or worked on.



# Task 23: Management Review



Management review is the engagement of top management in reviewing the EnMS and the energy performance, as well as asking and answering these questions:

- How have we done?
- Where can we improve?
- What do we need to change?
- Do we have enough resources in the right places?



# Section 7: Continual Improvement (Tasks 24 - 25)

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

Continual Improvement



Energy & Cost Reduction Over Time

*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?*

**REPEAT**



# Section 7: Continual Improvement

## Section 7: Improvement

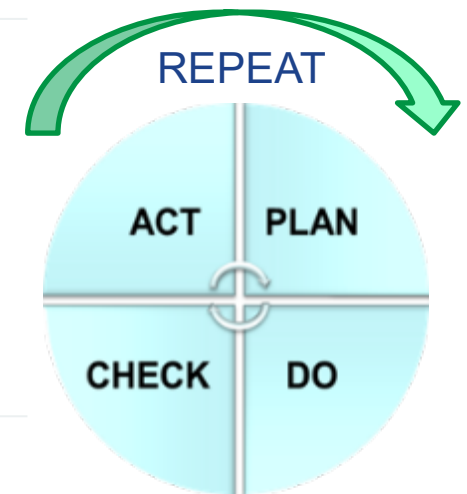
### Task 24 Corrective Actions

We identify nonconformities and other problems in the 50001 Ready energy management system and take appropriate corrective action.



### Task 25 Continual Improvement

We have a 50001 Ready energy management system and continually improve its processes and interactions. We continually improve the suitability, adequacy and effectiveness of our energy management system. We achieve and demonstrate continual energy performance improvement.



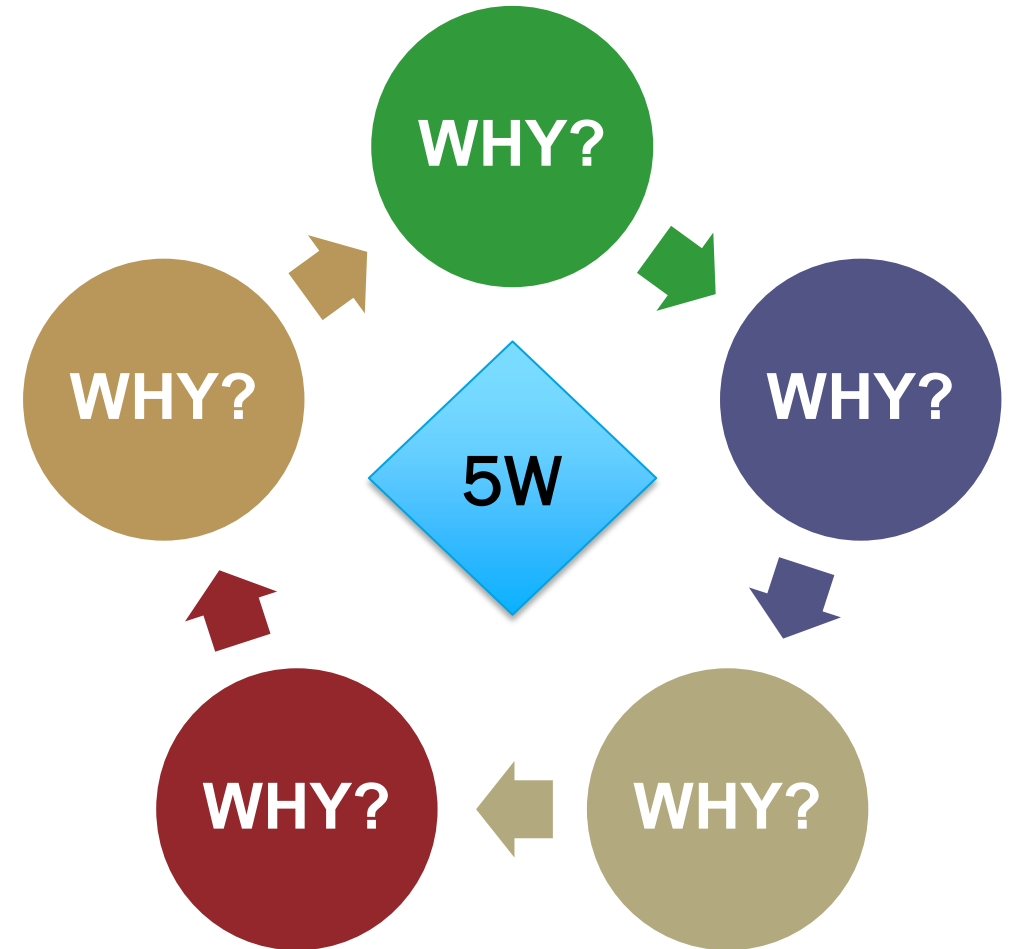
# Task 24: Key Terms

- **3.3.3 nonconformity**
  - non-fulfilment of a *requirement* (3.3.1)
- **3.3.1 requirement**
  - need or expectation that is stated, generally implied or obligatory
- **3.3.4 corrective action**
  - action to eliminate the cause of a *nonconformity* (3.3.3) and to prevent recurrence



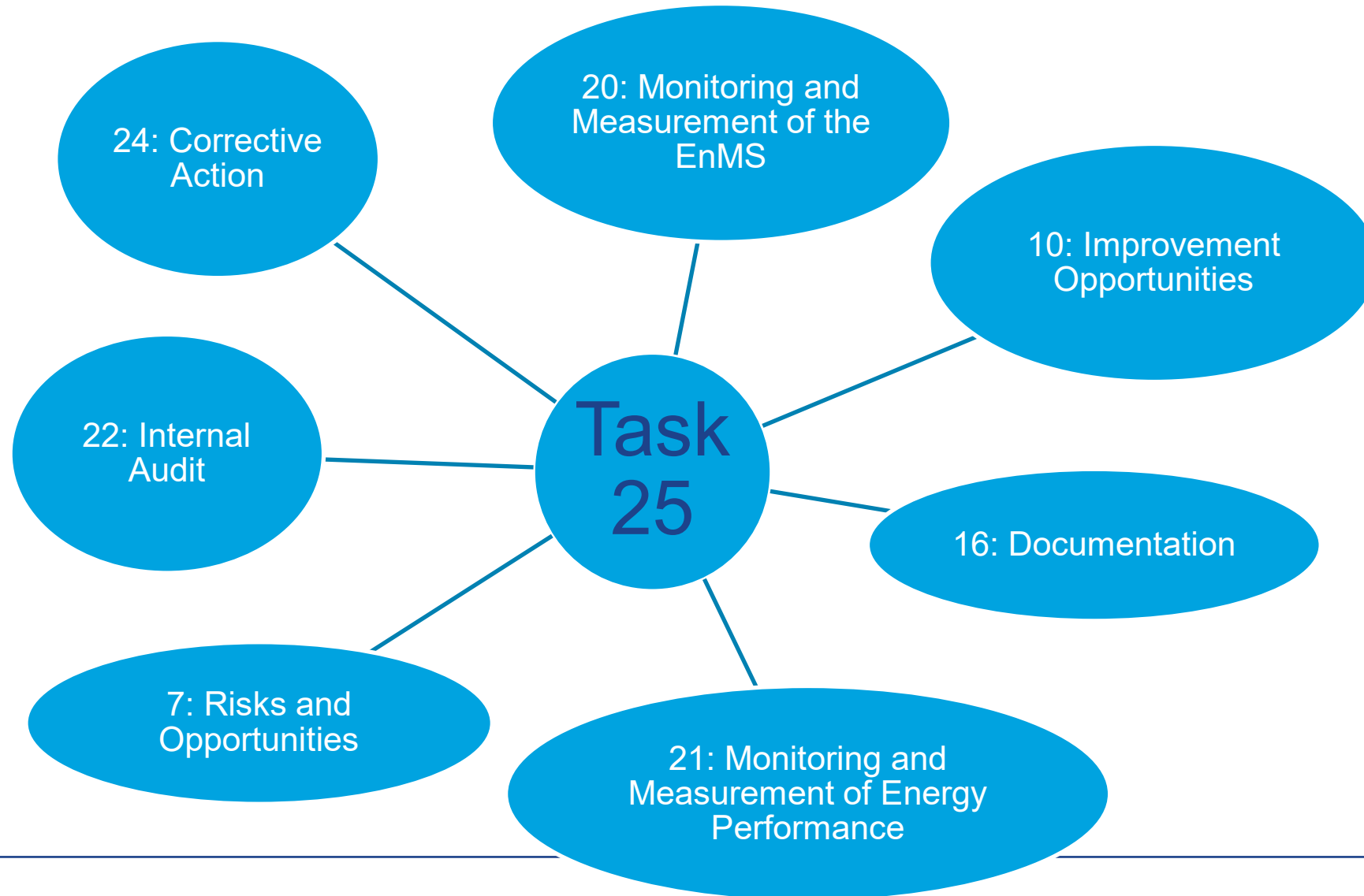
# Task 24: Impact and Why?

- **What is the impact?**
- **What is the need for further action.**
  - Do similar nonconformities exist?
  - Can similar nonconformities occur?
- **Why did this happen?**
  - Five Why's Exercise
  - Get to the root cause
- **Eliminate the root cause**
  - Take corrective action



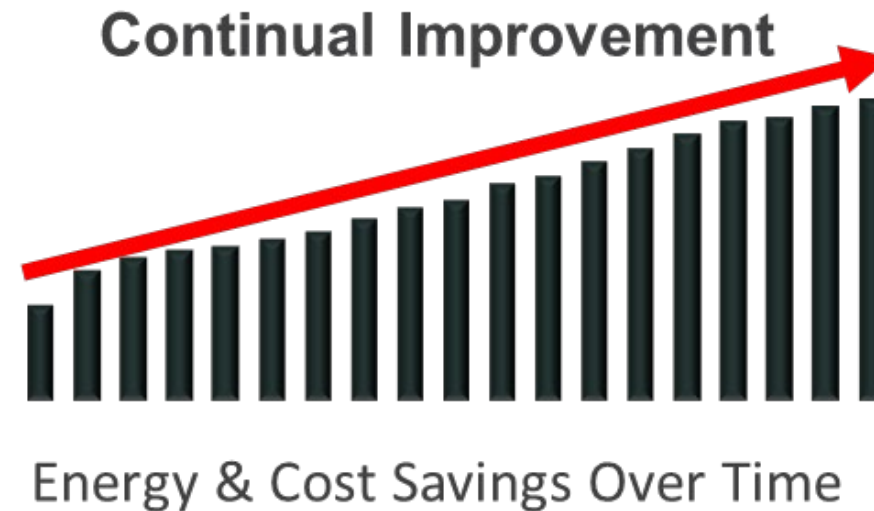


# Task 25: Connecting the Tasks



# Task 25: Continual Improvement

- You SHALL demonstrate continual improvement of your EnMS
- You SHALL demonstrate continual improvement of your energy performance




- Today's Content


**Remember to use the 50001 Ready Navigator**

# Use the Navigator

Active Partner Referral | Advanced Energy more information cancel referral



Partnering with:



## 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 in your facility. It provides step-by-step guidance and resources to help you understand the requirements of the ISO 50001 Energy Management System Standard. It also provides information on the international best practice for energy management systems. You can:

- Learn what energy management is and why it is important.
- Understand the requirements of the ISO 50001 Energy Management System Standard.
- Learn why energy management is important.
- Learn why you should use the 50001 Ready Navigator.

### Explore the Navigator

Dashboard

100% Completed

Task Assignments

Task	Assigned To	Status	Action
Energy and Sustainability	John Doe	Completed	
Energy Policy	John Doe	Completed	
Management Committee	John Doe	Completed	
Energy Team	John Doe	Completed	
Legal Requirements	John Doe	Completed	

### Create an Account or Log-in to Get Started

EMAIL ADDRESS

ENTER PASSWORD

**Log In**

[Forgot password?](#)

# Use the Multi-Site Option

- The multi-site option can be very helpful

**Central Office Portfolio View** [Central Office Dashboard](#) [Manage Central Office](#) [Manage CO Team](#) [Add 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 15 16 17 18 19 20 21 22 23 24 25

Contact	Site Name	Task Progress	Action	Last Activity
	EMD	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> 23 <input type="checkbox"/> 24 <input type="checkbox"/> 25	<a href="#">Dashboard</a>	08/12/2020 <a href="#">Notes 0</a> <a href="#">Remove</a>
	Utility Services - 23rd...	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> 23 <input type="checkbox"/> 24 <input type="checkbox"/> 25	<a href="#">Continue Setup</a>	05/22/2020 <a href="#">Notes 0</a> <a href="#">Remove</a>
	Northside WWTP	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> 23 <input type="checkbox"/> 24 <input type="checkbox"/> 25	<a href="#">Continue Setup</a>	05/22/2020 <a href="#">Notes 0</a> <a href="#">Remove</a>
	Southside WWTP	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> 23 <input type="checkbox"/> 24 <input type="checkbox"/> 25	<a href="#">Continue Setup</a>	05/22/2020 <a href="#">Notes 0</a> <a href="#">Remove</a>
	Sweeney WTP	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> 23 <input type="checkbox"/> 24 <input type="checkbox"/> 25	<a href="#">Continue Setup</a>	05/22/2020 <a href="#">Notes 0</a> <a href="#">Remove</a>
	Nano WTP	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> 23 <input type="checkbox"/> 24 <input type="checkbox"/> 25	<a href="#">Continue Setup</a>	05/22/2020 <a href="#">Notes 0</a> <a href="#">Remove</a>
	235 Government Center Dr...	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> 23 <input type="checkbox"/> 24 <input type="checkbox"/> 25	<a href="#">Continue Setup</a>	05/22/2020 <a href="#">Notes 0</a> <a href="#">Remove</a>

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The 50001 Ready Navigator is a resource of the Department of Energy's Advanced Manufacturing Office.  
[Advanced Manufacturing Office](#) | [Office of Energy Efficiency & Renewable Energy](#)

# Use the Playbooks



**50001 Ready**  
U.S. DEPARTMENT OF ENERGY

## 50001 Ready Navigator Playbook

### Task 22: Internal Audit

**Date last modified/updated:** [Click here to enter a date.](#)

**Who last modified/updated:** [Click here to enter text.](#)

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

1. Appointed an EnMS internal audit program manager.
2. Developed a documented internal audit procedure that addresses the responsibilities, planning, and conducting of EnMS internal audits, as well as the reporting of audit results.
3. Identified personnel to serve as EnMS internal auditors and train them on 50001 Ready Navigator EnMS guidance (or ISO 50001 requirements), internal auditing of ISO 50001 (including auditing of energy performance improvement), and your internal audit procedure.
4. Conducted regularly scheduled EnMS internal audits to identify areas of success and areas in need of improvement.
5. Recorded the results of your organization's internal audits.
6. Ensured that internal audit results are reported to relevant management.



# Polling Question 3

Polling Question

- 3) On a scale of one to five, how would you rate the value of the 50001 Ready online tool for implementing your energy management program?
- A. FIVE – Excellent. I used this during this training and will continue to do so.
  - B. FOUR – Very good. I was able use this some and want to use it more.
  - C. THREE – Okay. I did not get to fully use or evaluate this tool.
  - D. TWO – Not sure. I did not get to use this tool at all during this training.
  - E. ONE – No value to my organization.



- Today's Content

**Where can we go from here?**

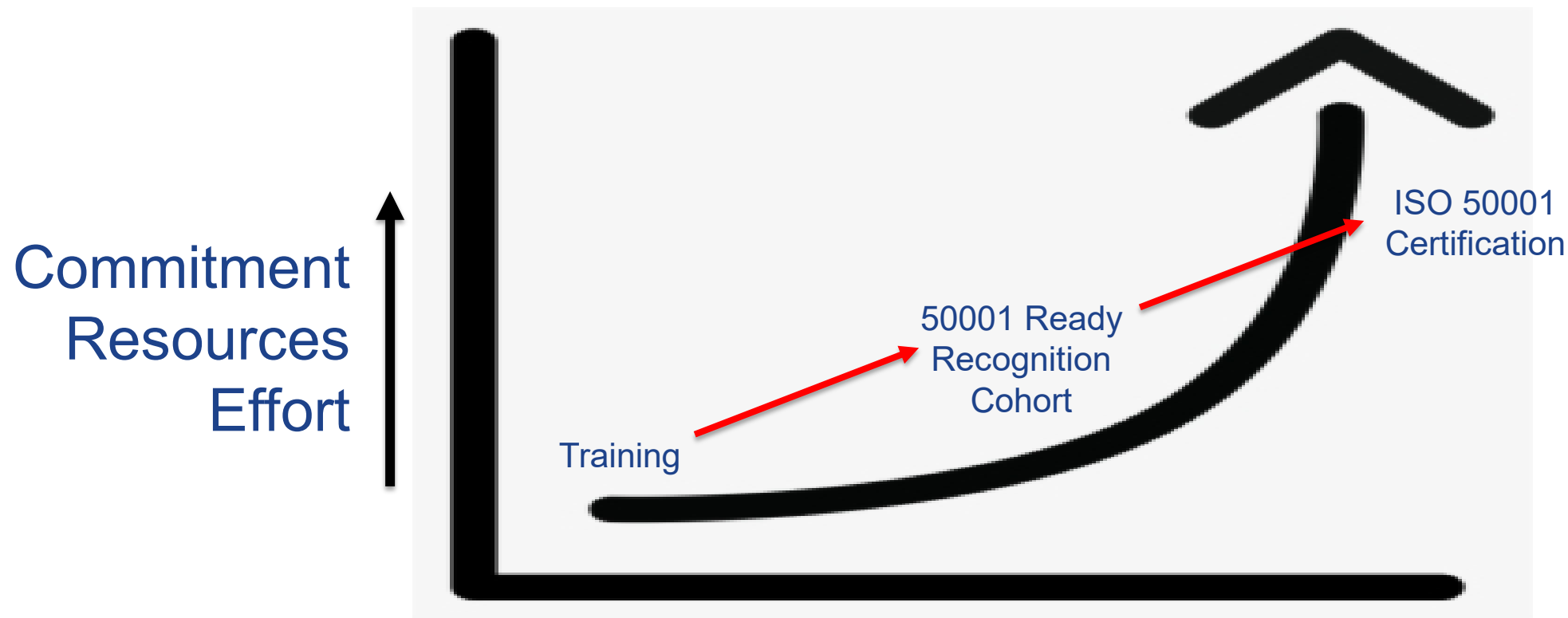
# OPTIONS to Move Forward

- If not already done:
  - Purchase and download the ISO 50001: 2018 standard
  - Set up your 50001 Ready account
  - Download 50001 Ready playbooks for tasks 1-25 and began working on these
- Work through the 25 task playbooks:
  - Leverage ISO 9001, 14001 & 45001 systems, if already in place
  - Make the playbooks your own
  - Evaluate your energy performance improvement
- Join a cohort for further progress assistance ([more to follow](#))
- Apply for [50001 Ready Recognition](#) (use the navigator to apply)
- Go for ISO 50001 third-party certification



**50001 Ready**  
U.S. DEPARTMENT OF ENERGY

# Consider your Pathway for 50001 Energy Management



# The DOE AMO Cohort Program

- The DOE AMO currently has the 50001 Ready Technical Assistance Program in operation
  - This program uses the cohort method
  - This program requires specific commitment per a “Participation Agreement”
  - This program is FREE



Lawrence Berkeley  
National Laboratory

# The DOE AMO Cohort Program



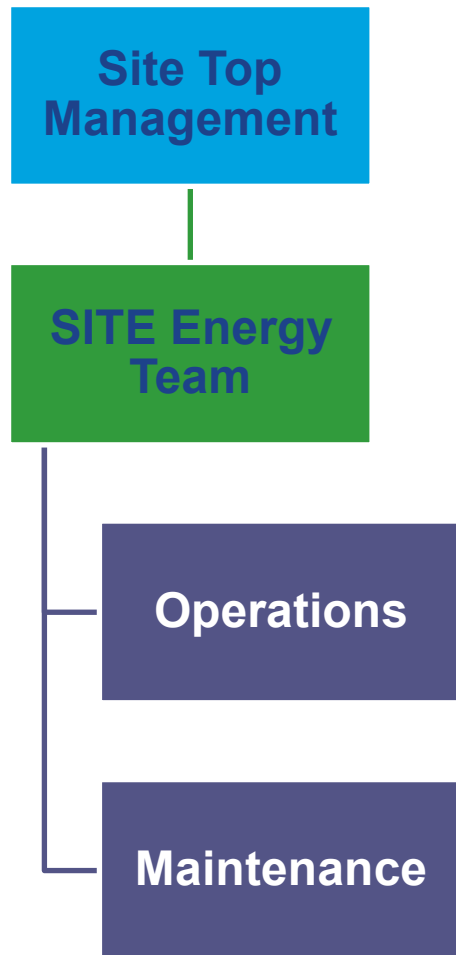
## ■ The Cohort Method

- Typically, six to ten organizations
- Multi-site organizations are okay
- Benefit from shared learning
- Benefit from shared best practices
- ~ 8 calendar months in length
- ~ 10 to 15 hours per month time commitment

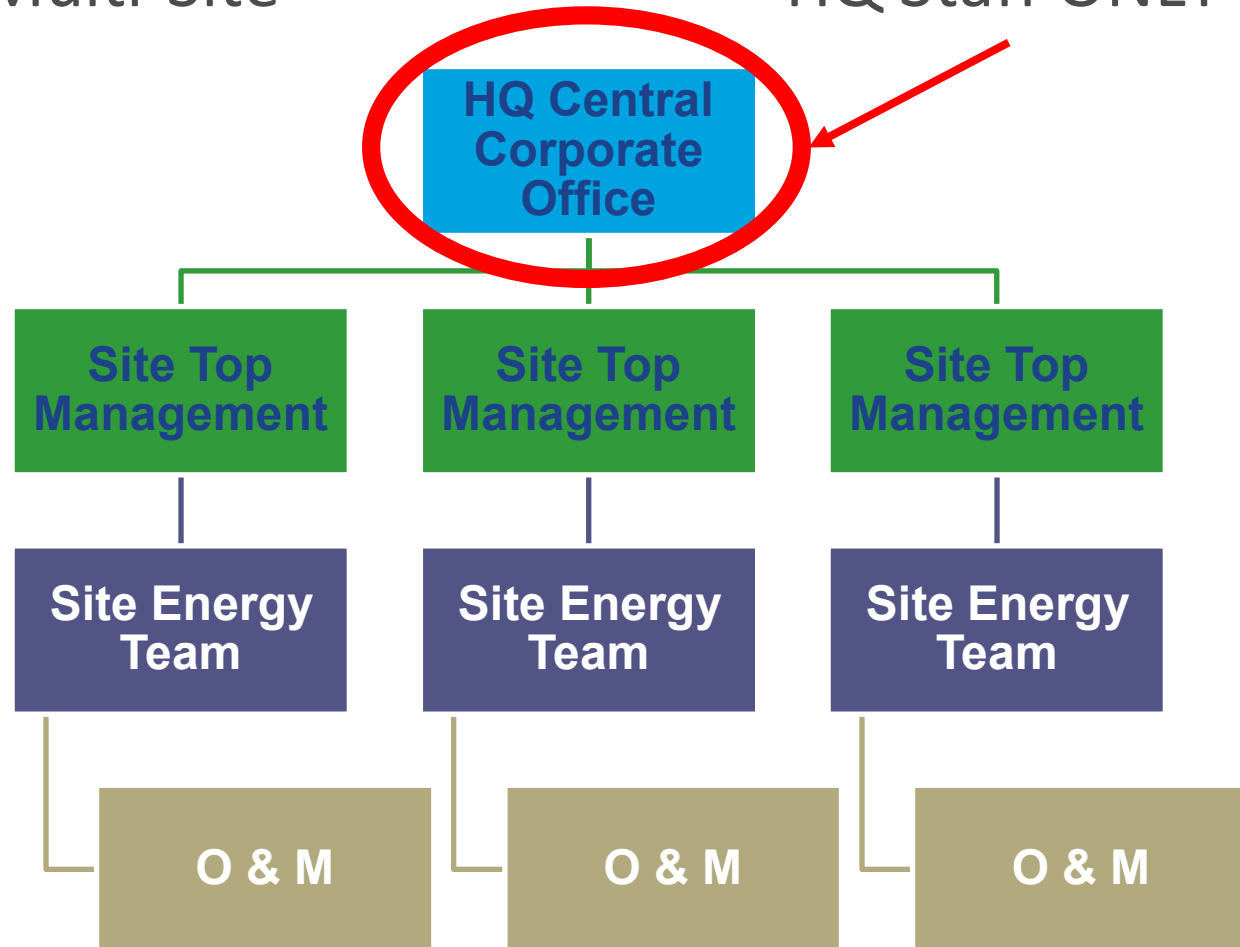


# Organizational Participation Models

## Single Site



## Multi-Site



## HQ Staff ONLY

# Typical Cohort Calendar



- = (1) Pre-training orientation and data collection
- = (8) 2-hr Group Training Sessions – Every four weeks
- = (8) 1-on-1 Coaching Calls – Scheduled two weeks after training
- = (1) Post-Training follow up assessment and data collection
- = Homework and Site Implementation between sessions

Month 1							Month 2							Month 3							Month 4						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
					1	2		1	2	3	4	5	6		1	2	3	4	5	6					1	2	3
3	4	5	6	7	8	9	7	8	9	10	11	12	13	7	8	9	10	11	12	13	4	5	6	7	8	9	10
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17	18	19	20	21	22	23	21	22	23	24	25	26	27	21	22	23	24	25	26	27	18	19	20	21	22	23	24
24	25	26	27	28	29	30	28							28	29	30	31				25	26	27	28	29	30	
31																											
Month 5							Month 6							Month 7							Month 8						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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23	24	25	26	27	28	29	27	28	29	30				25	26	27	28	29	30	31	29	30	31				
30	31																										



# The DOE AMO Cohort Program



- Participating organizations will **commit to**:
  - Providing staff resources to complete the program
  - Providing requested data collection forms, pre and post cohort
  - Completing assigned preparation and homework items
  - Applying for **50001 Ready Recognition**



50001 Ready Technical Assistance Program  
Site Level Participant Agreement



# The DOE AMO Cohort Program



- Participating organizations will **receive**:
  - You have already received the basics in this 8-week training.
  - Guidance to complete the pre and post cohort data collection forms.
  - EIGHT 2-hour group sessions for playbook review.
  - EIGHT 1-on-1 session with each individual sites for check in on progress and technical assistance
  - Assistance with applying for **50001 Ready Recognition**



# The DOE AMO Cohort Program



## ■ Desired Outcomes:

- Gain an understanding of ISO 50001 and create your EnMS
- Use the 50001 Ready navigator tool to implement the 25 energy management tasks and create your playbooks
- Improve your overall plant operations
- Demonstrate ongoing energy performance improvement
- Apply for and receive 50001 Ready Recognition for self-attesting to completion



# Applying for 50001 Ready Recognition

The application is accessible from the navigator

## 1. Self-attest to task implementation

Complete Self Attestation Form

## 2. Complete Performance Improvement Report

Submit energy performance data 'snapshot'.

## 3. Management sign-off

Sign-off by management of 50001 Ready implementation.

**DOE  
recognizes  
50001 Ready  
Achievement**

**Use the 50001  
Navigator  
instructions to  
apply**

# Participation in the DOE AMO Cohort Program

If you are interested participating in a DOE AMO Energy Management Cohort as a follow up to this training:

PLEASE LET US BOTH KNOW “**ASAP**”:

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Research Associate

ORNL

[guow@ornl.gov](mailto:guow@ornl.gov)

(865) 574-8632

Michael Stowe

Senior Energy Engineer

Advanced Energy

[mstowe@advancedenergy.org](mailto:mstowe@advancedenergy.org)

(919) 857-9043

U.S. DEPARTMENT OF  
**ENERGY** | Energy Efficiency &  
Renewable Energy

ADVANCED MANUFACTURING OFFICE

- Review and Wrap Up

# Webinar Wrap Up

## Kahoot Quiz Game

### Q&A

# Training Schedule: By Session

1. An Overview – March 28 - **DONE**
2. Laying the Foundation of 50001 – April 4 - **DONE**
3. Where does all the Energy Go? – April 11 - **DONE**
4. Sorting out the Energy Data – April 18 - **DONE**
5. Engaging Other Functions – April 25 - **DONE**
6. Evaluating Performance – May 2 - **DONE**
7. Ensuring Continual Performance – May 9 - **DONE**
8. Wrap Up and Next Steps – **TODAY - May 16**

**NEXT: Join the follow up cohort?**



# 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>

# Polling Question 4

## Polling Question

- 4) Based on your organization's goals for the implementation of an energy management system, what level of interest do you think you would have in participating in a follow on 50001 Ready cohort with a deeper and longer-term commitment? ?
- A. We are interested in this and would like to participate.
  - B. We are interested but need to know more.
  - C. We would not be interested at this time, but maybe later.
  - D. We do not intend to pursue 50001 Ready.

# Polling Question 5

Polling Question

- 5) What prevents you from participating 50001 Ready cohort after this 50001 Ready Virtual Training?
- A. Resources (people and time commitment).
  - B. Cannot get the data to implement 50001 Ready.
  - C. No support from top management.
  - D. I have learned everything I need from this training and no more help is needed from the cohort.
  - E. Nothing. I plan to participate in the cohort.

# Polling Question 6

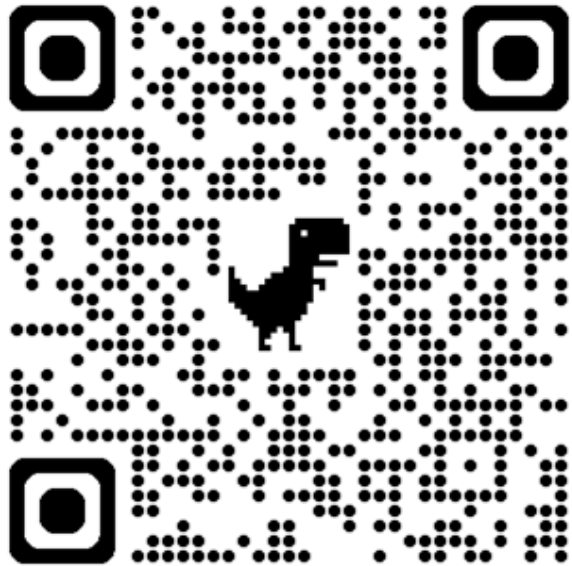
Polling Question

- 6) After attending all eight virtual trainings on 50001 Ready, how do you feel about 50001 Ready as a resource to help you with your energy management plans:
- A. Overwhelmed.
  - B. Cautiously optimistic.
  - C. Very encouraged.
  - D. Confident - Ready to get Ready.
  - E. Looking forward to the follow-on cohort.

1977

# Please Complete the Training Survey

- <https://www.surveymonkey.com/r/G7K2TD7>
- Or you can use the QR code below:



# And now, our Kahoot Quiz Review Game



# 50001 Ready Navigator: Questions?

## 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





# Please Contact Us With Any Questions



**Jess Allen**

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