



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

ORNL 50001 Ready Training  
Webinar Series, Session 3  
February 1, 2022  
10:00 a.m. to 12:30 p.m.

# Agenda – Session THREE



- Welcome, Safety, and Housekeeping
- Review Previous Sessions
- Today's Content – **Where Does All my Energy Go?**
  - Section 3: Planning
    - Task 8: Energy Data and Collection
    - Task 9: Significant Energy Uses (SEUs)
- Webinar Training Schedule & Preparations
- Kahoot Quiz Game
- Q&A



But first, a  
POLL!



# Polling Question 1

Polling Question

- 1) Reflecting on the impact of the COVID 19 virus, how was your production volume (and the associated energy consumption) impacted in 2020 and/or 2021?
- A. Significantly lower
  - B. Somewhat lower
  - C. Up and down, sporadic
  - D. Limited impact, stable
  - E. Somewhat higher
  - F. Significantly higher

# 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



- REVIEW

# Review of Previous Sessions

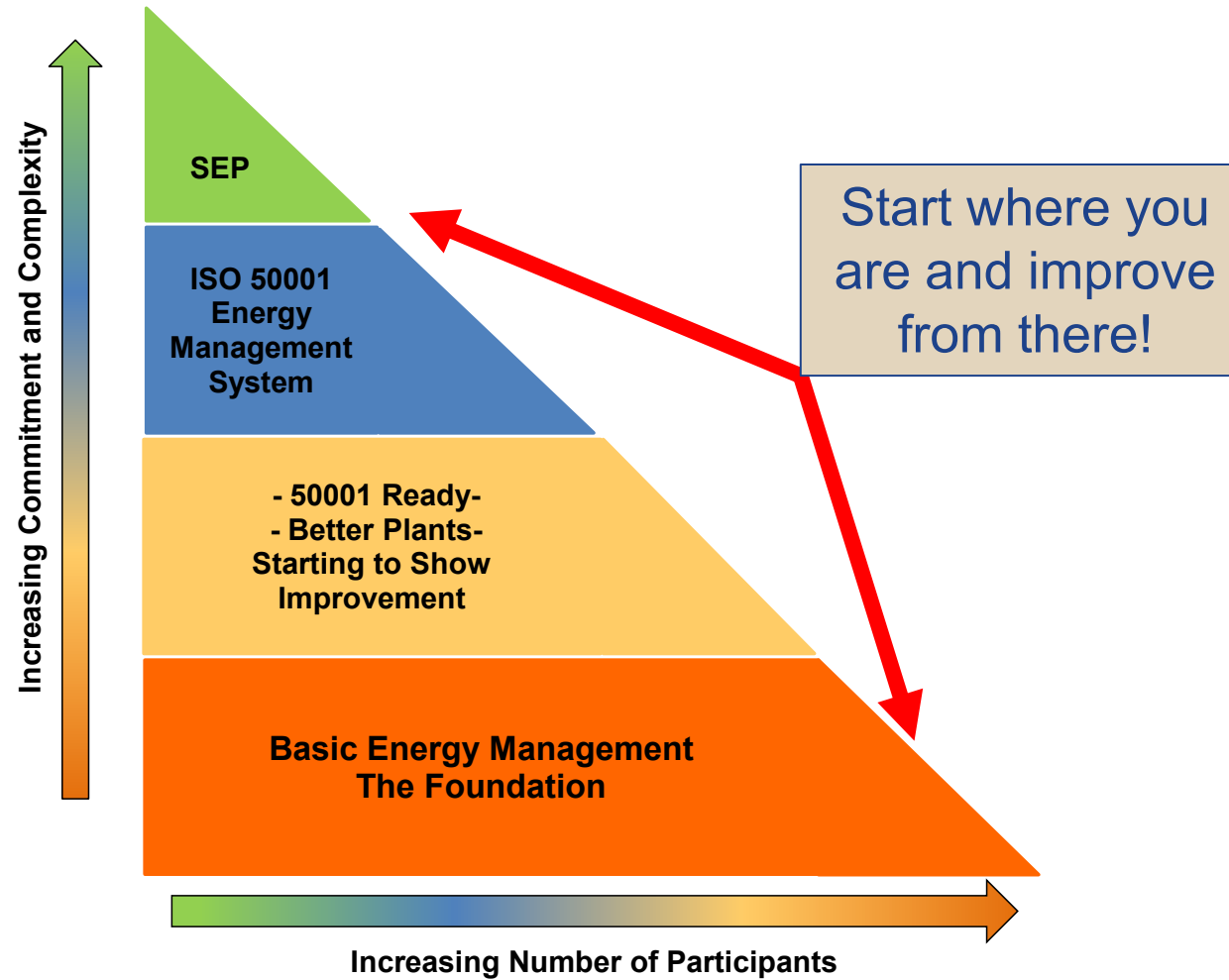
# Quick List of Acronyms

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





# Why SEM? - The Continuum



# Why 50001?: A System

## Navigator

LANGUAGE  
English ▼

Log In

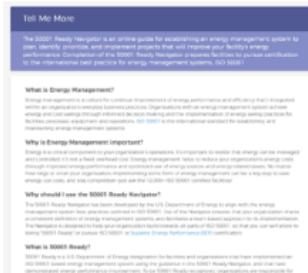


### Welcome to the 50001 Ready Navigator!

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+ sites worldwide benefiting from an energy management system!

The 50001 Ready Navigator has been updated to reflect the changes made to the ISO 50001 standard in 2018. The original version of the 50001 Ready Navigator, based upon the 2011 publication of ISO 50001, will be available online for one year and accessible by existing projects to allow for a seamless transition to the revised version. Information about the full transition from the current to updated 50001 Ready Navigator is available below.

#### About the Navigator



#### Explore the Navigator



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

EMAIL ADDRESS

ENTER PASSWORD

Log In

[Forgot password?](#)

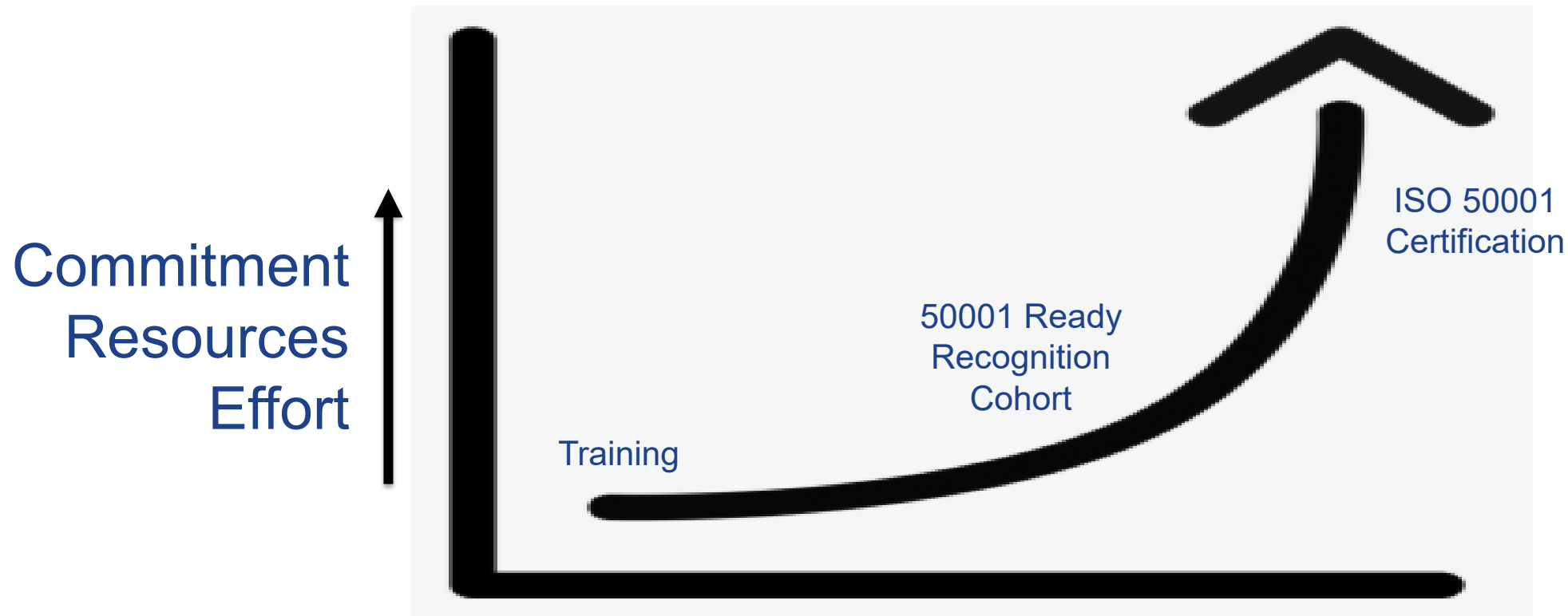
### 50001 Ready Navigator ISO 50001:2018 Update

The 50001 Ready Navigator's structure and tasks have been updated to align with ISO 50001:2018. Documentation of this can be found here:

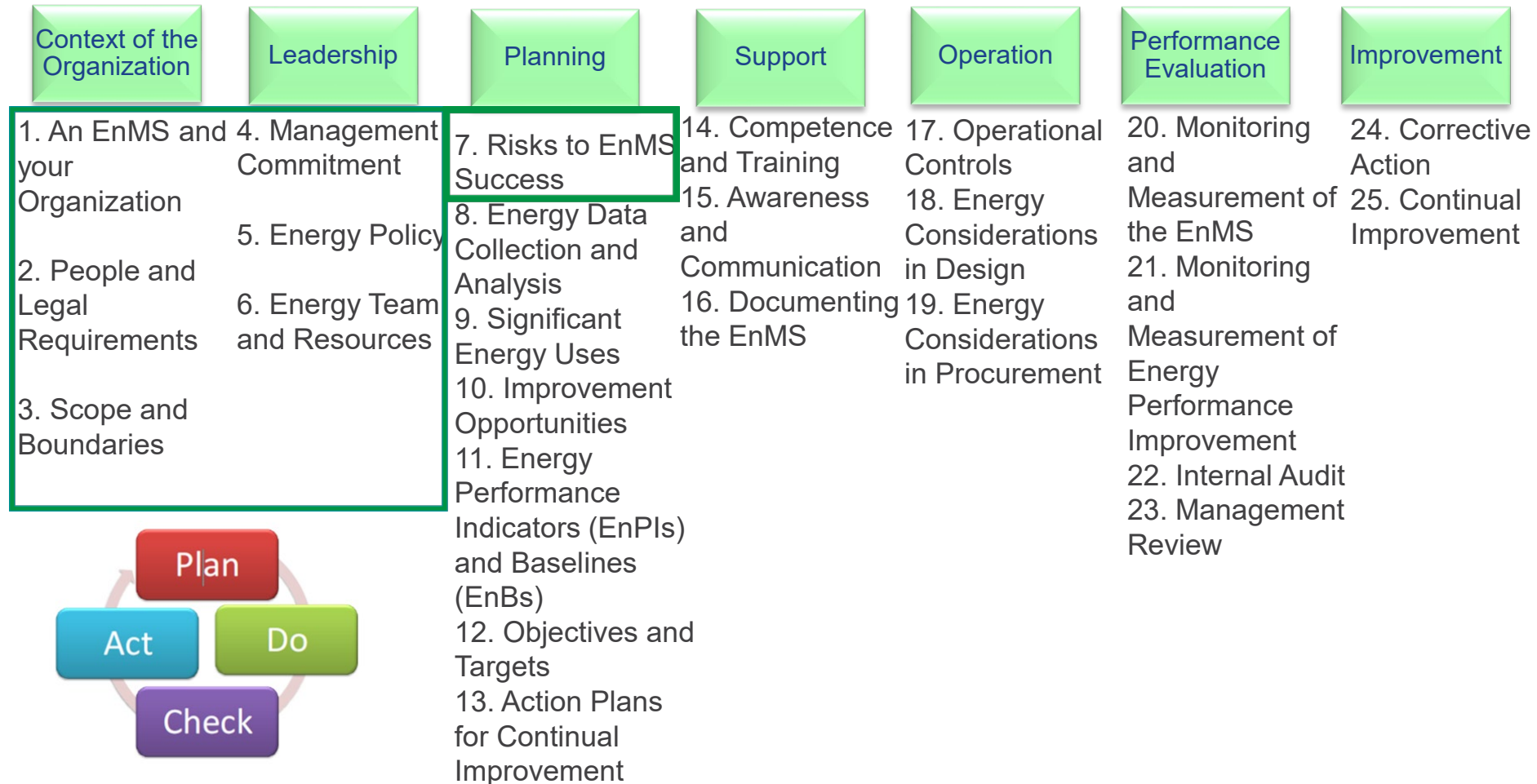
[Navigator crosswalk](#)

- FREE
- Download ONLY, one way information flow
- None of your site info is uploaded
- Single site or multi-site capability

# Consider your Pathway for 50001 Energy Management



# 50001 Ready: Review Previous Tasks

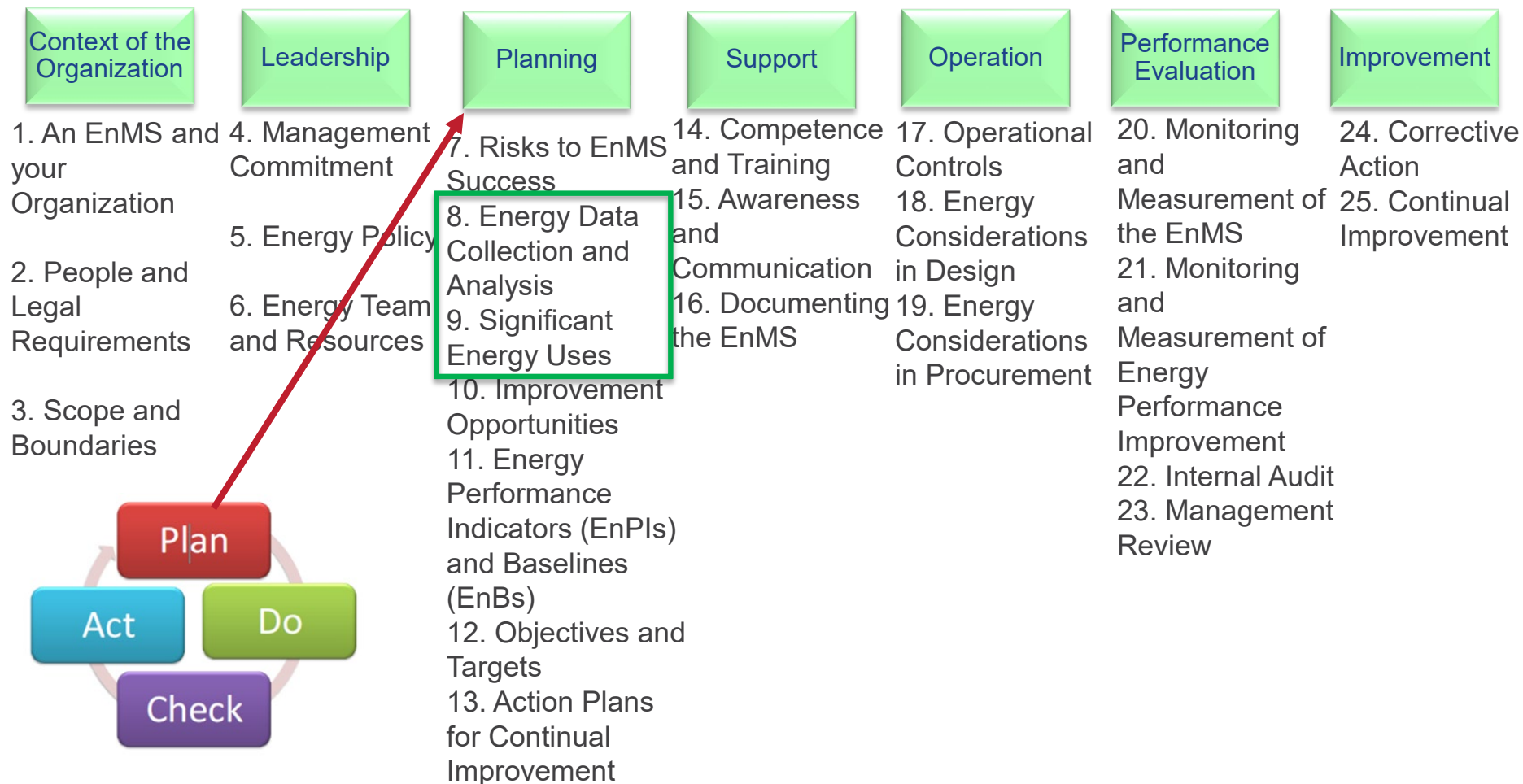


- Today's Content

## Tasks 8 - 9

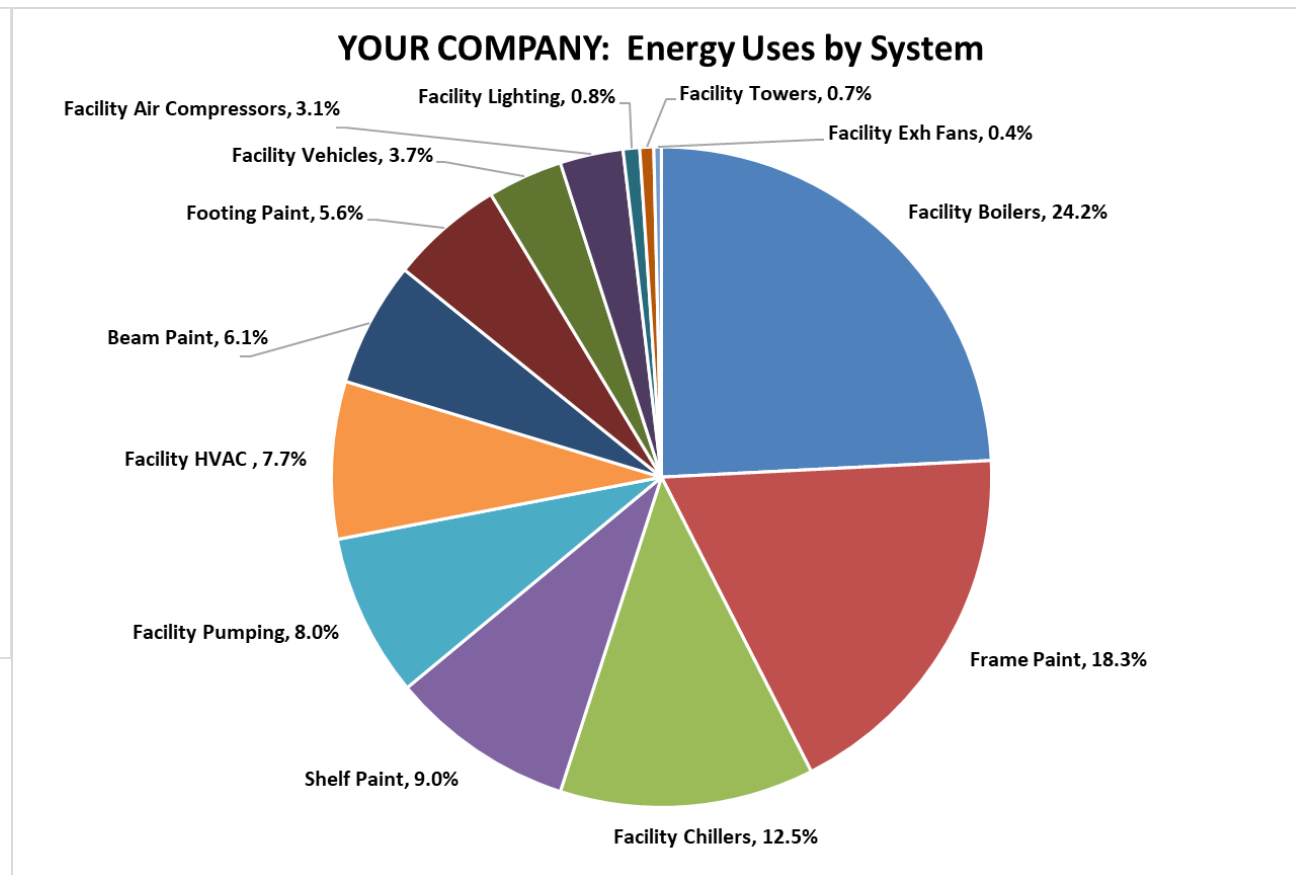
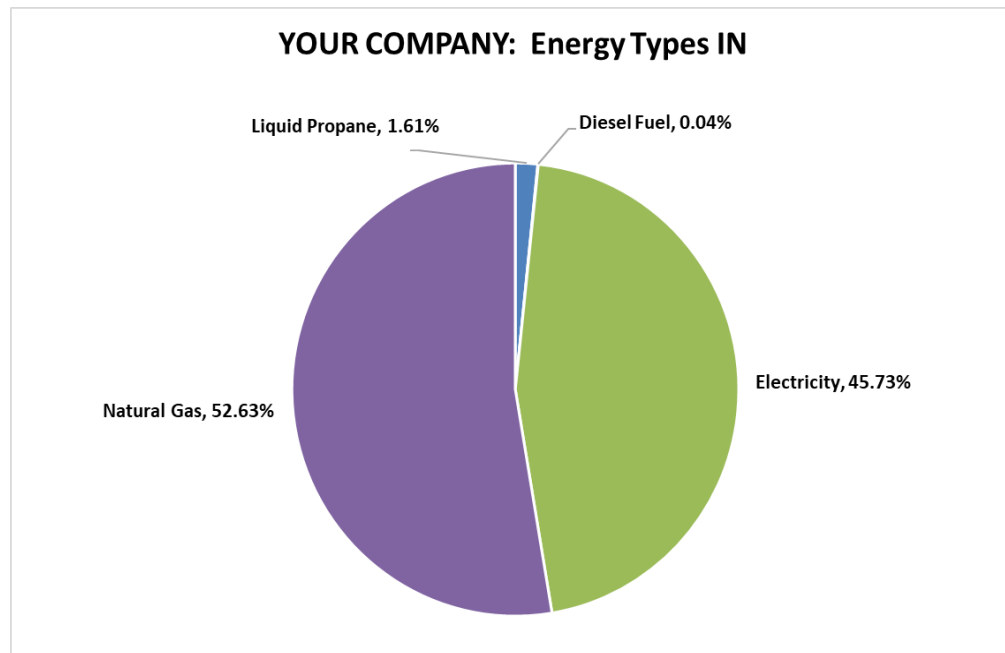


# 50001 Ready Navigator: Today's Tasks



# Planning Section (Tasks 8-13) – 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?*

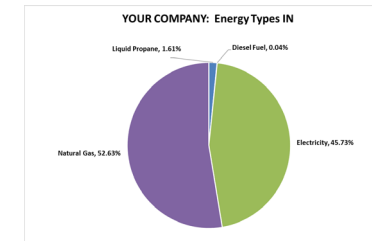
# Polling Question 2

## Polling Question

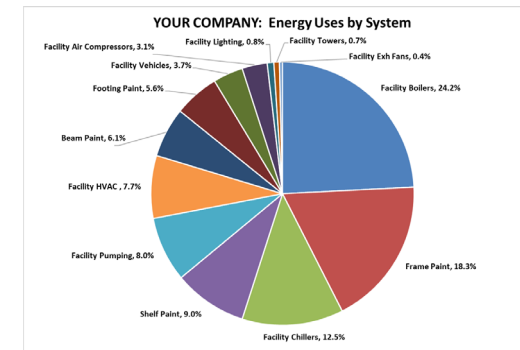
2) Think about the two pie charts on the previous slide. Think about your current data collection and energy evaluation processes. What level of effort would it take to produce both pie charts?

- A. I already have similar charts for both
- B. I am close on both, just need a little tweaking
- C. I am good on “Energy IN”, but would need some effort to get “Energy USE”
- D. It would take a significant effort to get both, especially “Energy USE”
- E. “We’re gonna’ need a bigger boat”

Energy IN



Energy USE



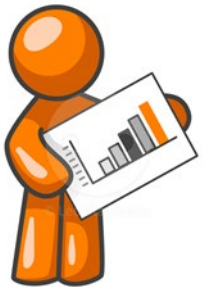
# Task 8: Data Collection and Analysis



Task 8: 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 (e.g., calibration)

We analyze our energy use and consumption data.



# Task 8: Questions to Think About

- How do you determine, collect and analyze energy data?
  - What are your energy sources?
    - (e.g., electricity, natural gas, fuel oil, etc.)
  - What are your energy users?
    - (e.g., chillers, boilers, fans, pumps, lighting, etc.)
    - Who knows about energy uses across your site?
  - What process are already in place that you can use?
  - Who currently works with your energy data? Contractors?
- Are relevant variables understood, collected and used?
- How is all this data analyzed and results recorded?
- How do you ensure accuracy and repeatability of data?



# Task 8: Key Terms

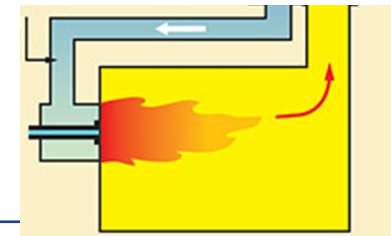
## ■ Energy Source

- 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.

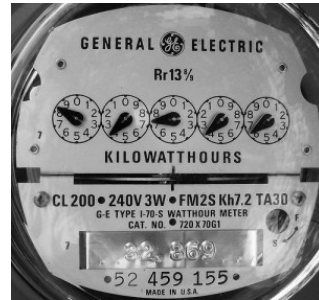


# Task 8: Key Terms (continued)



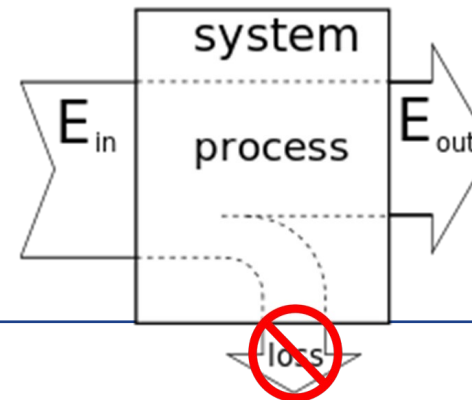
- Energy Consumption

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

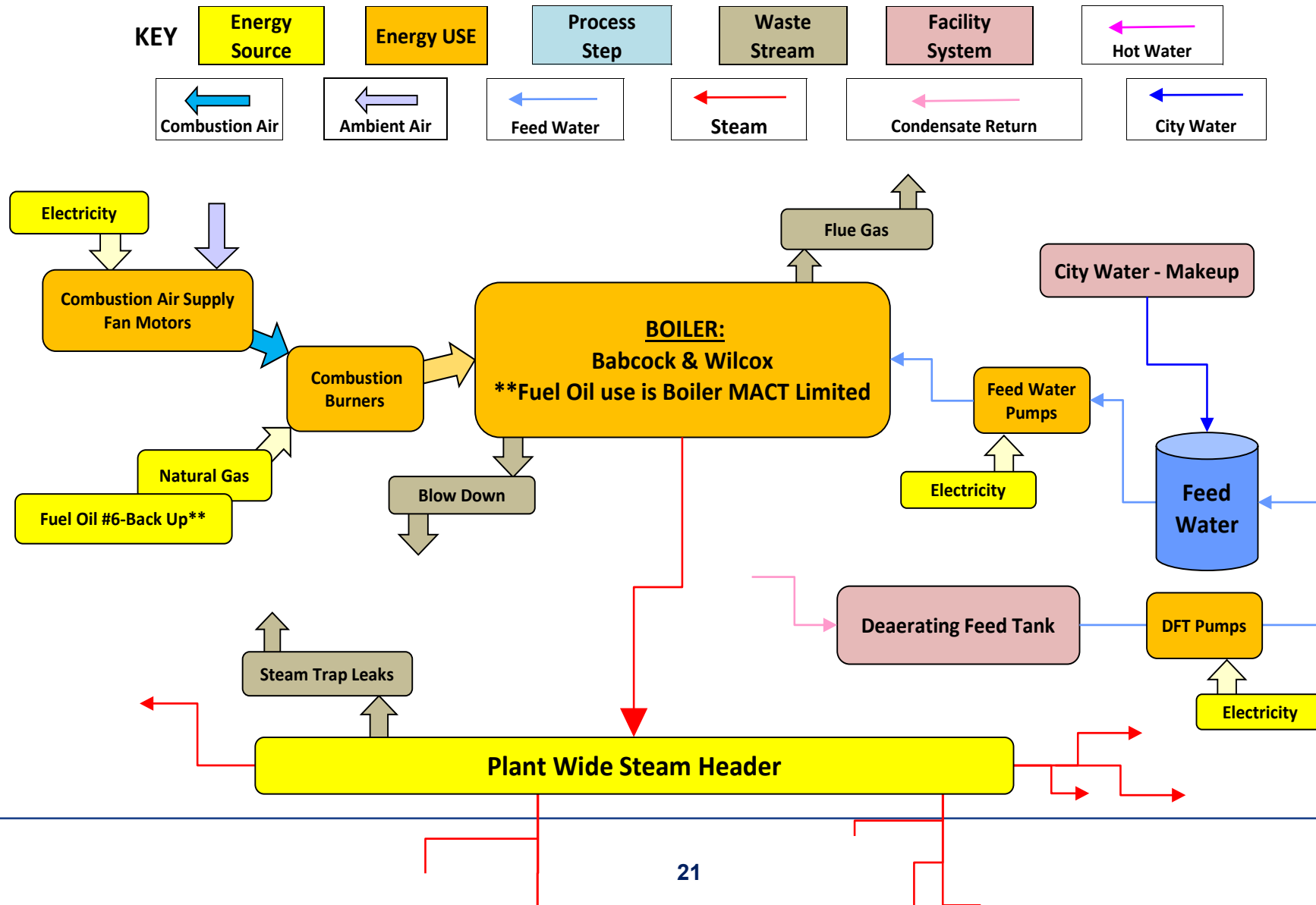


- Energy Efficiency

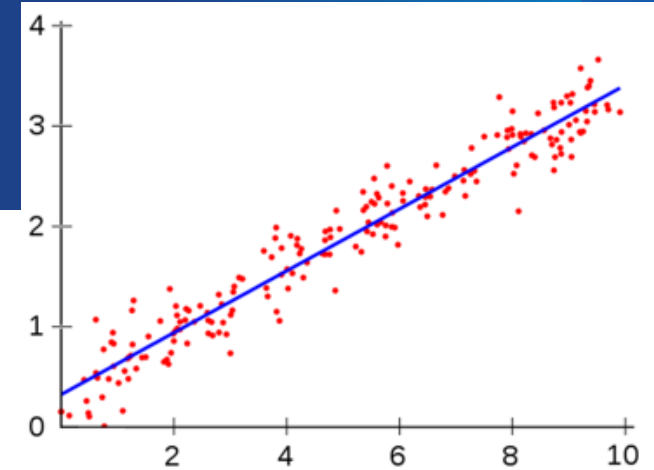
- A ratio of energy output to energy input, typically expressed as a percentage



# Task 8: Process Energy Maps Can be Useful



# Task 8: More Key Terms

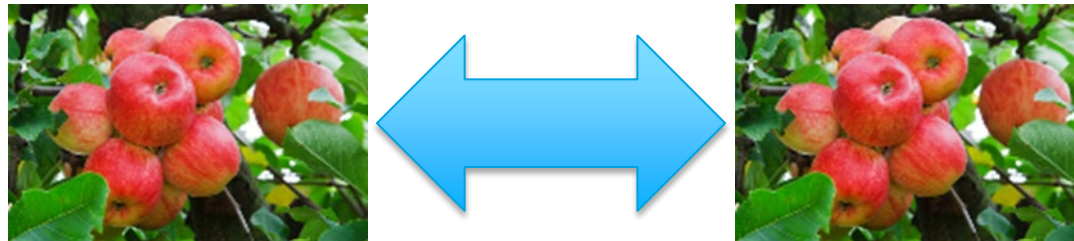


## ■ Relevant Variables

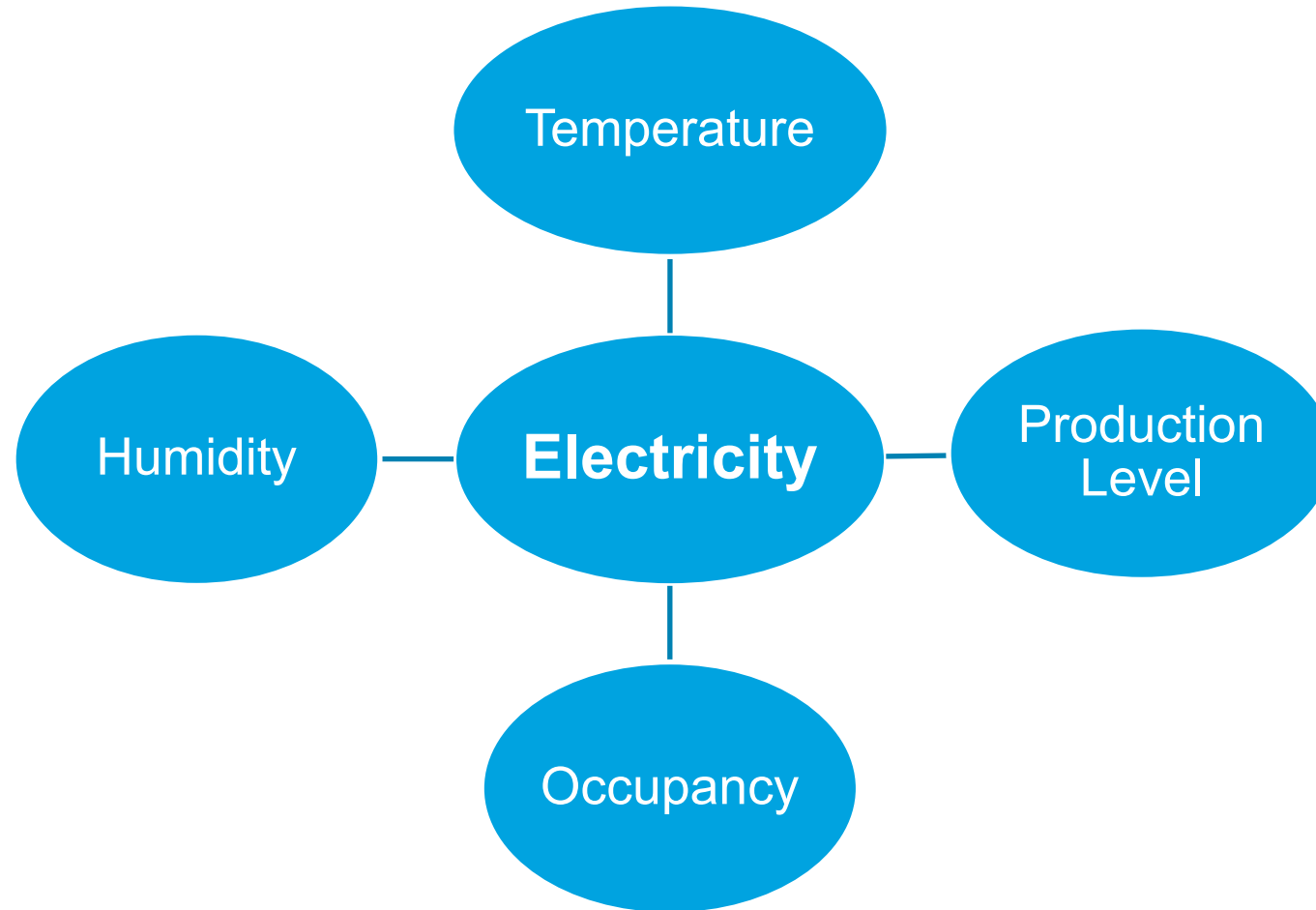
- Impacts energy performance, i.e., relevant
- Typically changes, i.e., variable
- Examples: weather conditions (heating degree days, cooling degree days, average outside temperature, humidity, working hours, occupancy, production output, etc.)

## ■ Normalization

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



# Task 8: Relevant Variables & Energy Use

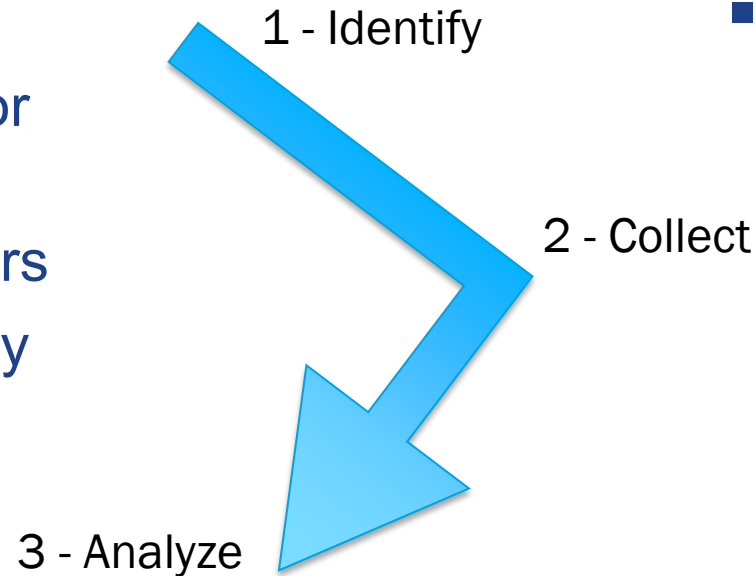




# Task 8: Delegating Roles

## ■ 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 8: Playbook

Activity

- Look at Task 8 in 50001 Ready
- Look at the Task 8 Playbook

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

50001 Ready Navigator Playbook

Task 8: Energy Data Collection and Analysis

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.](#)

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

1. Identified all energy sources that are consumed within the scope and boundaries.
2. Made a list of energy uses within the scope and boundaries.
3. Identified relevant variables that potentially affect the energy consumption of SEUs and would help create meaningful energy performance indicators (EnPIs) and energy baselines (EnBs).
4. Developed and implemented a data collection plan based upon the data needs including the key characteristics of ISO 50001.
5. Ensured measurements and metering are conducted accurately and are repeatable.
6. Determined appropriate analysis methods and used them to understand and monitor energy use and consumption.

# Polling Question 3

Polling Question

- 3) Think about your current data collection processes relative to Task 8 in 50001 Ready. Where do you feel you are with respects to the requirements?
- A. Got it all covered and it is running like a Swiss watch
  - B. We have robust data collection, just needs a little tweaking
  - C. We are good on incoming energy and utility bills, but we need more work on relevant variables and production data
  - D. It would take a significant effort to get our data collection upgraded to meet task 8
  - E. “That’s no moon, it’s a space station”



# Task 9: Significant Energy Uses

Task 9: We determine our significant energy uses (SEUs), identify and monitor their relevant variables and energy performance, and identify the persons that affect the SEUs.

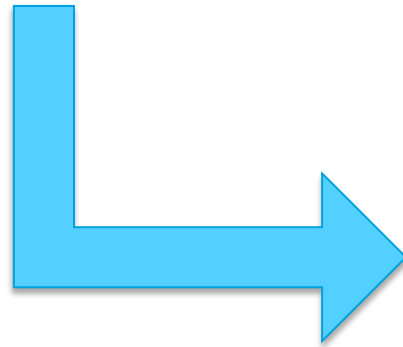
We have a process to review and update SEU data and related information, including our methods and criteria to determine that an energy use should be an SEU.



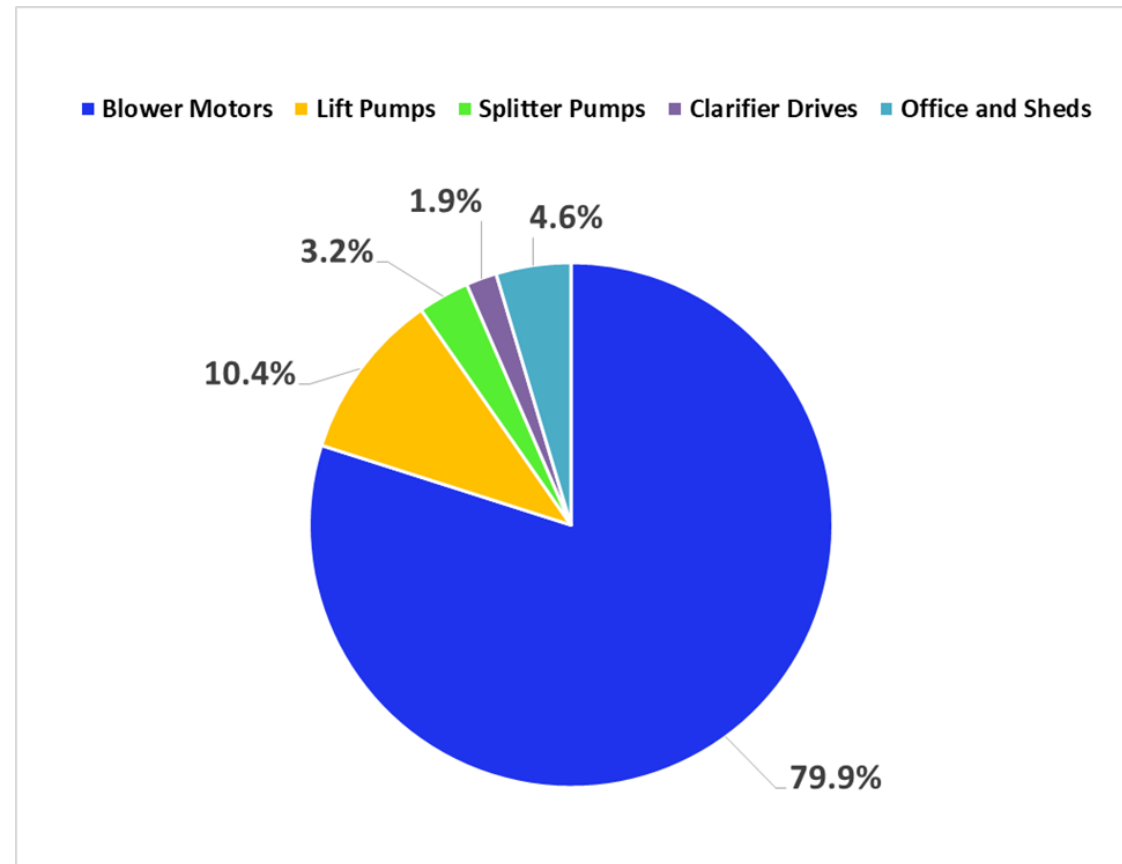
# Task 9: Key Terms



- Significance is determined by your organization



SEUs can be facilities,  
systems, processes,  
or equipment.





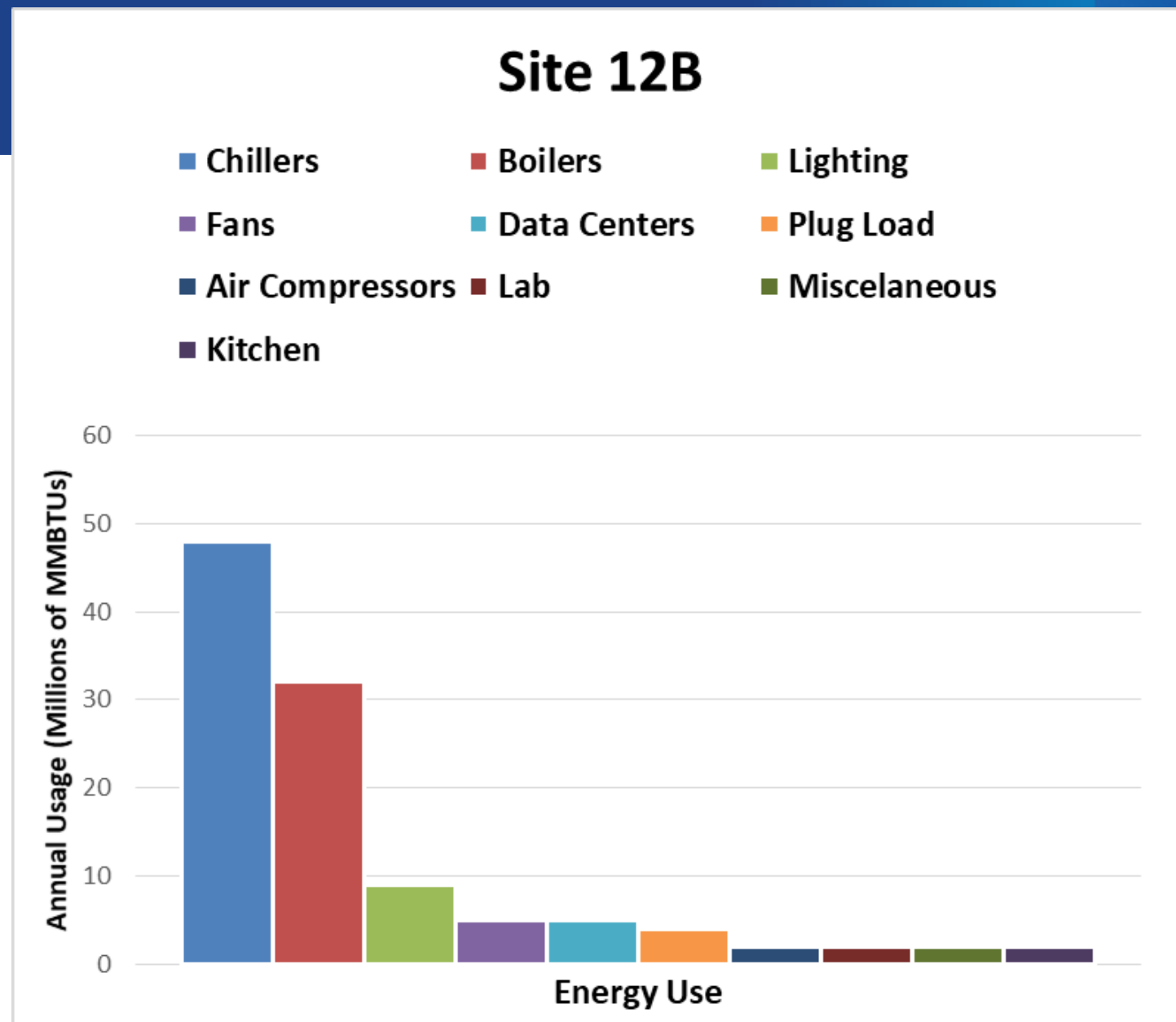
# Task 9: Selecting SEUs

- 3.5.6
- **significant energy use**
- **SEU**
- *energy use* accounting for substantial *energy consumption* **and/or** offering considerable potential for *energy performance improvement*
- Note 1 to entry: Significance criteria are determined by the *organization*
- Note 2 to entry: SEUs can be facilities, systems, processes, or equipment.



## Task 9: 80-20 rule

80% of  
consumption  
from 20% of  
end uses



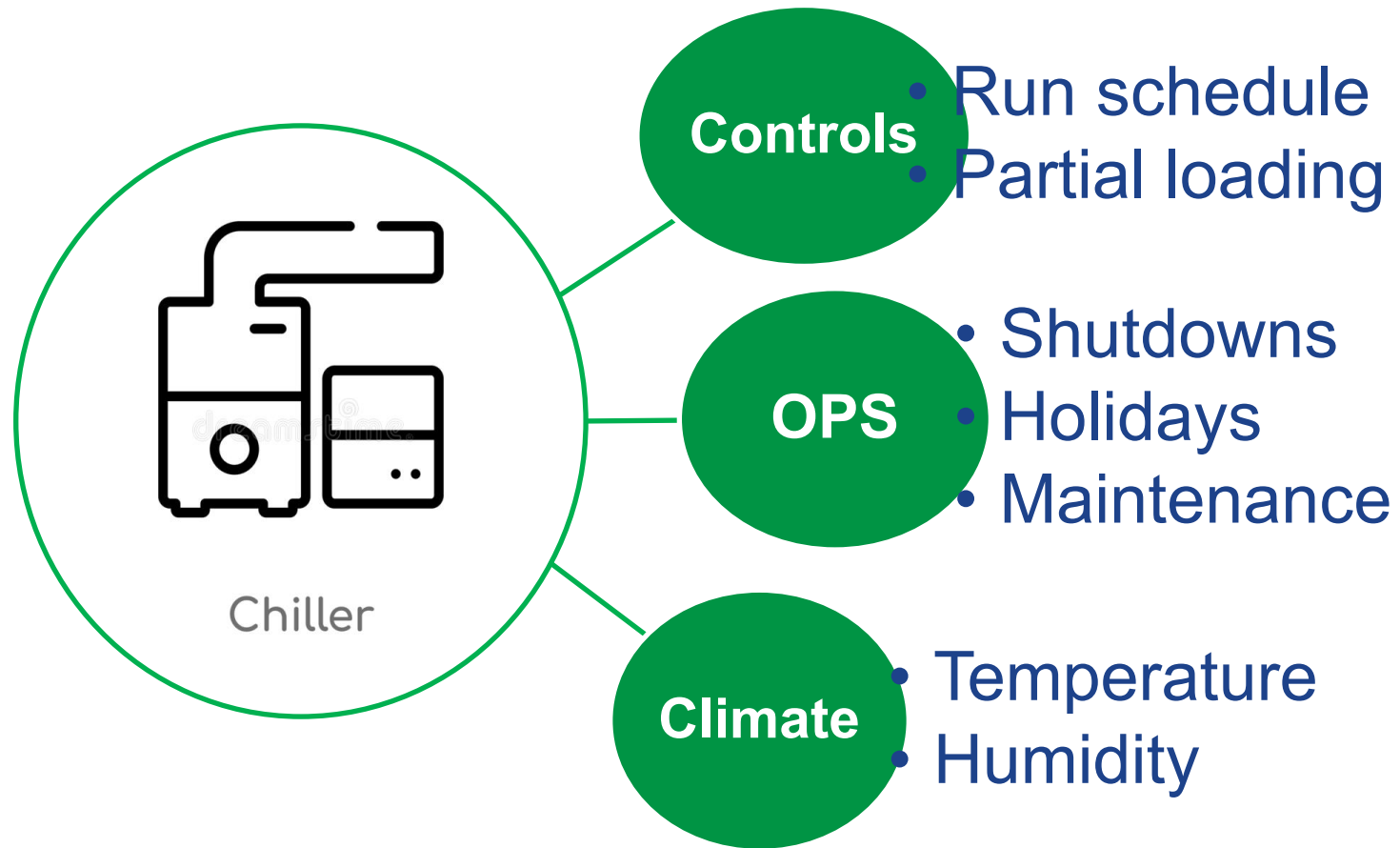
# Task 9: SEUs Require Lots of Work

- 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!!


## Task 9: What impacts SEU energy performance?



# Task 9: Playbook

Activity

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

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

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.](#)

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

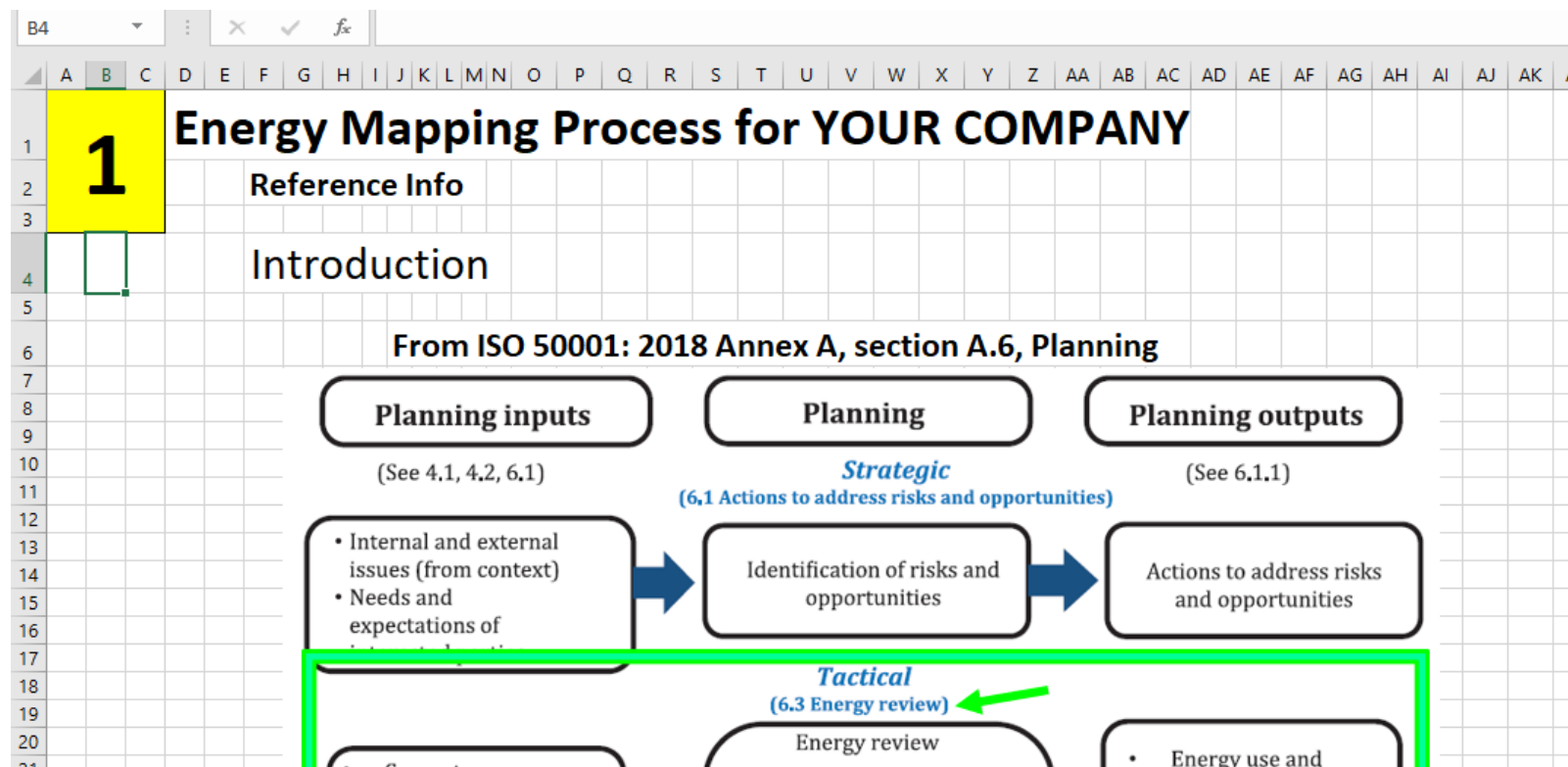
1. Identified the energy uses that consume the most energy within your boundaries.
2. Identified factors and persons that affect the energy consumption of identified energy uses.
3. Established selection criteria for identifying which of these energy uses should be a significant energy use (SEU).
4. 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.

# Task 9: Energy Mapping Template

Activity

- Review the tabs of the Energy Mapping Template Tool



# Polling Question 4

## Polling Question

### 4) Thinking about Tasks 8 - 9:

Task 8: Energy Data and Collection

Task 9: Significant Energy Uses (SEUs)

Where do you feel your organization is relative to these two tasks?

- A. We essentially already have all of this in place. Just a little tweaking is needed.
- B. These make sense and my organization has some of this in place. It would not take too much effort to complete these.
- C. Most of this is new to my organization, but we do have some basics in place. It would take some effort to get this in place.
- D. I would basically have to start from scratch to get these tasks completed.
- E. I need a valium!



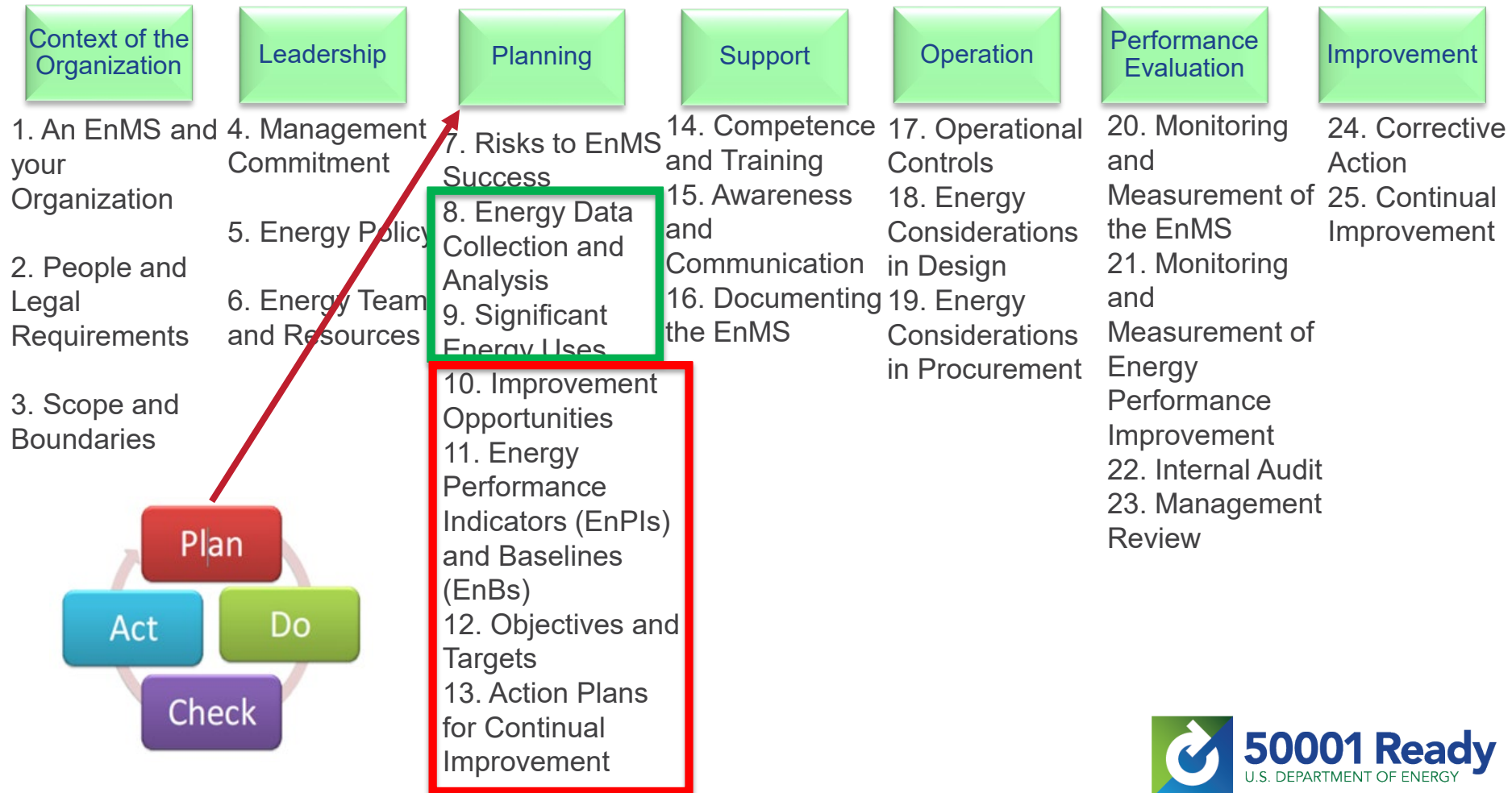
- Review and Wrap Up

# Webinar Training Schedule & Preparations

## Kahoot Quiz Game

### Q&A

# 50001 Ready Navigator Tasks: Webinar #2



# Training Schedule: By Session

1. An Overview – DONE, January 18
2. Laying the Foundation of 50001 – DONE, January 25
3. Where does all the Energy Go? – TODAY - February 1
4. Sorting out the Energy Data – NEXT - February 8
5. Engaging Other Functions – February 15
6. Evaluating Performance – February 22
7. Ensuring Continual Performance – March 1
8. Wrap Up and Next Steps – March 8

# Preparation for Session FOUR

- If desired, purchase the ISO 50001: 2018 standard
- Set up your 50001 Ready account, if not done yet
- Prepare for Session FOUR:
  - Review the “Getting it Done” tab for tasks 10-13 in 50001 Ready
  - What criteria do you use for prioritizing energy improvement opportunities? (Tasks 10)
  - What could you possibly use as your Energy Performance Indicators (EnPIs)? (Task 11)
  - What are your site objectives and energy targets? (Task 12)
  - Do you have process for developing action plans for implementing energy improvement projects? (Task 13)



Between each session we will send out a quick homework survey. Please complete and return these.

# 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>

# Polling Question 5

## Polling Question

- 5) After listening to today's webinar session THREE, and now having covered tasks 1-9, how do you feel about 50001 Ready as a resource to help you with your energy management plans:
- A. Still overwhelmed
  - B. Overwhelmed, but feeling some better
  - C. Cautiously optimistic
  - D. Encouraged
  - E. Ready to get Ready
  - F. I want my money back. Oh, wait. It was free!
  - G. Why, oh why, didn't I take the BLUE pill?

# And now, our Kahoot Quiz Review Game





# Question and Answer Time



# Please Contact Us With Any Questions



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