Links that will be shown today

- https://save-energy-now.org/EM/SPM/Pages/Home.aspx
- https://save-energy-now.org/EM/SPM/Pages/Step1_2_1.aspx
- Step 1.2.1Scope and Boundary worksheet
- https://save-energy-now.org/EM/SPM/Pages/Step1_2_4.aspx
- http://www.energystar.gov/index.cfm?c=guidelines.guidelines_index
- Step 1.2.4 Energy Policy Worksheet
- Step 2.1 Example Legal and Other Requirements Related to energy
- Step 2.1 Legal and other tracking matrix
- https://save-energy-now.org/EM/SPM/Pages/Step2.aspx
- Step 2.2.1 Example Types of Energy Management Data
- Step 2.3.4 Worksheet for Documenting SEU Criteria and Method
- Step 2.3.5-1 SEU Future Energy Estimate Worksheet
- Step 2.5.4 Example Criteria and Ratings for Prioritizing Energy Opportunities
- https://save-energy-now.org/EM/SPM/Pages/Step2_6.aspx
- Step 2.6.3 Checklist of Potential EnPIs
- https://save-energy-now.org/EM/SPM/Pages/Step3.aspx
- Step 3.1 Energy Objectives and Targets Worksheet
- Step3.2 Energy Management Action Plan
- https://save-energy-now.org/EM/SPM/Pages/Step2_1.aspx

W2-1

ADVANCED MANUFACTURING OFFICE

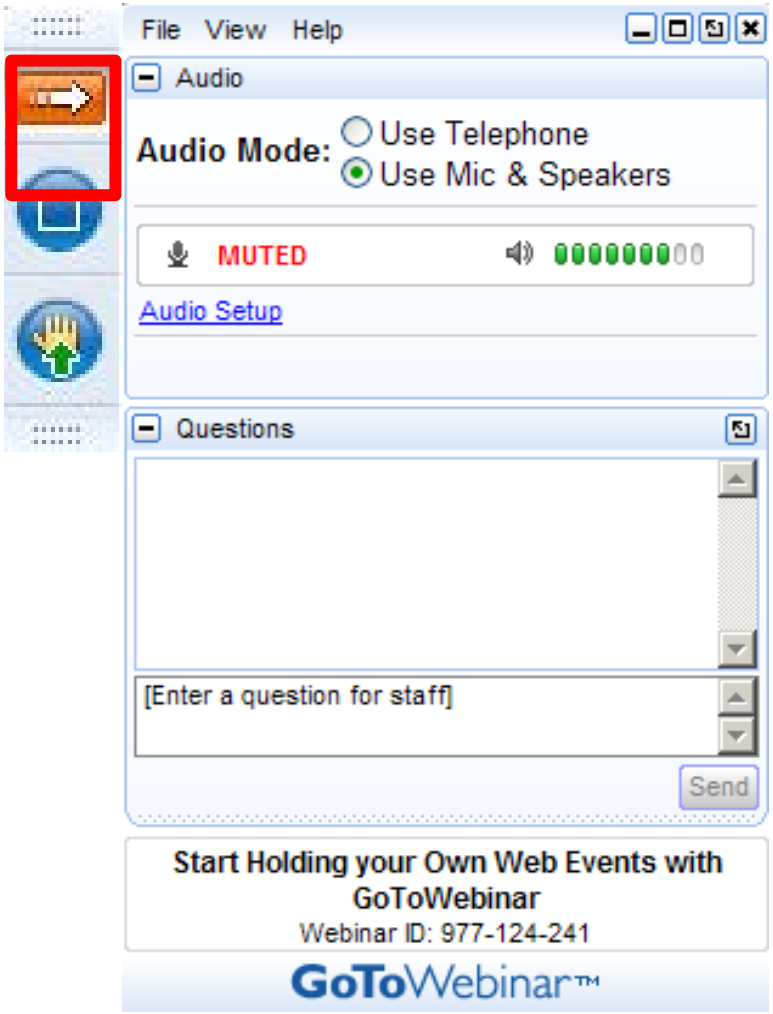
U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

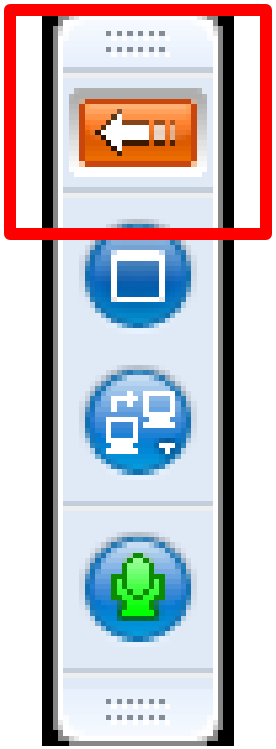
Energy Management System Implementation – Second Webinar- Planning

Dorothy Atwood
Brenda Faile

5-3-12

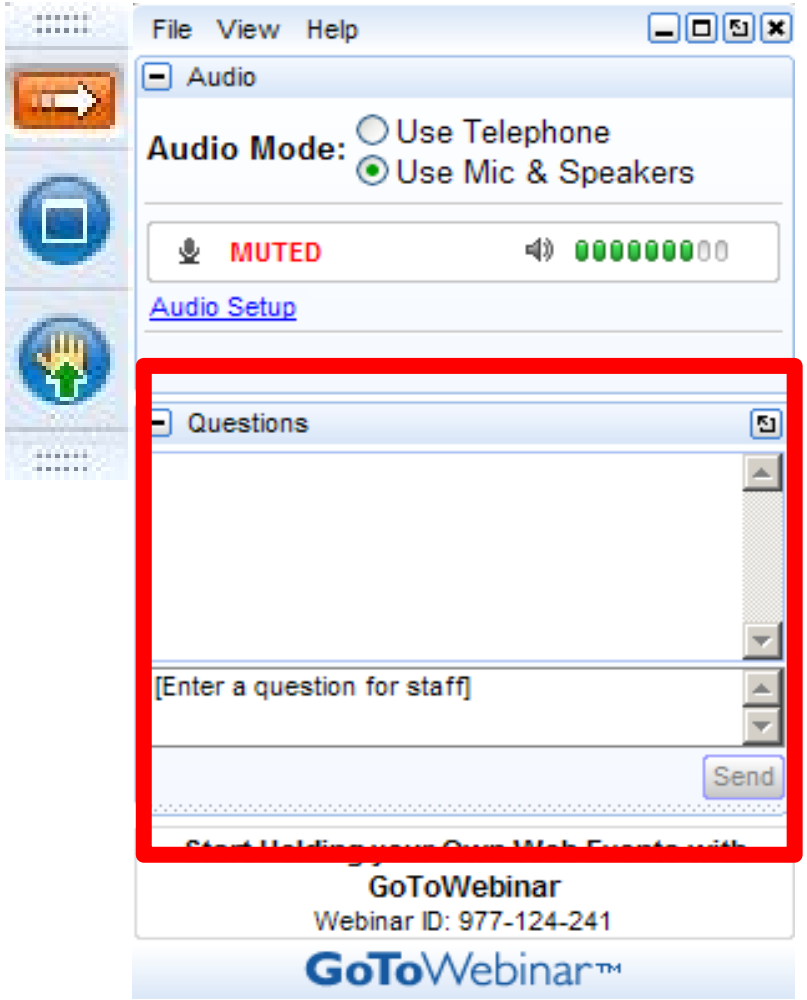
Hide and Show the GoToWebinar Panel

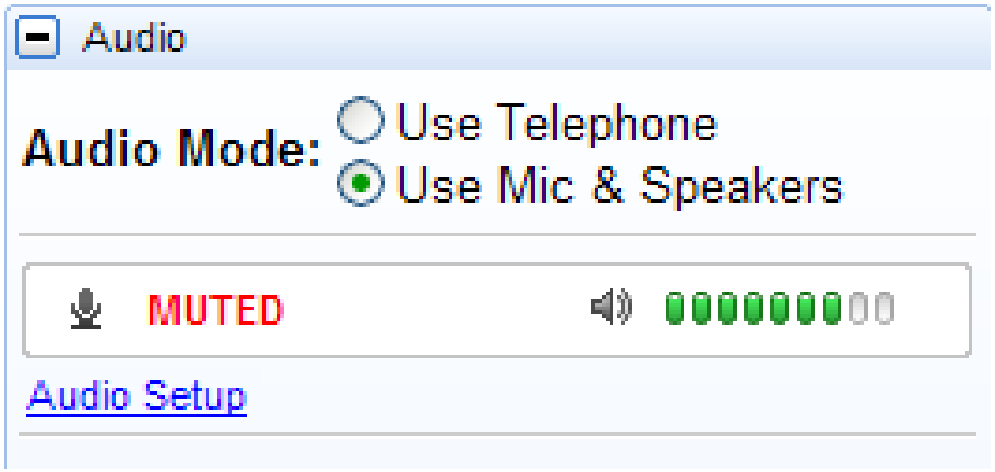




W2-3

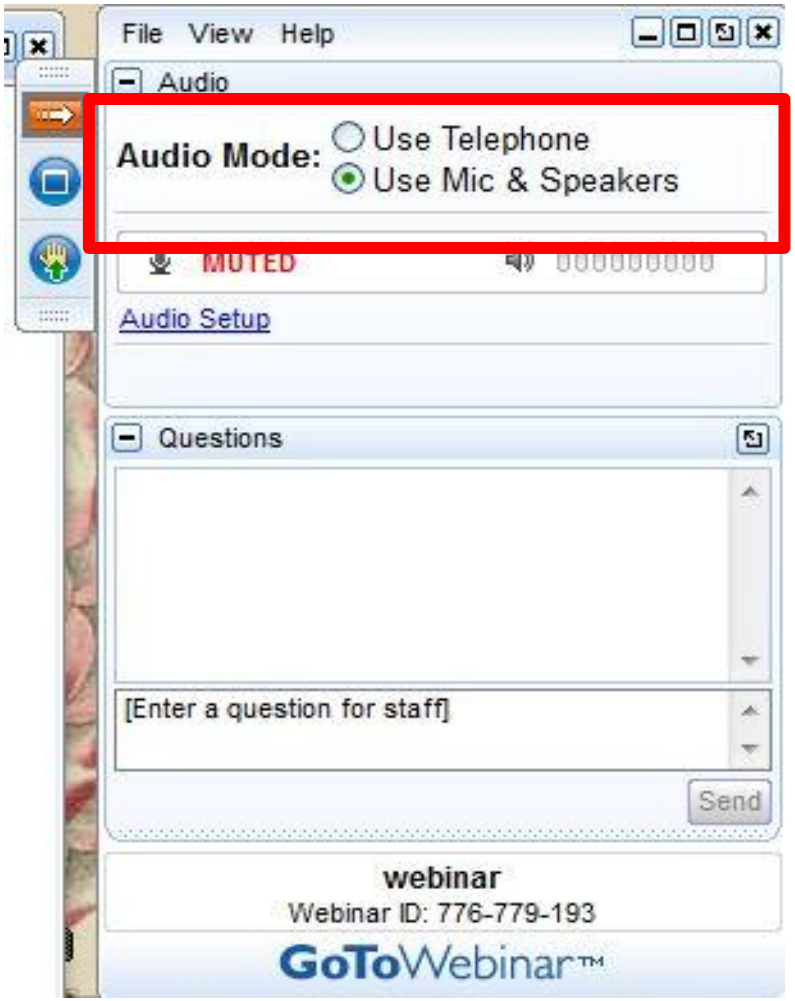
Type Questions

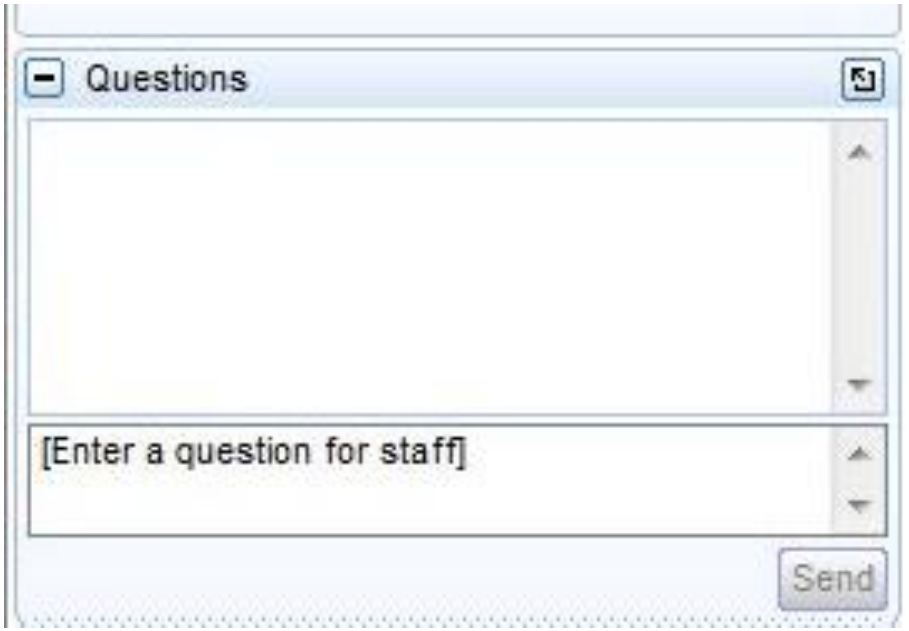




W2-4

Audio Selection





W2-5

Why Georgia Tech?

- Active participation on ISO 50001 and other international standard committees
- Trained and coached manufacturers through their implementation of management systems
  - Texas (2) Pilot
  - Northwest Pilot
  - Midwest Pilot
  - Southeast Pilot
  - Mid-Atlantic Pilot
  - Northeast Pilot
  - California Pilot
- Developed MSE 2000, precursor to ISO 50001
- Qualified specialists on DOE energy software
- Leadership role in developing the DOE eGuide content

W2-6

Dorothy Fisher Atwood

- Paper, plywood, fiberboard, sawmills, glass, wind turbines, chemical, munitions, shoes, metal foundries
- Water and wastewater facilities, state vehicle fleet, transit agency, state parks and recreation
- 15 years experience in management systems
- DOE pilots in Northwest, Midwest, and California
- Online web tools for energy management system implementation

W2-7

Who are we?

Brenda Webb Faile

- Over 30 years experience
- Management system implementation, documentation and maintenance
- ISO 9001, AS9100, ISO 14001, NQA-1
- US Tag for ISO 50001
- DOE pilots in Midwest and California
- Online web tools for energy management system implementation
- 15 years as RABQSA certified QMS lead auditor

W2-8

The 4-web series - Today is Web 2

- Web 1
  - Introduction to DOE eGuide
  - Building the Business Case
  - Case Studies
  - Project Planning

- Web 2
  - Establishing your Energy Picture
  - Scope and Boundary
  - Energy Baseline
  - Action Plans

- Web 3
  - Communication
  - Monitoring and Measurement
  - Checking the System
  - Internal Audit

- Web 4
  - Act
  - Management Review
  - Lessons Learned

W2-9

Web Session 2 - Overview

- This session covers - Planning:
  - Scope and Boundary
  - Policy
  - Legal and Other Requirements
  - Energy Review
  - Energy Baseline and EnPIs
  - Objectives, Targets, Action Plans
  - Outputs and Benefits

PDCA Benefits

Improved O&M consistent performance

Reduced energy consumption

Improved energy performance

Reduced environmental impacts

Better credibility and public image

Aware and competent workforce

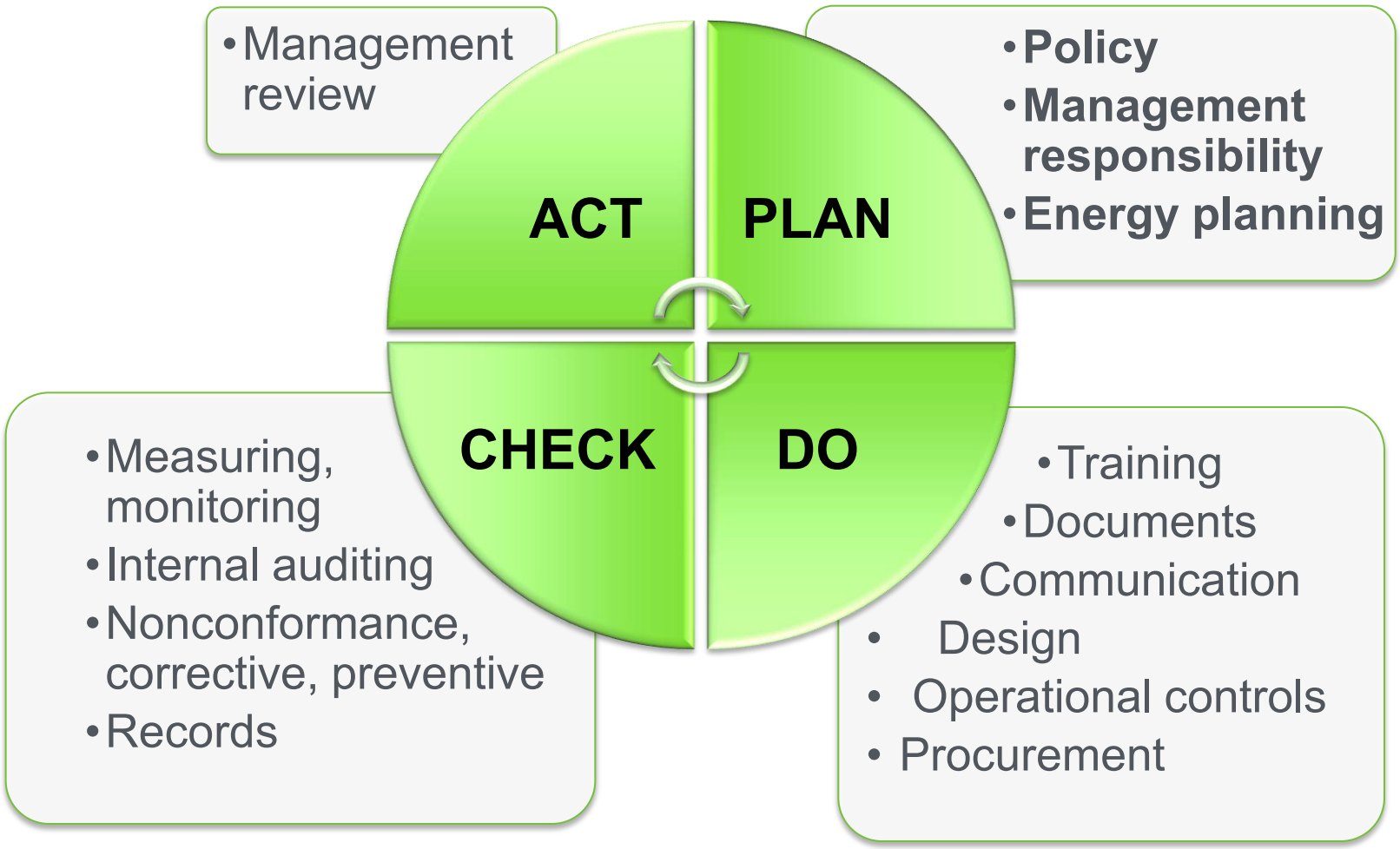
Better relationships with contractors

Improved relationship with suppliers

Integrate energy mgt. in organizational priorities

W2-11

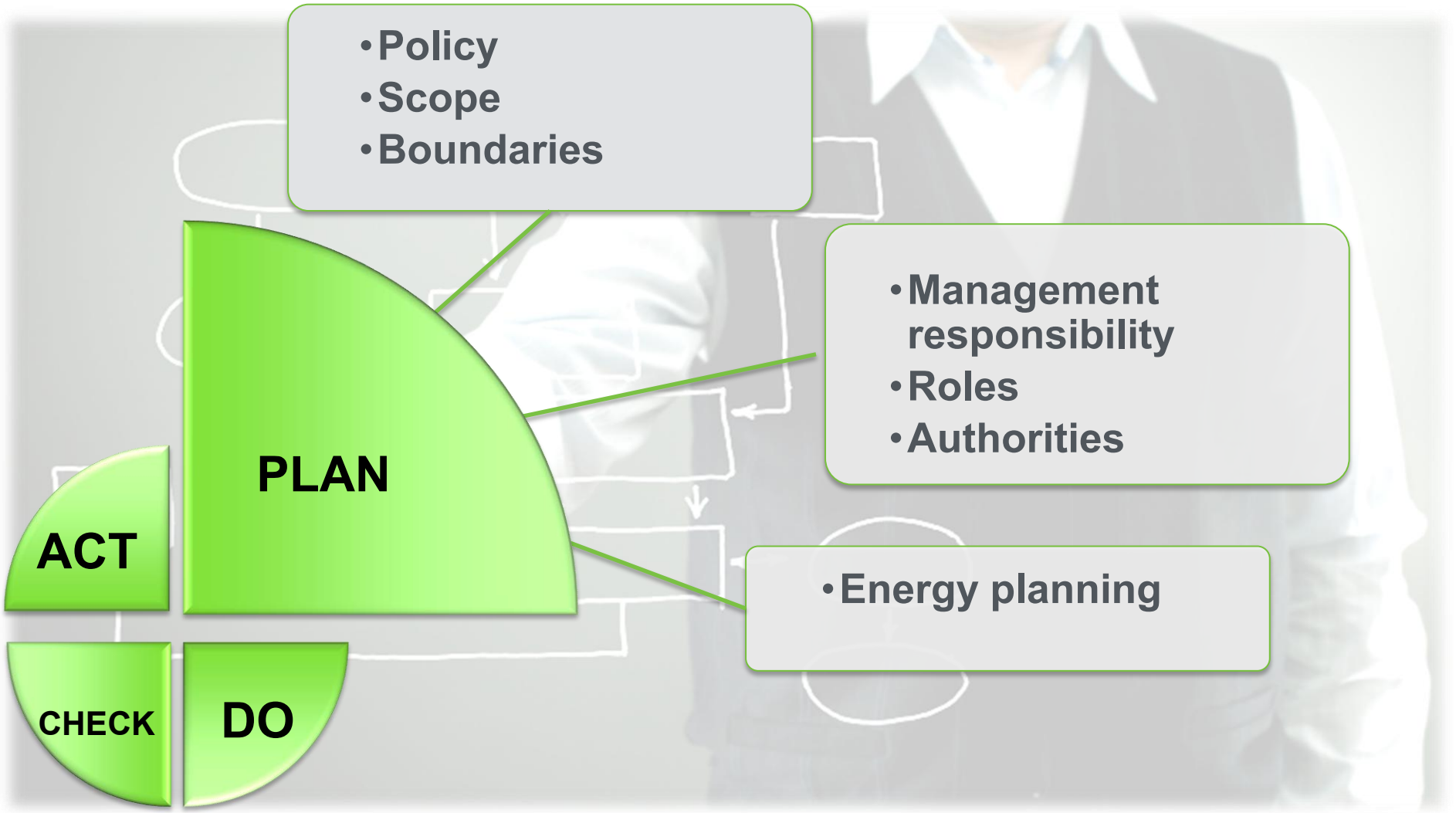
Planning Process



W2-12

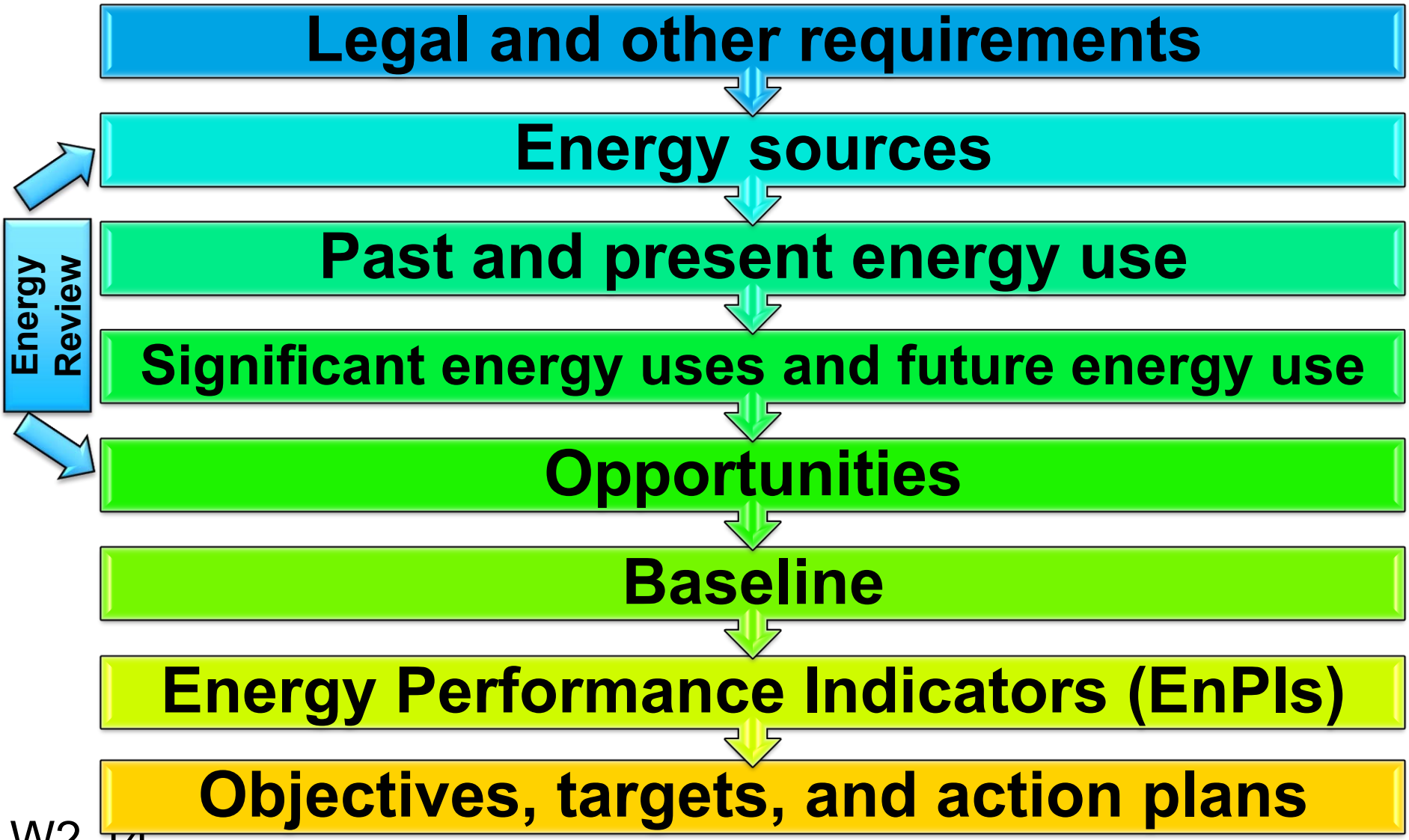
https://save-energy-now.org/EM/SPM/Pages/Step2.aspx

Planning Inputs



W2-13

Components of Energy Planning



W2-14

A look at the DOE eGuide

- Overview of Energy Planning process
- Resources to help you

- https://save-energy-now.org/EM/SPM/Pages/Home.aspx

W2-15

Scope and Boundary

- What is and is not covered by your energy management system?
- Scope and boundary must be documented.

ISO 50001 4.1 General requirements

W2-16

Scope and Boundary

- Do you have control?
- Do you have metering data for this energy source?
- Are there items you do not wish to include?

W2-17

A look at the DOE eGuide

- Step 1.2.1 Establish the scope and boundaries

- https://save-energy-now.org/EM/SPM/Pages/Step1_2_1.aspx

- Resources to help you – Pop up box
- Scope and boundary examples
- Scope and boundary worksheet

W2-18

The Management System Foundation - The Policy

ISO 50001 4.3 Energy policy

States the organizations commitments to:

- Continual improvement in energy performance
- Availability of information and resources
- Achieve objectives and targets
- Compliance with legal and other requirements

W2-20

Sample Policy

As an energy intense manufacturer of specialty glass, XYZ Company strives to reduce its energy consumption and costs and promote the long-term environmental and economic sustainability of its operations. We are committed to:

- **R**educe energy use per unit of production by 25% in 10 years in our manufacturing operations
- **E**nsure continual improvement in our energy performance
- **D**eploy information and resources to achieve our objectives and targets
- **U**phold legal and other requirements regarding energy
- **C**onsider energy performance improvements in design and modification of our facilities, equipment, systems and processes
- **E**ffectively procure and utilize energy-efficient products and services

W2-21

A look at the DOE eGuide

- Step 1.2.4 Define the energy policy
- Policy Worksheet

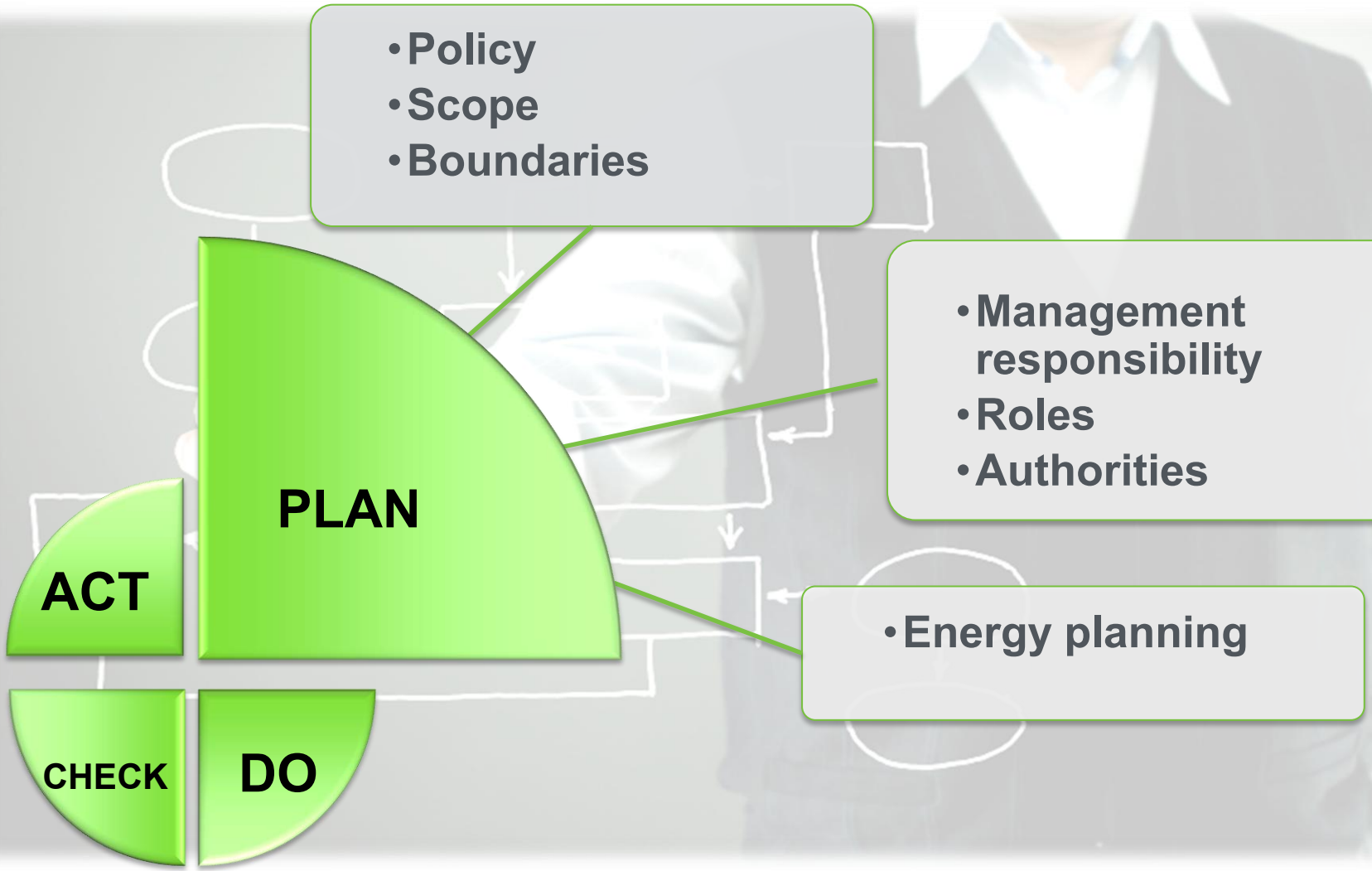
- https://save-energy-now.org/EM/SPM/Pages/Step1_2_4.aspx

- Energy Star

http://www.energystar.gov/index.cfm?c=guidelines.guidelines_index

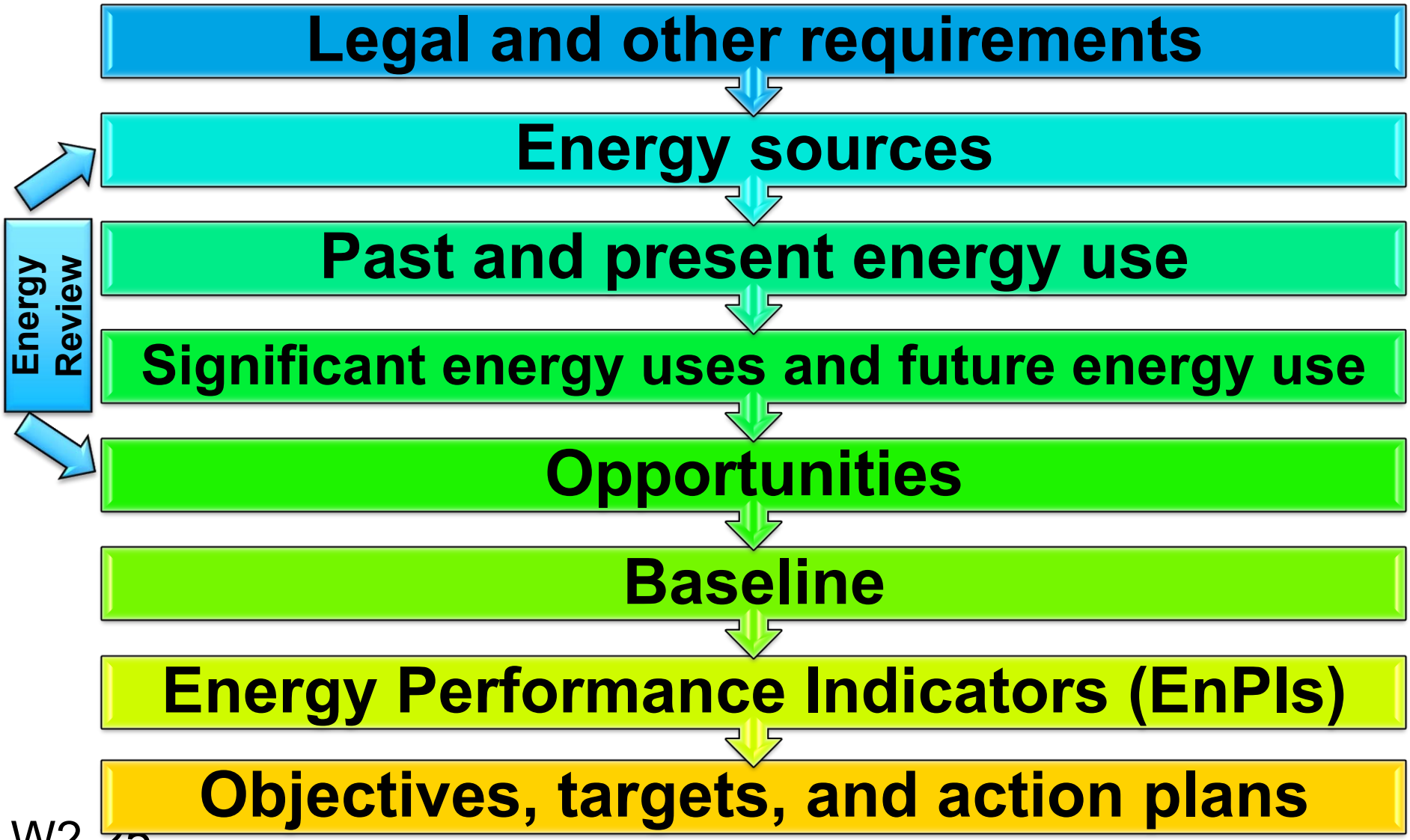
W2-22

Planning Inputs



W2-24

Components of Energy Planning



W2-25

Legal and Other Requirements

ISO 50001 4.4.2 Legal requirements and other requirements

- Identify requirements
- Access to the necessary information
- Determine how they apply to the system

W2-26

A look at the DOE eGuide

- Step 2.1 Example legal and other requirements related to energy
- Step 2.1 Legal and other tracking matrix
- https://save-energy-now.org/EM/SPM/Pages/Step2_1.aspx

- Example legal requirements
- Tracking matrix

W2-27

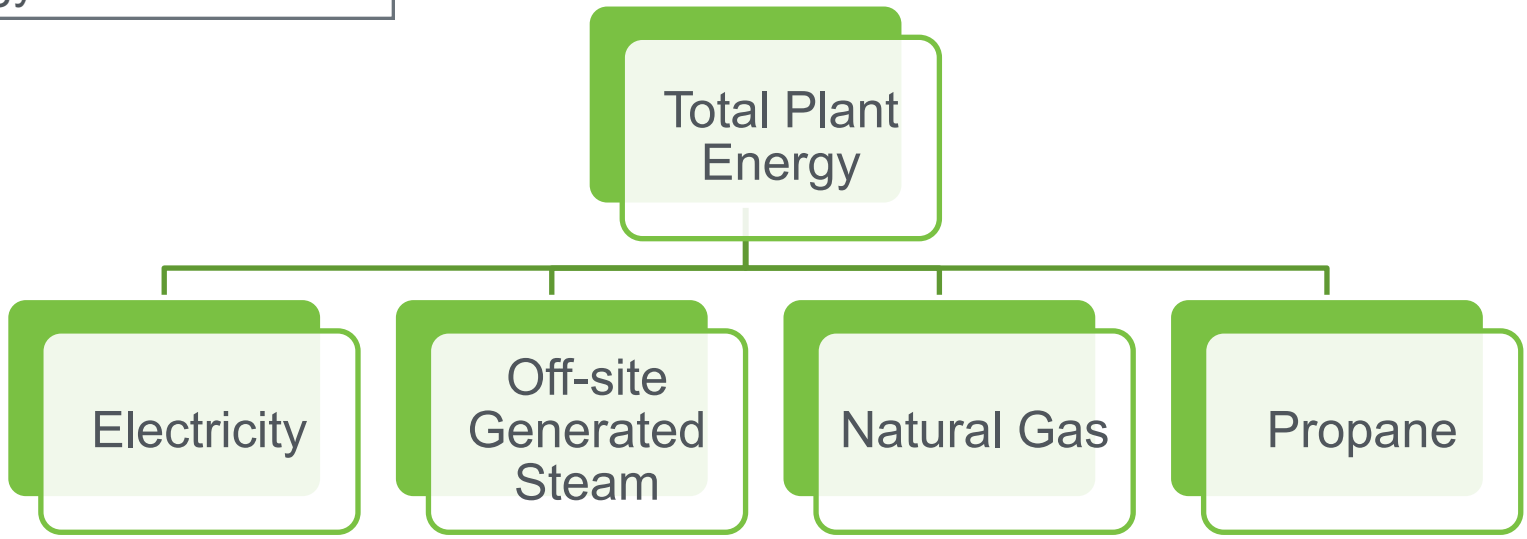
ISO 50001 4.4.3 Energy review

- Energy sources
- Past and current energy use and consumption
- Significant energy uses and future energy use
- Identify and prioritize opportunities

W2-28

Identify Sources

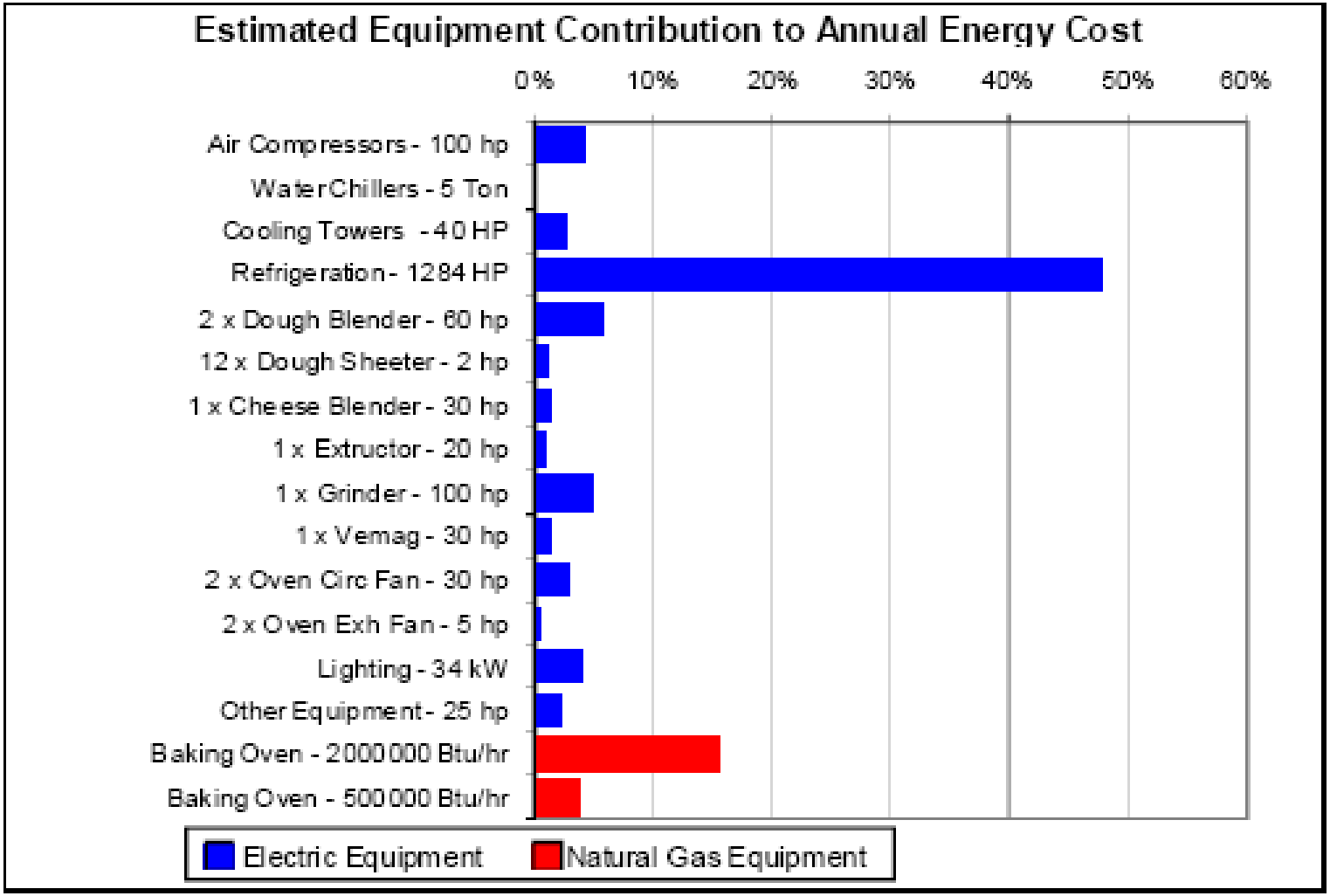
Utilize flow charts
Energy sources



Identify all energy sources that cross the boundary!

W2-29

Analyze Energy Use and Consumption



A look at the DOE eGuide

- Step 2.2 Acquire, analyze and track energy data

- https://save-energy-now.org/EM/SPM/Pages/Step1_2_4.aspx

- Step 2.2.1 Example Types of Energy Management Data

W2-31

Significant Energy Uses (SEUs)

- Significant component of the organization consumption
- Equipment, processes, facilities, activities
- Considerable opportunity for improvement
- Determined by YOU!

- Example Techniques
  - Energy balance
  - Pareto [six sigma tools]
  - Ranking methods
  - Other data analyses

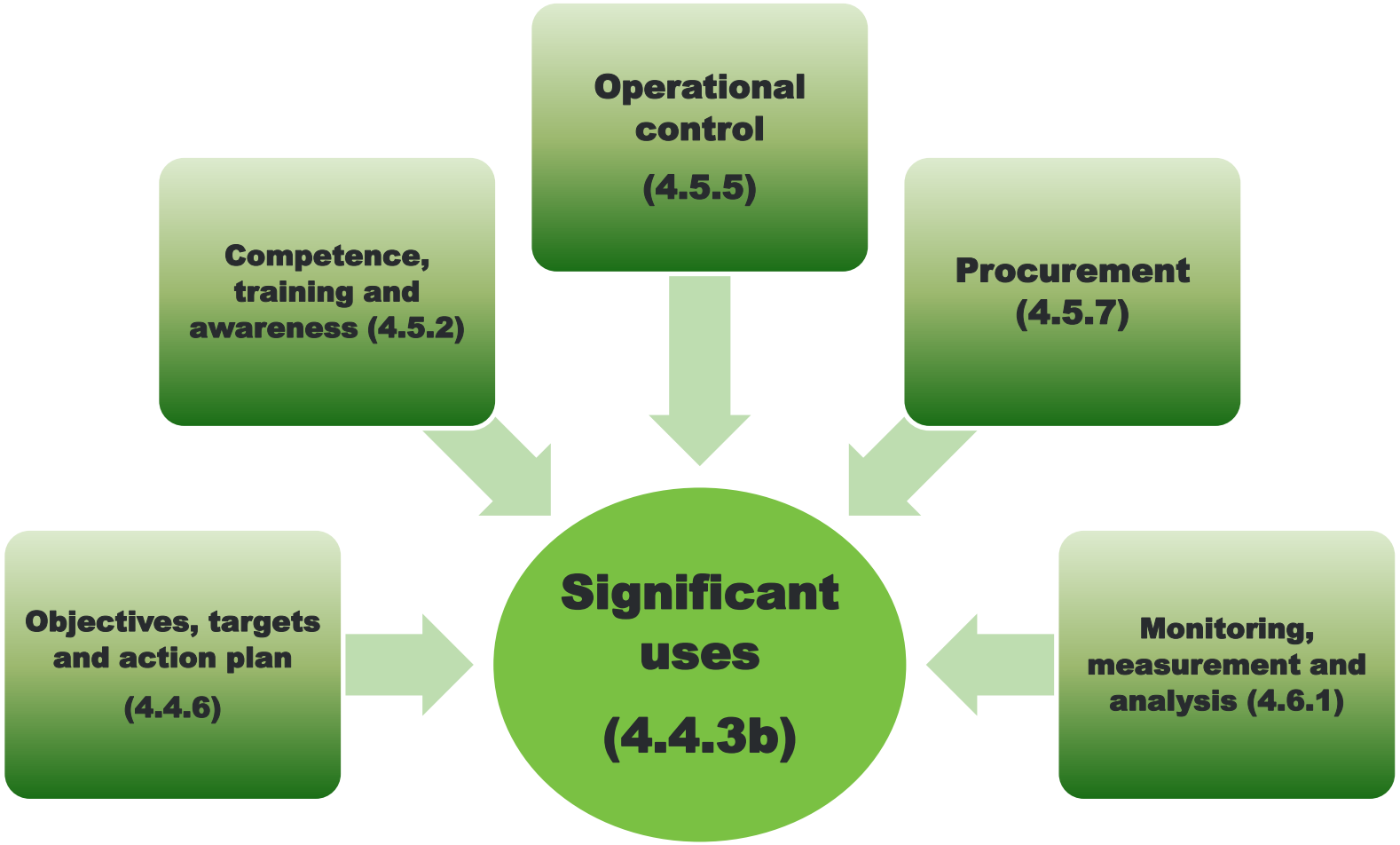
W2-32

Method to Determine Significance

	Significance Rating		
Description	**Percentage of total plant energy consumption**	**Value of anticipated opportunity**	**Total Rating**
Melter	4	1	4
Hi Press Air Compressor	2	2	4
Med Press Air Compressor	1	2	2
Med Freq	1	2	2
Forming Fans	1	2	2
Oven Scrubber	1	1	1

W2-33

Connections to Significance



W2-34

A look at the DOE eGuide

- Step 2.3 Determine significant energy uses
- https://save-energy-now.org/EM/SPM/Pages/Step2_3.aspx

- Step 2.3.4 Worksheet for Documenting SEU Criteria and Method.doc
- Step 2.3.5 SEU Future Energy Estimate Worksheet.docx

W2-35

Prioritization of Opportunities

- Compile a list of opportunities from energy assessments, employee suggestions, etc.
- Determine and document prioritization criteria
- Apply the prioritization criteria uniformly to develop a prioritized list of opportunities

Example Criteria Rating

	Rating Description			
Criteria	**1**	**2**	**3**	**4**
Anticipated annual energy savings	**Less than $10,000/year**	**$10,000-$25,000/year**	**$25,000-$100,000/year**	**Greater than $100,000/year**
Expected time required for implementation	**Greater than 12 months**	**6-12 months**	**Less than 6 months**	**Immediately**
Simple Payback	**Greater than 36 months**	**13-36 months**	**6-12 months**	**Less than 6 months**
Environmental, Health, or Safety Impact	**Increased negative impact on environmental, health, and/or safety conditions**	**Minimal negative impact on environmental, health, and/or safety conditions**	**No change to environmental, health, and/or safety conditions**	**Improved environmental, health, and/or safety conditions**

W2-37

Example Prioritization

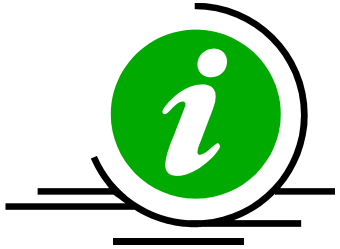
	Opportunity Rating				
Opportunity Description	**#1 Cost Savings**	**#2 Time to Implement**	**#3 Payback**	**#4 EHS Impact**	**Total Rating**
Insulate steam pipes	3	2	1	4	**24**
Replace fluorescent T-12 lighting with T-8 lighting	3	3	3	2	**54**
Repair compressed air leaks	**3**	**3**	**3**	**4**	**108**

W2-38

A look at the DOE eGuide

- Step 2.4 Identify energy opportunities
- Step 2.5 Prioritize energy opportunities
- https://save-energy-now.org/EM/SPM/Pages/Step2_4.aspx

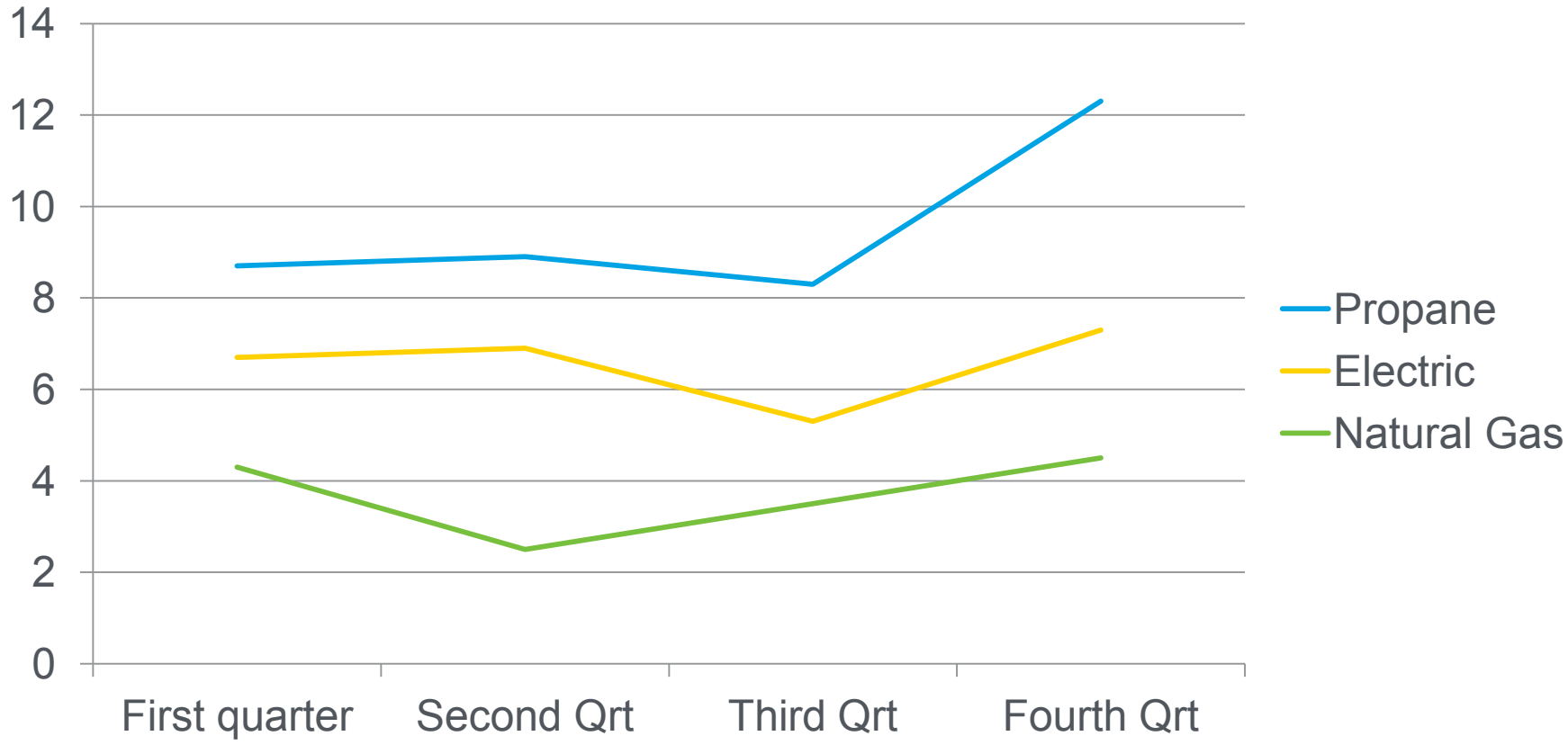
- Step 2.5.4 Prioritizing Energy Opportunities.xlsx



W2-39

Energy Baseline(s)

Allows an organization to show improvement.



W2-40

Plant Energy Profiler (ePEP)

INPUTS

- Plant description
- Utility supply data
- Energy use information

- Overview of plant energy
- Energy cost distributions
- Preliminary assessment
- Areas for improvement
- Energy reduction potential

OUTPUTS

W2-41

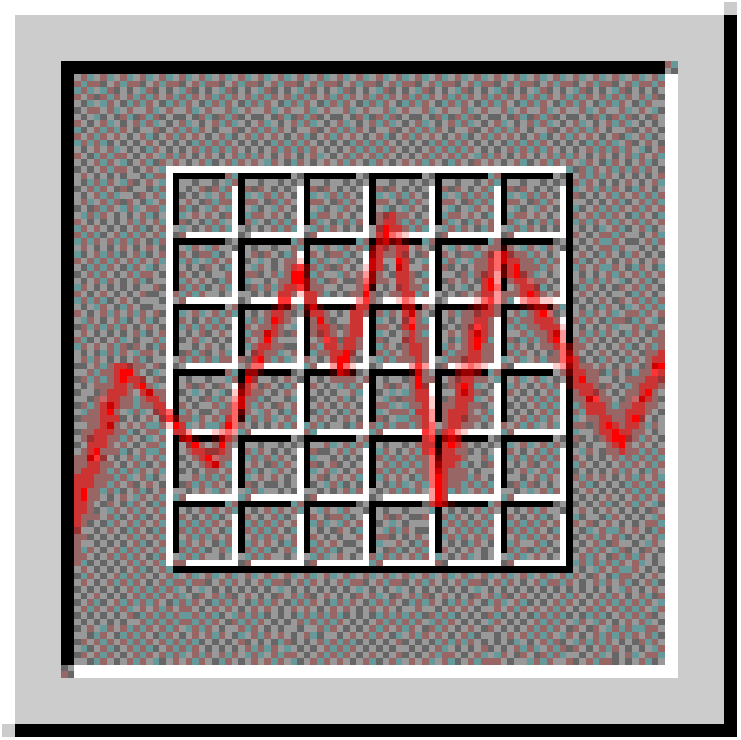
http://www1.eere.energy.gov/manufacturing/tech_deployment/software_epep.html

EnPIs How am I doing?

ISO 50001 4.4.5 Energy performance indicators

- EnPI
  - Help take energy data and turn it into information management can use to:
    - Understand what we are doing
    - Make informed decisions
    - Set priorities

W2-43



Used by operations to better control

- Process
- Facility
- Equipment

W2-44

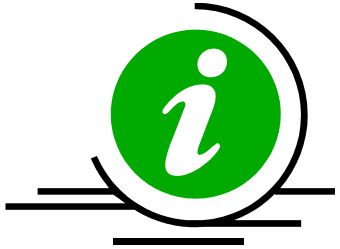
A look at the DOE eGuide

- Step 2.6 Establish baseline and determine energy performance indicators (EnPIs)

- https://save-energy-now.org/EM/SPM/Pages/Step2_6.aspx

- EnPI tool and manual

- Step 2.6.3 Checklist of Potential EnPIs.docx



W2-46

Objectives, targets and action plans

ISO 50001 4.4.6 Energy objectives, energy targets and energy management action plans

- Objectives and targets set the improvement
- Action plans define the who, what, when and how you will achieve the improvement.

W2-47

A look at the DOE eGuide

- Step 3.1 Establish energy objectives and targets
- Step 3.2 Formulate energy management action plans
- https://save-energy-now.org/EM/SPM/Pages/Step3.aspx

- Objectives Team Roster
- Step 3.1 Energy Objectives and Targets Worksheet.doc
- Target team roster worksheet
- Energy targets report to management
- Step 3.2 Energy Management Action Plan.doc

W2-48

Energy Planning Outputs

- Energy Planning Process
- Legal and Other Requirements
- Energy Review
  - Energy Sources
  - Past Energy Use and Consumption
  - Present Energy Use and Consumption
  - Future Energy Use and Consumption
  - Significant Energy Uses
  - Opportunities List
- Baseline(s)
- EnPIs
- Energy Objectives
- Energy Targets
- Energy Management Action Plans

W2-49

Planning Benefits

- Defined scope
- Clear responsibilities
- Better understanding of energy use
- Energy opportunities and priorities
- Future energy use for strategic planning

Suggested Activities

Review the DOE eGuide

Determine the scope for your organization

Identify the types of energy data you have available

Determine where you do not have any energy data

Identify possible energy improvements

W2-51

Software Tools Are Key to Implementation of Technology Deployment's Goals

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

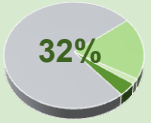
Technology Deployment Goals

Supply Chain
- 2% of energy
- 1,000 facilities

State & Utility
- 5% of energy
- 1,500 facilities

10,000 Facilities

Better Buildings, Better Plants
- 25% of energy
- 500 Partners; 7,500 facilities



Energy Performance Tracking

Baselining

EnPI Tool

Corporate Energy Performance Tracking for Better Plants Partners

Facility Energy Performance Tracking for Superior Energy Performance

Energy Management

eGuide for ISO 50001

eGuide Lite

ePEP (Plant Energy Profiler)

Energy Systems Analysis

- Motors
- Pumps
- Fans
- Compressed Air
- Steam
- Process Heating
- Data Centers
- Simple Calculators

Tool Performance Measurements

- Technical Account Managers
- Certified Energy Practitioners

- Better Plants Program
- Technical Account Managers

- Workshop Distribution
- ORNL Metrics

Our Vision: A comprehensive set of well-managed, efficient, and reliable software tools that will increase our outreach efforts, further end-user engagement, and help drive success with ISO 50001 and other AMO goals.

W2-52

What Comes Next?

- Web 1
  - Introduction to DOE eGuide
  - Building the Business Case
  - Case Studies
  - Project Planning
- Web 2
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  - Monitoring and Measurement
  - Checking the System
  - Internal Audit
- Web 4
  - Act
  - Management Review
  - Lessons Learned

W2-53