



# **Chapter 4-**

# **How to Conduct an Assessment**

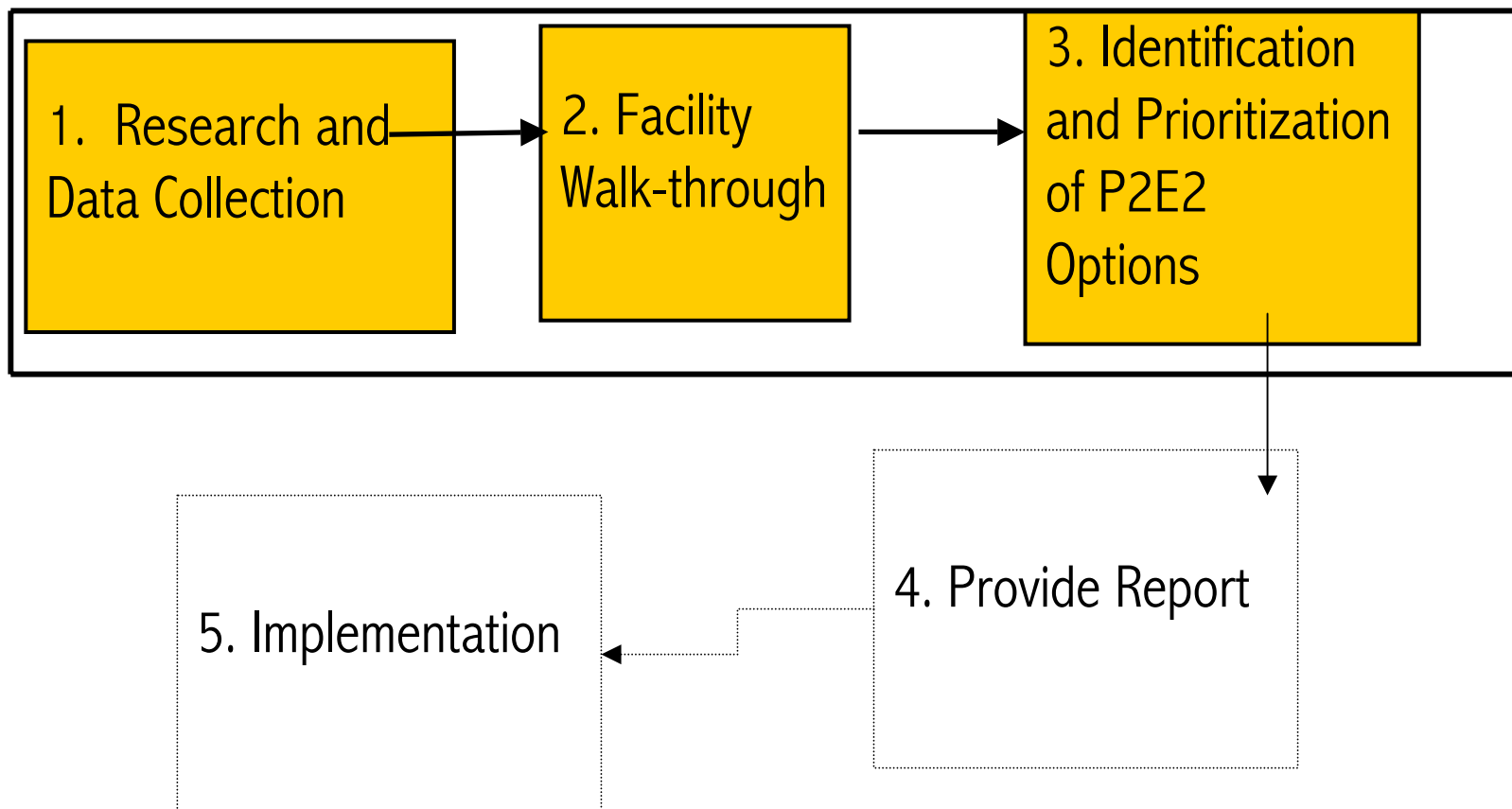


# Objectives of Chapter

- This chapter will review the steps involved in conducting an assessment:
  - research/preparation
  - facility walk-through
- - identification and prioritization of P2E2 options

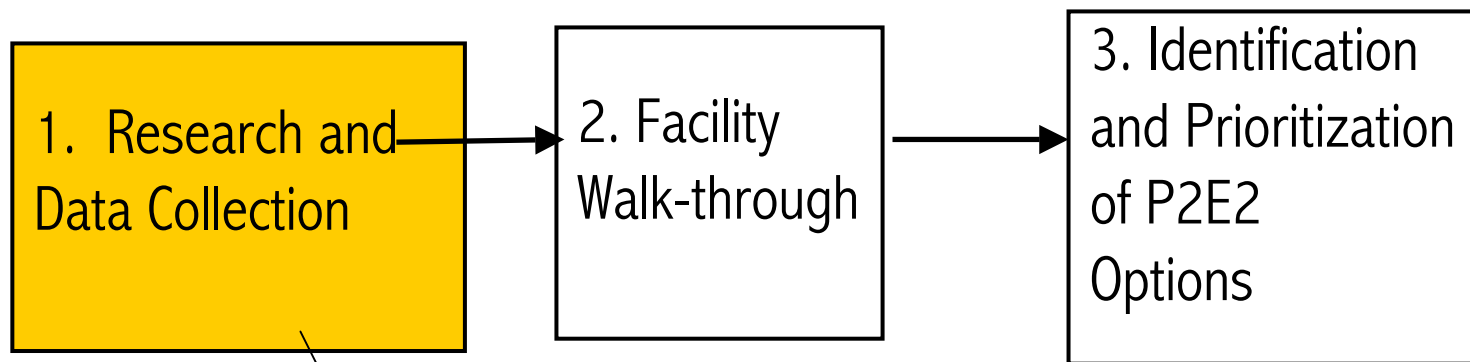


# P2E2 Assessment Strategy





# Phase 1: Research and Data Collection



- gather info. on facility
- gather other data as needed
- research P2E2 opportunities for similar operations

# Facility Information: Equipment and Processes



- Get information on:
  - process lines
  - lighting system, HVAC system, building envelope (shell)
- Determine whether facility has:  
Compressed Air Systems, Process Heating Systems, Motors, Pumps, Drives

# Facility Information: Materials Use



- Get relevant information about:
  - materials used
  - products produced
  - production operations
  - wastes generated

# Facility Information: Energy Use



- Review actual bills or spreadsheets (previous 12 months) for these utilities:
  - Electricity
  - Water
  - Natural or other Fuel Gases
  - District Heat and Cooling Sources
  - Renewable Energy Fuel/Sources
  - Liquid, Solid, Biomass Fuel

# Other Data

## MATERIALS USE

- ⇒ typical industry materials use
- ⇒ cost of materials, disposal

## UTILITIES

- ⇒ typical industry energy use
- ⇒ electric rate schedule





# Research P2E2 Opportunities

- Review P2E2 opportunities typically available for types of equipment and processes used at facility
  - ⇒ Determine typical payback rates for P2E2 upgrades
  - ⇒ Identify financial incentive programs for P2E2 upgrades

# Phase 1: Information Resources



## Appendix D:

- P2 Directory

## Appendix E:

- How to read a utility bill
- MIA Training Manual, Database (Rutgers)

## Appendix F:

- P2/E2 Site Assessment Checklists

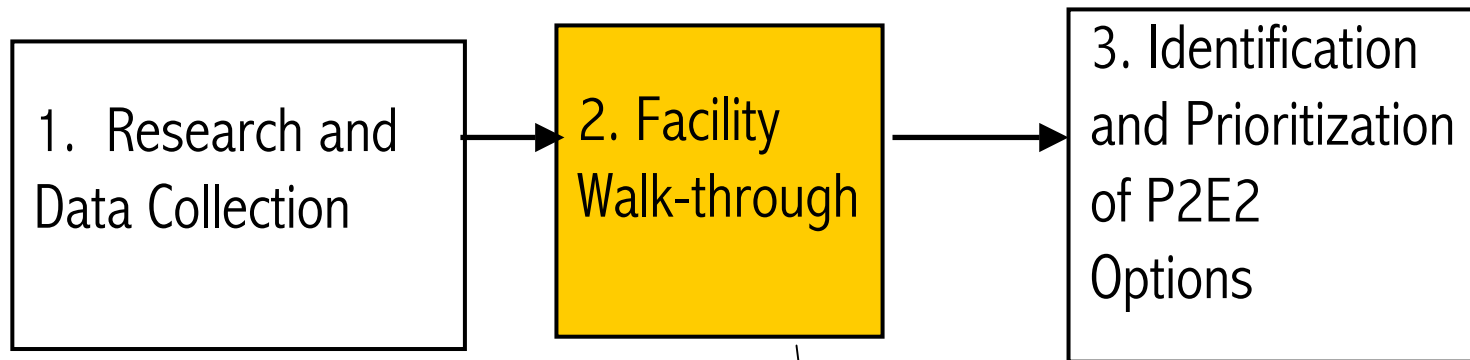
# Phase 1: Information Resources (cont'd.)



Sources for technical and financial E2 info:

- ⇒ DOE material
- ⇒ EPA material
- ⇒ Internet
- ⇒ Other resources

# Phase 2: Facility Walk-Through



- examine equipment, processes, building systems
- *[process characterization]*
- listen and ask questions

# Examine Equipment, Processes, Building Systems

## Processes

*(micro)*

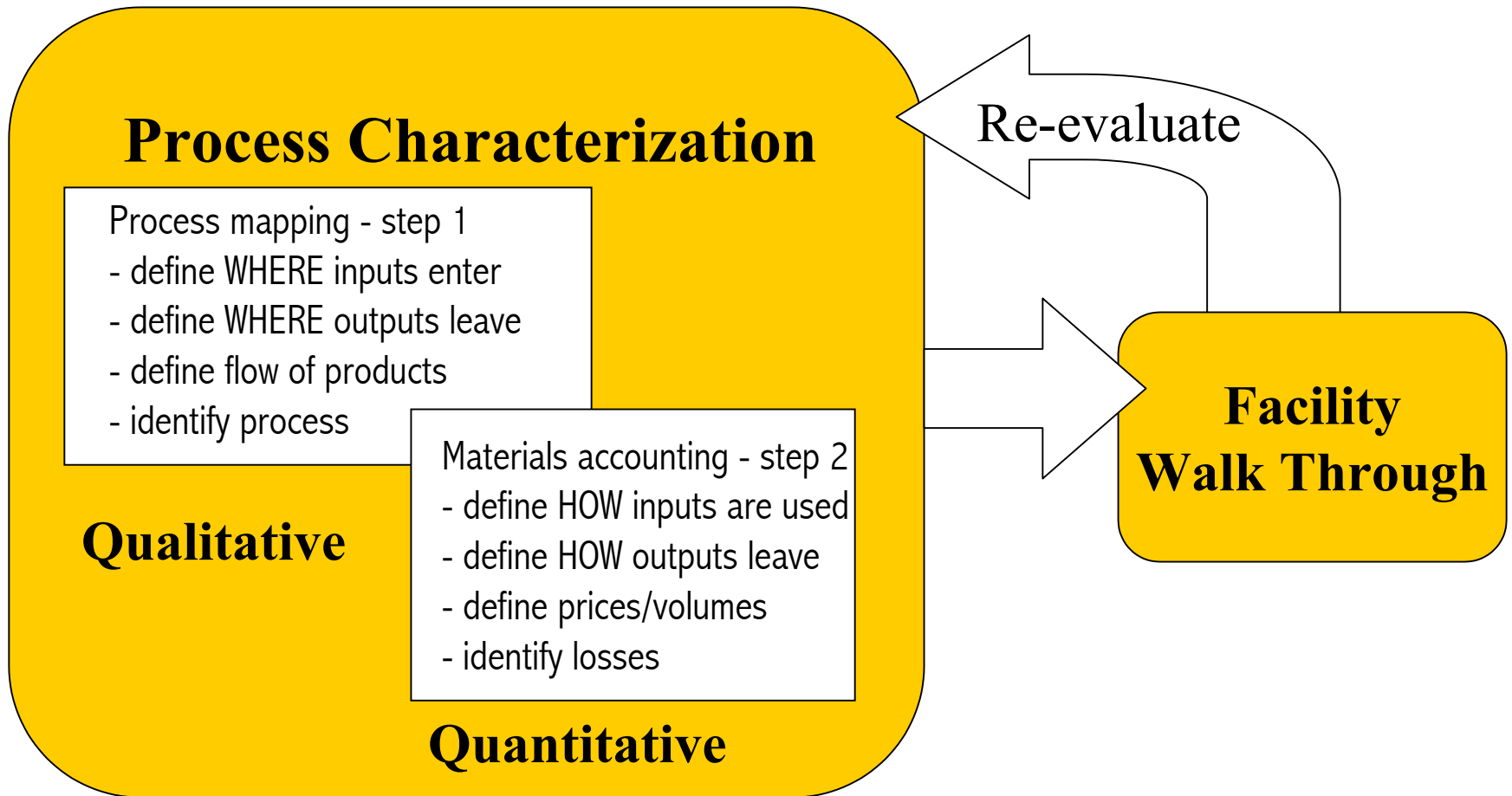
- ➔ how does each process work
- ➔ how is it controlled
- ➔ what are the material inputs
- ➔ what utility services are required

## Building Systems

*(macro)*

- ➔ how is space heated, cooled, ventilated, lighted, de/humidified
- ➔ how are services controlled after hours

# Process Characterization (optional)





# Listen

- Conduct the walk-through while facility is in operation
- Don't overlook or discount the obvious
- Involve the appropriate people before, during, and after the walk-through

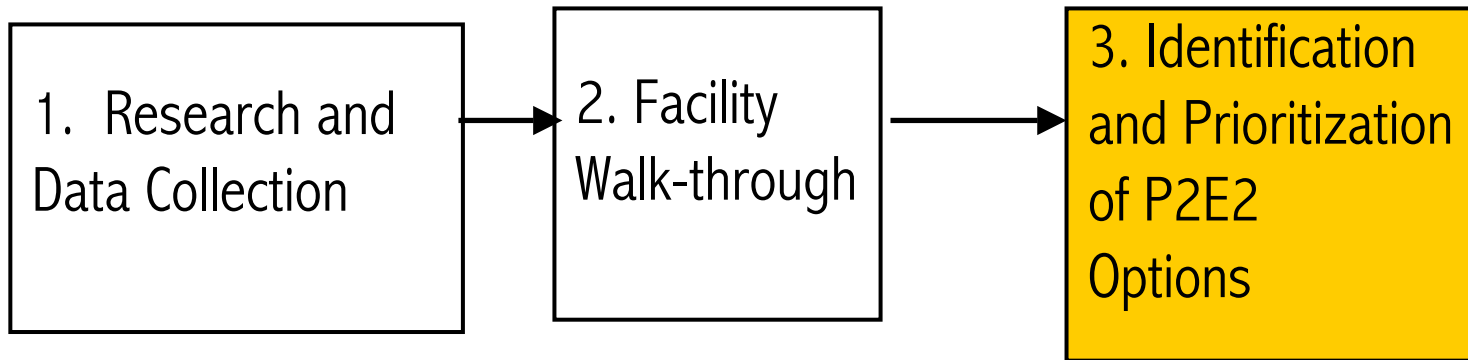


# Ask Questions

- Ask why? Why? Why? Why? Why?
- Ask targeted questions
- Speak in terms the facility personnel understand and relate to



# Phase 3: Identifying and Prioritizing P2E2 Options



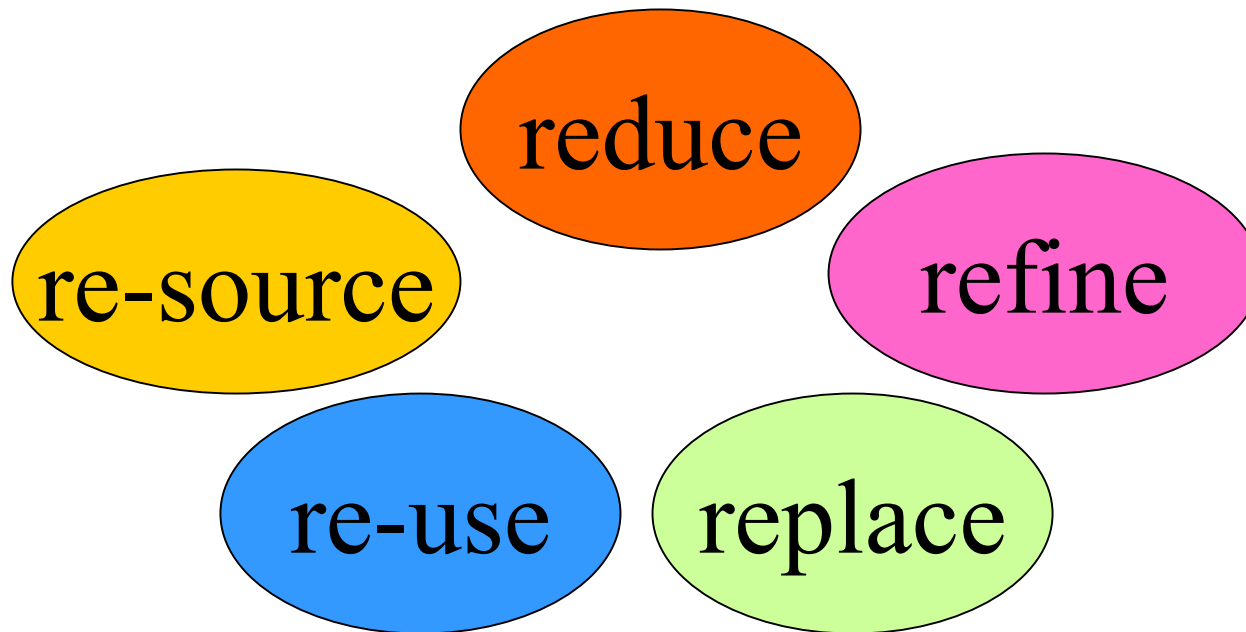
- generate list of options
- prioritize options
- communicating options to client

# Generating List of P2E2 Options



- What targets does the company already know about?
- What opportunities have been “buried?”
- What are the new opportunities for analysis?

# Generating List of E2 Options







# Prioritizing P2E2 Options

- Identify top options for each process or system by looking at:
  - ⇒ cost
  - ⇒ payback
  - ⇒ energy consumption impact
  - ⇒ environmental impact
- Low Hanging Fruits first

# ***Energy Star Approach to E2 Prioritization***



# Communicating P2E2 Options to Your Client



- Introduce key concepts before submitting report to avoid surprises
- Meet with client to go over report
- Help client determine which ideas to pursue, “buy in” to implementation