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ENERGY AUDITS OVERVIEW

ONLINE PROFESSIONAL COURSES LED BY THE WORLD'S TOP SPECIALISTS

ONLINE TRAINING BY KRISHNAJI PAWAR

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MODULE 3

Types of Energy Audits

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ENERGY AUDITS OVERVIEW

Energy Management Systems (EnMS) help organizations monitor and control energy use, establish long-term efficiency improvement processes, and use a whole systems approach to build capacity and focus on continuous improvement, without measuring or guaranteeing energy savings.

Learning Objectives

- Introduction
- Principles and Concepts of Energy Assessment
- Types of Energy Audits or Assessments
- Role of an Energy Auditor or Manager
- Energy Assessment and Audit Professional Certification
- Benefits of Energy Audits or Assessments
- Summary and Resources

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INTRODUCTION

- Energy Management Systems Overview
- Implements systems and procedures for monitoring and controlling energy use.
- Establishes long-term energy efficiency improvement processes.
- Uses a whole systems approach for capacity building and continuous improvement.
- Does not measure or guarantee energy savings or reductions.
- ASHRAE has defined three levels of energy audits: Levels 1, 2, and 3, and a necessary background step called Preliminary Energy-Use Analysis (PEA).

ENERGY AUDIT OVERVIEW

Energy audits examine how much energy a facility uses and how to make it more efficient. Important for the energy auditor to determine:

- What an energy audit is:
- What are the main functions and benefits of an energy audit?
- The various types of energy audits; and
- How to conduct an energy audit.



ENERGY AUDIT OVERVIEW+

- A crucial part of energy management, identifying opportunities for energy efficiency improvement.
- Defined as systematic analysis of energy use and consumption.
- Aims to identify, quantify, and report on opportunities for improved energy performance.
- Forms part of building condition survey and evaluates energy performance.
- Applicable to industrial energy systems.
- Develops understanding of energy-use patterns of a facility or system.



ENERGY AUDIT IMPORTANCE

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- Assesses energy usage in industries.
- Identifies waste areas and improvement opportunities.
- Reviews variations in energy costs and supply reliability.
- Determines appropriate energy mix.
- Identifies energy conservation technologies.
- Facilitates retrofitting for energy conservation equipment.
- Translates conservation ideas into practical solutions.



ASHRAE ENERGY AUDIT LEVELS AND PRELIMINARY ENERGY-USE ANALYSIS

Level 1 Energy Audit:

- Walk-through survey: Limited to low-cost or no-cost improvements.
- List of potential capital improvements for future consideration.



ASHRAE ENERGY AUDIT LEVELS AND PRELIMINARY ENERGY-USE ANALYSIS



Level 2 Energy Audit:

- Energy Survey and Analysis: Evaluation of energy by end use and peak demand analysis.
- Energy savings and installed cost estimates provided for practical energy efficiency measures.
- Operating and maintenance improvements and recommended measures for future in-depth analysis.

ASHRAE ENERGY AUDIT LEVELS AND PRELIMINARY ENERGY-USE ANALYSIS

Level 3 Energy Audit:

- Detailed analysis of capital-intensive modifications.
- Calls for more detailed field data, rigorous analysis, and possibly building energy modeling.
- Includes installed cost estimates with a higher degree of detail and confidence.



ENERGY AUDIT OVERLAY

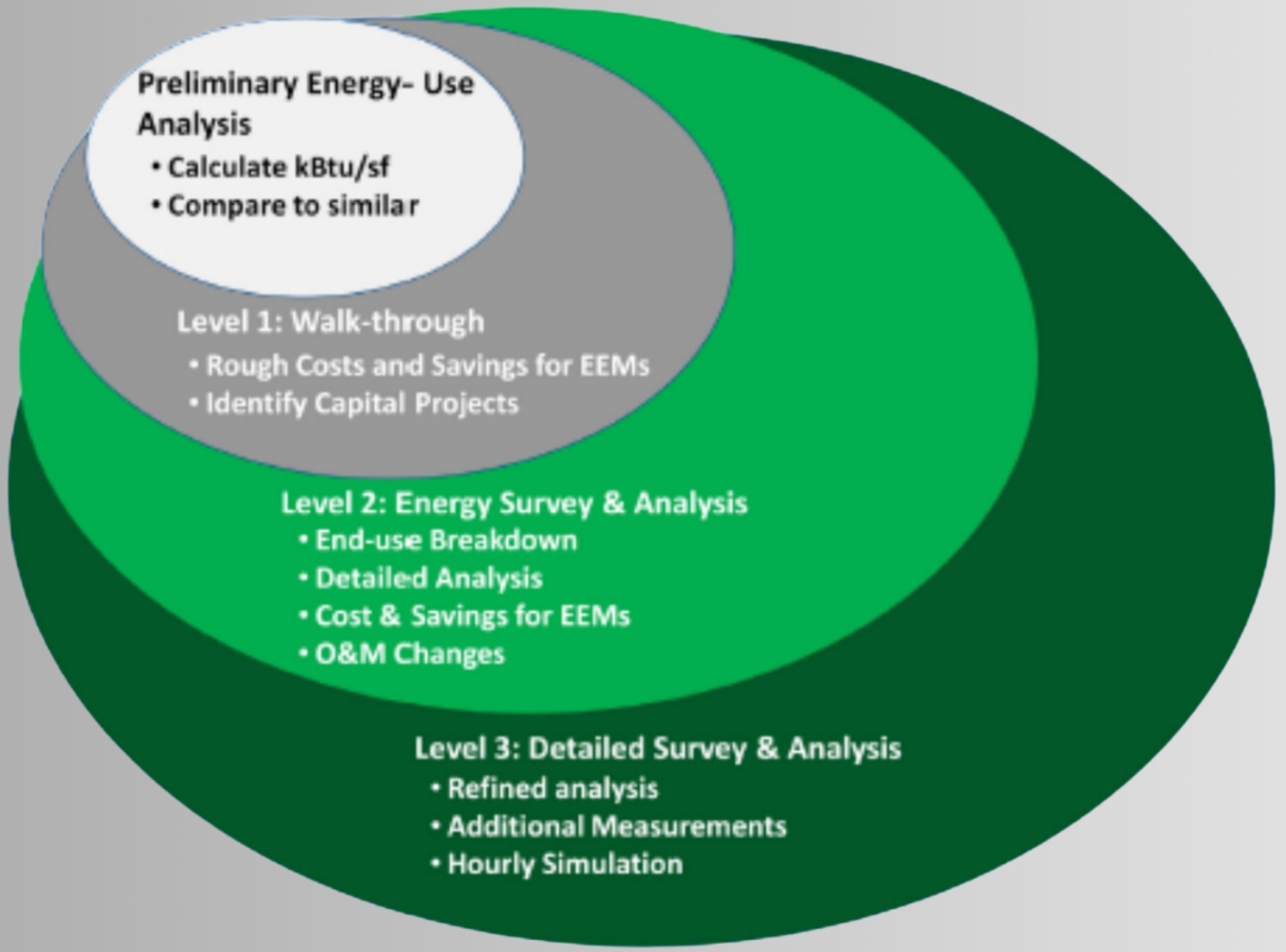


Figure 1 — Relationships of ASHRAE Energy Audit Levels 1, 2, and 3

ASHRAE'S ENERGY AUDIT OPTIONS

- Including PEA and audit levels 1-3.
- Suggests an optional separate energy audit, a targeted audit.
- Allows no strict boundaries between different energy audit levels.
- Suggests a single energy audit, including in-depth analysis of energy conservation and renewable energy options.
- Aims to transform energy use in a building and serve as a long-term planning tool.
- Similar to moving to a Level 3 audit and including PEA, Level 1, and Level 2 audits.
- Explores pros and cons of this transformational energy audit approach.



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