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ENERGY AUDITS OVERVIEW
ONLINE PROFESSIONAL COURSES LED BY THE WORLD'S TOP SPECIALISTS
ONLINE TRAINING BY KRISHNAJI PAWAR
LEED AP(BD+C),GSAS CGP,GCP,ISO 14001
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MODULE 2

Principles and Concepts of Energy Audits

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ENERGY AUDITS OVERVIEW

Energy efficiency is a new and interesting field. The energy professional is a mix of detective, scientist, environmentalist, advocate, builder, engineer, and architect.

Learning Objectives

- Introduction
- Principles and Concepts of Energy Audits
- 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 Audit Effectiveness and Results
- Limited, targeted, or no-cost/low-cost energy audits have been used in the past for modest energy savings.
- The effectiveness of these audits is questioned, with potential limited, targeted, and low-cost results.
- A more successful approach involves in-depth, comprehensive energy audits followed by comprehensive implementation of energy improvements.
- The results are measurable, enduring, and transform buildings.



PRINCIPLES

A fundamental strategy for transformational energy work is to concentrate on substantive rather than symbolic gains.

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COMPREHENSIVENESS

In an effort to enhance a structure as a whole, we intend to consider and approach it in its entirety.

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TRANSPARENCY

We desire clarity in both our work and our assumptions, in order to facilitate verification and confirmation.
Avoid harm.

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DO-NO-HARM

We desire energy improvements that do not cause structural harm to a structure or endanger its occupants.
Firmly grounded in evidence.

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EVIDENCE-BASED

- Prioritize empirical evidence over speculation or sales discounts.
- Avoid assumed percent savings or rule-of-thumb estimates.
- Consider proposed physical building adjustments.
- Use published studies or first principles of physics for savings estimates.



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TRUTHFULNESS.

- It is our intention that our energy savings forecasts be accurate.
- Preventing the inclination to exaggerate savings is our objective.

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OBJECTIVITY

Our objective is to mitigate bias in enhancements and inherent inclinations to favor specific improvements for any reason, including vendor promotion or other motivations.

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COST-EFFECTIVENESS

Our objective is to optimize energy savings through the process of assessing, selecting, and suggesting enhancements that are economically viable and enable the greatest possible savings to be achieved within a specified budget.

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CHOICE OR OPTION

Our objective is to provide options for building owners and property managers, ensuring that we do not undermine their judgment or dictate their choices.

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ROBUSTNESS AND PERSISTENCE

Our goal is to assess, select, and suggest enhancements that have a higher probability of producing enduring energy savings, are supported by empirical evidence, and are more likely to be effective in the long run.

ENERGY CONSERVATION TRENDS

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- Comprehensive energy improvements are gaining popularity.
- Lighting improvements include efficient replacements, reduced overlighting, and controls.
- Lighting controls include improved manual control, occupancy controls, photocontrols, and timers.
- Heating and cooling improvements are grouped into plant improvements, distribution improvements, and controls.
- Envelope improvements involve insulation and air sealing.
- Motor improvements include high-efficiency replacements and variable-speed drives.
- Water improvements involve efficient end uses, increased heater efficiency, and reduced leaks.
- Renewable energy complements these improvements, delivering clean energy.



GLOBAL ENERGY SITUATION ON CLIMATE CHANGE

Global sea-level rise could reach 0.2 to 2.5 m by 2100, potentially leading to the disappearance of 48 islands by the end of the century.

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GLOBAL ENERGY SITUATION AND CLIMATE CHANGE

- Rising levels of greenhouse gases like CO2, methane, and nitrous oxide are causing global average temperatures to rise.
- Surface temperatures have been warmer than in any preceding decade since 1850.
- Between 1880 and 2012, global average temperatures rose 0.85°C.
- Ocean warming accounts for over 90% of the energy accumulated between 1971 and 2010.
- The ocean has warmed most in the water closest to the surface.
- Scientists predict an additional 0.3–0.7°C increase from 2016–2035 and likely exceed 1.5°C between 2081 and 2100.



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