

Energy Auditing

The term “Energy Audit” is an established term within the energy management industry. There is a well-recognized organization that has developed a standard set of procedures and formats to use for an energy audit (American Society of Heating, Refrigerating and Air-Conditioning Engineers, ASHRAE). ASHRAE has three levels of energy audits, which increase in complexity and cost as you go from Level 1 to Level 3.

Level 1 – Energy Survey and Recommendations
Level 2 – Energy Survey and Engineering Analysis
Level 3 – Detailed Analysis of Capital-Intensive Modifications

In a **Level 1 Energy Audit**, the building’s energy cost and efficiency are assessed by analyzing energy bills and conducting an on-site survey of the buildings. A Level 1 energy survey will identify where energy is used inefficiently, as well as low-cost to no-cost measures for improving energy efficiency and save even more costs.

Because calculations at this level of energy assessment are basic, identified saving and cost information is approximate. This level of energy assessment may also identify, in a preliminary sense, capital improvements that merit further consideration for achieving even greater energy efficiency for the building.

While these savings opportunities would involve capital funding, we understand that these are not a priority right now. But to truly be a baseline for the future, we will nonetheless identify these savings opportunities as a part of this project.



A **Level 2 Energy Audit** is a more detailed Survey and Energy Analysis involving a Technical Analysis for Each Energy Management Opportunity. The Energy Audit will provide:

- A detailed understanding of how the energy within the building is being used
- Equipment/Systems evaluations (actual operating conditions, consumption and demand profiles during peak periods)
- Recommendations (operational, replacement, and retrofit opportunities)
- Energy Savings Project cost estimates and simple payback calculations

A **Level 3 Energy Audit** is the most detailed Audit involving an Engineering Analysis focused on potential capital-intensive Projects that were identified in the Level 2 Audit. The Level 3 Audit is an expansion on the other two Audits in that it requires:

- More detailed data collection and analysis
- Detailed project cost and savings calculations and Project management support
- High precision cost and savings calculations

Level 1 Energy Audit

There are three basic parts of a Level 1 energy audit done pursuant to the national standards:

1. Energy Use Analysis
2. Facility Inspection and Assessment
3. Findings and Report Preparation



1 Energy Use Analysis

- Gather and evaluate the physical characteristics of the buildings and their usages
- Gather and assemble utility bills
- Determine the buildings' Energy Use Index (EUI)

2 Facility Inspection and Assessment

- Tour the buildings to evaluate their construction, equipment, operation and maintenance.
- Meet with building manager(s) to learn of special energy or maintenance issues, or planned improvements to the building.
- Identify low-cost/no-cost energy improvements for the building or its O&M procedures.
- Estimate the approximate savings that could result from those changes.
- Identify any additional capital improvements for further study and the potential energy cost savings that they could provide.

3 Energy Audit Report

- Discussion of the building's EUI along with the EUI's of similar buildings
- Identify a reasonable target EUI, based on EUI information for other similar buildings along with the unique operating characteristics of the particular building.
- Identify a) energy cost savings that can be found right now and b) the savings in current energy costs that would be achieved if the building would meet its target EUI
- A listing of low-cost/no-cost changes along with estimated savings for these improvements
- A summary of any special energy issues or needs identified during the building inspection and assessment, including revisions to O&M procedures to reduce energy costs
- Identify potential capital improvements, with an initial rough estimate of their costs and potential savings

A Level 1 Energy Audit will generally cost approximately 8-10 cents per square foot.