

Celadon Resources Energy Audits

Primary Mission:

To Reduce Global Resource use for our clients by providing high performance, sustainable, efficient engineering options for all building types so that owners/occupants use less resources while maintaining high quality buildings, with the ultimate goal of producing Net Positive Energy Buildings.

In order to achieve these savings our client's buildings need to be analyzed. We offer three levels of analysis.

Tier 1 Analysis is a walk-thru audit. It includes an evaluation of energy consumption data to analyze energy use quantities and patterns as well as provide comparisons to industry averages, or benchmarks for similar buildings, including Energy Star. It will provide a list of low-cost savings opportunities through improvements in operational and maintenance practices.

This level of audit would consist of the following:

- a. Analyze the energy and other resources used within the building utilizing billing information, noting trends and indicated relevant benchmarks.
- b. Provide an Energy Star rating for the building.
- c. Walk through the building and inventory all major HVAC equipment, lighting and water uses.
- d. Recommend Energy Conservation Measures to make to the building.

Tier 2 Analysis will include Tier 1 items and will quantify energy uses and losses through a more detailed review and analysis of equipment, systems, and operation characteristics. This would include some on-site measurement and testing to quantify energy use and efficiency of various systems. We utilize standard engineering calculations to analyze efficiencies and calculate energy and cost savings based on improvements and changes. An economic analysis is conducted to recommended conservation measures. This level accounts for the "people factor". The recommendations will likely require capital expenditures for systems upgrades.

In addition to the items listed under Tier One, a Tier Two Audit would consist of the following:

- a. Analyze the energy and other resources used within the building by particular energy uses: i.e. lighting, HVAC, etc. It will note trends and indicated relevant benchmarks.
- b. Recommend Energy Conservation Measures to make to the building, along with estimated construction costs and energy and/or resource savings.
- c. Recommend maintenance procedure changes to reduce resources.
- d. Recommend behavioral procedure changes to reduce resources.

Tier 3 Analysis (Optima Level) includes the items of the previous analyses but supplies a more detailed study of energy use by function and more comprehensive evaluation of energy use patterns. This is done using energy modeling software. We develop computer simulation of the building systems that will account for weather and other variables to predict year-round energy use. The goal is to build a base for comparison that is calibrated and consistent with the actual energy consumption of the facility. After the baseline is established, recommended changes are made to the various systems and effects compared to the baseline. This method accounts for interactions between systems to prevent overestimation of savings and allows for our team to best evaluate expected returns.

A Tier 3 Audit, in addition to the items previously listed, would consist of the following:

- a. Record actual energy usage in the building for different time periods, systems, and tenants.
- b. Perform a full detailed, field audit of the building, which covers all energy and resource systems in the building. This information will be inserted into a full computer model of the building.
- c. The computer model of the building will be calibrated with actual energy use, utilizing Mach Energy recorded daily energy data, utility information and information we obtain from data loggers installed throughout the building.
- d. Various Energy Conservation Measures will be suggested, run through the software model, while realistic savings expectations are measured.
- e. Final recommendations of the analysis will include recommendations, associated costs, associated savings, and time frames for implementations.

Contact us for a quote based on your size of building. Typical office buildings, schools, municipal facilities, and retail spaces would all be very similar. Industrial building and warehouses will vary.

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