



foresight

MANAGEMENT

Facility Energy Audits

WHY

Many companies pay a lot of attention to how they purchase energy. Simply having a plan around buying energy misses a significant cost reduction opportunity... energy efficiency. Using as little energy as possible in order to support and power your business will positively impact your finances, operations, employee work experience, and the environment!

A facility energy audit, otherwise referred to as an “energy treasure hunt” or “energy assessment”, is critical in understanding how your facility uses energy, as well as, how much wasted energy and wasted costs there are in your building. An energy audit will empower your team to fully understand the behavioral, operational, and technical energy and cost opportunities in your building.

Past, Present, Future.
Data, Technology, Behavior.

HOW

Facility energy audits are comprehensive, they should encompass where your company has been, where it is now, and where it plans to go. With these timeframes, “past, present, and future” in mind, our team assesses three broad areas; utility bill data, the technology (equipment) that consumes energy in your facility, and how your people behave with and operate said equipment.

Not all facility energy audits are created equally. ASHRAE (the American Society of Heating, Refrigerating, and Air-

Conditioning Engineers) has established three distinct levels of audit. Beyond ASHRAE’s official levels, there are a myriad of other ways to go about conducting an energy audit.

At Foresight Management, our first step is to establish a deep understanding of our client’s goals and needs at a particular facility so we can make a customized recommendation as to how deep of an audit is appropriate. Understanding vital pieces of information like what the financial ROI thresholds are, learning what types of energy projects have been looked at in the past, and becoming aware of all the associates at the company who might be impacted by energy related projects are just a few of the key pieces of knowledge we need to learn in order to make a reasonable suggestion that meets our client’s goals and needs.

Upon establishing the appropriate level of energy audit, the next step is to meet with all the stakeholders at our client’s facility and map out the project timelines. Engaging with as many associates at the company that will be affected by the audit as early as possible is key to a successful engagement. We desire for everyone to be educated and to have a clear understanding of what we will be doing and how it may or may not impact them.

After creating a project timeline in collaboration with our clients, the project will begin! Throughout each facility energy audit, we will have utility bill specialists, engineers, energy modelers, and other technical specialists engaged in your project to one degree or another.

Below are some brief descriptions of different levels of depth of energy audit and a few highlights associated with each. Since the goals and needs of each of our clients is different, not all of our energy audits fit exactly into the below levels.

Consider the following audit levels a launching off point for how your company might begin a conversation with our team!

Level 1

A Level 1 energy audit is a low-level audit that typically identifies low cost/no cost energy efficiency opportunities. Depending on the size and nature of the facility, our team would only need to be on-site for a few hours to collect the basic information required. A Level 1 audit would typically not include capital investment estimates for the projects that are identified, nor would it include precise cost saving projections.

Level 2

A Level 2 energy audit is a more robust audit that provides detailed cost and benefit information on the energy efficiency projects that are identified. Additionally, a Level 2 audit will include life cycle analysis on specific HVAC units, which can be valuable from a maintenance and budget planning perspective. Level 2 audits can often times require our staff to be on-site multiple times for extended periods of time. Level 2 audits include detailed descriptions of how each opportunity will affect your facility – this contains approximate capex budgets, potential utility incentive (rebate) opportunities, operational implications, and estimated energy savings for each individual project.

If your company has not had an energy audit done in the last three years, the Level 2 audit (or a modified version of it) likely makes the most sense as a starting point. The vast majority of companies need realistic business cases and cost/benefit analyses in order for a project to be seriously considered for implementation. The Level 2 audit will provide the crucial financial metrics your company needs to move forward without burying you in “too much detail”.

Level 3

A Level 3 energy audit, otherwise referred to as an “investment grade audit” includes a fully calibrated energy model (computer simulation) of the facility that predicts energy use and cost down to time increments of an hour or lower, and a risk assessment to demonstrate relative certainty of the impact of the projects recommended. These detailed calculations and analyses would be included on top of all of the aspects included in a Level 2 audit.

Level 3 energy audits are excellent solutions for complex, energy intensive facilities found in industries such as health care and manufacturing. Before engaging in a Level 3 energy audit, it is good practice to fully vet the value of a Level 2 audit first. Many times an organization is not fully prepared to deal with the granularity of data a Level 3 provides, where the business case information provided in a Level 2 would suffice.

The report will include a prioritized list of the EEOs that Foresight has found in your building and our recommendations for execution. This includes estimated return on investment (ROI) for each of the identified opportunities and is organized in order of ROI potential and level of impact the project could have on your facility’s energy use, so you can realize the best path to an efficient facility.

SAMPLE REPORT

Since 2007, our team has performed energy audits at over 1,000 facilities. In most facilities, we identified between 5 – 50% energy savings that if implemented, would represent a better than 5-year ROI.

CASE STUDY

Client Profile

- 400,000 ft² facility located in the Midwest:
20,000 ft² office; 280,000 ft² production;
100,000 ft² warehouse
- 24x5 plant hours of operation.
- \$1.8M in total annual energy spend:
\$1.4M electricity; \$350k natural gas; \$50k water

Before Foresight

There was **no centralized energy efficiency opportunity project list** prior to conducting our facility energy audit. The facilities and maintenance department had a list of projects, EHS had a list of projects, production engineers had a few projects in mind, as did procurement. Some of the projects on these lists had been under consideration for a number of years, while others were just recently added. Some projects had full business case details associated with them while others were as simple as a bullet point list. **Very few of the projects had any estimates for future energy savings and none accounted for potential utility incentives.**

Beyond the fragmented nature of their potential projects, finance had very little visibility and input into what was in them. So, each of the departments were continually frustrated by “being rejected” by the finance team over the years. Finance and C-suite team members lacked a clear understanding of what was possible and didn’t have consistent reporting on energy use and costs coming from their teammates.

Despite every associate at the company expressing a personal interest in “sustainability” and “energy efficiency”, there was **no holistic, strategic approach to taking any type of action.**

After Foresight

After the Foresight Management advisory team became intimately aware of the needs and goals of our client, we were able to recommend a modified “ASHRAE Level 2” facility energy audit. The detailed business case information that accompanied the Level 2 audit was very important to our client so that the finance team would have total confidence in our projections. The life cycle analysis of every single piece of HVAC equipment did not make sense for this client to implement, so that was left off the scope of work.

Upon establishing the details of the scope of work, our data team **collected and analyzed (24) months of historical utility bills** and **established baseline metrics** for both energy usage and cost for the building. We worked with the company’s production team to overlay production data and hours of operation data to this historical look so that we could make accurate future estimates. Beyond setting data driven baselines, our engineering team performed **on-site visits** of the facility and **reviewed existing MEP drawings and building layouts.**

Our team **produced a report that identified (23) energy efficiency opportunities (EEO)** in total. These projects ranged from “no cost/low cost”, all the way to large capital expenditure retrofit projects. Some of the EEO’s were associated with human behavior and operations, while others were associated with switching out technology such as building controls, HVAC and lighting. Each project was described in detail and was accompanied by budgets for investment, energy savings calculations, applicable utility incentives, applicable State and Federal incentives, operational benefit list, environmental benefit list, as well as a detailed description of how the project could be implemented.

In total, if all (23) EEO’s were implemented, the cost was estimated to be \$975,000, the total energy savings was estimated to be \$268,000 and the incentives associated with doing this work was \$110,000. **Culminating a simple ROI of 3.23 years. This \$268,000 represented nearly 15% of our clients total annual energy spend.**

BENEFITS

- Better understanding of how each area of your facility consumes energy
- Establishes a baseline for your building to compare against future usage
- Roadmap to energy efficiency through identifying opportunities, designing solutions, and implementing projects
- Provide valuable insights if you are setting GHG reduction targets

DON'T TAKE OUR WORD FOR IT...

**U.S. DEPARTMENT OF ENERGY'S
GUIDE TO ENERGY AUDITS**

FREQUENTLY ASKED QUESTIONS

How much does an energy audit typically cost?

We price our audits depending on the square footage of your facility, location of facility, use of the facility, and what level of audit you are looking for. Pricing can range from \$0.03 to \$0.25 cents per square foot.

How much time will it take to complete the audit?

Depending on the level of depth of audit you need, energy audits can be completed within a few days or can take multiple months to complete.

What kind of information will you need from me?

- At least 12 months of energy bills.
- All applicable building drawings, schedules and hours of operation.
- Applicable production information.
- Insight into past energy projects that were or were not implemented.

What if my company has more than one facility?

No problem! Nearly all of our clients operate more than one facility and we are very comfortable traveling.

