What is a load audit?

A load audit or an energy survey of your home's energy usage and costs identifies specific energy efficiency measures appropriate to reduce your home energy bills.

Overview
It is important for everyone to take steps to understand and manage energy costs. An energy audit will assist in evaluating energy consumption and provide guidelines on how to improve energy efficiency. The energy survey includes:

Residential Energy Survey:

- Checking temperatures of your air conditioning system, refrigerator and water heater
- Inspecting weather stripping and caulking around doors and windows
- Checking the calibration of the thermostat
- Inspecting air filters and duct system
- 12-month profile of your electric usage

Commercial Energy Survey:

- Lighting
- Air conditioning, Chillers & Refrigeration
- Exhaust Fans
- Building Envelope
- Heating
- Controls
- Demand Rates
- Benchmarking
- Profiling
- Power Quality
- Bill/Rate Analysis
- End use technology transfer

Home Energy Audits

You can easily conduct a home energy audit yourself, with a simple but diligent walk-through; you can spot many problems in any type of house. When auditing the home, keep a checklist of areas you have inspected and problems you found. This list will help you prioritize your energy efficiency upgrades.

The first step to taking a whole-house energy efficiency approach is to find out which parts of the house use the most energy. A home energy audit will pinpoint those areas and suggest the most effective measures for cutting the energy costs.

Professional energy audits generally go into great detail. The energy auditor should do a room-by-room examination of the residence, as well as a thorough examination of past utility bills.

Energy Auditing Guidelines

- Check for holes or cracks around your walls, ceilings, windows, doors, light and plumbing fixtures, switches, and electrical outlets that can leak air into or out of your home.
- Make sure your appliances and heating and cooling systems are properly maintained. Check the owner's manuals for the recommended maintenance.
- Study the family's lighting needs and use patterns, paying special attention to high-use areas such as the living room, kitchen, and outside lighting. Look for ways to use lighting controls—like occupancy sensors, dimmers, or timers—to reduce lighting energy use, and replace standard (also called incandescent) light bulbs and fixtures with compact or standard fluorescent lamps.

Formulating Your Plan

After you have identified where your home is losing energy, assign priorities by asking yourself a few important questions:

- How much money do you spend on energy?
- Where are your greatest energy losses?
- How long will it take for an investment in energy efficiency to pay for itself in energy cost savings?
- Does the energy saving measures provide additional benefits that are important to the customer (for example, increased comfort from installing double-paned, efficient windows)?
- Can the job be done by the homeowner or will they need to hire a contractor?
- What is the customer’s budget and how much time will be allocated to spend on maintenance and repair?

Once you assign priorities to the customer’s energy needs, you can form a whole-house efficiency plan.

The plan will provide you with a strategy for making smart purchases and home improvements that maximize energy efficiency and save the most money.

The energy auditor will analyze how well the home's energy systems work together and compare the analysis to your utility bills. He or she will use a variety of equipment such as blower doors, infrared cameras, and surface thermometers to find leaks and drafts. After gathering information about the home, the auditor will give the customer a list of recommendations for cost-effective energy improvements and enhanced comfort and safety. A good energy auditor will also calculate the return on your investment in high-efficiency equipment compared with standard equipment.

Preparing for an Energy Audit

Before the energy auditor visits the house, make a list of any existing problems such as condensation and uncomfortable or drafty rooms. Have copies or a summary of the home's yearly energy bills. (The utility can get these for the customer.) Auditors use this information to establish what to look for during the audit. The auditor first examines the outside of the home to determine the size of the house and its features (i.e., wall area, number and size of windows). The auditor then will analyze the residents' behaviour:

- Is anyone home during working hours?
- What is the average thermostat setting?
- How many people live here?
- Is every room in use?

The customer’s answers may help uncover some simple ways to reduce the household's energy consumption.

Locating Air Leaks

First, make a list of obvious air leaks (drafts). The potential energy savings from reducing drafts in a home may range from 5 to 30% per year, and the home is generally much more comfortable afterward. Check for indoor air leaks, such as gaps along the baseboard or edge of the flooring and at junctures of the walls and ceiling.

Also look for gaps around pipes and wires, electrical outlets, foundation seals, and mail slots. Check to see if the caulking and weather stripping are applied properly, leaving no gaps or cracks, and are in good condition.

Inspect windows and doors for air leaks. See if you can rattle them, since movement means possible air leaks. If you can see daylight around a door or window frame, then the door or window leaks. You can usually seal these leaks by caulking or weather stripping them. Check the storm windows to see if they fit and are not broken. You may also wish to consider replacing your old windows and doors with newer, high-performance ones.

Heating/Cooling Equipment

Inspect heating and cooling equipment annually, or as recommended by the manufacturer. If you have a forced-air furnace, check your filters and replace them as needed. Generally, you should change them about once every month or two, especially during periods of high usage. Have a professional check and clean your equipment once a year.

If the unit is more than 15 years old, you should consider replacing your system with one of the newer, energy-efficient units. A new unit would greatly reduce your energy consumption, especially if the existing equipment is in poor condition. Check your ductwork for dirt streaks, especially near seams. These indicate air leaks, and they should be sealed with a duct mastic. Insulate any ducts or pipes that travel through unheated spaces. An insulation R-Value of 6 is the recommended minimum.

Lighting

Energy for lighting accounts for about 10% of your electric bill. Examine the wattage size of the light bulbs in your house. You may have 100-watt (or larger) bulbs where 60 or 75 watts would do. You should also consider compact fluorescent lamps for areas where lights are on for hours at a time. Your electric utility may offer rebates or other incentives for purchasing energy-efficient lamps.