



By John W. Bartok Jr.

AN ENERGY AUDIT is a common term used to describe a broad range of energy studies, from a simple walkthrough to identifying major problem areas to a comprehensive analysis of where every Btu of energy is consumed. The areas covered should include heating and electricity use as these are the largest energy bills that you pay.

A walkthrough audit

Major savings can usually be achieved with a simple walkthrough audit. This will identify losses due to infiltration and areas where insulation can be beneficial. It can also point out maintenance to heating, cooling and control systems that should be done.

Once the audit is complete, corrective measures can be developed, potential cost savings determined and a timetable for implementation established. Assign priority to the different items and someone to implement corrective action.

Comparing fuel and electricity use from year to year are also beneficial in that they can identify energy/demand rate structure. Adjusting controls on a cooling system can reduce electricity demand and save money. Energy-conservation measures have a shorter payback than installing an alternate energy system. For most energy-conserving measures the payback is usually less than two years. ❖

CONTACT INFORMATION

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Conduct an energy audit of your greenhouses

Walkthrough greenhouse energy audit

Greenhouse No. ____

Reduce air leakage

- _____ Do exterior doors close tight? Are they insulated?
- _____ Are doors, vents and shutters weather-stripped?
- _____ Do fan intake shutters close tightly?
- _____ Is there broken glass, torn plastic or cracks around the foundation?

Reduce heat loss

- _____ Does the inner layer of the polyethylene film covering have infrared inhibitor and anti-condensate control?
- _____ Are knee-walls and non-glazed areas insulated?
- _____ Is the perimeter wall insulated to 18 inches below ground?
- _____ Are unneeded winter fans and shutters covered with insulation?
- _____ Do energy blankets close tight against the sidewall, gutter and frame?
- _____ Are windbreaks installed around the greenhouse to deflect the winter winds?

Heating system

- _____ Has the heating system been serviced this year? What is furnace efficiency?
- _____ Are there leaks in heat pipes, valves or steam traps?
- _____ Are the supply and return pipes insulated?
- _____ Have the heat pipes and fin radiation been cleaned?
- _____ Is there outside make-up air available to the furnace/boiler?
- _____ Is the chimney 2 feet above the ridge of the greenhouse? Does it have a cap?
- _____ Has root zone heat been installed to allow a lower air temperature?

Ventilation system

- _____ Do the ventilating fans have a Ventilation Efficiency Ratio greater than 15?
- _____ Have the fans been cleaned and serviced?
- _____ Have the vent motors and arms been lubricated?
- _____ Is the horizontal-airflow fan system installed to give good air circulation?

Control system

- _____ Have thermostat/controller sensors been cleaned and calibrated recently?
- _____ What is the thermostat differential between on and off?
- _____ Are air temperature sensors located at the plant canopy?
- _____ Are soil temperature sensors located in a representative flat or pot?
- _____ Are heating and cooling thermostats located together and aspirated?
- _____ Have electronic thermostats or controllers been installed?
- _____ Has the hot water thermostat been set at 120°F?

Electrical system

- _____ Do motors over 5 horsepower have a high-efficiency rating?
- _____ Has the wiring system been checked for overloading or corrosion?
- _____ Have light bulbs and fixtures been cleaned recently?
- _____ Have motion-sensing light switches been installed in storage areas?

Water system

- _____ Are water faucets dripping?
- _____ Is the hot water tank and piping insulated?
- _____ Have water filters and screens been cleaned recently?

Management

- _____ Can the night temperature be lowered with a savings of 3 percent for each 1°F?
- _____ Can the greenhouse start-up be delayed by a week or more in the spring?
- _____ Is the growing area full of plants?