



A SIMPLE GUIDE TO Put your home's energy

By Ed Werner

There is a saying that “the cheapest electron to produce is the one you don’t use.”

Dollar-for-dollar, it is almost always the best investment to put your money into improving the efficiency of your building before you consider adopting alternative energy sources

(wind, solar, etc.).

Taking measures to lower the amount of energy your house consumes will decrease your costs and increase the value of the structure.

There are four primary areas to consider: lighting, building shell, HVAC system (heating, ventilating, and air conditioning), and appliances. These are listed in order of the typical cost-to-benefit ratio or return on your investment for making improvements.

Lighting

The easiest upgrade is replacing standard incandescent bulbs with new, compact fluorescent light bulbs (cfl). Fourteen to 16 watt cfl bulbs produce about the same amount of light as a 60 watt standard bulb while a 25 to 27 watt cfl bulb is about the same as a 100 watt standard. For every hour you use a cfl over a standard bulb, you save about 75 percent on power.

Building Shell

The building shell consists of its walls, roof, floors, doors, and windows. Look for insulation issues and air leakage problems. Stopping air leaks is usually the least expensive improvement. Look for poor weather stripping (or none) around doors and windows. Poorly fitting doors and windows that cannot be tightened with weather stripping are good candidates for replacement. Windward side doors and windows are especially prone to leakage due to wind pressure and extra attention should be given them.

Old doors and single pane windows have extremely low insulating capacity and should also be candidates for

replacement – or for the addition of storm windows and doors. When adding storm doors with bug screens, be sure they have glass that can be closed over the screen to create a closed panel.

When checking insulation, the ceiling is the most important and also the easiest to investigate. You should have at least 14 to 18 inches of loose insulation or 10 inches of rolled fiberglass batt-style insulation to achieve an R30 insulating level. Adding insulation to walls can be difficult and very expensive.

Other considerations:

- If considering new exterior siding, there are products that can significantly add to the R values of walls and look very attractive.
- Consider insulating the crawl space. Be sure to check for moisture build up, condensation, and any other water problems. These conditions can lead to mold and rotting of wood structures. Poor ventilation is usually the culprit but ventilating with outside air also brings in cold, which can make your floors chilly, so insulation underneath the floorboards becomes a big factor.

Good ventilation is important for helping keep your home cool in the summer as well as keeping the air from getting stale. Window fans should blow outward and are most effective when not pushing against prevailing breezes. Open windows in rooms you want the air to come in and ensure there is a clear path for air to move through the house to the exit point.

HVAC System

The heating, ventilating, and air conditioning system is an integral part of a home and provides comfortable living temperatures year-round.

While probably cost prohibitive to replacing a functioning system based on efficiency alone, if you encounter a failure, seriously consider upgrading. A pre-1995 furnace typically runs at 80- to 85-percent efficiency or less. This means the furnace converts about 80 to 85 percent of the

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gluttons on a permanent diet

heating value found in the fuel into usable heat for your home. A high-efficiency replacement for the same system can run around 95-percent efficient. There are systems such as ground source heat pumps that run around 200 to 300 percent efficient since they use natural sources for heating and cooling rather than fuel and only consume energy to transfer the heat into a home. These can be expensive and are especially difficult to retrofit into an existing home but are very cost-effective when considered for new construction.

Other considerations:

- Change your furnace air filters. They typically cost a few dollars and should be changed every few months – more often during dry conditions.
- Add a programmable thermostat and set it to reflect your schedule.
- Check the balance of flow of air from your ducts. A simple method is to use a piece of ribbon a few inches wide and a foot long or so and hold it over vents when the system is running. Judge the flow from each vent by comparing the height the ribbon rises in the air coming from the vent. There will be differences, but they should not vary significantly. Close dampers in little-used rooms. You may want to contact a professional HVAC technician if significant variations are found.

Appliances, Devices

Look closely at energy ratings when replacing appliances. If replacing a refrigerator with a new model, try not to use the old one inside a place (the garage) that isn't a temperature-controlled area. Refrigerators are designed to operate at room temperatures. Putting a refrigerator where temperatures can become very high not only causes it to run longer but much more inefficiently. Refrigerators and freezers in excess of 20 years old are likely ready for replacement. New units are much better insulated, and the heat pumps and motors they use to keep the box cold inside have become more efficient as well.

A simple improvement to help a water heater is to add a specially designed blanket that wraps around it. Turn down the temperature on water heaters that are not heavily used. This reduces the energy needed to keep the water at a certain temperature. It does require more hot water to maintain desired temperatures at the faucet. This causes the water heater to cool down quicker so you may need to balance the temperature with use. Consider an on-demand water heater for seldom-used faucets. These units heat water as needed and do not have a storage tank.

Finally, the combined effect of all those small devices around a home that have little green and red lights on all the time adds up. All those chargers for cell phones and iPods draw power when plugged in regardless if the device is connected. A simple solution is to plug them into a power strip with a master switch. When you connect a device, just hit the switch to power up. If you keep your TV in a "warmed up" mode, it essentially uses about 90 percent of the power it would use if actually on.

Many are interested in renewable energy as well as just making their homes more energy efficient. The advantage of starting with energy efficiency if considering a renewable system is that you are reducing the size requirements for that system as well. This approach will save you money now as well as when you decide to purchase a renewable energy system, such as solar panels or wind generators.

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