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Retrofit your home for energy efficiency

□ BY MAGGIE LESLIE □

The average American family spends about \$1,500 a year on utility bills, according to the Rocky Mountain Institute. This could be reduced dramatically by making a few adjustments and improvements. Some energy-saving measures are simple and inexpensive, while others more complex and costly. This checklist will help you figure out where to start. Some of the cheapest, easiest retrofits will save you the most. When you are ready to get started, the Southface Energy Institute offers a free downloadable guide called "Home Energy Projects: An Energy Conservation Guide for Do-It Yourselfers." It provides a lot of information on how to perform the tasks yourself, where to get the material, and how much it will cost.

Where to Begin

- Determine your savings. Collect a year's worth of utility bills and divide their total by the heated square footage of your home. According to RMI, most bills are about \$.60-\$.90 per square foot. If you are in this range, or even higher, the low-cost and no-cost measures will be a great place to start.
- Assess your house. Measure the thickness of the insulation in your attic, basement and walls. What is the age and condition of your HVAC system and water heater? Is your home drafty?
- Determine the financial incentives. Visit www.energytaxincentives.org/consumers and www.dsireusa.org for a comprehensive list.
- Consider a comprehensive audit. The directory includes a list of Building Performance Contractors (see Listings). These trained professionals will come to your home and perform an energy audit or Green Gauge Assessment. They can recommend improvements and provide contracting services, if you would prefer not to do the work yourself.

Heating and Cooling

Water heating, lights & appliances

NO COST

- In the winter, the thermostat is turned down when not at home or going to bed.
- Filters are clean.
- Shades are drawn on sunny days in summer and after sunset in winter.
- The fireplace damper is closed and sealed when not in use.
- The fireplace is not lit when the heat is on if it doesn't have doors.

- Energy-saving settings are used on dishwashers and washing machines and then heat dry on the dishwasher is avoided.
- Lights are turned off when leaving a room.
- Cold water is used for rinsing dishes, running food disposals and laundry.
- Thermostat on the water heater is turned down to 120°F.
- Refrigerator condenser coils and dryer exhaust are clean.
- Clothes washers and dishwasher are run only when full and clothes are air dried instead of using a clothes dryer.

LOW COST

- A programmable thermostat is installed.
- Broken window panes are repaired
- Air filter is changed. *Note: Be careful when choosing a new air filter. High MERV filters work great for air quality, but they may adversely affect the performance of your system by causing too much resistance.*
- Holes, leaks and gaps through walls, ceiling and floor are sealed using caulk or spray foam. *Note: Some holes may be large enough that they require rigid blocking before sealing.*
- Electrical outlets have gaskets.
- Attic Hatch or door is insulated and weatherstripped
- Vertical walls between the house and attic are insulated and have a rigid backing.
- Ductwork is sealed with mastic and heating and cooling system has had a tune up. Duct leakage can increase your heating/cooling bill by 10 to 30 percent and compromise your air quality.

- Low-flow, WaterSense-rated faucets and showerheads are installed.
- An insulating jacket is installed on the water heater .
- A timer is installed on the water heater so it only heats water when needed.
- Leaky faucets and toilets are repaired.
- Hot water pipes are insulated.
- A rainbarrel is installed for outdoor watering.
- A toilet tank bag is installed to reduce the amount of water used per toilet flush.
- Inefficient incandescent bulbs to energy-saving compact fluorescents or LEDs.

QUICK PAYBACK

- Ductwork is insulated to R-8.
- Insulating blinds and shades, or storm windows are installed.
- A blower door test has been performed to identify more leaks in the building envelope and they have been sealed. *Note: You may need to consider adding ventilation, depending on the air tightness you reach.*
- R-38 insulation in the attic and R-19 insulation in the floors are installed (make sure all holes are sealed first!).

- Appliances are plugged into a power strip that can easily be turned off to reduce ghost loads.
- A high-efficiency or a gas-tankless water heater installed
- Inefficient appliances are replaced with Energy Star-rated refrigerators, dishwashers, washers and dryers.
- A dual flush retrofit kit is installed to reduce the amount of water used per toilet flush.

LONG-TERM PAYBACK

- Windows are replaced with double-paned low-e windows with a U-value of less than .35
- Ceiling fans are installed.
- The Central heating and air system is replaced with a more efficient model.
- Wall insulation is installed.
- Exterior solar shade screens, awnings or removable trellises are installed where appropriate to shade from over-heating in the summer.

- Convert to solar water heating. *Note: Consider integrating it with space heating. The current tax credits available make it much more affordable than ever before.*
- Install a PV system to produce electricity.

Sources for this fact sheet include Southface Energy Institute, "Home Energy Projects: An Energy Efficient Conservation Guide for Do-It-Yourselfers," www.southface.org/web/resources&services/publications/large_pubs/Home-Energy-Projects.pdf and Rocky Mountain Institute, "Home Resource Efficiency," www.rmi.org/sitepages/pid206.php.