



## Inventory of Energy Efficiency and Conservation for your Home

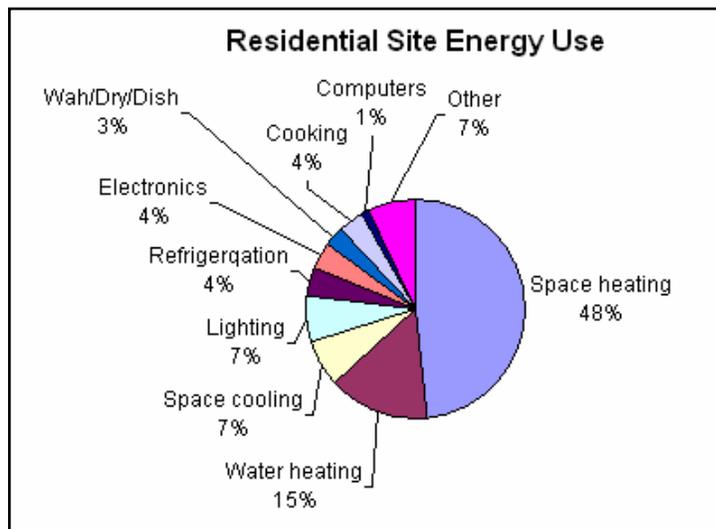
(Adapted from [ENERGY STAR® Home Improvement](#))

You have two options to assess the energy efficiency of your home:

1. **Do-it-yourself audit:** Use the assessment questions below or the [ENERGY STAR Home Energy Yardstick](#) to compare your home's energy efficiency to similar homes across the country and get recommendations for energy-saving home improvements from ENERGY STAR.
2. **Hire a professional:** A professional auditor can use a variety of techniques and equipment to determine the energy efficiency of your home. Thorough audits often use equipment such as blower doors (which measure the extent of leaks in the building envelope) and infrared cameras (which reveal hard-to-detect areas of air infiltration and missing insulation). Your first step should be to contact your utility to see if they offer free or discounted energy audits to their customers. If not, you can hire a home energy professional, such as a certified Home Energy Rater, to evaluate your home's energy efficiency.

### *Do-it-yourself Assessment Questions*

First, you need to understand where most of your energy goes. The pie chart below shows the percentage of different energy uses in a typical home. As you can see, most of your home's energy goes to space heating, water heating, cooling, and lighting. After doing your energy assessment, you will need to then prioritize your actions based on the potential energy (and dollar) savings vs. the cost of the project. This chart can help guide your choices of projects to undertake and where you can potentially have the greatest impact on your utility bill.





Please answer the following questions to help you assess the energy efficiency of your home or apartment. In many cases, the results of your assessment may lead you to hire a professional because of the technical difficulties in assessing the problem. However, there is much you can do yourself.

1. **High Energy Bills:** Do you have high energy bills, especially in winter and summer? High utility bills in summer and winter can often be traced to air leaks in your home's envelope, inefficient windows or heating and cooling equipment, or poorly sealed and insulated ducts.
  - a. You can use the ENERGY STAR [Home Improvement Tool](#) to score your home's energy use and generate a customized list of improvements. You will need one year of your utility bills handy.
  - b. For best results, hire a contractor who is an energy specialist to do an in-home evaluation. A good specialist will use [diagnostic equipment](#) to evaluate the performance of your home and generate a customized list of improvements.
2. **Cold Floors in Winter:** Does your home have cold floors? Some types of floor coverings (such as wood, stone, tile, or concrete) will naturally feel cold on bare feet. However, insufficient insulation or air infiltration can also cause cold floors.
  - a. Contact a heating and cooling contractor to check if your heating and cooling system is providing enough air to each room. Your contractor should check: is a damper closed; has a duct become disconnected from a register; is it sized correctly, is it leaky?
3. **Drafty Rooms:** Are your rooms drafty? Cold air coming into or going out of your house, especially through leaks hidden in the attic and basement, can cause rooms to feel drafty and uncomfortable.
4. **Moisture on Windows:** Are your windows collecting moisture in colder weather? It is difficult to completely eliminate moisture on existing windows. Inefficient windows (e.g., single pane with aluminum frames) or high moisture with inadequate ventilation can result in condensation, frost, or pools of water on windows and sills. Moisture in the air condenses when it touches a cold surface. (The same effect causes a glass of ice tea to "sweat" on a hot humid day.) Continued excess moisture can lead to mold, mildew, and deterioration of your windows and sills.
  - a. Are your windows single or multi-pane?
  - b. Do you have storm windows?
  - c. Are the frames metal?
  - d. Are you using a humidifier in your home?
  - e. Is your dryer venting into the house?
5. **Ice Dams:** Does your home have ice dams on the roof or icicles hanging from the eaves and gutters? Ice dams usually occur after a heavy snowfall and several days of freezing temperatures. Warm air inside your home leaks into the attic and will



warm the underside of the roof causing snow and ice on the roof to melt. The melted water will drain along the roof, under the snow, until it reaches the cold overhang. The overhang tends to be at the same temperature as the outdoors and the melted water will refreeze and form an ice dam and icicles. The ice dam can cause damage to the roof, which will result in water leaks to the inside. Frequently the result will be a water spot on the ceiling under the roof damage.

- a. Hire a contractor who is an energy specialist or specializes in air sealing to do an in-home evaluation. A good specialist will use [diagnostic equipment](#) to evaluate the performance of your home and generate a customized list of improvements.

## 6. Peeling Paint

7. **Hot or Cold Rooms:** Are there significant temperature differences between rooms of your home? Temperature differences of up to three degrees from room to room are not uncommon, but often one or several rooms are uncomfortably warm or cold. This condition could be caused by several factors within your home including inadequate insulation, air leakage, poor duct system design, duct leakage, unwanted heating by the sun in warmer months, or a failure in part of your heating and cooling system.

- a. For best results, hire a contractor who is an energy specialist to do an in-home evaluation. A good specialist will use [diagnostic equipment](#) to evaluate the performance of your home and generate a customized list of improvements. Ask your contractor to check if your heating and cooling system is operating correctly. Ask your contractor to check your ducts for air leakage and proper distribution of air.

8. **Dry Indoor Air in Winter:** Is the air in your home too dry in the winter? Air leaks in your home allow warm humid air to escape and draw in drier, colder air. Dry indoor air can contribute to dry throat and skin and static shocks. Proper humidity levels keep furniture and your home from drying out and reduce the energy use of your heating system because you will feel warmer at a lower thermostat setting.

- a. Ask a heating and cooling contractor to check your heating and cooling system to make sure it is operating properly. Also, ask the contractor to check your duct system for air leaks, and proper size and air flow to each room.

## Energy saving ideas for your living space

### Ideas that are free (or nearly so)

- Use your blinds or drapes. Open them on sunny winter days to let warm sun in; close them on winter nights to keep the heat in.



- Closing, or partially closing blinds and drapes during hot days can reduce air conditioning demand by keeping out sunlight and heat. Windows facing south let in the most heat.
- When not using the air conditioning, open windows at night to let cool breezes in, then close them before the weather warms up to keep cooler air trapped indoors longer.
- Lights, televisions, computers and appliances not only use electricity, they generate heat. Keep them turned off when they are not needed.
- Turn off outdoor decorative lighting.
- Use appliances such as ovens, dishwashers and clothes dryers early in the day or late in the evening, when temperatures are cooler.
- If using your clothes or dishwasher, be sure to only run it with a full load. You can also use the cold water cycle and detergents to save hot water.
- Be sure the damper is closed or sealed in your fireplace or wood/pellet stove. This provide a direct vent to the outside, allowing warm air to escape in the winter.
- Do not use your fireplace. This is a very inefficient means of heating your home, as much of the heat goes up the flue.
- Fix leaking faucets – a hot water leak means you are heating water you never use.
- Lower the thermostat on your hot water tank to 120 degrees. Many hot water systems come pre-set to 140 degrees.
- Conduct a [do-it-yourself](#) home energy audit (see above).

#### **Ideas under \$25**

- Change the air filter in your furnace each month. Heaters use more energy when the filter is full of dust.
- Caulking and weather-stripping your home can result in energy savings of 10 percent or more.
- Seal holes where wire, conduits, and pipes enter the attic and along partition walls, eaves, and knee walls. Use caulk, spray-in foam, or compressed fiberglass insulation.
- Use compact fluorescent bulbs. They use about one-fourth the energy an incandescent uses with the same light quality and last 10 times as long.
- Low-flow shower heads reduce water use by 50 percent or more - a standard shower head uses about five to seven gallons of water per minute.

#### **Ideas over \$25**

- Have your heating and cooling equipment serviced annually.
- Put a timer on your room air conditioner, or use a programmable thermostat on your central heating and cooling system. A programmable thermostat can save you \$150 every year on energy costs.
- Insulate hot water tanks, hot water pipes and heating ducts (recommended R-6).
- Seal your ductwork, especially if it is in un-conditions space, such as attic or crawlspace. Aim for 10% total leakage.



- Use fans to supplement room or central air conditioning. They do not lower air temperatures, but the breeze they produce makes it feel cooler. Fans use much less electricity than air conditioners. Be sure to turn off fans when no one is in the room.
- Install ceiling fans which use about 98 percent less energy than most central air conditioners.
- Plant trees or shrubs to shade the house and air conditioner. However, be sure shrubs do not restrict air flow around your air conditioner unit.
- If canister lights are not rated as air tight (AT) or insulation contact (IC), they should be replaced. These can allow air to pass directly to your attic.
- Hire a professional to seal your home.
- Hire a professional to seal you ductwork.
- Add more insulation to your home. Attic: R-38; exterior wall frame: R-13; basement wall/crawlspace: R-10 to R-13
- If you do not already have treated windows, install sun-control or other reflective films on south-facing windows to reduce solar gain.
- If your HVAC equipment is more than 10 years old or not keeping your house comfortable, consider replacing it with a model that has earned the ENERGY STAR (SEER 14/HSPF 8.5). If you home is well-sealed, be sure the HVAC is not oversized. Sized and installed correctly, these high-efficiency heating and cooling units can save up to 20 percent on heating and cooling costs.
- Consider installing a high-efficiency or solar water heater when replacing your old unit. Water heating can account for 15–25% of a home's energy use. Water heater efficiency is measured as an Energy Factor (EF) — higher Energy Factors means higher efficiency. Look for: 40-gal tank: 0.93; 60-gal tank: 0.92; 80-gal tank: 0.89.
- Consider ENERGY STAR qualified windows when replacing old windows. ENERGY STAR qualified windows, doors, and skylights increase the comfort of your home, and protect your valuable possessions from sun damage. Look for: U-factor: less than 0.40; SHGC: less than 0.45.
- Consider ENERGY STAR appliances when replacing old appliances. Many ENERGY STAR products cost only marginally more, but the energy savings more than make up for the added purchase price in a few years.