

## Home EE Tips, Ideas, and Solutions

[http://www.eere.energy.gov/consumer/your\\_home/](http://www.eere.energy.gov/consumer/your_home/)

### Air Conditioners

When buying a new room air conditioner, look for units with an EER of 10.0 or above. Check the EnergyGuide label for the unit, and also look for room air conditioners with the ENERGY STAR® label.

### Personal Computers

Personal computers use about the same amount of energy to startup as they use when they are on for about two seconds. For energy savings, consider the following

- Turning off the monitor if you aren't going to use your PC for more than 20 minutes
- Turning off both the CPU and monitor if you're not going to use your PC for more than 2 hours.

### Electricity

You can reduce electricity use in your home by focusing on where and how you use electricity in these areas:

- Appliances and electronics
- Purchase energy-efficient products and operate them efficiently.
- Lighting
- Purchase energy-efficient products, operate them efficiently, and incorporate more daylighting into your home using energy-efficient windows and skylights.
- Electric space heating and cooling
- Purchase energy-efficient electric systems and operate them efficiently. Incorporate passive solar design concepts into your home, which include using energy-efficient windows. Properly insulate and air seal your home. Select an energy-efficient heating system that doesn't use electricity.
- Electric water heating
- Purchase an energy-efficient electric water heater and operate it efficiently. Or select an energy-efficient water heater that doesn't use electricity.

### Insulation

For energy efficiency, your home should be properly insulated from the roof down to its foundation. This includes the following areas:

- Attic spaces
- Attic access doors to unfinished attics
- Knee walls in finished attics
- Ducts in unconditioned spaces
- Cathedral ceilings
- Exterior walls
- Floors above unheated garages
- Foundations
  - Basements
  - Crawl spaces
  - Slab-on-grade floors.

### Landscaping

#### Temperate Region

- Maximize warming effects of the sun in the winter.
- Maximize shade during the summer.
- Deflect winter winds away from buildings.
- Funnel summer breezes toward the home.

#### Hot-Arid Region

- Provide shade to cool roofs, walls, and windows.
- Allow summer winds to access naturally cooled homes.
- Block or deflect winds away from air-conditioned homes.

#### Hot-Humid Region

- Channel summer breezes toward the home.
- Maximize summer shade with trees that still allow penetration of low-angle winter sun.
- Avoid locating planting beds close to the home if they require frequent watering.

#### Cool Region

- Use dense windbreaks to protect the home from cold winter winds.
- Allow the winter sun to reach south-facing windows.
- Shade south and west windows and walls from the direct summer sun, if summer overheating is a problem.

## Lighting

### When to Turn Off Your Lights

#### Incandescent Lighting

Incandescent lights (or bulbs) should be turned off whenever they are not needed. Nearly all types of incandescent light bulbs are fairly inexpensive to produce and are relatively inefficient. Only about 10%–15% of the electricity that incandescent lights consume results in light—the rest is turned into heat. Turning the light(s) off will keep a room cooler, an extra benefit in the summer. Therefore, the value of the energy saved by not having the lights on will be far greater than the cost of having to replace the bulb.

#### Fluorescent Lighting

The cost effectiveness of turning fluorescent lights off to conserve energy is a bit more complicated. For most areas of the United States, a general rule-of-thumb for when to turn off a fluorescent light is if you leave a room for more than 15 minutes, it is probably more cost effective to turn the light off. Or in other words, if you leave the room for only up to 15 minutes, it will generally be more cost effective to leave the light(s) on. In areas where electric rates are high and/or during peak demand periods, this period may be as low as 5 minutes.

## Daylighting

Artificial lighting consumes almost 15% of a household's electricity use. Use of new lighting technologies can reduce lighting energy use in homes by 50%–75%.

You can reduce lighting energy use by selecting lighting and sources that use energy more efficiently, and by installing lighting controls.

Daylighting is the use of windows and skylights to bring sunlight into your home.

Today's highly energy-efficient windows, as well as advances in lighting design, allow efficient use of windows to reduce the need for artificial lighting during daylight hours without causing heating or cooling problems.

The best way to incorporate daylighting in your home depends on your climate and home's design. The sizes and locations of windows should be based on the cardinal directions rather than their effect on the street-side appearance of the house.

South-facing windows are most advantageous for daylighting and for moderating seasonal temperatures. They allow most winter sunlight into the home but little direct sun during the summer, especially when properly shaded.

North-facing windows are also advantageous for daylighting. They admit relatively even, natural light, producing little glare and almost no unwanted summer heat gain.

Although east- and west-facing windows provide good daylight penetration in the morning and evening, respectively, they should be limited. They may cause glare, admit a lot of heat during the summer when it is usually not wanted, and contribute little to solar heating during the winter.

## Hot Water Heating

Water heating can account for 14%–25% of the energy consumed in your home. You can reduce your monthly water heating bills by selecting the appropriate water heater for your home or pool and by using some energy-efficient water heating strategies.

### Energy-Efficient Water Heating

To lower your water heating bills, try one or more of these energy-saving strategies:

- Reduce your hot water use
- Lower your water heating temperature
- Insulate your water heater tank
- Insulate hot water pipes
- Install heat traps on a water heater tank
- Install a timer and use off-peak power for an electric water heater
- Install a drain-water heat recovery system.

## Storm Doors

Adding a storm door can be a good investment if your existing door is old but still in good condition. However, adding a storm door to a newer, insulated door is not generally worth the expense since you won't save much more energy.

Storm door frames are usually made of aluminum, steel, fiberglass, or wood (painted or not). Wooden storm doors require more maintenance than the other types. Metal-framed storm doors might have foam insulation within their frames.

High-quality storm doors use low-emissivity (Low-E) glass or glazing. Some doors have self-storing pockets for the glass in summer, and an insect screen for the winter. Some have fixed, full length screens and glass panels that slide out of the way for ventilation. Others are half screen and half glass, which slide past each other. Some are removable for cleaning, others are not. All of these features add some convenience and higher costs.

Never add a glass storm door if the exterior door gets more than a few hours of direct sun each day. The glass will trap too much heat against the entry door and possibly damage it.

Storm doors for patio doors are hard to find but they are available. Adding one to a new, multi-glazed, Low-E door is seldom economic. Insulated drapes, when closed for the night in the winter (or on sunny days in the summer) are also a good idea.

<http://homemizer.com/energy-efficient-windows.html>

## Windows

Energy Efficient Windows are a Worthwhile Investment

There is really no more important consideration for home energy efficiency than modern, energy efficient windows. For the average home, heating and cooling accounts for about 40% of the total energy bill. Since the average home loses 30% of its energy through the windows, installing energy efficient windows can reduce that expense by up to 25%. Not only that, but they can actually pay for themselves in as little as two years.

## Refrigerator

Tips for saving energy with your refrigerator

- The temperature of your refrigerator should be set between 35 and 40 degrees. The freezer should be set at about 5 degrees.
- If you have a manual defrost model, defrost it regularly to ensure maximum efficiency.
- Check the seals on the doors to make sure they create a tight seal. An easy way to check is to close the door on a piece of paper. With the door closed, pull on the paper. If it slides out easily, you probably need to replace the seals.
- Wrap food and cover liquids you place in your refrigerator. This helps reduce the amount of moisture inside, and eases the burden on the compressor.
- Keep your fridge away from heat sources, such as stoves, dishwashers, and direct sunlight.
- Leave a space between the back of the refrigerator and the wall behind it to allow air circulation. It's also a good idea to move the fridge away from the wall once a year, and vacuum the condenser coils.

All of these tips will help you save energy and money, and find a more efficient refrigerator. If yours is an old clunker, consider shopping for a new, more efficient model. The savings can be remarkable.

Helpful tips when shopping for a refrigerator

One of the best things you can do is buy an Energy Star model. The links above contain many resources for comparing models and potential annual energy use. Also, when looking for refrigerators, check the yellow EnergyGuide sticker for projected energy use.

As with buying anything, the best way to save energy is to buy only what you need. In this case, that means buying the smallest refrigerator that fits your needs. Think about buying a top freezer model too, since they are usually about 10 - 25% more efficient.

Ice makers increase the energy used by about 15 - 25% as well, and can add an additional \$250 to the price. Manual defrost models use only half the energy of automatic defrost models, although they do require you defrost them periodically. Look for a refrigerator with automatic moisture control, which reduces the load on the compressor.