

Take Advantage of Federal Tax Credits for Energy Efficiency Improvements

Through December 31, 2013, federal tax credits are available for energy efficiency upgrades in existing homes. The tax credit is 10 percent of the cost, up to a \$500 lifetime cap. [The cap is based on any tax credits taken between 2006 and 2012.] Through 2016, federal tax credits are available (for existing homes and new construction) for geothermal heat pumps, solar panels, solar water heaters, small wind energy systems, and fuel cells at 30 percent of the cost, with no upper limit, except that the tax credit for fuel cells is capped at \$1,000 per kilowatt of power capacity.

More information about the federal energy efficiency tax credits can be found at www.energystar.gov or www.irs.gov.



More Than 100 Ways To Improve Your Electric Bill

The way you use electricity at home offers great opportunities for using energy wisely. For example, did you know that you can reduce your electricity usage for lighting by 75 percent just by replacing your incandescent light bulbs with compact fluorescent bulbs or Light Emitting Diode (LED) lamps? Or, that you can reduce your cooling bill by 2 percent just by raising your thermostat by 1 degree in the summer? Likewise, in the winter, lowering your thermostat by only 1 degree can reduce heating bills by 3 percent.

These are just three ways you can save energy and money! This booklet offers you more than 100 ways to improve your electric bill by saving energy in the major areas of home heating, cooling, lighting, cooking, dishwashing, water heating, clothes washing, clothes drying, and refrigeration.

These simple, low- or no-cost tips can assist you in making your energy decisions and in gaining greater control over your electric bill. By following these tips, you also will improve the comfort and convenience of your home. And you'll help to protect the environment by using energy wisely.

Please read the booklet carefully and take advantage of the tips when and where you can. Even more, remember that many energy companies offer advice and assistance in each of these areas. These companies can do on-site energy audits, offer incentives on efficient appliances, conduct Internet-based home energy audits, or provide information on using electricity more efficiently in your home. Call or e-mail your local energy company to find out more!



- ▶ The single most important step in residential energy conservation is the installation of thermal insulation. Check current insulation levels, and properly insulate a new or existing home according to the U.S. Department of Energy's (DOE's) specifications for your geographic area. Insulate ceilings, walls, and floors over unconditioned crawl spaces.
- ▶ Double-glazed windows (two panes of glass separated by a sealed air space) cut heat transfer by 40 to 50 percent. In extremely cold regions, triple glazing could be economically justified.
- ▶ Single-glazed windows should have storm windows. A storm window provides a second thickness of glass and a layer of still air that reduces heat transmission markedly.
- ▶ If your doors are old, but still in good condition, install storm doors at the entrances of your house. A storm door helps save energy because it reduces the air infiltration that occurs when the prime door is opened and also reduces the amount of heat transfer through the prime door when it is closed.
- ▶ Weatherstrip and caulk around all entrance doors and windows to limit air leaks that could account for 15 to 30 percent of heating and cooling energy requirements.
- ▶ In the winter, the air is normally dry inside your house. This is a disadvantage because, to be comfortable in dry air, people typically require a higher temperature than they would in a humid environment. Therefore, efficient humidifiers are a good investment for energy conservation.

- ▶ Keep the overhead door of an attached garage closed to block cold winds from infiltrating the connecting door between the house and garage.
- ▶ In a typical home, air leaks can be responsible for 25 to 40 percent of the energy used for heating and cooling.
- ▶ Plug any air leaks before insulating. This will enhance the performance of the insulation. The most common places for air leaks are in your basement and attic.
- ▶ To fix small air leaks, use caulk, foam spray, and weather-stripping. To fix large leaks, use plywood, drywall, or rigid foam insulation. To fix gaps around chimney and furnace flues, use sheet metal and high-temperature caulk.

Energy You'll Save:


Properly caulking and weatherstripping your doors and windows reduce heating and air conditioning usage by 10 to 20 percent.


- ▶ Some of the major air leakage areas for the average home are: air ducts; window sashes and frames; fireplaces; door sashes and frames; plumbing utilities and wall penetrations; furnace flues; attic entrances; wall outlets; and recessed light fixtures.
- ▶ Fireplaces should have tightly fitting dampers that can be closed when the fireplace is not in use. Open dampers allow the natural draft of chimneys to pull warm air out in winter and cool air out in summer.
- ▶ Close fireplace doors when not in use to reduce air infiltration and heat loss.

For more information on air infiltration and insulation, check out the following Web sites: www.insulate.org, www.naima.org, www.nfrc.org, www.energysavers.org, www.energystar.gov, and www.simplyinsulate.org.



- ▶ Air conditioners vary considerably in efficiency and in the amount of energy used. Therefore, select equipment based on its federal energy efficiency rating. For window units, this rating is the Energy Efficiency Ratio, or EER. Depending on the room air conditioner's cooling capacity and reversibility, the minimum federal EER ranges from 8.0 to 9.8. As a general rule, an EER of 11 or more is excellent.
- ▶ Effective October 1, 2013, all ENERGY STAR® room air conditioning units manufactured after that date will be at least 15 percent more efficient than federal standards. New federal energy efficiency standards for room air conditioners will take effect in June 2014.
- ▶ Central air conditioner units are rated on their Seasonal Energy Efficiency Ratio, or SEER. A rating of 14 SEER is excellent, and the minimum cooling efficiency for air conditioners and heat pumps is 13 SEER. All ENERGY STAR® units manufactured after January 1, 2009, have a SEER level of 14.5 and an EER of 12.0.
- ▶ Seek professional help in determining the size of cooling equipment needed. Oversized units should be avoided—not only because they draw more energy than is necessary, but also because they cannot dehumidify properly.
- ▶ Locate the compressor units of central air conditioning and heat pump systems in an outside area that is shaded by the house or by trees and plants. Units should be kept clean and free of any plant or tree overgrowth.
- ▶ Direct sunlight falling on a window air conditioning unit increases its workload. When a choice is possible, locate such units on the north or shady side of the house.

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- ▶ Set the cooling thermostat as high as comfort will permit. The higher the setting, the more energy you will save.
 - ▶ Heating and cooling take up about 50 percent of the typical home's total energy bill, costing the average homeowner more than \$1,000 a year.
 - ▶ Consider installing a programmable thermostat. It can be programmed to a preset schedule, so it saves you money and hassle.
 - ▶ Attics must be ventilated to relieve heat build-up caused by the sun. When planning a new home, install vents of proper size and location to ensure attic ventilation by natural airflow. For existing homes, determine whether attic ventilation is adequate and, if necessary, improve airflow by adding or enlarging vents.
 - ▶ Choose light-colored roof shingles for your house to reflect more of the sun's heat. The darker the shingles, the more heat that will be absorbed during the summer season.
 - ▶ Open windows during the moderate weather of spring and fall for cooling instead of operating air conditioning equipment.
 - ▶ Close cooling vents and turn off window air conditioners in unused rooms. Keep doors to unused rooms closed.
 - ▶ Draw blinds, shades, or drapes to block the sunlight during the hottest part of the day, especially on south- and west-facing windows.
 - ▶ In the cooling season, run kitchen and bath exhaust fans only long enough to rid the house of unwanted water vapor and odors.
 - ▶ Don't position heat-producing devices such as lamps and TV sets beneath a wall-mounted thermostat for a central cooling system. Heat rising from the equipment could cause the thermostat to read a temperature higher than the true room temperature and lead to overcooling.



▶ If you're buying a new heating system, consider a high-efficiency electric air source or ground source heat pump. The energy efficiency is rated according to a federal standard called the Heating Seasonal Performance Factor, or HSPF. Heat pumps with an HSPF of 10 are almost three times more efficient than the most efficient natural gas furnaces. The minimum efficiency for air source heat pumps is 7.7 HSPF.

▶ Ground source heat pumps, or GeoExchange units, use the Earth as a heat source in the winter and as a heat sink in the summer. Ground source heat pumps are rated in terms of Coefficient of Performance (COP) for the winter. The higher the COP, the higher the efficiency of the heat pump. Where gas furnaces have COP values in the 0.78 to 0.94 range, ground source heat pumps have COP values in the 3.1 to 5.4 range.


▶ In the heating season, water vapors from bathing and cooking are beneficial because they help humidify the home. So, use kitchen and bath exhaust fans sparingly in the winter to keep as much heat as possible inside your house.

▶ Locate the heating thermostat on an inside wall and away from windows and doors. Cold drafts will cause the thermostat to keep the system running even when the rest of the house is warm enough.

Energy You'll Save:

Replacing an old central air conditioner (SEER rating of 10 or less) with a new high-efficiency unit (SEER rating of 13 or more) saves at least 25 percent on cooling bills.

Installing a ground source heating and cooling system, such as a GeoExchange system, reduces heating and cooling bills by at least 30 to 50 percent.



Through 2016, you can qualify for a federal tax credit of 30 percent of the equipment cost (including installation costs) with no upper limit if you purchase an ENERGY STAR® qualified geothermal (ground source) heat pump. You must own a home to qualify, otherwise the tax credit does not apply.


Starting September 1, 2012, new minimum efficiency standards for oil, natural gas, and electric boilers took effect. This is the first increase of standards since 1992. For gas hot water and gas steam, an Annual Fuel Utilization Efficiency (AFUE) rating of 82 percent and 80 percent, respectively, is required. For oil hot water and oil steam, an AFUE rating of 84 percent and 82 percent, respectively, is required.

- ▶ Set the heating thermostat as low as comfort permits. For instance, each degree above 68°F can add 3 percent to the amount of energy needed for heating. If you have a heat pump, make sure that the thermostat is designed to operate the heat pump efficiently when raising the temperature after it has been lowered.
- ▶ When entertaining a large group of people during the heating season, lower the thermostat a degree or two before the guests arrive. Otherwise, since people generate heat, the space may become wastefully overheated.
- ▶ Lubricate pump and blower bearings regularly in accordance with manufacturers' recommendations to limit the amount of energy lost to friction and to extend equipment life as well. Close heating vents and radiator valves in unused rooms. Make sure that drapes, plants, or furniture do not block registers for supply or return air.

For more information on heating and cooling, check out the following Web sites: www.geoexchange.com and www.energystar.gov.



- ▶ Select refrigerator and freezer sizes that are just large enough for your family's needs. Energy usage is proportional to cubic feet of refrigerated space, regardless of whether all of the space is utilized.
- ▶ Consider replacing your refrigerator or freezer **BEFORE** it breaks down. Look for the ENERGY STAR® label when shopping for refrigerators or freezers. On average, ENERGY STAR® refrigerators use 15 percent less energy than units meeting the minimum federal standard.
- ▶ **NEVER** put a second refrigerator in the garage. In the winter months, frozen foods may melt (as the temperature sensor in the refrigerator will not activate the compressor if the temperature in the garage is 42°F or lower). In the summer months, the temperature in the garage can easily exceed 100°F, and the refrigerator has to work extra hard to keep food cold. If you need a second unit, place it in your basement.
- ▶ On older units, vacuum clean the condenser coils of refrigerators and freezers (in the back or at the bottom of cabinets) every three months or so. Dust-covered coils impair the efficiency of compressor operation and increase energy usage.
- ▶ Door gaskets on refrigerators and freezers should seal tightly against the frames to prevent infiltration of warm air. To check the condition of the gasket, place a dollar bill against the frame and close the door. If the bill can be pulled out with a very gentle tug or, worse still, simply drops out on its own, the door requires adjustment or the gasket needs to be replaced.

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- ▶ Don't keep your refrigerator or freezer colder than necessary. For the food compartments, recommended temperatures are 37-40 degrees for the refrigerator and 5 degrees for the freezer.
 - ▶ Some older refrigerators are furnished with a power-saver switch. A heating element provides a small amount of heat that prevents moisture condensation around the edges of the door. Try turning the switch off; condensation, if any, may be slight and unobjectionable. If this is the case, save energy by keeping the switch turned off.
 - ▶ When buying a new refrigerator, look for new energy-saving features such as improved insulation materials. These features can save as much as 5 percent in annual consumption of electricity.
 - ▶ Do not place uncovered liquids in refrigerators. In addition to absorbing undesirable flavors, the liquids give off vapors that add to the compressor workload.
 - ▶ Allow hot foods or liquids to cool off before placing them in the refrigerator. The cooling-off period should not hurt the taste of the food and will reduce the load on the refrigerator. Discard any uncooked food that has remained at room temperature for more than two hours. Plan ahead and remove all ingredients for each meal at one time. Each time the door of a refrigerator or freezer is opened, its compressor has to run a bit longer to replace the cold air that spills out.
 - ▶ Chest-type freezers are less likely to lose cold air when doors are opened than upright freezers.
 - ▶ For the same storage capacity, chest-type freezers use anywhere from 11 to 27 percent less energy than upright freezers.

For more information on refrigeration, check out the following Web sites: www.aham.org and www.energystar.gov.



Range Tops

- ▶ To cook efficiently, heat must be transferred from the electric cooking element to the food with minimum loss to the surroundings. To help do this, select pots and pans with absolutely flat bottoms. Spherical bottoms leave an air gap that provides a ready escape route for heat.
- ▶ Expand your family's menus to include stews and other single-dish meals that can be prepared in a slow cooker. Such meals require far less energy than those calling for the simultaneous use of the oven plus two or three surface units.
- ▶ Based on DOE data, typical gas cooktops are 15.6 percent efficient, while electric coil cooktops are 73.7 percent efficient, and electric smooth cooktops are 74.2 percent efficient.
- ▶ Develop the habit of "lids-on" cooking. Tightly fitted lids help keep heat within pots and pans, permitting the use of lower temperature settings and shorter cooking times.
- ▶ Reflector pans beneath stovetop-heating elements should be kept bright and clean. Shiny pans help to focus heat rays on utensil bottoms; dull or soiled pans absorb heat wastefully.
- ▶ Begin cooking on highest heat until liquid begins to boil. Then lower the heat-control setting and allow food to simmer until fully cooked.

Ovens

- ▶ Use your microwave whenever possible. Microwaves draw less than half the power of their conventional counterparts and cook for a much shorter period of time. For example, an item that needs to be cooked in a full-sized oven at 350°F for one hour will take only 15 minutes to cook in a microwave on the “high” setting.
- ▶ Rather than using the oven for preparing small quantities of food, consider cooking in small portable electric appliances such as a frying pan, grill, or toaster oven. On average, these use only about one-third of the electric power of an oven broiler.
- ▶ When operating an electric oven, attempt to cook as much of the meal in it at one time as possible. Foods with different cooking temperatures can often be cooked simultaneously at one temperature—variations of 25 degrees in either direction still produce good results and save energy.
- ▶ When preheating an oven for baking, time the preheat period carefully. Five to eight minutes should be sufficient. There is no need to preheat for broiling or roasting.
- ▶ Rearrange oven shelves before turning the oven on. To do this after the oven has preheated not only allows wasteful escape of heat, but poses a burn hazard as well.
- ▶ According to DOE data, standard gas ovens are 3.0 percent efficient. Electric ovens are 10.7 percent efficient. Microwaves are 55.7 percent efficient, or almost 19 times more efficient than gas ovens.
- ▶ When roasting or baking, avoid making frequent progress checks that involve opening the oven door. Each time the door is opened, a considerable portion of the oven’s heat escapes.

Energy You'll Save:

Using a microwave can reduce your energy used for cooking by more than 50 percent.

- ▶ Activate the self-cleaning cycle on an electric oven only for major cleaning jobs. Wipe up minor spills and splatters with a damp cloth. When self-cleaning is necessary, start the cycle right after cooking, while the oven is still hot, or wait until late evening hours when use of electricity is lowest. If you are billed on a "time-of-use" or "time-of-day" rate, electric rates are usually lower during late evening hours as well, which will reduce the cost of using the self-cleaning cycle.
- ▶ NEVER use an open oven as a room heater or as a source of warm air for drying rain-dampened outerwear. If the kitchen is furnished with the type of refrigerator or freezer that exhausts warm air through a front floor-level grille, damp shoes can be dried quite nicely and at no extra energy cost by placing them on the floor near the grille.



One of the biggest energy users in your home, next to heating and cooling systems, is your hot water heater or system, using 14 to 25 percent of your total energy usage.

- ▶ Make sure your new water heater is energy efficient with an Energy Factor (EF) of 0.95 EF for an electric 55 or below-gallon unit, 0.615 EF for a gas 55 or below-gallon unit, and 0.62 EF for an oil 55 or below-gallon unit.
- ▶ It is important to keep the system properly maintained. Once or twice a year, drain a bucket of water out of the bottom of the heater tank because it can be full of sediment. The sediment insulates the water in the tank from the heating element, which wastes energy.
- ▶ In addition, you might want to invest in a relatively inexpensive water heater insulation kit. Older hot water tanks (except super-insulated tanks) generally are not insulated very well, so an extra layer of protection will keep the heat from being lost through the walls of the tank. Be sure to read the instructions on the kit carefully. Do not insulate over any doors, vents, or relief valves.
- ▶ When buying a water heater, it is wise to correctly estimate your needs. Don't buy a water heater that is too large for your family, but you should consider your future needs as well as your present requirements. Demands for hot water will be greater as the size of your household increases, as your children become older and begin to take showers or soak for hours in a full tub of water, and as certain new appliances (such as hot tubs or Jacuzzis) are added.


Energy You'll Save:

Lowering your water heater temperature setting from 140°F to 120°F can reduce your water heating energy bill by more than 10 percent.

- ▶ Some water heaters now have external solid-state controls that allow you to lower temperature settings, such as by creating a "vacation" setting. Look for and take advantage of these features.
- ▶ In sprawling ranch houses or in residences with two or three levels, the rooms requiring hot water may be widely separated. It may be possible to get better hot water service with less use of electricity by having two or more water heaters—one heater in each principal water-using area—instead of one heater in a central location.
- ▶ Repair leaky faucets promptly. A steady drip of hot water can waste many gallons of water per month, plus the energy needed to heat the water.
- ▶ Consult with a plumber to determine if your water heater meets the needs of your family. This table includes the electric water heater sizes usually considered adequate for various family sizes:

Family Size	Electric Water Heater Capacity
1 to 4	30 to 50 gallons
4 to 7	50 to 80 gallons
7 or more	80 gallons or more

- ▶ Letting the water run while shaving or when washing dishes by hand is needless waste. Avoid this by using sink stoppers and dishpans.
- ▶ Encourage family members to take showers rather than baths. The average person will use about half as much hot water in a shower as in a bath.



Through 2016, you can qualify for a federal tax credit of 30 percent of the equipment cost (including installation and labor costs) on a solar water heater. All ENERGY STAR® solar water heaters qualify, but renters cannot take advantage of this incentive.

- ▶ The standby heat loss of a water heater increases with temperature. So, set the temperature control of your water heater at a moderate 120°F, or as low as possible without running out of hot water. If you need hotter water for certain functions, such as dishwashing, consider a dual-temperature system. Such systems employ a central unit supplying 120°F or lower temperature water for general purposes, plus a second, smaller water heater set for a higher temperature.
- ▶ Locate water heaters as close to the points of hot water use as possible. The reason for this is that any hot water that remains in a supply pipe after a tap or valve is closed eventually cools off and is wasted. The longer the supply pipe, the more heat that is lost.
- ▶ If your water heater is more than 10 years old, consider replacing it with high-efficiency qualified heaters. You do not want to be left without a water heater when it does fail. Planning ahead will save you money, energy, and time.
- ▶ When long lengths of hot water supply pipe are unavoidable, insulate them to reduce losses. Hardware stores sell hot water pipe insulation kits.


For more information on water heating, check out the following Web sites: www.ahrinet.org and www.energystar.gov.




New energy standards are being implemented through 2014 that require light bulbs to use 28 percent less energy in order to consume less energy (watts) for the amount of light produced (lumens). As of January 2012, traditional 100-watt bulbs were replaced by 72-watt bulbs to meet the standards. In 2013, 75-watt bulbs will be subjected to the standards, and beginning in 2014, 60-watt and 40-watt bulbs also will be included.

In July 2012, new efficiency standards were implemented regarding incandescent reflector lamps and general service fluorescent lights, which basically eliminate lights with the lowest efficiency and the lowest initial cost.

- ▶ Provide “task” lighting (over desks, tool benches, craft tables, etc.) so that work and leisure activities can be done without illuminating entire rooms.
- ▶ Select the type of light bulb on the basis of its efficiency. Compact fluorescent bulbs will give an incandescent bulb’s warm soft light, while using 75 percent less electricity. They also last about 8 to 10 times longer. Use these bulbs in fixtures or lamps that are on for more than two hours each day.
- ▶ If you don’t like the “look” of compact fluorescent lighting, consider high-efficiency halogen lighting. For example, a 100-watt incandescent bulb can be replaced by a 72-watt or 70-watt halogen bulb. A 60-watt incandescent bulb can be replaced by a 42-watt or 40-watt halogen bulb.
- ▶ Consider using LED light bulbs, especially in hard-to-reach fixtures. A 60-watt incandescent bulb can be replaced by a 7.5 to 12-watt LED bulb that will have a rated lifetime of more than 25,000 hours.

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- ▶ Some compact fluorescent and LED bulbs can be used with dimmer switches. Check the package to make sure. Where possible, consider using dimmable LED or compact fluorescent bulbs. However, do not use them with non-dimmable switches.
 - ▶ Instead of using a 190-watt halogen torchiere to light up a room, consider a compact fluorescent torchiere that will produce as much light, and use less than 70 watts.
 - ▶ When possible, place floor, table, and hanging lamps in the corner of a room rather than against a flat wall. Lamps in corners reflect light from two wall surfaces instead of one and, therefore, give more usable light.
 - ▶ The reflectance of interior surfaces has an important bearing on lighting efficiency. In home decoration, therefore, choose lighter colors for walls, ceilings, floors, and furniture. Dark colors absorb light and require higher lamp wattage for a given level of illumination. Light-colored surfaces should be kept clean to keep reflectance levels high.
 - ▶ In lamps and fixtures having two or more sockets for incandescent bulbs, consider using a single large bulb in one socket rather than filling all sockets with bulbs of smaller wattage. A 72-watt bulb, for instance, produces 35 percent more light than four 25-watt traditional incandescent bulbs for the same amount of energy. Using compact fluorescent bulbs will save more energy. Typically, a 23-watt compact fluorescent bulb can replace a 90- or 100-watt incandescent bulb or a 72-watt halogen bulb.
 - ▶ Many so-called “long life” bulbs emit significantly less light than a standard incandescent bulb of the same wattage. They should be used only where the long-life feature is advantageous, as in hard-to-reach fixtures, or where it is not possible to use compact fluorescent or LED bulbs.



Note: Federal law mandates that the maximum power use of torchiere light fixtures can be no more than 190 watts. If you purchase a torchiere, make sure that your fixture meets this requirement.

- ▶ Clean lighting fixtures regularly. Dust on lamps and reflectors impairs lighting efficiency.
- ▶ For large areas such as family recreation rooms, where high levels of lighting are required periodically but not 100 percent of the time, install fixtures on two or three separate circuits so illumination can be controlled by switching circuits on and off.
- ▶ To ensure that outdoor lighting is turned off during the daytime, install photoelectric controls or timers.
- ▶ Consider using compact fluorescent bulbs in outdoor fixtures. Many bulbs will produce light down to an outdoor temperature of 0°F. Check to see if they are compatible with photoelectric controls or timers.
- ▶ If you are on vacation and have a timer on a lamp for security reasons, use a compact fluorescent bulb to save energy. Make sure the timer is compatible with the bulb.
- ▶ For holiday lighting, consider using LED lights. Not only will LED lights reduce electric use by more than 90 percent compared to traditional incandescent holiday light bulbs, they will last more than 25,000 hours.

More information about high-efficiency lighting is available through lighting manufacturer Web sites and at www.energystar.gov.




Washing Machines

A new federal efficiency standard for clothes washers took effect in January 2011. Make sure your new clothes washer meets or exceeds this standard, which is a Modified Energy Factor, or MEF, of 1.26, and a water factor of 9.5 or less. (A water factor is the number of gallons of water used per cubic feet of clothes washed. For example, if a clothes washer uses 21 gallons and washes 3.0 cubic feet of clothes, the water factor is 7.0.)

On March 7, 2015, the standards will change again, and require a top loading washer to have a minimum Integrated Modified Energy Factor (IMEF) of 1.29 and a maximum Integrated Water Factor (IWF) of 8.4. A minimum IMEF of 1.84 and maximum IWF of 4.7 will be required for a front-loading washer.

- ▶ Look for ENERGY STAR® clothes washers, which typically use 25 percent less energy than washers that meet the minimum federal standards and use 35 percent less water than regular washers.
- ▶ Follow detergent instructions carefully. Oversudsing actually hampers effective washing action and may require more energy in the form of extra rinses.
- ▶ If you are in the market for a new washing machine, consider using a front-loading or horizontal axis washing machine. According to studies by DOE, these new units use at least 20 percent less water and 40 percent less energy to make hot water and wash clothes than regular top-loading washing machines. They are also gentler on fabrics.

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- ▶ Set the wash temperature selector to cold or warm and the rinse temperature to cold as often as possible. Sort laundry and schedule washes so that a complete job can be done with a few cycles of the machine carrying its full capacity rather than a greater number of cycles with light loads.
 - ▶ In terms of features, when shopping for a clothes washer, look for several water level options (to adjust to different loads). Also, look for pre-soaking and suds-saver options.
 - ▶ Washing machines with higher spin speeds can extract more water and reduce drying time, which saves more energy.

Clothes Dryers

On January 1, 2015, new efficiency standards for clothes dryers will go into effect based on the combined energy factor (CEF), which includes standby energy consumption.

- ▶ Avoid over-drying. This not only wastes energy, but harms fabrics as well.
- ▶ Many dryers have settings that allow an automated moisture sensor to reduce the drying time. Dryers with automated moisture sensors may have a buzzer or other sound system to let you know when clothes are dry. Use the sound system to minimize drying time.
- ▶ To save energy, try not to run the electric dryer unless it is carrying its rated poundage of clothes. Don't overload, however, since this causes excessive wrinkling and perhaps requires an added amount of ironing.
- ▶ Dry towels and heavier cottons in a separate load from clothes with lighter weights.



In May 2013, new efficiency standards went into effect for standard-size and compact dishwashers. For standard-size units, the efficiency standards are a maximum of 5 gallons of water per cycle and a maximum usage of 307 kilowatt-hours (kWh)/year.

- ▶ Overall, dishwashers use less water than washing dishes by hand. For a full load of dishes in the dishwasher, washing the same dishes by hand would typically use at least 6 more gallons of hot water.
- ▶ Be sure that your dishwasher is full, but not overloaded.
- ▶ Don't use the "rinse hold" feature on your dishwasher when you only have a few soiled dishes.
- ▶ Look for dishwashers with internal booster heaters, so that you can set your water heater thermostat at 120°F (rather than 140°F or higher for dishwashing purposes). Most new dishwashers have this feature.
- ▶ Look for the ENERGY STAR® label when purchasing a new dishwasher. New criteria went into effect in January 2012, which made ENERGY STAR® units more than 10 percent more energy efficient and 12 percent more water efficient than baseline 2012 units.
- ▶ Many dishwashers have an option for "air drying" or "heated drying." The "air drying" setting will use less energy.

For more information on high-efficiency dishwashers, check out the following Web sites: www.aham.org and www.energystar.gov.





Other Electronics & Appliances

- ▶ The typical U.S. home now has, on average, 25 electronic products, 99 percent of which must be plugged in or recharged. Turn off these products when they're not in use. Or, use a power strip as a central "turn off" point when you're finished using equipment. This will help to eliminate the standby power consumption used by many electronics even when they are turned off. Unplug any battery chargers or power adapters when electronics are fully charged or disconnected from the charger.
- ▶ In the market for a new television? Once you decide on the size, remember that an LCD TV will typically use less electricity than a plasma TV.
- ▶ The average new plasma TV uses about 301 watts, while an average LCD TV uses 111 watts. If the TV is used for 3 hours per day, the plasma TV will use about 330 kWh per year and cost about \$38.94 to operate, while the LCD TV will use about 122 kWh per year and cost about \$14.40 to operate (based on a national average cost of 11.8 cents per kWh).
- ▶ LED backlit LCD televisions only use 101 watts. These newer LCDs use energy efficient LEDs to light up the TV screen instead of the standard fluorescent backlights.
- ▶ Some TVs have a "quick start" option, which makes the TV turn on more quickly when you press the power button. However, this option uses much more power in the "standby mode"—typically 25 to 50 watts, compared to the normal standby mode usage of 1 to 3 watts. If you don't mind waiting for a few seconds, turn off this option to save energy.

- ▶ With an LCD TV, turn down the LCD backlight. By turning down the backlight, you'll lower power consumption and also make the TV less bright. However, many LCD TVs are set on a "retail" setting, which is the brightest setting for use in retail stores. Most LCD TVs have a "home" setting, which is more appropriate for home use and will save energy.
- ▶ 3D televisions typically use more power than 2D televisions. Tests with plasma televisions show that the 3D versions use approximately two times more power than the 2D versions. This is most likely due to the brighter screen needed for the 3D televisions.
- ▶ Some TVs come with a power-saver mode that is designed to reduce energy consumption. Performance of this mode varies from model to model. The power-saver mode usually makes the TV less bright, but this also can help with image quality, especially with the room lights turned off.
- ▶ If you need a digital-to-analog converter box for your TV, make sure to look for the ENERGY STAR® label. Converter boxes that have this label use no more than 8 watts in the "on" mode and 1 watt in the "sleep" mode. They also power down automatically within a few hours of not being used.
- ▶ Look for the ENERGY STAR® label when shopping for a variety of electronics and appliances, such as dehumidifiers, ceiling fans, battery chargers, DVD players/recorders, Blu-ray players, cordless phones, home stereo systems, cable boxes, or set-top boxes.



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- ▶ Computer screen savers may save screens, but they do not save energy. Make sure that the screen saver does not deactivate your computer's sleep mode. You can set the computer to operate the screen saver, then go into the sleep mode.
 - ▶ If you are not going to use your personal computer for more than 20 minutes, turn off your monitor. If you are not going to use your computer for more than 2 hours, turn off your monitor and CPU. It takes a lot more energy to have your computer running than the energy it takes to start it.
 - ▶ Save energy—and space—with a multi-function device that combines several capabilities—such as print, fax, copy, and scan. Enable power management features for additional savings. Turn off the machines when not in use.
 - ▶ Different video game consoles use different amounts of energy. Consider this factor when using or buying a console. A study by the Electric Power Research Institute showed after an hour of active play, the PlayStation 3 used an average of 84.8 watts, the Xbox 360 used 87.9 watts, and the Nintendo Wii used 13.7 watts.
 - ▶ It is important to turn off your video game console when it is not in use. Most game consoles use as much energy in the “idle” mode as in the “active” or “game on” mode. The annual electricity usage for a video game console that is always turned on is nearly 10 times as much as a console that is turned off when not in use.
 - ▶ Unplug chargers of appliances from outlets when they are not being used or if they are fully charged. Leaving unused appliances and chargers plugged in wastes energy because they are on standby mode, which is still using electricity.



▶ The power-saving mode on smart phones does not actually save much power at all, it just shuts off the phone's screen. The phone actually is in idle mode, which means it is still constantly looking for a clear signal and incoming data. The best thing to do to save energy on your phone is to turn it off when it is not in use.

▶ To save battery life on your smart phone, be sure to properly close applications that you are not using.

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