

Energy Saving Tips

From the American Council for an Energy-Efficient Economy
<http://www.aceee.org/consumerguide/checklist.htm>

Energy Saving Tips - Refrigerator

Minimize the energy consumption of your existing refrigerator by following these tips.

- **Check Door Seals**
Check the door seals or gaskets on your refrigerator/freezer. You can do this by putting a dollar bill in the door as you close it and see if it holds firmly in place. Or, put a bright flashlight inside the refrigerator and direct the light toward a section of the door seal. With the door closed and the room darkened, inspect for light through the crack.
- **Adjust the Thermostat**
The refrigerator compartment should be kept between 36°F and 38°F, and the freezer compartment between 0°F and 5°F.
- **Move the Refrigerator to a Cooler Location**
If your refrigerator is in the sunlight or next to your stove or dishwasher, it has to work harder to maintain cool temperatures.
- **Check Power-Saver Switch**
Many refrigerators have small heaters built into the walls to prevent moisture from condensing on the outer surface — as if the refrigerator doesn't have to work hard enough already! On some units, this feature can be turned off with an energy-saver or power-saver switch. Unless you have noticeable condensation, keep this switch on the energy saving setting.
- **Minimize Frost Build-Up**
Manual defrost and partial automatic defrost refrigerators and freezers should be defrosted on a regular basis. The buildup of ice on the coils inside the unit means that the compressor has to run longer to maintain cold temperatures, wasting energy. If you live in a very hot, humid climate and don't use air conditioning, defrosting may be required quite frequently with a manual defrost model. After defrosting, you might be able to adjust the thermostat to a warmer setting, further saving energy.
- **Manage Your Food and Storage Space**
To keep your refrigerator from working too hard, let hot foods cool, cover foods, label items for quick identification, and keep your freezer full.

Energy Saving Tips - Dishwasher

Whether you are buying a new dishwasher or using an existing one, you may be able to save a considerable amount of energy by changing the way you operate it.

- **Avoid Hand-Washing**
Studies are showing more and more that, when used to maximize energy-saving features, modern dishwashers can outperform all but the most frugal hand washers.
- **Scrape, Don't Rinse**
Studies show that most people pre-rinse dishes before loading them into the dishwasher, even though dishwashers purchased within the last 5–10 years do a superb job of cleaning even heavily soiled dishes. If you find you must rinse dishes first, get in the habit of using cold water.

- **Follow Manufacturer Instructions**
Completely fill the racks to optimize water and energy use, but allow proper water circulation for adequate cleaning.
- **Wash Only Full Loads**
The dishwasher uses the same amount of water whether it's half-full or completely full, so nothing will save more energy than waiting to run your dishwasher. If you find that it takes a day or two to get a full load, use the rinse and hold feature common on newer models. This will prevent build up of dried-on food while saving time and water compared to pre-rinsing each item. The rinse feature typically uses only 1 to 2 gallons of water.
- **Use Energy-Saving Cycle Options**
Pay attention to the cycle options on your dishwasher and select the cycle that requires the least amount of energy for the job. Use the no-heat air-dry feature on your dishwasher if it has one.
- **Turn Down the Water Heater Temperature**
Since the early 1990s, most dishwashers in the U.S. have been sold with built-in heaters to boost water temperature to 140–145°F, the temperature recommended by manufacturers for optimum dishwashing performance. The advantage to the booster heater is that you can turn down your water heater thermostat to 120°F (typically half-way between the “medium” and “low” settings).

Energy Saving Tips - Laundry

Optimize Load Size

It is important not to underload or overload either your washer or dryer. Most people tend to underload their washers rather than overload — particularly with conventional top loaders

- **Use Lower Temperature Settings**
Use cold water for the wash cycle instead of warm or hot (except for greasy stains), and only use cold for rinses. Experiment with different laundry detergents to find one that works well with cooler water.
- **Use Energy-Saving Features**
If your dryer has a setting for auto-dry, be sure to use it instead of the timer, to avoid wasting energy and overdrying, which can cause shrinkage, generate static electricity, and shorten the life of your clothes.
- **Reduce Drying Time**
If you can't air-dry your laundry, save on drying time by drying similar fabrics together, drying multiple loads in quick succession (to take advantage of residual heat), and make sure to clean the dryer filter after each use.

Energy-Saving Tips for Cooking

- **Match the Cooking Method to the Meal**
Methods of cooking that minimize the area that must be heated (a toaster oven versus an oven, for example) save energy. On the other hand, sometimes the most efficient cooking methods (like the microwave) will sacrifice food quality. The trick is to find the right

balance, or an appliance explicitly designed for a particular type of meal (crockpot, rice-cooker, etc)

- **Match the Pan Size to the Element Size**
For example, when using an electric cooktop, a 6" pan on an 8" burner will waste over 40% of the heat produced by the burner.
- **Buy Sturdy, Flat-Bottomed Cookware**
The ideal pan has a slightly concave bottom — when it heats up, the metal expands and the bottom flattens out. An electric element is significantly less efficient if the pan does not have good contact with the element. For example, boiling water for pasta could use 50% more energy on a cheap, warped-bottom pan compared to a flat-bottom pan.
- **Use High-Conductivity Materials**
Certain materials also work better than others and usually result in more evenly cooked food. For instance, copper-bottom pans heat up faster than regular pans. In the oven, glass or ceramic pans are typically better than metal—you can turn down the temperature about 25°F and cook foods just as quickly.
- **Keep Your Stovetop Clean and Shiny**
Believe it or not, when burner pans become blackened from heavy use, they can absorb a lot of heat, reducing burner efficiency. You want them to remain shiny so they reflect heat up to the cookware.
- **Reduce your Cooking Time...**
 - ...before you start*, by defrosting frozen foods in the refrigerator before cooking. With conventional ovens, keep preheat time to a minimum.
 - ...while you cook*, by keeping oven racks clear. Don't lay foil on the racks and, if possible, stagger multiple pans to improve air flow. Avoid peeking into the oven as you cook. On an electric burner or in the oven, turn off the heat just before the cooking is finished to prevent overcooking.
 - ...next time*, by cooking double portions so all you have to do is reheat prepared food. Also, use the self-cleaning option in your oven infrequently and only after you've cooked a meal so it can use the residual heat.

Energy Saving Tips - Lighting

- **Make Use of Natural Daylighting**
Rearrange furniture to maximize daylight useful for reading, cooking, or other work. Also consider painting your walls a lighter color so that light is reflected back into the room and not absorbed into the walls.
- **Reduce Background Light Levels and Rely More on Task Lighting**
Concentrate light just where it's needed by keeping ceiling lights turned off and by using smaller track lights and table or floor lamps.
- **Switch to Compact Fluorescent Lamps**
This is the simplest way to shave significant amounts off electricity bills.
- **Use Linear (Tube) Fluorescent Lighting Where Design Permits**
Linear fluorescents are not just for basements and garages anymore! New high-efficiency

tube fluorescent fixtures, both direct and indirect, can be a great lighting design option for kitchens, livingrooms, and other living spaces.

- **Turn Lights Off and/or Install Sensors**
If you can't get in the habit of turning lights off, install occupancy sensors that will turn lights on and off when you enter and leave a room. Other control options include light-sensors (for outdoor fixtures), timers, and dimmers. Check the packaging of a CFL to determine whether it will work with a dimmer.
- **Check with your local utilities**
Some utilities subsidize customer purchases of compact fluorescents lamps as part of demand-side management programs.

Home Electronics

The energy use of electronic equipment often goes unnoticed. But as it turns out, an estimated 10% to 15% of all electricity used in American homes can be attributed to the buzz of electronic devices. The vast majority is consumed by home entertainment systems and home office equipment. But small energy users, including portable devices with battery chargers, make up a significant share—not because they use a lot of energy individually, but because of their sheer numbers.

Step 1. [Understanding Power Modes](#)

Step 2. [Reducing Energy Use](#)

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Understanding Power Modes

To minimize the energy used by home electronics, it is helpful to understand the true meaning of “on” and “off” as applied to electronics. It's rarely that simple! Unlike a light switch that turns a lamp or fixture on or off, many electronics products operate in two, three, or even four modes, and even continue to draw power when apparently turned off.

Mode	Definition	Examples
Active (In-Use)	Appliance is performing its primary function.	TV displays picture and/or sound. VCR records or plays back tape. Printer prints document.
Active standby	Appliance ready for use, but not performing primary function. Appears on to consumer.	DVD player on but not playing. Cordless appliance charging.
Passive standby	Appliance is off/standby. Appears off to consumer, but can be activated by remote control OR is performing peripheral function.	Microwave not in use, but clock is on. CD player off, but can be turned on with remote control.
Off	Appliance is turned off and no	Computer speakers are off,

	function is being performed. Consumer cannot activate with remote control.	but plugged in. TV is not functioning and cannot be turned on with remote.
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Below is a table of common electronic equipment and the average energy used in each mode and per year (in order from most energy-intensive to least)

Product	Passive Standby or Off (watts)	Active Standby (watts)	Active (watts)	Average Annual Energy Use (kWh)
Home Entertainment				
Plasma TV (<40")	3	-	246	441
DVR/TiVo	37	37	37	363
Digital Cable	26	26	26	239
Satellite Cable	12	11	16	124
CRT TV (<40")	1	-	73	123
LCD TV (<40")	3	-	70	77
Video Game Console	1	-	24	16
DVD	1	5	11	13
Home Office				
Desktop Computer	4	17	68	255
Laptop Computer	1	3	22	83
CRT Monitor	2	3	70	82
LCD Monitor	1	2	27	70
Computer Speakers	2	-	7	20
Modem	5	-	6	50
Wireless Router	2	-	6	48
USB Hub	1	-	3	18
Printer	2	3	9	15
Fax	4	4	4	26
Mutli-Function Printer/Scanner/Copier	6	9	15	55
Rechargeable Devices				
Power Tool	4	-	34	37
Hand-Held Vacuum	3	-	3	29
Cordless Phone	2	3	5	26
Electric Toothbrush	2	-	4	14
Shaver	1	-	1	11
MP3 Player	1	-	1	6
Cell Phone	0	1	3	3
Digital Camera	0	-	2	3

Source: ECOS Consulting, 2006: *Final Field Research Report for the California Energy Commission*

Reducing Energy Use – Consumer Appliances

There are several steps you can take now to minimize the energy used by the electronics in your home:

- **Unplug It.** The simplest and most obvious way to eliminate power losses is to unplug products when not in use. Search the wall sockets in your house for hidden un-connected chargers and other devices that don't need to be plugged in. When you detach your cell phone or similar device from its charger, unplug the charger too.
- **Use a Power Strip.** Plug home electronics and office equipment into a single power strip with an on/off switch. This will allow you to turn off all power to the devices in one easy step. But remember to keep your power strip in an easy-to-reach location! Once the power strip is turned off, no power will be delivered to the outlets, thereby eliminating power wasted by power supplies. One caveat: home entertainment equipment such as TVs, cable and satellite boxes, and DVRs will need to be reprogrammed or given time to reboot and download information when turned back on. You may want to plug these devices into a separate strip and only turn them off when you plan to be away for more than a few days.
- **Use a Power Meter.** Use a power meter to find your leading sources of energy consumption to help you to prioritize which products to unplug or to replace. Plug these devices in between a given appliance and the wall socket to see how much electricity it is using. Two models to look for are the Kill A Watt™ and the Watts Up? Pro Power Meter. For an even more sophisticated, big-picture look at your home's real-time electricity use, you might also consider purchasing a power use monitor. These devices are programmed to read information from your electric meter and communicate the real-time changes in use through an easy-to-read screen. Some good monitors to look for are [The Energy Detective \(TED\)](#), the [Power Cost Monitor](#), and the [Cent-A-Meter](#).
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Buying New Electronics

Home Entertainment Equipment

- Look for the [ENERGY STAR](#) when purchasing a new TV, DVD Player, VCR, audio system, or digital-to-analog converter box. The ENERGY STAR label ensures low **standby power use** for these appliances — in most cases only 1 watt or less.
- As of January, 2008, the ENERGY STAR label for **TVs** will indicate low **active-mode power use** as well (when the TV is actually on). Under 40 inches, choose a TV with an LCD screen. The average plasma TV uses more energy per year than a modern refrigerator. We do not recommend purchasing any TV with a screen greater than 40 inches at this time.

Computers and Home Office Equipment

- Look for the [ENERGY STAR label](#) on any new PCs, printers, faxes, and copiers. Current specifications set maximum power levels for sleep mode power consumption (and, in the case of monitors, active mode power) as well as requirements for power management features.
- Remember, you must enable the [power management features](#) on your computer and monitor in order to save energy.

External Power Supplies

- Electronic products run on low-voltage direct current (DC) and therefore require power supplies to transform the 120-volt alternating current (AC) supplied at the power outlet. Some larger products, like TVs, stereos and set-top boxes, incorporate the power supply into the body of the product. Others use external power supplies, the familiar “wall packs” that increasingly compete for space in our outlets and power strips. These power supplies consume electricity as long as they are connected to a power outlet, whether or not the product is on or off, and even if it is disconnected! You'll know a wall pack is using energy when it has been plugged in for a while and it is warm to the touch.
- A number of manufacturers now offer high-efficiency power supplies (typically “switch-mode” power supplies) and a growing number of products are sold with these improved devices. The best of these devices boast efficiency levels of more than 90%, whereas the worst performers are only 20-40% efficient (meaning they waste more than half of the electricity that passes through them!).
- High efficiency power supplies are much smaller and lighter than the wall-pack power supplies they replace, saving room under your desk and in your briefcase. [ENERGY STAR-qualified power supplies](#) are now available and are being sold with a growing number of electronics products. For more information, check out EfficientPowerSupplies.org