MORE THAN 100 WAYS TO IMPROVE YOUR ELECTRIC BILL

EEI Edison Electric INSTITUTE

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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 about 75% just by replacing your oldest incandescent light bulbs with compact fluorescent bulbs or by about or more than 85% with 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, refrigeration, and consumer electronics.

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!

One web-based resource that shows energy company programs is https://programs.dsireusa.org/system/program.

AIR INFILTRATION

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.

There are federal tax credits if you install insulation in your home. For qualifying products, the tax credit is 30% of project cost, up to $1200. More information on this tax credit can be found at https://www.energystar.gov/about/federal_tax_credits/insulation.

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 you replace old windows, you can receive a federal tax credit of 30% of the project cost up to $600. Exterior windows or skylights meeting the "ENERGY STAR Most Efficient" criteria are eligible for the tax credit. More information can be found at https://www.energystar.gov/about/federal-tax-credits/windows-skylights.

If you replace old doors, you can receive a federal tax credit of 30% of the project cost up to $250 per door, and up to $500 per year. Exterior doors have to be ENERGY STAR certified to qualify. More information is available at https://www.energystar.gov/about/federal-tax-credits/exterior-doors.

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.

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.

ENERGY YOU'LL SAVE:

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

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, efficient windows and insulation, check out the following Web sites: www.insulate.org, www.naima.org, www.nfrc.org, www.energy.gov/energysaver/energy-saver, and www.energystar.gov.

HEATING & COOLING

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 new federal standard implemented in June 2014, known as the Combined Energy Efficiency Ratio, or CEER. Depending on the room air conditioner's cooling capacity and other features, the minimum federal CEER ranges from 8.7 to 11.0. As a general rule, a CEER of 12 or more is excellent.

ENERGY STAR® room air conditioning units are at least 15% percent more efficient than current federal standards. New federal energy efficiency standards for room air conditioners took effect in June 2014.

Updated efficiency standards for central air conditioners went into effect on January 1, 2023. Central air conditioner units are rated on their Seasonal Energy Efficiency Ratio, or SEER2. A rating of 15 SEER2 is excellent while the minimum cooling efficiency for air conditioners is 13.4 SEER2 in the northern states of the U.S. and 14.3 SEER2 in the southern states. For larger systems in the south (at least 45,000 Btu/hour cooling capacity), the new requirement is 13.8 SEER2. All ENERGY STAR® split system units have a SEER level of at least 15.2 SEER2 as well as having an Energy Efficiency Ratio (EER2) of at least 12.0 EER2.

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.

There are federal tax credits for installing high-efficiency central air conditioners. The tax credit is 30% of project cost up to $600. For split systems, ENERGY STAR certified air conditioners with SEER2 > 16.0 are eligible. All ENERGY STAR

certified packaged systems are eligible for the tax credit. More information is available at https://www.energystar.gov/about/federal-tax-credits/central-air-conditioners.

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.

Set the cooling thermostat as high as comfort will permit. The higher the setting, the more energy you will save.

ENERGY YOU'LL SAVE:

If you install a new ground source heat pump at your house in 2024, you will be eligible for a 30% tax credit of the cost of the system, including installation. Existing homes and new construction qualify. Both principal residences and second homes qualify. More information is available at https://www.energystar.gov/about/federal_tax_credits/geothermal_heat_pumps.

Heating and cooling take up about 50 percent of the typical home's total energy bill, costing the average homeowner more than $700 a year.

Consider installing a basic programmable thermostat or an advanced "smart" thermostat. With programming to preset schedule, or adapting to your schedule, they save you money and hassle.

Attics must be ventilated to relieve heat buildup 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.

On cooler summer days, 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 high-wattage 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 HSPF2. Heat pumps with an HSPF2 of 10 are almost three times more efficient than the most efficient natural gas furnaces. The minimum efficiency for typical split system air source heat pumps is 7.5 HSPF2.

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 0.80 to 0.98 range, ground source heat pumps have COP values in the 3.1 to 6.1 range.

If you install a ground source heat pump in 2024, you will be eligible for a federal tax credit of 30% of the project cost, with no dollar cap.

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:

If you install a high-efficiency heat pump in 2024, you will be eligible for a federal tax credit of 30% of the project cost, up to $2,000. All ducted heat pumps that have earned the ENERGY STAR label are eligible, as well as certified mini-split systems (non-ducted) that are rated at SEER2 > 16, EER2 > 12, and HSPF2 > 9. There are different requirements for "cold climate" heat pumps. More information is available at https://www.energystar.gov/about/federal-tax-credits/air-source-heat-pumps.

Make sure to replace or clean the air filters for your heating and cooling system at least once a month (or as often as recommended by the manufacturer). Clogged filters lead to lower energy efficiency.

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.org and www.energystar.gov.

ENERGY YOU'LL SAVE:

Replacing an old central air conditioner (SEER2 rating of 10 or less) with a new high efficiency unit (SEER rating of 13.4 or more) saves at least 33 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 35 to 50 percent.

REFRIGERATION

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 about 9 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.

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.

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 6 to 25 percent less energy than upright freezers.

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

COOKING

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.

Electric induction ovens are up to 10 percent more efficient than conventional smooth top electric ranges.

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.

Energy Efficient Cooking Appliances Comparison

Appliance	Temperature °F	Time	Energy	Cost
Electric Oven	350	1 hour	2.0 kWh	$0.16
Electric Convection Oven	325	45 min.	1.39 kWh	$0.11
Gas Oven	350	1 hour	.112 them	$0.13
Electric Frying Pan	420	1 hour	.9 kWh	$0.07
Toaster Oven	425	50 min.	.95 kWh	$0.08
Electric Crockpot	200	7 hours	.7 kWh	$0.06
Microwave Oven	"High"	15 min.	.36 kWh	$0.03

Source: consumerenergycenter.org

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 use less than one-half 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.

ENERGY YOU'LL SAVE:

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

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. Microwave ovens are 55.7 percent efficient, or over 18 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. If possible, turn on the oven light without opening the oven door to check on the food's progress.

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.

WATER HEATING

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.

New federal standards took effect on April 16, 2015. Standards for electric, gas, and oil water increased. New electric water heaters are now even more efficient as of April 16, 2015.

Make sure your new water heater is energy efficient with a Uniform Energy Factor (UEF) of 0.92 UEF for an electric 55 or below-gallon unit, 0.58 UEF for a gas 55 or below-gallon unit, and 0.56 UEF for an oil 55 or below-gallon unit. These values are based on the "medium" water draw (as water heaters now have as many as 4 UEF's, based on estimated daily hot water usage). All new units are now rated with Uniform Energy Factors (UEF's). Higher values are more efficient.

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.

For even higher efficiency, check into heat pump water heaters. ENERGY STAR certified heat pump water heaters have efficiencies that range from 2.2 to 4.07 UEF.

High-efficiency heat pump water heaters are eligible for a federal tax credit in 2024. If you install an Energy Star certified heat pump water heater, the tax credit is 30% of project cost, up to $2,000. More information is available at https://www.energystar.gov/about/federal-tax-credits/heat-pump-water-heaters.

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

It is important to keep the system properly maintained. Once or twice a year, if possible, 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.

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 longer time periods in a full tub of water, and as certain new appliances (such as hot tubs or spas) are added.

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 large 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 smaller water heaters—one heater in each principal water-using area—instead of one very large water 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.

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.

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 a high-efficiency water heater. 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: https://www.ahrinet.org/advocacy/regulatory/energy-efficiency/residential-products/residential-water-heaters and www.energystar.gov.

LIGHTING

Under DOE final rules published in 2022, nearly all incandescent and halogen light bulbs (with certain niche applications like incandescent or halogen appliance lamps and bug lamps still allowed) were not allowed to be sold in the US as of August 1, 2023. At some point, you will need to consider other alternatives such as LED light bulbs.

Provide high efficiency "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. Some 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.

Consider using LED light bulbs, especially in hard-to-reach fixtures. A 60-watt incandescent bulb can be replaced by a 7 to 10-watt LED bulb that may have a rated lifetime of more than 25,000 hours (which is 25 times longer than many incandescent light bulbs).

Some, but not all compact fluorescent and LED bulbs can be used with existing 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.

If you install a new dimmer switch, make sure that it is compatible with the type of light bulb that you use in the light fixture. Some "universal" dimmers work with all types of light bulbs (LED, compact fluorescent, and incandescent/halogen). Information about compatibility may be available on the web site of the dimmer manufacturer and/or the light bulb manufacturer.

Instead of using a 190-watt halogen torchiere to light up a room, consider a compact fluorescent or LED torchiere that will produce as much light, and use less than 60 watts.

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.

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 impact 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. Information about compatibility may be available on the web site of the dimmer and/or light bulb manufacturer.

In lamps and fixtures having two or more sockets for light bulbs, consider using a single large bulb in one socket rather than filling all sockets with bulbs of smaller wattage. For example, using a 20-Watt LED light bulb rated at 130 lumens/Watt will put out more light than three 10-Watt LED light bulbs rated at 80 lumens/Watt (2600 versus 2400 lumens).

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 or LED bulbs in outdoor fixtures. Many bulbs will produce light down to an outdoor temperature of 0°F or lower. Check the light bulb package label or the manufacturer web site for information about the lowest temperature that the light bulb will operate in. Also 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 or LED 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.

LAUNDRY

WASHING MACHINES

On January 1, 2018, the standards for clothes washer increased, and require a standard (full sized) top loading washer to have a minimum Integrated Modified Energy Factor (IMEF) of 1.57 and a maximum Integrated Water Factor (IWF) of 6.5. A minimum IMEF of 1.84 and maximum IWF of 4.7 are required for a standard (full sized) front-loading washer.

Look for ENERGY STAR® clothes washers, which typically use 20 percent less energy than washers that meet the minimum federal standards and use 30 percent less water than regular washers.

Follow detergent instructions carefully. Over-sudsing 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 using a front-loading (horizontal axis) washing machine. Based on the 2018 federal standards, these units use at least 28 percent less water and 17 percent less energy to make hot water and wash clothes than regular top-loading washing machines. They are also gentler on fabrics.

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 went 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.

Standard vented electric clothes dryers have higher energy efficiency (higher combined energy factors) than gas clothes dryers.

Look for ENERGY STAR® clothes dryers, which typically use 5-12% less energy than dryers meeting 2015 federal standards.

Clean out the lint filter between every load of clothes you dry. Get into the habit of removing lint from the screen, either before or after every load. Some new dryers will automatically remind you to check the lint filter before starting up.

Clean out your dryer vent once a year, if possible. The dryer vent typically first grows a wooly coating inside, and then the lint will start to pile up and reduce the width of the vent passage. When this happens, your dryer loses efficiency because less moist air is able to escape. Cleaning your dryer vent once a year ensures that your dryer functions near its highest efficiency.

For even more energy savings, consider a heat pump clothes dryer. While standard Energy Star clothes dryers have CEF's that range from 2.7 to 4.3, heat pump clothes dryers have CEF's that range from 4.5 to 11.0.

DISH WASHING

For standard-size units, the efficiency standards are a maximum of 5 gallons of water per cycle and a maximum annual energy 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 standard sized dishwasher. New criteria went into effect in January 2016, which made ENERGY STAR® units more than 9 percent more energy efficient and 30 percent more water efficient than the current federal standards.

Many dishwashers have an option for "air drying" or "heated drying." The "air drying" setting will use less energy.

If your dishwasher has a manual food filter (and not a self-cleaning filter), make sure to clean the food filter on a regular basis. The dishwasher filter is located at the bottom of your dishwasher, under the bottom rack. To find it, pull out the bottom dish rack, then look for the filter (usually in one of the back corners of the dishwasher tub or in the center near the base of the bottom spray arm). As you wash the dishwasher filter with hot water, you may need to use a soft brush and dish soap on calcium deposits and other hard-to-remove food debris. Make sure

that you don't use a wire brush, scouring pad or anything rough to scrub the filter, as these materials could damage the filter.

With most new dishwashers, the manufacturers advise to "scrape, don't rinse" before putting the dishes in the dishwasher. Modern dish detergents are designed to cling to leftover food in order to clean effectively. If there's no food to cling to, the detergent may actually end up damaging your dishes over time, etching little scratches and pits into their surfaces.

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, 21 connected devices, based on the following article: https://www2.deloitte.com/us/en/insights/industry/telecommunications/connectivity-mobile-trends-survey.html#print-the-report. 99 percent of them 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? Look for the ENERGY STAR® label for TV's that use less energy.

The average new LED TV uses between 30-130 Watts, depending on the screen size and features. The average OLED TV uses between 100-160 Watts. Check the yellow "energy guide" label on the TV to see estimated annual costs (based on five hours of operation per day).

With an LED TV, turn down the LED backlight. By turning down the backlight, you'll lower power consumption and also make the TV less bright. However, many LED TVs are set on a "retail" setting, which is the brightest setting for use in retail stores. Most LED TVs have a "home" setting, which is more appropriate for home use and will save energy. Other brightness settings may save even more energy. Other LED TV's have a light sensor that can automatically adjust the TV's brightness based on the amount of light in the room.

TV's that are labeled as "4K" or "Ultra High-Def" typically use 30% more energy than regular high-definition TV's.

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.

Newer 8K ultra high-definition TV's, which have four times more pixels than 4K TV's and 16 times more pixels than 1080p TV's, use even more electricity. Based on their Energy Guide labels, a 65" 8K TV will use two times more electricity than a 65" 4K TV.

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, sound bars, MP3 Speaker boxes, cordless phones, home stereo systems, cable boxes, or set-top boxes.

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 device(s) when not in use.

Different video game consoles use different amounts of energy. Here is information about different devices and their energy usage:

	Mode	Power Consumption (W)
Xbox One S	Shut-down (energy saving)	0.5
	Sleep Mode	11
	Navigation Mode	27
	DVD Playback	33
	Blu-Ray Playback	39
	Streaming HD	33
	Streaming UHD	36
	Active Gameplay	62
Xbox Series X	Shut-down (energy saving)	0.5
	Sleep Mode	13
	Navigation Mode	48
	DVD Playback	48
	Blu-Ray Playback	50
	Streaming HD	47
	Streaming UHD	48
	Active Gameplay	153
Xbox Series S	Shut-down (energy saving)	0.4
	Sleep Mode	10
	Navigation Mode	28
	DVD Playback	*N/A*
	Blue-Ray Playback	*N/A*
	Streaming HD	28
	Streaming UHD	31
	Active Gameplay	74
Sony PlayStation 5 (HD)	Active gaming *(PS5 games: three game average)*	209.8
	Active gaming (PS4 game: Battlefield 4)	97.2
	DVD Playback	56.5
	Blu-Ray Playback	55.7
	Streaming Media	56.1
	Home Menu User Interface	45.6
Sony PlayStation 5 (UHD)	Active gaming *(PS5 games: three game average)*	210.9
	4K Blu-Ray Playback	80.7
	Home Menu User Interface	47.1
	Rest (default standby)	0.38
	Rest (supply power to USB ports)	4.0
	Rest (stay connected to the Internet)	1.2
	Rest (all)	4.2

	Mode	Power Consumption (W)
Nintendo Switch	**Docked**	
	Playing games	7-11
	Playing games (charging)	15-17
	Streaming media	6
	On the Home menu	3
	Sleep mode	0.3-0.5
	Sleep mode (charging)	9.8-12.1
	Power off	0.3-0.5
	Undocked	
	Playing games (charging)	8-9
	Sleep mode (charging)	8-9
Nintendo Switch OLED	**Docked**	
	Playing games	6
	Streaming media	5
	On the Home menu	3
	Sleep mode (WiFi)	0.3-0.5
	Sleep mode (wired)	2.2
	Power off	0.3-0.5

Source: nintendolife.com and playstation.com

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. Most smart phones have settings to allow you to choose which "apps" to put in a "sleep mode" if you don't want to close them.

ROOM AIR CLEANERS

Room air cleaners are portable appliances that remove fine particles, such as dust and pollen, from the indoor air in one room. Some larger room air cleaners that operate continuously will use as much energy as a smaller refrigerator (about 450 kWh).

Room air cleaners are rated based on their Clean Air Delivery Rate (CADR) in cfm (cubic feet per minute). The CADR measures how quickly a unit delivers filtered air in a room. The higher the CADR, the more quickly the room air cleaner filters the air and the larger area it can serve.

Size the room air cleaner for the room. Smaller rooms require lower CADR's. According to the EPA Energy Star website, the minimum CADR for a 100 square foot room with an 8-foot ceiling (10 feet by 10 feet floor area) is 65 cfm. For a 200 square foot room with an 8-foot ceiling, the minimum CADR is 130 cfm. For a larger room of 600 square feet with an 8-foot ceiling (20 feet by 30 feet floor area), the minimum CADR is 390 cfm.

If you have ceilings higher than 8 feet, you may want to select a portable air cleaner with a higher CADR.

Make sure that the air flow into or out of the air cleaner is not obstructed. Keep air cleaners away from curtains and anything that might block air flow.

If the air cleaner causes an uncomfortable draft, then redirect the airflow away from you, so that you don't feel the need to increase the heating temperature during the winter.

Look for the Energy Star label when purchasing a room air cleaner. Energy Star room air cleaners are rated for "Minimum Smoke" CADR per Watt. The higher the CADR/Watt, the higher the energy efficiency.

New federal efficiency standards took effect for room air cleaners on January 1, 2024. They are rated in terms of CADR per Watt of power. Make sure that your room air cleaner meets the federal standards. Tier 2 of these standards will take effect on January 1, 2026.

For more information on high-efficiency room air cleaners, check out the following Web sites: www.ahamverifide.org, www.aham.org, and www.energystar.gov/products/air_cleaners.

ELECTRIC VEHICLES

Not only are electric vehicles fun to drive, they have zero tailpipe emissions, they can be powered with renewable electricity, they can be charged at home, and they are much more energy efficient than gasoline or diesel powered vehicles.

There are now over 100 EV models available to choose from in 2024.

In addition, if you purchase an electric vehicle or an electric vehicle charger, you may be eligible for a federal tax credit.

Electric vehicles may be eligible for a federal tax credit as high as $7,500. Make sure to check with https://www.fueleconomy.gov/feg/taxcenter.shtml to see if the vehicle you are interested in is eligible, and how high the tax credit may be. Other conditions are based on the vehicle price and your income apply as well.

Used electric vehicles that cost less than $25,000 and purchased from a dealer may also eligible for a federal tax of up to $4,000. Other conditions are based on your income apply as well.

Electric vehicle efficiency is shown in miles per kWh or MPGe (miles per gallon equivalent for a gasoline vehicle). For example, an EV that gets 3.0 miles per kWh will have an MPGe of 101.1 miles per gallon equivalent! Some EV's are rated at over 4 miles per kWh, or over 134.8 MPGe! The higher the miles/kWh or MPGe, the higher the energy efficiency of the electric vehicle.

If you are interested in installing a 208/240 Volt charger at your home (also knows as a "Level 2" charging station), you may be eligible for a federal tax credit of 30% of the project cost, up to $1000.

Your energy company may offer a special rate if you have a "Level 2" EV charger. The rate could be for your whole house with the EV charger or a separate rate for the EV charger. In either case, you will have more flexibility in terms of charging at certain times of the day or night to lower the cost of charging.

All EV's can charge at household receptacles (120 Volts, or "Level 1"), but it is much slower than charging at a "Level 2" charger. In addition, Level 2 charging is on average 10% more efficient than Level 1, according to several studies.

If you are in the market for a Level 2 charging station, look for the Energy Star label. Energy Star certified EV chargers provide the same "active mode" service as non-certified products but use up to 40% less energy in the "standby mode".

For both electric vehicles and EV charging stations, your state and/or local city or county may also have incentives. Your energy company may also have incentives available.

For more information on electric vehicles and electric vehicle charging stations, check out the following Web sites: www.fueleconomy.gov, www.energystar.gov, www.eei.org/issues-and-policy/electric-transportation, and www.afdc.energy.gov/laws/state.

The **Edison Electric Institute** (EEI) is the association that represents all U.S. investor-owned electric companies. Our members provide electricity for nearly 250 million Americans, and operate in all 50 states and the District of Columbia. As a whole, the electric power industry supports more than 7 million jobs in communities across the United States. In addition to our U.S. members, EEI has more than 70 international electric companies as International Members, and hundreds of industry suppliers and related organizations as Associate Members.

Organized in 1933, EEI provides public policy leadership, strategic business intelligence, and essential conferences and forums.

For more information, visit our Web site at **www.eei.org**.

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