

TIPS TO SAVE FUEL & ELECTRICITY

Use efficient lighting

Replace incandescent bulbs with compact fluorescents (CFLs). These use four times less energy and they last eight times longer. So you not only cut your electricity bills dramatically, you also save a lot of money on buying bulbs.

Incandescent Lighting

Incandescent lights should be turned off whenever they are not needed, because they are the least efficient type of lighting. 90% of the energy they use is given off as heat, and only about 10% results in light. Turning lights off will also keep a room cooler, an extra benefit in the summer.

Halogen Lighting

While **halogens** are more efficient than traditional incandescent bulbs, they use the same technology and are far less efficient than CFLs and LEDs. Therefore, it is best to turn these lights off whenever they are not needed.

CFL Lighting

Since they are already very efficient, the cost effectiveness of turning **CFLs** off to conserve energy is a bit more complicated. A general rule-of-thumb is this:

- If you will be out of a room for 15 minutes or less, leave it on.
- If you will be out of a room for more than 15 minutes, turn it off.

The value of the energy saved by turning a CFL off depends on several factors:

- The price an electric utility charges its customers depends on the customer "classes," which are typically residential, commercial, and industrial. There can be different rate schedules within each class.
- Some utilities may charge different rates for electricity consumption during different times of the day. It generally costs more for utilities to generate power during certain periods of high demand or consumption, called peaks.
- Some utilities can charge commercial and industrial customers more per kilowatt-hour (kWh) during peak periods than for consumption off-peak.
- Some utilities may also charge a base rate for a certain level of consumption and higher rates for increasing blocks of consumption.
- Often a utility adds miscellaneous service charges, a base charge, and/or taxes per billing period that could be averaged per kWh consumed, if these are not already factored into the rate.

LED Lighting

The operating life of a light emitting diode (LED) is unaffected by turning it on and off. While lifetime is reduced for fluorescent lamps the more often they are switched on and off, there is no negative effect on LED lifetime. This characteristic gives LEDs several distinct advantages when it comes to operations. For example, LEDs have an advantage when used in conjunction

with **occupancy sensors or daylight sensors** that rely on on-off operation. Also, in contrast to traditional technologies, LEDs turn on at full brightness almost instantly, with no delay. LEDs are also largely unaffected by vibration because they do not have filaments or glass enclosures.

Use energy efficient electric appliances

They use two to 10 times less electricity for the same functionality and are mostly higher quality products that last longer than the less efficient ones. In short, efficient appliances save you lots of energy and money. In India, appliances like refrigerators and ACs have efficiency rating labels ranging from 1 to 5 stars, the higher numbers being more efficient.

Use an energy efficient computer

Buy a laptop instead of a desktop. It consumes five times less electricity. If you buy a desktop, get an LCD screen. Enable the power management function on your computer, the screensaver does not save energy. Check if your computer supports the more advanced speedstep power management. Switching off a computer extends its lifetime, contrary to some misconceptions. Minimise printing and print on both sides of the paper. Laser printers use more electricity than inkjet printers.

Formula for Estimating Energy Consumption

Use this formula to estimate an appliance's energy use:

$$(\text{Wattage} \times \text{Hours Used Per Day}) \div 1000 = \text{Daily Kilowatt-hour (kWh) consumption}$$

$$1 \text{ kilowatt (kW)} = 1,000 \text{ Watts}$$

Multiply this by the number of days you use the appliance during the year for the annual consumption in kWh per year.

Estimating Annual Cost to Run an Appliance

Multiply the annual consumption in kWh per year (that you calculated above) by your local utility's rate per kWh consumed to calculate the annual cost to run an appliance. Note: To estimate the number of hours that a refrigerator actually operates at its maximum wattage, divide the total time the refrigerator is plugged in by three. Refrigerators, although turned "on" all the time, actually cycle on and off as needed to maintain interior temperatures.

Examples:

Window fan:

$$\begin{aligned} & (200 \text{ Watts} \times 4 \text{ hours/day} \times 120 \text{ days/year}) \div 1000 \\ & = 96 \text{ kWh} \times 11 \text{ cents/kWh} \\ & = \$10.56/\text{year} \end{aligned}$$

Personal Computer and Monitor:

$$\begin{aligned} & [(120 \text{ Watts} + 150 \text{ Watts}) \times 4 \text{ hours/day} \times 365 \text{ days/year}] \div 1000 \\ & = 394 \text{ kWh} \times 11 \text{ cents/kWh} \\ & = \$43.34/\text{year} \end{aligned}$$

Typical Wattages of Various Appliances

Here are some examples of the range of nameplate wattages for various household appliances:

- Aquarium = 50–1210 Watts
- Clock radio = 10
- Coffee maker = 900–1200
- Clothes washer = 350–500
- Clothes dryer = 1800–5000
- Dishwasher = 1200–2400 (using the drying feature greatly increases energy consumption)
- Dehumidifier = 785
- Electric blanket (Single/Double) = 60 / 100
- Fans
 - Ceiling = 65–175
 - Window = 55–250
 - Furnace = 750
 - Whole house = 240–750
- Hair dryer = 1200–1875
- Heater (portable) = 750–1500
- Clothes iron = 1000–1800
- Microwave oven = 750–1100
- Personal computer
 - CPU - awake / asleep = 120 / 30 or less
 - Monitor - awake / asleep = 150 / 30 or less
 - Laptop = 50
- Radio (stereo) = 70–400
- Refrigerator (frost-free, 16 cubic feet) = 725
- Televisions (color)
 - 19" = 65–110
 - 27" = 113
 - 36" = 133
 - 53" - 61" Projection = 170
 - Flat screen = 120
- Toaster = 800–1400
- Toaster oven = 1225
- VCR/DVD = 17–21 / 20–25
- Vacuum cleaner = 1000–1440
- Water heater (40 gallon) = 4500–5500
- Water pump (deep well) = 250–1100
- Water bed (with heater, no cover) = 120–380

Energy saver water heaters

We have two new Energy Saver water heating Savings Projects. These do-it-yourself guides provide step-by-step instructions to water heating improvements that will save you energy and money. Setting your water heater temperature too high can waste \$36-\$61 a year in standby heat losses -- not to mention more than \$400 in demand losses. Learn how to safely **lower your water heating temperature**. Another way to save money on water heating costs is to **insulate your hot water pipes**. This small improvement can help raise your water temperature 2-4 degrees F.

For long-term investments, consider purchasing an **energy-efficient water heater**. Whether your looking at **tankless water heaters** or considering **solar**, our new Energy Saver 101 water heater

infographic lays out the different types of water heaters on the market and will help you figure out how to select the best option for your home.

Lowering your water heating costs is just one way to save money on energy costs. On Earth Day, Energy Department experts will answer your questions ways to save money on energy costs and incorporate renewable energy options in your home

Drive less

Walk, bike, carpool or take public transport. You'll save 1.5 kg of carbon dioxide for every 5km you don't drive. Use cars that run on cleaner fuels such as CNG and LPG. Switch off your car if you want to stop for more than two minutes. Bicycles should be used for covering short distances to save precious fuel like petrol.

Check your tyres

Keeping your tyres inflated properly can improve the fuel efficiency of your car. Every litre of petrol saved keeps 2.5 kg of carbon dioxide out of the atmosphere. Using radial tyres will help you save three to seven percent of fuel.

Move your air-conditioning thermostat up two degrees

You could save about 900kg of carbon dioxide a year with this simple adjustment. Set the thermostat of the room air conditioner at 25C to get the most comfort at the least cost.

Use renewable energy

Sunlight can be used in many different ways to save energy. Use a solar water heater instead of an electric geyser. A 100 litre solar water heater can save around 1500 units of electricity every year. For lighting, use batteries that can be charged with sunlight. A solar cooker cooks rice and vegetables without losing their essential nutrients. Just leave the solar cooker outside in the sun to cook your food. If you live in a village, you can use biogas from cow-dung to save energy.

Plant more trees

A single tree will absorb one tonne of carbon dioxide over its lifetime.

Turn off electronic devices

Simply turning off your television, stereo, computer, fans, lights when you are not using them will save thousands of kilograms of carbon dioxide emissions a year.

Reuse & recycle

Recycling and re-using products like paper and bottles will help protect the environment. Use recycled paper. Recycle your office and household waste.

Use stairs

Use stairs to climb at least up to three floors of building instead of taking a lift.

Use bi-cycles

Use bi-cycles to cover short distances.