



SAVING ELECTRICITY IN THE HOME

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Although it arrives in our homes as a clean and convenient source of energy, electricity is actually quite a high-carbon fuel. Most power stations are not very efficient; about two-thirds of the energy in their fuel is lost as waste heat.

The standard unit in which domestic electricity bills are measured is the kWh (kilowatt-hour). At the moment, our mix of gas, coal and nuclear power stations (and some hydroelectric and wind power) leads to carbon dioxide (CO₂) emissions of about 0.52kg CO₂ per kWh (DEFRA figure).

An average household uses about 4300kWh of electricity each year. This results in emissions of over 2 tonnes of CO₂ per household or ¾ tonne per person – just for domestic electricity supply. In comparison, total CO₂ emissions per person in the UK are around 10 tonnes, and total emissions per person in India are about 1 tonne.

Luckily it's possible to cut domestic electricity use in half with simple energy efficiency measures. This table shows how electricity use is divided up in an average house (excluding electric heating):

Lighting	19%
Cold Appliances	18%
Wet Appliances	15%
Cooking	15%
Consumer Electronics	19%
ICT (computers, etc)	9%
Other	5%

Green Electricity

Changing to an electricity supplier that uses renewable sources like wind or hydro will help to promote these technologies, and so reduce overall CO₂ emissions. It is still vital to reduce electricity use, so that the UK can reach 100% renewable electricity more quickly. See our free **Electricity from Renewable Sources** sheet for more advice.

Electric Heating

If you have electric heating (such as storage heaters) this will be the biggest chunk of your electricity bill by some distance. For advice on reducing heating bills, see our free **Energy Efficiency** sheet. Electric heating is both more expensive and leads to more carbon emissions than most other options. To investigate alternatives, see our free **Home Heating** sheet.

Lighting

Light bulbs account for one-fifth of the average electricity bill. The first step is to switch off lights when unused. The belief that a light takes a lot more energy to warm up than it uses over time is unfounded. If a room is to be empty for over 15 minutes, turning the lights off will save energy.

The other key step is to switch to low-energy bulbs. Only 10% of the electricity used by incandescent bulbs is converted into light - the rest is given off as heat. For much of the year this heat is not needed, and in winter it's an expensive way to get heat.

Compact fluorescent lamps (CFLs) are far more efficient at making light from electricity; they use 75% to 80% less energy than incandescent bulbs. So a 20W CFL can replace a 100W incandescent. This energy saving means that CFLs repay their purchase price within a year. They also last much longer, so you need fewer replacements. CFLs are now available in many shapes and sizes, including dimmable types and spotlight / downlighter fittings.

LED (light-emitting diode) bulbs are a new option. Most are far too dim for domestic spotlights (at 1 or 2 watts), but there are now 10W LEDs to replace 30W halogen bulbs. At present, CFLs are the best option in most cases, but as LEDs develop they could offer greater efficiency and longer lifetimes.

Another factor is the design and placement of light fittings. Good 'task lighting' in key areas (such as the kitchen worktop or a reading lamp) will mean you don't need strong lighting in the whole room. For more information on energy efficient lighting, see our **Bright Ideas** tipsheet.

Cold Appliances

As they are always plugged in, fridges & freezers make up a big chunk of our electricity use - and you can't just switch them off when not needed.

To make best use of existing appliances, put them in a cool room (if possible) and certainly well away from a cooker or other heat source. Avoid placing the appliance in direct sunlight and allow space around the back grill for good air circulation. To maximise efficiency, keep the back grill clean from dust build-up, replace damaged door seals and defrost a freezer regularly.

Lowering the thermostat by 1 degree will increase energy consumption by 3%, so keep a fridge only as cool as you need. The electricity use of some older fridges can be reduced with a 'Savaplug', which modulates the power drawn to that needed by the appliance. To check compatibility with your fridge, contact **CAT Mail Order**: mail.order@cat.org.uk; 01654 705959.

Upgrading to an efficient new appliance should save several tens of pounds per year of electricity, so is worth considering. New cold appliances must display an 'Energy Label'. When buying a fridge or freezer, look carefully at the rating on this label. An A++ rated fridge uses 50% less electricity than an A rated one. Look for an appliance that is no bigger than you need - a half-empty fridge has to work harder to cool down after the door is opened.

Wet Appliances

Most of the energy used by washing machines is to heat the water, so use a lower temperature setting whenever you can and always wash a full load. Tumble-dryers use lots of energy, so try to avoid their use if you can - use a washing line to dry clothes wherever possible. A high-speed spin cycle is an efficient way to remove most water; a 500rpm spin will remove about one-third of the water, while a 1100rpm spin will remove half. Gas-powered dryers lead to lower emissions than electric ones.

Wet appliances are covered by the Energy Label scheme, so look for the highest rating when buying a new machine. The label includes information about other features to help compare products.

Cooking

Using a gas cooker (if you can) will result in lower carbon emissions than an electric cooker. This is because burning gas directly is more efficient than producing electricity in gas-fired power stations. Overall, a gas hob will result in about half the CO₂ emissions of most electric hobs, although modern induction hobs come fairly close. Also, gas cookers are cheaper to run and the hobs more controllable.

Any form of heating with electricity is very power-hungry, so try to only heat the water you need in an electric kettle. Also, use well-fitting saucepan lids and make sure that the saucepan base covers the electric ring (or the gas flame). Adding a little salt lowers the boiling point of water and prevents vitamins leaching from vegetables as they cook. Steaming vegetables uses less energy and water than boiling and retains more vitamins.

Try to plan oven cooking so you don't leave shelves empty for long periods. Grilling food is usually more efficient than oven baking.

Microwaves are far more efficient than a standard oven, as they heat only the food and not the surroundings. However, if use of a microwave leads to much higher consumption of frozen ready-meals, then overall energy use (from food processing & storage) and the resulting carbon emissions will be high.

Consumer Electronics & Computers (ICT)

With the rise of wide-screen TVs, digiboxes, DVDs, home PCs, mobile phones and so on, electricity use in this area is growing fast. As these items are not covered by the Energy Label scheme, it is harder to know what electricity consumption will be, and it can vary a lot between similar products.

The easiest way to save electricity here is avoid leaving appliances on standby. The average house spends £38 per year powering devices on standby, and across all homes this is equivalent to the output of one power station. Many of these devices also have internal transformers that draw power when the device is off but the supply at the wall socket is still on (a 'phantom load').

When buying, check how much electricity a device will use in various different modes, and whether it can be switched off completely without affecting operation (many digiboxes can, for example). If something does need to be left plugged in, check what the standby or 'phantom load' will be.

Power Saving Devices

There are many gadgets now appearing to help us reduce our electricity use. The most basic, but perhaps most effective, are multi-plug extensions with individually switched sockets - so you can easily turn off items when not in use (especially useful if you have inaccessible wall sockets).

There are also several plug-in devices that will automatically power down the electricity supply when an appliance is turned off (such as 'Standby Power Saving' or 'Standby Buster'). These can be useful if you know that friends & family (or even you!) regularly forget to turn things off at the wall.

The plug-in 'Powermeter' measures the electricity consumption of individual appliances when in use and on standby. You can use them to assess how you could save by upgrading to a new appliance.

Wireless monitors, such as 'Efergy', provide instant feedback on the total electricity consumption of a household, display the cost of the electricity being used and the associated carbon dioxide emissions.

The products and the tipsheets mentioned here are available from **CAT Mail Order**: <http://store.cat.org.uk> or 01654 705959.