

# ***A Guide to Saving Energy in the Home***



*SHARE gratefully acknowledges the help of  
[www.energysavingtrust.org.uk](http://www.energysavingtrust.org.uk)  
in the preparation of this booklet*

# Energy Saving Quick Hits

Here are some quick tips from the Energy Saving Trust: see if you're saving as much energy as you could be.

## 1. Understand your bill

The information on a typical energy bill can be confusing. But understanding it can go a long way to helping you get to grips with your energy use.

The bill describes your consumption in kiloWatt-hours, sometimes just called "units". It may be easier just to think of these units as "bucketfuls" of electricity. Some appliances use energy faster than others, and appliances will be used for different lengths of time. So, as examples, a 2.5kW kettle will consume one unit of electricity in about 25 minutes, but a 5W LED light bulb will take 200 hours to get through the same



amount. It can get a bit confusing and misleading just to look at a rating plate on an appliance: a modern well insulated oven will draw 3kW or more until it's up to heat, then maybe 700W or so to keep it up to temperature. This is where a smart meter can really help with showing where your electricity is being consumed, and keep a running check on your bill.



## 2. Switch off standby

You can save around £30 a year just by remembering to turn your appliances off standby mode. It's not that they use much power when not in use, but they are doing it all the time. (Not many Watts but lots of hours).

Almost all electrical and electronic appliances can be turned off at the plug without upsetting their programming. Just check the instructions for any appliances you aren't sure about. Some satellite and digital TV recorders may need to be left plugged in so they can keep track of any programmes you want to record.

### 3. Careful in your kitchen

You can save around £30 a year from your energy bill just by using your kitchen appliances more carefully:

- ◆ Use a bowl to wash up rather than a running tap and save £25 a year in energy bills.
- ◆ Only fill the kettle with the amount of water that you need and save around £7 a year. Your cuppa will be ready quicker, too.
- ◆ Cutback your washing machine use by just one cycle per week and save £5 a year on energy.



### 4. Get a head and be quick!

If you've got a shower that takes hot water straight from your boiler or hot water tank (rather than an electric shower), fit a water efficient shower head. This will reduce your hot water usage while retaining the sensation of a powerful shower.

A water efficient shower head could save a family of four as much as £75 a year on water heating, as well as a further £120 on water bills if they have a water meter. Not bad for a £20 initial outlay.



Calculation is based on the assumption that the family takes 20 showers a week and replaces a 13 litre/minute power-shower head with a 7.7 litre/minute water efficient shower head, and the family are charged £2.82 per cubic metre of water used (includes sewerage charge). Spending one minute less in the shower each day will save up to £7 off your energy bills each year, per person. With a water meter this could save a further £12 off annual water and sewage bills. If everyone in a four person family did this it would lead to a total saving of £76 a year.

## 6. Draught proofing

Unless your home is very new, you will lose some heat through draughts around doors and windows, gaps around the floor, or through the chimney.

There may be a little outlay at first, but draught proofing is an easy DIY job. Draught excluders over a letter box or even stopping draughts under a door can save around £25 a year on energy bills, as well as making your home cosier. Installing a chimney draught excluder could save around £15 a year as well. See page 10 for more ideas.



## 7. Take control of your heating

More than half the money spent on fuel bills goes towards providing heating and hot water. Installing a room thermostat, a programmer and thermostatic radiator valves (available from as little as £8 each) and using these controls efficiently could save you around £75 a year. Even if you already have a full set of controls, turning down your room thermostat by just one degree can save around £80 a year.

Whatever the age of your boiler the right controls will let you:

- ◆ set your heating and hot water to come on and off when you need them
- ◆ heat only the areas of your home that need heating
- ◆ set the temperature for each area of your home.



## 8. Switch to LEDs



You can now get LED spotlights that are bright enough to replace halogens, as well as regular energy saving bulbs ('compact fluorescent lamps' or CFLs). They come in a variety of shapes, sizes and fittings....and they're nowhere near as expensive as they used to be.

If the average household replaced all of their bulbs with LEDs, it would cost about £100 and save about £35 a year on bills.

## 9. Turn off lights

Turn your lights off when you're not using them. If you switch a light off for just a few seconds, you will save more energy than it takes for the light to start up again, regardless of the type of light. This could save you around £14 on your annual energy bills.

## Are you a homeowner?

If you're a homeowner, there are some other things you can consider to improve the energy efficiency of your home. These can be more costly to put in place, but will benefit you in the long term.

Explore the benefits of renewable or more energy efficient technology, such as air source heat pumps, solar PV or wood chip boilers. Installing renewable technology for your heating or electricity can lead to greater savings on your energy bills and extra income as a result of the energy you generate.

Consider your options for insulation. Making sure your home is well insulated can significantly reduce unnecessary heat loss - leading to lower energy bills and a more comfortable home.

# Understanding your heating system

In a typical UK household, more than half the money spent on fuel bills goes towards providing heating and hot water. As fuel costs rise, having an efficient and cost effective heating system is vital, and it's one of the main steps you can take to reducing your carbon dioxide emissions.

It's important to understand your current heating system. Nearly all homes in the UK have either a central heating system – a boiler and radiators - or they use electric storage heaters. Some homes will also make use of individual heaters that are not part of the main central heating system.

## What is central heating?

This is the most common form of heating in the UK. A single boiler heats up water that is pumped through pipes to radiators throughout the house as well as providing hot water to the kitchen and bathroom taps.

The boilers in South Hill run on oil, LPG (tank gas), coal or wood. It's likely that you'll also have an electric immersion heater as a back-up. Be wary of using this instead of your boiler in the summer - it may well be cheaper to use the right controls and run the boiler rather than the immersion.

If you have a central heating system, you may consider these energy-saving improvements:

- ◆ Replace your boiler with a newer, more efficient model. Keep an eye out for grants - they are available if your existing boiler is elderly and inefficient.
- ◆ Fit better controls and use them to make sure your boiler only provides heat where and when you want it.
- ◆ Switch to a cheaper or lower carbon fuel or technology. Find out about renewable technologies for generating electricity and heat.
- ◆ Make any insulation and draught-proofing improvements that you can.
- ◆ Use chemical inhibitors to help maintain central heating system efficiency.

## What type of boiler do I have?

Since 2005 virtually all gas boilers (2007 for oil boilers) that have been fitted in the UK are the more efficient condensing boilers. Condensing boilers have bigger heat

exchangers that recover more heat from the burning gas, making them more efficient. Your boiler will be a condensing boiler if the following points are true:

- ◆ The flue is made of plastic. If it is made of metal it's unlikely to be a condensing boiler.
- ◆ The boiler has a plastic pipe coming out of the bottom, through the wall and into a drain.
- ◆ It was installed after 2005 (if it's a gas boiler).
- ◆ It was installed after 2007 (if it's an oil boiler).

## Combi or regular boiler?

### Combi boilers

A combi (or combination) boiler provides hot water directly, whenever it is required, and does not need a hot water cylinder. Gas, oil and LPG boilers may be combination.

### Regular boilers

A regular boiler provides hot water when the programmer tells it to, and then stores it in a hot water cylinder until it is needed. A regular boiler is more efficient than a combi at producing hot water, but some heat is inevitably lost from the hot water cylinder, so a combi may be more efficient overall.

## What is electric heating?

Most UK homes that don't have a boiler and radiators have electric storage heaters. These heat up overnight using cheaper off-peak electricity, and give out the heat during the day. If you have storage heaters, you will probably have a hot water cylinder heated by one or two immersion heaters.

Electric storage heating is one of the most expensive heating options in the UK, and it emits more carbon dioxide than most systems. It is also harder to control electric storage heaters than radiators, especially with older systems.

If you have a system like this, you may consider these energy saving improvements:

- ◆ Install new, more controllable storage heaters.
- ◆ Fit thermostats and controls to make your existing system more efficient.

- ◆ Consider making insulation and draught-proofing improvements.
- ◆ Replace your system with an efficient boiler system. You don't need to be on mains gas (just as well for us!) and if you choose oil, consider the bulk purchase schemes that are available in the Parish.

## What is secondary heating?

Many households use individual heaters, such as portable electric heaters or fixed gas fires, in addition to their central heating. This is called 'secondary heating'. Modern central heating systems are usually more efficient than individual heaters, but it can make sense to use an individual heater to heat one space for a limited time. This can help avoid over heating spaces that do not need to be heated, or are used infrequently. Secondary heating is typically provided by one or more of the following:

- ◆ Portable electric heaters such as oil filled, convection, panel or fan heaters
- ◆ Portable heaters that run on bottled gas or paraffin. Note that these generate fumes plus large amounts of water vapour so will need extra ventilation; gas heaters in particular can be a source of condensation and dampness, and should always be used in conjunction with a carbon monoxide alarm.
- ◆ Portable halogen heaters
- ◆ Wood burning or solid fuel stoves
- ◆ Open fires
- ◆ Range cookers
- ◆ Traditional gas fires
- ◆ Wall-mounted gas heaters



Smaller portable heaters, such as fan and halogen heaters, can be useful if only a small room or area needs heating for a short period of time.

- ◆ Where central heating does not heat the room enough, or there is no central heating in the room, electric convection, oil-filled or panel heaters might be a suitable option for providing the required level of heat. Electric heating is 100% efficient but electricity is expensive and carbon-intensive. If you do use an electric heater make sure it is only on when it is needed, such as to boost the background heat when the room is in use.
- ◆ Wood or other solid fuel burning stoves can provide adequate heating for a single room and are much more efficient and less carbon intensive than open fires.
- ◆ Open fires often provide a nice atmosphere to a room but they are very inefficient. Most of the heat from open fires goes up the chimney rather than heating your room. When your fire is not being used it will most likely be a source of draughts in your home, so make sure you know how to draught proof it.
- ◆ Portable gas heaters run on butane (bottled gas) or paraffin (heating oil). These types of heaters require good ventilation as they release combustion gasses and water vapour that can build up in unventilated rooms potentially making damp problems worse.

## Non-standard heating systems

Radiators or storage heaters provide heating in the vast majority of houses in the UK. However, a number of alternative technologies can be used, or in addition to, including underfloor heating, solid fuel stoves, range cookers, open fires, electric fires and gas fires.

## Finding an installer

If you want to get a wood burning stove, the installation must comply with Building Regulations. HETAS is a Government-recognised body which approves biomass appliances and services. You can use the HETAS register to find a trained installer.

If you are installing or replacing a fixed (wall-mounted or otherwise) gas heater then you will need to use a Gas Safe Register installer.

Portable heaters can be bought from DIY or home furnishing shops and do not need to be installed by a professional. You can just take them home and use them when you need them.

# Cutting out draughts in older homes is not as tricky as it sounds

Draught-proofing is a cheap and effective way to save money and make your home more comfortable. But those living in older or period properties can be put off by the unique characteristics of the building.

In actual fact, these properties are among the most ripe for making some good improvements in comfort, as well as savings on bills. They tend to have lots of gaps and areas where heat may leak from the building and cold air can enter – so it stands to reason that blocking them up will result in noticeable improvement.

## Preserve period features

Draught-proofing is also well suited here because it improves the thermal performance of a home without requiring you to replace period features, such as doors or windows. Many draught-proofing products are designed to be discreet, ensuring they have little or no impact on the aesthetic or character of the property.

It's not entirely plain sailing, though – there are few things you need to consider in old and sensitive properties, not least ventilation.

## Keep your building breathing

Some degree of ventilation is required in any property to let it release moisture, and therefore prevent damp and condensation from building up.

In a sense, the sheer number of gaps and openings in older homes is something of a plus, as it means you should be able to do some draught-proofing whilst still maintaining adequate ventilation. But a really important note to the most meticulous draught-proofers is that you can be too thorough.

In short, you should not totally seal the building – and it's most important to maintain ventilation in kitchens and bathrooms, since this is where most moisture is produced. You should also ensure that any rooms with open fires or flues are adequately ventilated. In particular, ensuring that no wall or window vents, underfloor grilles, airbricks or extractor fans are blocked is key.

## Where to focus your efforts

There are a wide range of different areas you should consider for draught-proofing in an older home:

- ◆ Doors – you can draught-proof around the edge, and in letterboxes or keyholes.
- ◆ Doorways - a heavy curtain over a draughty doorway will keep the inside snug. Thermally lined curtains are available for just a few pounds.
- ◆ Windows – this could include draught-proofing around the edges or installing secondary glazing.
- ◆ Suspended floorboards – sealing the gaps between floorboards and around skirting boards with a gap filling tape is an easy DIY project.
- ◆ Chimneys – chimneys which are not in regular use should be draught-proofed.
- ◆ Loft-hatches - neglecting the loft hatch after insulating your loft wastes a lot of your hard work and effort. Simply fixing a piece of insulation board on the back of the hatch will pay real dividends - especially with draught excluder round the edges.
- ◆ Electrical fittings - downlighters can be a real source of heat loss but consult an expert - don't be tempted just to bury them in loft insulation: any covering over a downlighter **MUST** comply with fire regulations and not cause the fittings to overheat.



# Lights and lighting

Lighting accounts for 15 per cent of a typical household's electricity bill. You can cut your lighting bill and energy use by changing which bulbs you use and how you use them. Houses typically use a mixture of standard light fittings and downlighters or spotlight fittings. Energy efficient bulbs are available for both types of fittings.

## Which light bulbs are energy efficient?

There are two main types of energy efficient light bulbs available in the UK. Compact Fluorescent Lamps (CFLs) and Light Emitting Diodes (LEDs).



*Compact Fluorescent Lamps (left) are gradually being phased out in favour of Light Emitting Diodes (above).*

*CFLs can have a noticeable delay between being switched on and achieving full brightness, but LEDs are almost instantly fully bright. LEDs are more efficient than CFLs, saving even more in the long term. They are also less difficult to recycle at the end of their life. (Due to their gas content, CFLs have to be disposed of carefully in specific bins at a recycling centre, but LEDs are classed as small electrical item waste and go in with the other electricals).*

Both CFLs and LEDs are a cost-effective option for most general lighting requirements. Replacing just one traditional light bulb with an LED of the same brightness will save you about £3 to £6 per year, depending on how much the traditional bulb was in use. By replacing all bulbs in your home with LED alternatives, you could save about £35 a year on your electricity bills. So, start with lamps that are on frequently, or for long periods of time. Particularly big savings can be made in kitchens and lounges .

LEDs are available to fit most fittings and are especially good for replacing spotlights and dimmable lights. As an example, a kitchen with downlighters may have several fittings each having 50 Watt halogens - these can be replaced at the same brightness with LEDs at only 3 Watts each, often without any fitting changes or rewiring.

### What else can I do to save energy?

You can save money and energy by implementing control mechanisms and being conscious of how you use your lighting.

- ◆ Always turn lights out when leaving a room, regardless of how long for.
- ◆ Be conscious of how many lights you have on and whether they all need to be in use.
- ◆ Arrange light switches so that it is convenient to turn them off i.e. place switches at top and bottom of stairs, each end of a hallway and each door to a room.
- ◆ Use a sensor and timer on external lights so they are only in use when they need to be.
- ◆ Use appropriate lightings i.e. a low background light while watching television and a bright, concentrated light for reading. Having a range of lights in a room with separate switches will make this easier.

### What about the phase out of inefficient light bulbs?

All traditional incandescent bulbs have been banned within the EU, as part of a shift towards more efficient technology with other lower performing halogens expected to be banned later this year. An increase in efficiency and decrease in the cost of LED bulbs over the last few years has helped ease this transition.

# Roof and loft

A quarter of heat is lost through the roof in an uninsulated home.

Insulating your loft, attic or flat roof is a simple and effective way to reduce your heat losses and reduce your heating bills. Loft insulation is effective for at least 40 years and it should pay for itself many times over. As installation is unobtrusive and quick, it is an excellent first step in managing your heat losses.

## Choosing loft insulation

If your loft is easy to access and has no damp or condensation problems it should be easy to insulate. It is possible to do it yourself, or you can call in a professional.

If access is easy and your loft joists are regular, you can use rolls of mineral wool insulation. As well as the traditional mineral wools, insulation made from recycled bottles can be very effective, and is much more pleasant to handle. The first layer is laid between the joists – the horizontal beams that make up the floor of the loft – then another layer is laid at right angles to cover the joists and make the insulation up to the required depth. Don't forget that the loft hatch needs insulating too; failing to do so is like leaving a window open into your roof space.



## Storage space

If you plan to use the loft or attic for storage, you will want to lay boards over the joists. Unfortunately, if you only insulate between the joists before doing this, the insulation won't be thick enough.

To get enough insulation, you can raise the level of the floor so you can fit enough mineral wool beneath the new floor level. You can do this by fitting timber battens across the joists, or you can buy purpose built plastic legs that fit on the joists and support the new floor. It's important to leave a ventilated air gap between the insulation and the boards to prevent condensation on the underside of the boards.

Make sure you don't squash the mineral wool when you fit the boards on top as this will reduce its insulation value.

## Room-in-roof

If you want to use your loft as a living space, or it is already being used as a living space, you can insulate your room-in-the-roof by insulating the roof itself rather than the loft floor. This is typically done by fixing rigid insulation boards between the roof rafters. Boards must be cut to the correct width so that they fit snugly between the rafters. They can then be covered by plasterboard. Rafters aren't usually very deep, so to get the best performance you may have to insulate over them as well, using insulated plasterboard. If there isn't room to do this, make sure you use the highest performance insulation board.

Walls in the roof space and around dormer windows should also be insulated. This is typically done with rigid insulation boards.

In all cases adequate ventilation should be maintained to the rafters.

## Inaccessible loft spaces

If your loft is hard to access, you can have blown insulation installed by a professional, who will use specialist equipment to blow loose, fire-retardant insulation material made of cellulose fibre or mineral wool into the loft. This doesn't usually take more than a few hours.

## Flat roofs

A flat roof should preferably be insulated from above. A layer of rigid insulation board can be added either on top of the roof's weatherproof layer or directly on top of the timber roof surface with a new weatherproof layer on top of the

insulation. This is best done when the roof covering needs replacing anyway. If your flat roof needs to be replaced you must now insulate it to comply with building regulations.

It is possible to insulate a flat roof from underneath, but this can lead to condensation problems if not completed correctly.

Installing flat roof insulation could save you similar amounts on your heating bills to loft insulation. The savings will vary depending on how much of the property has a flat roof.

## Damp lofts

Insulation stops heat escaping from living spaces, so it will make your loft space cooler, which could introduce or worsen existing damp or condensation problems. If you are installing loft insulation yourself, please keep in mind that you may need to increase ventilation. Get professional advice before installing insulation to see if you can fix any damp problems first.

## Is installing insulation a DIY project?

- ◆ If your loft is easy to access, does not have damp problems and is not a flat roof, you could probably insulate it yourself.
- ◆ Room-in-roof insulation can be installed by experienced DIY-ers. In cases where there are damp problems or a more complex insulation system is needed, a professional installer should be used.
- ◆ Flat roof insulation always requires professional insulation. Damp roofs require professional assessment before work can be carried out.

## Pipes, water tank and loft hatch

Insulating between the joists of your loft will keep your house warmer but make the roof space above colder. This means pipes and water tanks in the loft space could be more likely to freeze, so you will need to insulate them. If your water tank is some distance from the loft hatch, you will also need something to walk on for safe access.

The cooler air in your insulated loft could mean that cold draughts come through the loft hatch. To prevent this fit an insulated loft hatch and put strips of draught-excluding material around the hatch edges.

# Water

Did you know that much of your water use at home contributes to your energy bill?

Each household in the UK uses on average around 330 litres each day. About 15 per cent of a typical gas or oil heated household's heating bill is from heating the water for showers, baths and hot water from the tap. This is on average about £80 a year.

Saving water can reduce your water bill (if you're on a water meter), reduce your energy use and bills, reduce the impact on your local environment, and reduce carbon dioxide emissions by using less energy to pump, heat and treat the water.

When we use water, we are often using energy, mostly to heat the water. Generating energy produces carbon dioxide emissions which is one of the main greenhouse gases causing climate change. Heating water for use in our homes makes up about four per cent of the UK's total carbon dioxide emissions.

## Water heated by a boiler

In most homes, the hot water is supplied by the main central heating boiler, either directly if it is a combi boiler, or from a hot water cylinder. Often there will be an electric immersion heater in the cylinder as well.



Tip – use the boiler to heat the water, even in the summer. The immersion heater will be more expensive, and should only be used as an emergency back-up.

## Water heated by immersion

In some homes, particularly those with electric storage heaters, water can only be heated by immersion heater. There may be two immersions, one in the top of the cylinder and one in the bottom. Usually the bottom heater comes on at night, and heats the whole cylinder using cheap off-peak electricity. The top heater is used to provide additional hot water during the day if required, using expensive peak rate electricity.



Tip – do not leave a peak rate immersion heater on all day and all night. You will waste a lot of money keeping water hot when you don't need it.

# Four steps to saving money on your hot water bills

1. Use less water and hot water in particular.
2. Insulate your hot water cylinder – a well fitted tank jacket could save you around £20 a year, more if you heat your water electrically. Insulating the hot water pipes will save more energy, and can help your taps to run hot more quickly.
3. Controls - make sure you have the right controls, and have them set correctly to give you enough hot water when you want it, and not when you don't.
4. Solar – once fitted, solar water heating can provide a good proportion of your hot water requirements with virtually no running costs.
5. If you have solar PV, you can use a diverter to power the immersion heater directly from the panels during the day

## Passive Flue Gas Heat Recovery Device

If you have a combi boiler, you may not be able to fit solar water heating, but you may be able to fit a Passive Flue Gas Heat Recovery Device (PFGHRD). This recovers additional heat from the boiler's flue gases and uses it specifically to heat the hot water supply.

# Water-saving products

## Water-efficient showerheads

New water-efficient showerheads use technology that can produce water flows that feel far higher than they actually are - an easy way to save both water and energy. They are most effective on power and mixer showers with a high flow rate. You should not attach a low flow showerhead to an electric shower as this could cause possible damage to your shower unit.

## Reduced-capacity baths

A standard bath has a capacity of around 80 litres, so even when it's less than half full it uses a lot of water. If you're buying a new bath, look for one with a lower capacity. Of course, you can always save water and money by taking a quick shower instead of a bath.



## Water-efficient appliances

Looking to replace water-using appliances such as dishwashers or washing machines? Look for products with the new Water Efficient Product Label and/or the Waterwise Recommended Checkmark as these models can help you to save water, energy and money.

## Lower flow taps

Taps with a low flow rate can be fitted to bathroom and kitchen sinks. Click point taps are better for kitchen sink taps; aerated or regulated flow taps are more suitable for a bathroom sink; but all work very well.

## Flow tap aerators and regulators

If you're not replacing taps or shower units, you can still save water by fitting flow regulators to showers and aerators to taps. Flow devices are easy to install. They often contain precision-made holes, filters or flow aerators to regulate the flow of water without changing how it feels to you. If you have an electric shower you should not fit a flow regulator as this could cause possible damage to your shower unit.

# About the Energy Saving Trust:

“Climate change is a major threat to humanity, fuel bills continue to rise and our reliance on imported energy continues to grow.

The UK is committed to achieving an 80 per cent reduction in carbon emissions by 2050. To address these challenges we all need to reduce our energy consumption and accelerate a move to sustainable, low carbon lifestyles.

We are a leading and trusted organisation helping people save energy every day. Our experts speak with millions of householders every year, deliver first class programmes for governments and provide consultancy to UK businesses and international companies. All that we do is underpinned by our pioneering world-renowned research.

We are independent and impartial so the advice we give is all about helping you.”

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*For more help and guidance, as well as information on renewable energy and low carbon transport, please visit [www.energysavingtrust.org.uk](http://www.energysavingtrust.org.uk)*

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