



HOME LIGHTING – WHAT CAN WE DO TO SAVE ENERGY?

Most modern homes have more light fittings than required. Maximise the use of daylight, especially when planning a renovation or new build project. Often the best action is to ensure you have plenty of smaller task light areas to ensure you get the required amount of light exactly where you need it (i.e table/floor light for reading/writing, pendant light above dining table, kitchen lighting for preparation/cooking counter top zones etc). First of all, replace all standard light bulbs because whichever model you choose, you will be saving energy straightaway. Start with the lights that are used most often in the house.

Traditional tungsten bulbs waste 95 per cent of the electricity they use in creating heat, with only 5% creating light. These inefficient bulbs are being phased out, and will not be available in larger shops.

Fluorescent strip lighting is more efficient than standard tungsten lights. If your strip lighting is the size of a 10 pence piece or wider in diameter, this should be replaced with the narrower, most efficient electronic T5 which is much more efficient. Speak to an electrician about the possibility of a conversion kit which would allow the same fitting.

Halogen bulbs use less energy than traditional light bulbs but are not nearly as efficient as CFLs or LEDs. Energy saving halogen lamps save 30-50% compared to conventional halogens. Rooms with halogen lights would generally have more fittings so although each individual halogen will use less energy, the total effect will probably use more electricity. Replacement LED bulbs for halogens reduce electricity consumption by up to 75%. MR16 LED bulbs are great replacement for 12v halogen bulbs. These must be matched to a suitable low voltage LED power supply which delivers the constant voltage/current that these bulbs need. LED energy saving GU10 bulbs are the most efficient halogen replacements available.

Compact Fluorescent Lights (CFLs) i.e. standard low energy bulbs are miniature versions of full-size fluorescent strip lights and give off light similar to that of incandescent bulbs and use up to 80% less energy than traditional bulbs. They fit into standard light fittings, give the same amount of light and last up to 10 times longer than incandescents. They give off much less heat than conventional bulbs and come in various shapes and sizes. CFLs are not recommended for use when lights are switched on and off very frequently, as this will affect the lifetime of the bulb. But there are CFLs that can last up to 1 million switches for such situations. Most CFLs can be used with a compatible timer. The newer models don't present the problems of slow start up or flicker.

Light Emitting Diodes (LEDs) are small, solid light bulbs and they are the most energy efficient source of lighting available on the market today. They are very robust, last 20 to 50 times longer than conventional light bulbs, and save 80% or much more in electricity costs. LEDs are versatile, available with standard and pin bases and because of the low power requirement are a practical application for solar power generated electricity. Some LEDs series are available with a dimmable system. LEDs are relatively expensive, but with technical developments, they should cost less in the next year or two.

Downlights produce heat because traditional light bulbs overheat. If you already have these in your home, make sure the light bulbs are positioned so that they do not get into contact with floor/loft wooden joists or loft insulation by allowing a gap of at least 50mm. There are heat diffusers available that can easily be placed around the light fitting, alternatively cover the light with an upturned terracotta pot. Loft insulation can then be placed on top of this. Where downlights come with a transformer, make sure this is designed specifically for the purpose and the installer is qualified for the job. The transformer should not overheat if it is of the correct type. Ideally downlights should be replaced with low energy lights.

Dimmers of the standard type are not always fully compatible with energy saving bulbs and additional kit would be required. Always check with the manufacturer because development is fast in this area. CFL 4-pin lamps are dimmable using the correct control gear. 2-pin lamps aren't dimmable yet. Osram DULUX EL DIM (CFL - screw cap) can be used in all applications with suitable leading-edge phase-dimmers. Some LEDs are dimmable.

Fittings make sure you choose the right fitting when changing bulbs, these are indicated by initials on the box BC (bayonet cap), SBC (small bayonet cap), ES (Edison screw), SES (small Edison screw).

Outdoor lighting Take into account the use of timers, motion-sensors and photocells. Some light bulbs are not compatible with these considerations. CFLs can be used outdoors, but should be covered or shaded from the elements; low temperatures may reduce light levels and they are not recommended with motion-activated fixtures. Although not as bright as halogen bulbs, LEDs are energy efficient and can last up to 50 000 hours even when switched on and off frequently. Some LED security spotlights can be used with standard AA batteries lasting up to six months before batteries need replacing. 330-500W Tungsten halogen floodlights are expensive to run and contribute to light pollution in a domestic situation.

Watts/Lumens/Efficiency/Brightness/Colour When choosing a new light bulb look for efficiency information in Lumens (light output, measure of brightness) per Watt (measure of energy) as you need to know how much light you get per Watt consumed. Divide the wattage of a traditional bulb by 5 to get the equivalent CFL (eg a 20W CFL equates to a 100W traditional bulb). When choosing new light bulbs, also look for the lumens measurement on the box – measurement of the brightness a light bulb emits – a higher number equates to a brighter light. Wattage shows how much energy is required to power the bulb, (eg the same amount of lumens can be obtained by changing a 60W bulb with a 11W CFL or 42W energy-efficient halogen bulb). 1,200-1,300 lumens gives the same light as a traditional 100W bulb; 650-700lumens is equivalent to a traditional 60W bulb.

LEDs reach full brightness immediately. CFLs can take longer but the new models with electronic rapid start circuitry make the lamp light in less than 1 second with virtually no flickering.

Colour temperature is measured in Kelvins and varies from warm white (2700 or 3000K) up to daylight (6000K and beyond). To replace standard incandescent or halogen lamps, a colour temperature of around 2700K to 3300K is preferred. The Colour Rendering Index (CRI) is coded from 0 to 100. The higher the number the more vivid things look under that light; low CRI rating makes objects appear faded. Make sure the bulb has a CRI of at least 80.

Safety Always take care with electricity and make sure the power is switched off when you replace bulbs.

Take care not to touch the glass bulbs with your hands, particularly halogen bulbs, as this will affect bulb life performance and life. Compact fluorescent light bulbs emit a low level of Ultra Violet light which, at close range, might aggravate symptoms in exceptionally light sensitive skin conditions.

CFLs also contain traces of mercury sealed in the light bulb (less than 1/100th of the mercury found in an amalgam dental filling). Burning coal is the biggest source of mercury pollution but as using low energy bulbs lowers fossil fuel consumption, mercury is not an issue as the net effect is to produce less mercury. If you break a CFL bulb, you should open the windows for 15 minutes and leave the room. Gather up the broken pieces with kitchen paper (not a brush, or vacuum cleaner), using rubber gloves to protect your hands. Wipe the area with a damp cloth afterwards, and put the broken glass, paper and cloth into a plastic bag and seal it. All broken, used bulbs must be disposed of at the recycling centre not in the household bin.

Which one to choose?

It is widely recognised that LEDs will be the future of lighting. Technical developments are fast in this area so bear in mind that in 18 months time there will be better, more affordable models available on the market. LEDs are the most energy efficient and reliable source of artificial lighting. They provide a better quality of light than CFLs, allow for flexibility and visual variety but are the most expensive choice.

CFLs are a very good affordable option even if they do not yet provide the quality of light LEDs offer.

Energy efficient halogen lights are a good option if you don't want to compromise on the quality of light and can't change all light bulbs to LEDs but they don't last as long as CFLs.

The Energy Saving Trust website has further information and a list of recommended lighting products.

www.energysavingtrust.org.uk/scotland

Banchory Energy Reduction Initiative (B.E.R.I.) is a local community organisation funded by the Scottish government's Climate Challenge Fund until March 2012 and run by volunteers and part time staff. Online information at www.banchory.org see link to community projects. For more information tel 077 697 125 20 e mail beri.banchory@hotmail.co.uk Drop in advice sessions at Banchory Town Hall Mondays and Fridays 10.30 – 12.30

