

Energy-efficient lighting

According to the Energy Savings Trust¹, lighting consumes 20% of the average household electricity demand. Although this sounds like a relatively small amount, there are some easy wins here that can save money and cut carbon emissions without much effort.



❖ Using lights efficiently

- Think about where and when you leave lights on. Simply turning off lights in unused areas is the first step. Even if you are leaving a room for just a few minutes, it saves energy to turn the lights off, regardless of the type of bulb fitted.
- Do you need an outside light on all the time, or can you fit a movement sensor instead? For security it's often a better deterrent for a light to come on suddenly than to have a drive or entrance permanently lit.
- Select and adjust light fittings so you only light areas that need it.
- For outside lighting, look at where the light shines. If it shines upwards, you are wasting energy, as well as creating light pollution that can harm wildlife.
- Light levels are also worth thinking about. Consider use of different lighting systems within a room, so you can switch from soft background light to brighter lighting depending on what you are doing.
- For larger spaces with big windows, it can be more efficient to split lighting circuits so that you can switch on lights at the back of the room before the lights nearer the windows as it gets darker.
- Use task lighting for specific activities. If you sit in a favourite chair to read, use a reading lamp rather than have the whole room brightly lit.
- Light fittings and lampshades also make a difference. Recessed lights that are set into the ceiling can be very effective for lighting specific areas but are highly directional, so you might need many more individual lamps for a given area. See Energy Factsheet no. 20, *Recessed Lights*, for more tips on this option.
- Regularly clean lampshades as dust can reduce the light output by as much as 20%.

¹ <https://energysavingtrust.org.uk/advice/lighting/>

- There is a common misconception that low voltage lighting systems are the same thing in terms of energy efficiency as low energy lighting systems. No! It's the Watts that count, not the Volts. A 240V 50W bulb uses exactly the same amount of Watts (power) as a 12V 50W bulb.
- LEDs are the most energy-efficiency type of bulbs. They are adaptable for many uses, including for replacing dimmable lights and spotlights.

❖ Light bulb technology

- Traditional **incandescent light bulbs** were invented more than 100 years ago and are extremely inefficient. Only about 5% of the electricity they use converts into visible light. What's more, the bulbs don't last long because the filament that creates the light evaporates as heat passes through it.
- **Halogen light bulbs** use the same filament technology as traditional bulbs but run at a higher temperature, making them *slightly* more efficient.
- There are two main types of energy-efficient light bulbs available: compact fluorescent lamps (CFLs) and light emitting diodes (LEDs).
- **Compact fluorescent lamps (CFLs)** were the first energy efficient bulbs on the market and use around 70-80% less electricity than the equivalent traditional bulbs, as well as lasting almost 10 times longer. CFL bulbs have a gas inside a glass tube that is charged with electricity until it glows. They sometimes take a little while to achieve full brightness.
- **Light emitting diodes (LEDs)** have largely replaced CFLs. They are more efficient, longer lasting, turn on instantly at full brightness and are available to fit pretty much any light fitting in the home (see Figure 1). Within a bulb, there are a large number of LEDs to create the required brightness.
- Phasing out of inefficient light bulbs:
 - Companies are not allowed to manufacture new inefficient incandescent or halogen bulbs, but shops are allowed to sell their old stock, and specialist bulbs are still found in ovens, cooker hoods and security lights.
 - This means when shopping for new products and replacement lights, you should check the labels carefully and try to buy the most energy-efficient alternatives.

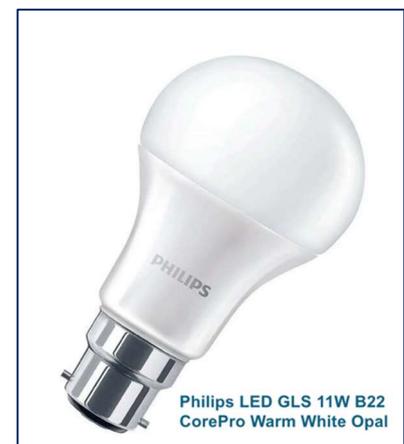


Figure 1 – A typical LED bulb replacement for an incandescent bulb

- Light bulbs are labelled to show the equivalent wattage to a conventional incandescent bulb (see Figure 2) to help you select the best lamp for the job.
- Additional label information includes the expected life, the energy savings and the 'Product Colour Temperature', which tells you if the lamp emits a 'soft' orange light or a brighter blue/white light (see Figure 3).
- Many recessed lights are fitted with halogen spot lamps. These can have high energy requirements (a typical halogen GU10 bulb uses 50W) and because they are recessed, you can have lots of them in one room. LED equivalents to a GU10 50W bulb are now available which only use 10-20% of the energy for the same light output.
- If you are replacing inefficient bulb types with low energy types, a light bulb fitting guide is shown in Figure 4.

EFFICIENCY	Least Most			
BULB TYPE				
LUMENS	STANDARD	HALOGEN	CFL	LED
450	40 W	29 W	9 W	8 W
800	60 W	43 W	14 W	13 W
1100	75 W	53 W	19 W	17 W
1600	100 W	72 W	23 W	20 W
RATED LIFE	1 year	1-3 years	6-10 years	15-25 years
SAVINGS	✗	up to 30%	up to 75%	up to 80%

Figure 2 – Equivalent power and brightness for different bulb types

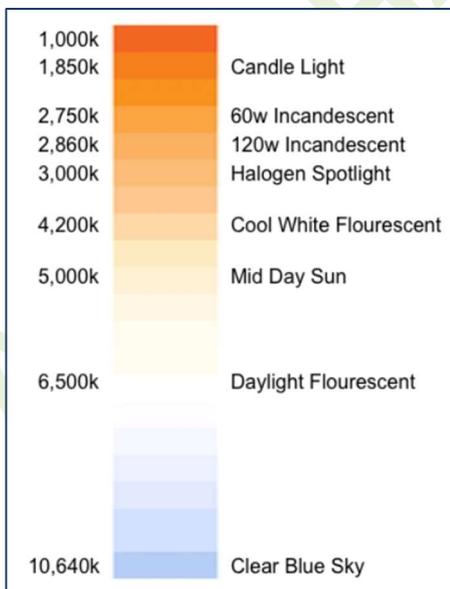


Figure 3 – Correlated Colour Temperature chart (degrees Kelvin)

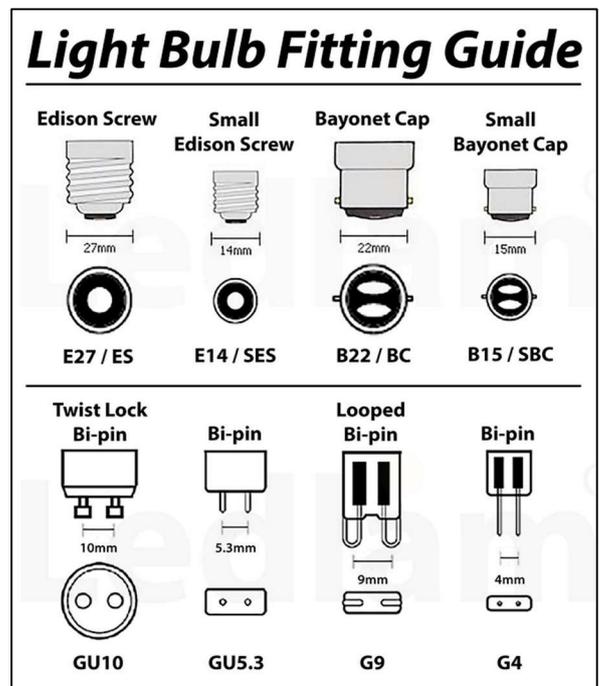


Figure 4 – Light bulb fitting guide

BARNINGHAM NET ZERO

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