

Guide to Energy Saving Light Bulbs

Confused about all the different light bulb options? Simply follow this **5 Step Guide** on how to choose the right light bulb for your home!



Myth Busters

1.

If there is a sticker on my lamp shade that says MAX 40W, I have to replace the light bulb with a 40W bulb.

FALSE – You can use a lower watt bulb as MAX 40W only indicates the maximum watt that is safe to use for the specific lamp shade. Simply choose an energy-efficient light bulb such as CFLs or LEDs, which have the same light output (lumen) of a 40W traditional incandescent bulb.

2.

If my light bulb is dead and still in the fitting, it is still using electricity.

FALSE – A dead light bulb does not use any electricity. However, you should replace a flickering, dim or defective light bulb, as it can use more energy than a normal bulb.

3.

CFL and LED lights are only available in bright white colours.

FALSE – You can get CFLs and LEDs in different degrees of brightness from warm white to cool white and these colour differences can change the general ambience of a room. Light colour is measured in degrees Kelvin (K), which means that a bulb marked 2,700K will give a warm white, while one marked 3,400K will produce a cool white light. You will find degrees Kelvin printed on the light bulb packaging or on the light bulb itself. Both CFLs and LEDs are also available in other colours (e.g. red, blue).

4.

CFLs do not provide enough light.

FALSE – You can choose CFLs based on their light output (lumen). This means that a 12W CFL can produce as much light as a 60W traditional incandescent light bulb. However, CFLs require some time to warm up and are therefore not instantly bright.

5.

CFL and LED lights are not dimmable.

FALSE – Both CFLs and LEDs are now available for dimmer switches. However, please read the manufacturer's packaging properly to ensure you have chosen a dimmable light bulb. Note that they can also be more expensive than the non-dimmable CFL or LED bulb.

6.

Energy-saving light bulbs contain hazardous mercury.

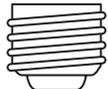
FALSE – Only CFL light bulbs contain mercury and require some care when handling and disposing of them. However, CFLs typically only contain approximately three to five milligrams of mercury, which is about one hundredth of the mercury content found in the older thermostats still used in some homes. Ensure to read the manufacturer's packaging for guidelines on proper handling and disposal.

Step 01

Pick Your Cap Type

Each light fixture in your home requires a specific light bulb cap. Before heading to the shop to purchase your replacement bulb,

why not take a note of the cap type you require to ensure it fits! The most common cap types can be found in the table below.

Bayonet Cap (BC)	Small Bayonet Cap (SBC)	Edison Screw (ES)	Small Edison Screw (SES)	GU5.3	GU10
					
Also known as B22	Also known as B15	Also known as E27	Also known as E14	Also known as two-pin or bipin cap	Also known as two-pin or bipin cap
This is the most common bulb cap used in Ireland.	This bulb cap is not very common. It is mainly used on low wattage candle bulbs and 'golf ball' bulbs.	This bulb cap is widely used throughout Europe and is sometimes referred to as 'screw-in'.	This bulb cap is widely used in low wattage bulbs e.g. candle lamps, R50 reflectors.	This bulb is a low voltage (12V) spot light, which is most commonly associated with your typical down lighter in your home.	This bulb is a mains voltage (240V) spot light, which is also associated with your typical down lighter in your home. It is sometimes referred to as 'Twist-lock'.

Step 02

Choose Your Light Bulb Shape

Before choosing the shape of your light bulb, consider what you would like the bulb to do. It is not simply about the look of the bulb, but rather how it throws light. The design of the

bulb determines the direction of the light. The table below provides an overview of some commonly used light bulb shapes and their uses.

	Traditional/ A-lign	Spiral	Candle	Spot	Downlight	Globe	Stick/ Tube
							
Lamp	✓	✓	✓				✓
Pendant Fixture	✓					✓	✓
Ceiling Fixture	✓						✓
Track Lighting				✓			
Recessed Can				✓	✓		
Wall Sconces		✓	✓				✓
Outdoor Covered	✓	✓	✓				✓

What is a beam angle?

The beam angle refers to the measure of the spread of the light source and is stated in degrees. Choose a wider beam angle for the living room, dining room and bedroom and a softer and more narrow beam angle for targeted lights or specific areas for decoration.

Step 03

Pick an Energy Efficient Light Bulb

When choosing your light bulb, don't just buy the cheapest option, as they can cost you more in the long-term. Take into account the energy efficiency of the light bulb

and its running cost. The table below provides an overview of different light bulbs with their power consumption, brightness, lifespan and cost.

	Traditional	Eco-Halogen	CFL	LED
				
Consumption Power	60W	42W	13W	6W
Brightness	700 lumen= 	625 lumen= 	741 lumen= 	500 lumen= 
Energy Efficiency*	E	D	A	A+
Lifespan	1,000hrs = 1 year	2,000hrs = 2 years	10,000hrs = 10 years	30,000hrs = 30 years
Cost per bulb	€1	€3	€3.50	€9.45
Yearly Running Cost	€10.80	€7.56	€2.34	€1.08
15 year Lifetime Cost	Yearly Running Cost + 15 bulbs = €177	Yearly Running Cost + 7.5 bulbs = €135.90	Yearly Running Cost + 1.5 bulbs = €40.35	Yearly Running Cost + 1 bulb = €25.65

* All calculations are based on 1,000 hours per year at €0.18 per kWh.

^ A+ = Most Efficient, G = Least Efficient

Step 04

Pick the Right Brightness

There is a lot of confusion around the wattage and the light (lumen) output of light bulbs. Did you know that you can purchase a lower watt light

bulb with the same brightness of a traditional 60W bulb? Please see table below to compare.

Lumen	Traditional	Eco-Halogen	CFL	LED
220+	25W	18W	6W	4W
400+	40W	28W	9W	6W
700+	60W	42W	12W	10W
900+	75W	53W	15W	13W
1300+	100W	70W	20W	18W

What is Watt?

Wattage is the traditional way of considering your light bulb replacement. However, this is only a measure of the electricity used rather than a reliable way to understand the brightness of a bulb.

What is Lumen?

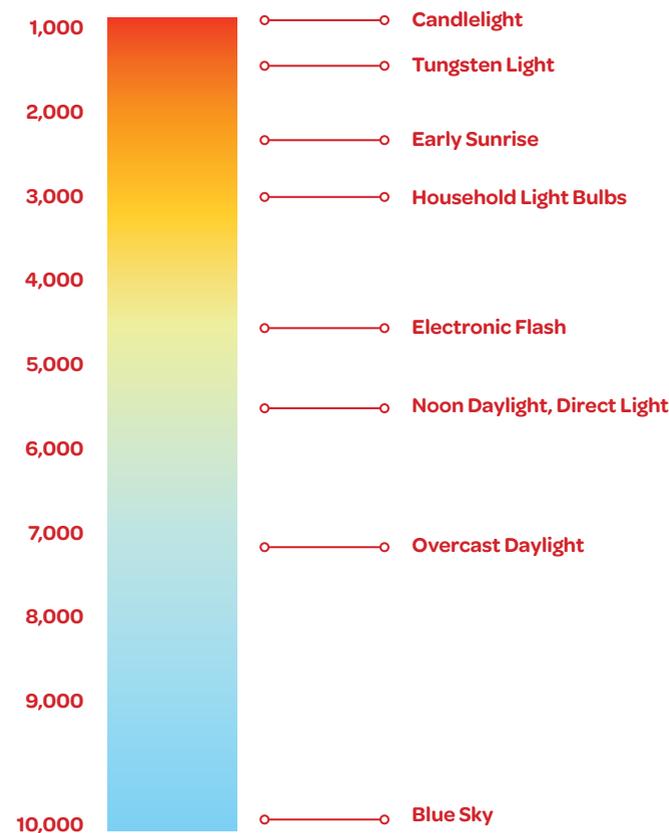
Lumen is the measure of brightness. Instead of picking your light bulb based on watt, you should consider the lumen output of the bulb.

Step 05

Pick the Right Colour

There are a lot of concerns around the colour of energy-efficient light bulbs. However, most light bulb packaging now includes information on the

bulb's colour. See the Kelvin scale below to ensure you pick the right light bulb for the desired atmosphere.



What is Kelvin?

Light colour is measured in degrees Kelvin (K). A bulb marked 2,700K will give a warm white equivalent to that of an ordinary bulb while one marked 3,400K will produce a cool white closer to daylight.

Your Energy Calculator

The following formula will help you calculate the running cost of your bulb per year, based on the

watt of the bulb, the amount of time the bulb is typically used and the electricity unit cost.

Watt of light bulb	+	1,000	x	Hours of use per day	x	Days of use per week	x	Electricity cost (€/kWh)	x	weeks of the year	=	Running cost per year
--------------------	---	-------	---	----------------------	---	----------------------	---	--------------------------	---	-------------------	---	-----------------------

Example

Traditional bulb

60W	+	1,000	x	3 hours per day	x	5 days per week	x	€0.18 per kWh	x	52	=	€8.42
-----	---	-------	---	-----------------	---	-----------------	---	---------------	---	----	---	-------

LED bulb

6W	+	1,000	x	3 hours per day	x	5 days per week	x	€0.18 per kWh	x	52	=	€0.84
----	---	-------	---	-----------------	---	-----------------	---	---------------	---	----	---	-------

What is a kWh?

Kilowatt-hour (kWh) is a unit of energy equivalent to one kilowatt of power expended for one hour.

Why not count the number of light bulbs in your home and check how much they are costing you!

Consider Renewable Electricity

Even if you have reduced your electricity consumption at home by introducing energy efficient light bulbs, electricity is still the most expensive energy source in Ireland. By introducing renewable energy sources into the Irish electricity grid, Ireland has been able to make its energy supply more secure and reduce its carbon emissions. Over 80% of renewable electricity is currently generated from wind power with other renewable energy sources including bioenergy, hydro and solar accounting for the rest (SEAI, 2013). Solar photovoltaic panels in particular offer a viable option for households to produce their own free electricity. For more information on domestic renewable energy options, please visit www.seai.ie.

Acknowledgement

This information leaflet was produced by Codema, Dublin's energy agency, as part of a European initiative called 'Academy of Champions for Energy' (ACE), which aims to increase the uptake of sustainable and renewable energy across North West Europe. The ACE project is co-funded by the INTERREG IVB NWE programme, which is a Programme of the European Union to promote the economic, environmental, social and territorial future of the North-West Europe area. To find out more about the ACE project, please visit www.aceforenergy.eu where you can access useful case studies and tools on citizen engagement and community energy.