Cost benefit of lighting

Highlighting the benefits
In the UK, most electricity is generated by fossil fuel-fired power stations. These release carbon dioxide (a greenhouse gas) into the atmosphere, as a by-product of electricity generation.

Home energy use is responsible for 28 per cent of UK carbon dioxide emissions which contribute to climate change. By following best practice standards, new build and refurbished housing will be more energy efficient: this will reduce emissions, cut energy consumption, save money and safeguard the environment.

New properties are built to high thermal performance standards and so require less heating. As a result, lighting and appliances can account for up to 75 per cent of total fuel costs, 33 per cent of CO_2 emissions and about 20 per cent of total energy use.

Energy efficient lighting will reduce electricity consumption, delivering potential savings of approximately 900,000 tonnes of CO_2 over 10 years across the UK.

Energy consumption can be reduced by:

- Using energy efficient lamps and luminaires (light fittings).
- Directing light where needed (task–directional lighting).
- Using lighting only when required.
- Making the most of daylight.

Energy efficient lighting can:

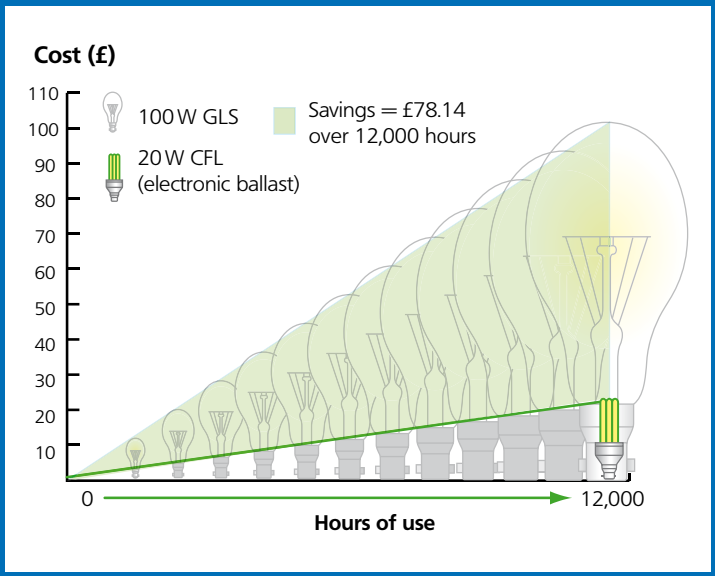
- Reduce energy costs.
- Reduce CO_2 emissions.
- Reduce maintenance costs for communal areas through longer life expectancy.
- Help to achieve Housing Corporation Scheme Development Standards.
- Aid compliance with building regulations.

Lifetime costs
Comparing Compact Fluorescent Lamps (CFL) and General Lighting Service (GLS) lamps
The table right shows the savings that can be achieved by replacing a 100 W tungsten filament lamp (GLS or incandescent lamp) with a 20 W CFL. This is based on an electricity price of 7.9 p/kWh and 1,100 hours of use per year (which, according to research, is the average lifespan of the two most often used lamps in the average house).

	100 W GLS	20 W CFL*
Cost	£0.50	£3.70
Lamp life (hours)	1,000	12,000
Total lamp cost (over life of 1 CFL)	£6.00	£3.70
Total electricity cost (over life of 1 CFL)	£94.80	£18.96
Total costs	£100.80	£22.66
Savings through the use of CFL instead of 100 W GLS		**£78.14**

* The cost of the dedicated fitting is in the order of £6-12 higher (excluding installation costs) than one designed for an incandescent lamp. This one-off cost is not incurred when replacing lamps and so is not included in these calculations. CFLs may also be available at discounted prices from energy suppliers.

Incandescent lamps are very inefficient (90 per cent of the energy they use is given out as heat). Because of this, though, they help to keep a building warm during the heating season. Changing to energy efficient lighting may therefore mean more energy is needed for heating (this is known as the heat replacement effect). The additional energy requirement will partially offset the cost and CO_2 savings of energy efficient lighting.



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Specifying

Dedicated energy efficient light fittings (which contain an electronic ballast, ensuring that only energy efficient lamps can be used) should be specified wherever possible. This will guarantee long term reductions in CO_2 emissions and enable occupants to reap financial benefits throughout their time in the property. Although energy saving lamps can be used in conventional fittings, there is no certainty that they always will.

The best time to install low energy lighting is during construction. In many parts of the UK, building regulations require that new houses have a set proportion of lighting provided by these dedicated fittings. The same applies to extensions and conversions (where there is material change of use).

In existing housing, luminaires can be replaced at any time. A key opportunity, though, is whilst rewiring – especially where existing pendant fittings are being replaced. In unoccupied housing (e.g. during a tenancy gap, or redevelopment) low energy lighting should be installed as part of the works.

What is energy saving recommended?

The Energy Saving Trust endorses a wide range of energy-efficient products through the energy saving recommended scheme. Currently one in two people buying an appliance used the energy saving recommended logo as a way of easily identifying the most energy efficient products in class – this is one in four households. The availability of dedicated low-energy luminaires has improved hugely in recent years with products available for most applications and styles. Many of these have received energy saving recommended certification.

A full list of these is available at www.est.org.uk/recommended
Images of most of these are available at www.lightingassociation.com

Further information

The Energy Saving Trust sets energy efficiency standards that go beyond building regulations for use in the design, construction and refurbishment of homes. These standards provide an integrated package of measures covering fabric, ventilation, heating, lighting and hot water systems for all aspects of new build and renovation. Free resources including best practice guides, training seminars, technical advice and online tools, are available to help meet these standards.

The following publications may also be of interest:

- Low energy domestic lighting – 'looking good for less' (CE81/GPCS 441)
- Domestic lighting innovations (CE80/ADH001)
- Low energy domestic lighting (GIL 20)
- Energy efficient lighting – a guide for installers (CE61)

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