

Energy efficient lighting in houses, townhouses and units

For new dwellings and home renovations

What is the requirement for energy efficient lighting in new dwellings?

New houses, townhouses and multi-unit residential buildings need to have energy efficient globes installed to a minimum of 80 per cent of the total fixed light fittings to both internal and external areas of the building, such as their attached garages and outdoor living areas (e.g. verandahs and balconies).

This is required under the *Queensland Development Code 4.1—Sustainable buildings* (QDC). An alternative method for houses and townhouses is available under the Building Code of Australia which measures the minimum number of watts per square metre of the building's floor area.

What type of lights are energy efficient?

An energy efficient globe, for the purpose of the QDC, is defined as having a minimum output of 27 lumens per watt. Compliant globes may include fluorescent tubes, compact fluorescent lamps (CFLs), neon, metal halide and high efficiency light emitting diodes (LEDs). Energy efficient downlights (depending on their lumens per watt) are also now available and are generally CFLs or LEDs. It is important to determine the globe's lumens per watt to ensure it complies with the QDC standard.

How can I tell how many lumens per watt a globe has?

A globe's lumens per watt may be shown on its packaging. If not, other details can be used to calculate this. Simply divide the lumens (the light's output indicated as 'lm') by the globe's wattage (the light's power indicated as 'W'). For example, a globe with 680lm and 15W has 45 lumens per watt. Alternatively, the globe's technical details can be obtained in-store from the lighting supplier, from the manufacturer's data sheet or the manufacturer's website.

When did the current requirement come into effect in Queensland?

Since 1 May 2010, new houses and townhouses (class 1 buildings) and residential units (class 2 buildings) have been required to comply with the energy efficient lighting requirement. It also applies to existing houses, townhouses and residential units at time of renovation.

What about the federal phase-out of inefficient light globes?

In 2009 the Commonwealth Government phased out inefficient light globes through an import and retail sales ban. This phase-out only affected the poorest performing incandescent and halogen downlights i.e. those with 15 lumens per watt or less.

Are halogen downlights energy efficient?

While halogen downlights are sometimes described as 'low voltage', this does not mean they are efficient in producing light. Each halogen downlight typically uses 50 watts and the transformers (thin black boxes in the roof) uses an extra 4 to 8 watts. Often four or more halogen downlights are now used where previously only one light globe would have been installed. This means that halogen downlights often use significantly more energy for lighting.

Halogen downlights are also a potential fire risk as a 50 watt light can burn at up to 370°C in the roof space. To minimise the risk of fire, large gaps must be left around each lighting fixture. This can substantially reduce the cooling and heating potential of ceiling insulation (for more information see the AS3000:2007 Electrical installations, commonly referred to as the 'Wiring rules').

What are the benefits of energy efficient globes?

Installing energy efficient lighting is one of the easiest and most cost effective ways householders can reduce their energy use and save on their electricity bills.

A typical 15-watt CFL globe (equivalent to a 75-watt incandescent) costs around \$3. Replacing incandescent or halogen downlights with a CFL globe can save up to 80 per cent on running costs, with a saving of around \$10 each per year on electricity bills. The typical payback for a CFL globe is less than six months. CFL globes also last up to 10 times longer than an incandescent globe. Savings of around \$400 per year can be achieved by using 10 energy efficient lights instead of 40 halogen downlights.

CFL globes also do not generate heat into the roof space and living area. CFL globes come in a range of colours:

- **Warm white** provides a soft warmer light comparable to light provided by traditional incandescent light globes and can be used in living and bedroom areas.
- **Cool white** provides neutral light comparable to office lighting, and can be used in service areas, such as bathrooms, kitchens, laundries and garages.
- **Daylight** similar to outdoor light comparable to midday lighting conditions.

Requiring homes to have energy efficient lighting also supports the energy efficiency requirements for new houses and townhouses (6-stars) and residential units (5-stars).

This standard can also reduce the need for additional electricity infrastructure caused by peak demand by encouraging more energy efficient lighting.

How is the energy efficient lighting requirement applied with a home renovation?

Home renovations need to comply with the energy efficient lighting requirement. If the renovation represents more than 50 per cent of the existing building's floor area, then the building certifier has discretion to determine how the energy efficient lighting requirement may also apply to the existing part of the house, along with the renovation.

Homeowners undertaking renovations should discuss how they can comply with their building certifier early in the design stage so they know what work needs to be done. A home renovation guideline is available on www.hpw.qld.gov.au.

What else can be done to reduce energy used for lighting?

When designing a new dwelling or home renovation, natural day lighting can be promoted in high use areas to minimise the use of artificial lighting that may be required through the day.

Door switches for pantries, proximity switches and controlled lighting, such as dimmers and timers, can also be installed.

For more information

For more information refer to *QDC 4.1—Sustainable buildings* and the associated guideline. Both are available on the Department of Housing and Public Works website www.hpw.qld.gov.au/construction/BuildingPlumbing