Energy efficient lighting in houses, townhouses and units

What is the requirement for energy efficient lighting?

New houses and townhouses (class 1 buildings) and units in multi-unit residential buildings (class 2) need to have energy efficient globes installed to a minimum of 80 per cent of the total fixed artificial light fittings to both internal and external areas, such as their attached garages and outdoor living areas (e.g. verandahs and balconies).

This standard also applies to existing houses, townhouses and residential units at time of renovation.

The energy efficient lighting standard has been required under the *Queensland Development Code 4.1—Sustainable buildings* (QDC 4.1) since 1 May 2010.

What type of lights are energy efficient?

An energy efficient globe, for the purpose of QDC 4.1, 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.

The standard does not include heat lamps used in bathrooms (as these are for the purposes of radiating heat).

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

It is important to determine the globe's lumens per watt to ensure it complies with QDC 4.1, and this may be shown on its packaging.

If not, other details can be used to calculate this. Simply divide the lumens (the light's output, as indicated by 'lm') by the globe's wattage (the light's power, as indicated by '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 who may hold a copy of the manufacturer's data sheet or from the manufacturer's website.

Are halogen downlights energy efficient?

While halogen downlights are sometimes described as 'low voltage', this does not mean they are efficient in producing light.

A 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 used per room where previously only one light globe would have been installed. Therefore they can use significantly more energy for lighting in the dwelling.

Halogen downlights are also a potential fire risk. A 50 watt light can burn at up to 370˚C in the roof space. To minimise the risk of fire, gaps must be left around each lighting fixture. However, this can substantially reduce the cooling and heating potential of ceiling

insulation in the roof space. For more information see the Australian Standard AS/NZS 3000:2007 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 with their on-going electricity bills.

A typical 15-watt CFL globe (equivalent to a traditional 75-watt incandescent lamp) costs around $3. Replacing each incandescent or halogen downlight 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 time 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 globes 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 lamp 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 building standards for energy efficient 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 as it encourages more energy efficient lighting.

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

The energy efficient lighting standard may apply when undertaking a renovation to an existing dwelling, such as an alteration or addition. It can apply to the new building work associated with the renovation.

Further, if the renovation represents more than 50 per cent of the existing dwelling's floor area, then the building certifier has discretion to determine whether and to what extent the energy efficient lighting standard should also apply to the existing part of the dwelling (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 in complying with the energy efficient lighting standard for residential buildings.

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

When designing a new dwelling or home renovation, natural day lighting can be promoted in high-use areas, such as living rooms and kitchens, 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 to provide appropriate lighting when required.

For more information

For more information about energy efficient lighting refer to the department's website at www.hpw.qld.gov.au.