

# Does Low Voltage Equal Low Power?

## The Great Downlight Mythconception Dispelled

One of the great lighting “mythconceptions” is that low voltage lamps mean low power consumption, but this cannot be further from the truth. Since the 1980’s consumers have used halogen downlights to enhance their home’s architectural and aesthetic appeal and now the halogen downlight, a lamp once predominately used in jewellery store cabinet displays, has established itself as the lamp of choice in homes...but at what cost?



**Figure 1.** LED’s retrofit into halogen fittings in the Retail shop at Melbourne Zoo

Most Consumers are unaware that each 50W halogen downlight uses up to 55 Watts of power with transformer losses included. Halogen downlights can have surface temperatures well over 190°C, the heat generated by halogen downlights and the fire risk from insulation in contact with the lamp is also downplayed. Current Australian standards provide for clearances of 200mm from the downlight to prevent contact, tragically however serious accidents can and do occur.

The best way to eliminate risk is not to install halogen downlights in the first place, but they do look great and home owners prefer them. How do we keep the downlight look but significantly reduce the risk? Technology today offers a number of products that are safer non-halogen downlight alternatives, the two most common types being Light Emitting Diodes (LED’s) and Compact fluorescent lamp (CFL) technology.

LED’s produce instant light, are capable of being dimmed, have very little surface heat and their energy consumption is around 1/10<sup>th</sup> that of a halogen. A major disadvantage is that light output may not be sufficient to replace the existing halogen lamp. LED products come in different configurations, some are direct replacements of existing halogens, using the existing power supply and neatly connecting into the existing fitting. Other LED’s however, are all in one complete kits that offer a new fitting – so the existing halogen lamp, power supply and fitting need to be removed for the new LED to be installed.



**Figure 2.** ecoBright® 6Watt LED which can be a direct replacement for some Halogen lamps.

Direct replacement LED’s tend to be inexpensive, but are also less likely to produce the same light output as a 50 Watt halogen. Complete LED units are typically more expensive, have a higher wattage and are quite capable of meeting and maintaining the existing light output. Whether the existing light level is required at all depends on what the primary use of the lighting is for – if it is used for a spotlighting effect (figure 1), or as a secondary lighting source, then a 6 Watt LED (figure 2) would be sufficient for the task.



**Figure 3.** ecoBulb® 12V 15W CFL direct replacement for some Halogen lamps.

The CFL alternative to halogens however, can be split into two categories: those that need an electrician to fit them and those that can be fitted by the householder themselves. Direct replacement CFL’s (figure 3) are rated to low voltage specifications and similar to direct replacement LED’s, simply plug into the existing hardware for halogen lamps. CFL solutions that require an electrician (figure 4) to fit them do not need transformers and therefore the spacing between the lamps and the insulation can be reduced – this allows for better insulation of the home.

The advantages of CFL’s are cost and light output. The main disadvantage is that CFL’s require a small period of time to warm up – this is especially true of CFL’s containing amalgam (an alloy of mercury) instead of free mercury (such as the ecoBulb® range) - which makes them safer than traditional CFL’s. Many CFL fittings do not provide for dimming although there are dimmable versions on the market.

The appeal of halogen downlights is quite high however, there is also a growing awareness of the risks and energy consumed by these lamps and the safer alternatives available. As long as consumers are willing to trade off some of the benefits of 50W halogen lamps, then big savings can be made in running costs.

It’s a classic win-win and difficult to argue against something that is not only good for our hip pocket but good for the environment as well.

For more information contact ecoBright® energy solutions on 03 9331 0027 or visit [www.ecobright.com.au](http://www.ecobright.com.au)



**Figure 4.** ecoBulb® 15W CFL a complete replacement for Halogen lamps.

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