



# Lighting Your Home

Try out the tube types in your local lighting shop to see all the different “shades of white” that are available.



## Fluorescent Lighting, save energy and money

Compact Fluorescent light bulbs (CFLs) cost more initially but win over conventional lighting on two counts:

- 1) they last up to 8 times longer than incandescent lights
- 2) require only 25% of energy to produce the same amount of light.

This translates to a saving of between \$30 and \$70 over the lifetime of the bulb, pretty good for an investment of \$5 (and less in bulk)! And you don't have to change light bulbs nearly so often.

Compact fluorescents incorporate a built-in ballast and fit normal bayonet or screw fitting. No hassle, just replace your existing light bulbs when they burn out

## ***Free compact fluorescent lights, shower heads and installation!!!***

Yes the heading is correct. If you wish to convert your compact fluorescent lights and your showerheads at the same time for free then contact the companies below.

- Green Alliance 1300 787 749
- Enviro Saver - Phone 1800 368 476  
[www.envirosaver.com.au](http://www.envirosaver.com.au)

## ***But what about the quality of light???***

Modern fluorescents run at a variety of colour temperature and use different phosphors to achieve their perceived colour. “Warm White” runs at 3000K which is very similar to a regular incandescent light bulb.

## ***Light Bulb Shape***

Compact fluorescents now come in a variety of shapes, linear, corkscrew, and enclosed. Talk to your lighting shop or refer to an excellent article in ReNew magazine, Issue 95 pp36, 37 to choose the correct shape to match your fixture and application. Generally anything that emulates the traditional light bulb will work well in a light fitting

## ***In General***

Whatever type of lighting you use in your home, the less they are on, the less electricity you will use: saving you money and the reducing your environmental impact:

## **Quick Tips:**

- Turn off lights when not in use
- Rather than lighting a whole room, use ‘task’ lighting
- Use motion sensors for outdoor lights
- Clean light bulbs and fixtures regularly
- Use Light timers

## **Other types of Lighting**

### **1. Incandescent or ‘regular’ light bulbs**

The Federal Government has announced that incandescent lights will be phased out in 2009-10, so the sooner you changeover the better. As incandescent lights produce 90% heat and only 10% light you can see why Compact Fluorescent lights are a good idea. Compact Fluorescent lights can now replace virtually every type of incandescent light currently available and the price in bulk is now very good.

### **2. Halogens**

Halogen light bulbs are marginally more efficient than incandescent light bulbs, but when used in downlights, the large number of halogens used to light a room vastly outweighs this efficiency. Light bulb life on average is about twice incandescent but 2-5 times shorter than fluorescent. Use halogen lighting sparingly where bright

tasklighting or accenting is required or better still consider CFL downlights or LED lighting- see below.

#### Why Recessed Downlights are bad news

Because recessed halogen downlights run so hot, they require a 90mm radius circle clear of insulation around them. If you think of the ceiling insulation as the duna of your house, these gaps around the downlights are the same as cutting holes in your duna! In a 20m<sup>2</sup> room with 8 downlights you will have an uninsulated area of only 1% by area, but will increase heat loss by 15%, not including heat losses due to infiltration (warm air venting out through the downlights themselves). In addition, the 8 downlights draw 500W of power when the same light levels in the room could be achieved with two 25W fluorescent light fixtures.

### **CFL Downlights**

These have been on the market since about 2005 and are a big improvement over the halogen downlights. Coming currently in 7, 9, 11 and 18 W sizes, the 18W bulb is roughly equivalent to a 100W light. Running on 240V they don't have a transformer but you can use the same hole in your ceiling if you decide to replace your halogen downlights; you'll need an electrician to do the wiring. You can also now buy dimmable versions of the CFL's.

Pros:

- much lower energy consumption while still giving good levels of light.
- You still cannot lay insulation over the fixtures but you only need to leave a 50 mm radius gap in your insulation around each fixture.
- Bulbs last much longer so lower maintenance.
- High initial cost of bulb but actually cheaper than halogens over life cycle of bulb due to low energy costs.
- More expensive versions are dimmable.

Cons:

- Downlights are still a relatively inefficient way to light a room as many fixtures are required due to recessing and narrow beam angle.

### **LED Lights**

These are predicted to be the lights of the future.

They have three main benefits:

1. Experimental LEDs have attained very high efficiencies
2. They last a very long time- up to 100 000 hours, the equivalent of over 11 years continuous running. You'll never have to change a light bulb again.
3. Because of their high efficiency they run much cooler than halogens allowing you to insulate over recessed downlights removing a big energy loss from your home.

The primary downside of LEDs is cost. Currently a quality equivalent for a halogen downlight will cost up to \$250 but with long life, good colour and low consumption they are already popular commercially. A variety of new designs and lighting intensities are reaching the market but have yet to be applied to the full range of light fittings styles. Look out for them in commercial settings where lights are left on for long periods.

### Skylights

Skylights provide natural daylight to rooms that would otherwise require lighting. Unfortunately, they also allow large quantities of heat to enter in summer and heat to be lost from your house in winter.

How do you get light without heat in a dark room?

1. The simplest and cheapest solution is to install an energy efficient light fixture (you can even pay a bit extra and get a daylight spectrum fluorescent)
2. Use a daylighting device such as a Solatube or Velux Sun Tunnel – They are very bright without the heat
3. Using a clerestory window (high level vertical window) instead will reduce summer heat gain and reduce winter heat loss. If you can point it north, it will also increase winter heat gain.

If you insist on a skylight, buy the best you can afford. Features such as double glazing, block out blinds, and low emissivity glass all help to reduce the inherent problems in our climate caused by skylights.

### **Windows:**

**A range of other fact sheets on saving energy and money in your home are available from HEAT**

To many, the best light is natural light so maximising windows would seem a logical way to reduce the need for artificial light. Unfortunately, even the best windows allow a much greater heat flow than does a similar area of insulated wall. In general, windows on the northern face of a house in Canberra are beneficial to a house's energy performance while windows on the East, West, and South are potentially quite harmful to the energy efficiency of a house. Remember, it's always cheaper to turn on a light than to use active heating or cooling. For more information, see the HEAT Windows Factsheet.

## Lighting Myths

### Myth 1: Low voltage means low energy use

Voltage refers to the "strength" of the electricity flowing, not the amount. When it comes to cost, the power or current that a light draws is the measure of how much it will cost. Low voltage lights typically use 50W lightbulbs and an additional 5-15W in their transformers. CFLs by comparison use between 12 and 21W and don't require transformers.

### Myth 2: Turning fluorescents on and off uses all my savings in power

Turning a fluorescent on uses very little energy. The idea that you are better off leaving a fluorescent on for hours rather than turning it off came about because old style ballasts used to wear out if turned on and off excessively. With modern electronic ballasts this no longer holds true. If you're going to leave the room for more than 10 minutes, turn off the light.

## Miscellaneous Tips:

- Use light-coloured paint inside your house. Dark wall colours absorb light, increasing the amount of lighting needed.
- Modern dimmer controls reduce greenhouse gas emissions as they reduce light output. They also extend lamp life. If you are buying new dimmable fixtures, check to ensure that dimming the light fixture does reduce power use. Automatic light timers turn off after set intervals (12-36 minutes), great for toilets, laundries and front porches. Fit into normal light socket and take a normal bulb.



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