

# consumer

ENERGY EFFICIENT LIGHTING GUIDE [WWW.CONSUMER.ORG.NZ](http://WWW.CONSUMER.ORG.NZ)

**Electricity**  
Commission



## Energy Efficient Home Lighting

a guide to your options





## What's wrong with ordinary light bulbs?

One word: Heat. Ordinary light bulbs produce far more heat than light. About 95 percent of the energy they use becomes heat. Only about 5 percent of the energy becomes light. That heat costs you money - you are paying more for heat than light. For lights that are left on for lots of hours that cost can add up. This guide explains the alternatives.

**An average household spends \$1600 a year on electricity. About 10 percent of that goes on lighting. By choosing energy efficient lighting, your power bill will be less.**



## What's right with energy saving light bulbs?

They last longer and are far more energy efficient than ordinary bulbs. Energy saving lightbulbs (for example, compact fluorescent lamps, CFLs) can be used in most places where you currently use ordinary (incandescent) bulbs. They use similar technology to office-style fluorescent tubes, but come with screw-in or bayonet fittings so they can fit into standard light sockets. They last longer and are far more energy efficient than ordinary bulbs. And, though the most common bulbs come as spiral or U-shaped tubes, they are also available in a range of shapes and types.

**You can help the country reduce its greenhouse gas emissions and reduce the need for power companies to build more electricity generation and distribution facilities in the future.**

## Advantages of energy saving light bulbs



As a rule of thumb, a 20-watt energy saving bulb should produce about as much light output as a 100-watt standard bulb – good models produce more. That means if you replace an ordinary bulb with a quality energy saving bulb, you'll only use about one-fifth as much electricity – and still have at least as much light as before.

For each ordinary bulb you replace with an energy saving bulb, at current electricity prices it has been estimated you'll save around \$120 over the life of the bulb (8000 hours).

### How long do energy saving bulbs last?

An energy saving bulb should last about 5000 to 10,000 hours, whereas an ordinary bulb will generally burn out at around 1000 hours. Used for three hours a day, an energy saving bulb should last about 10 years.

### Don't energy saving bulbs produce harsh light?

Not necessarily. Unlike ordinary bulbs, energy saving bulbs come in a range of whites. If you want lighting that's similar to an ordinary bulb, say for places where people relax – like lounges – look for “warm white” on the packaging. In kitchens, bathrooms, laundries and work areas, some people like a ‘cooler bluish-white’ light. If you want this colour, look for “cool white” or “cool daylight” on the packaging.

### Don't energy saving bulbs cost more than ordinary bulbs?

Energy saving bulbs cost more to buy than ordinary bulbs. But a \$6\* high quality energy saving bulb should last longer than six \$1 ordinary bulbs – and you won't have the hassle of changing bulbs as often. Buying energy saving bulbs will work out cheaper in the long run. And, energy saving bulbs use 80 percent less power over their life so you'll save money on electricity use.

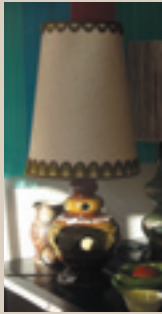
### Do they flicker like fluorescent tubes do?

No. Good-quality energy saving bulbs don't flicker.

### Are there any other advantages of energy saving bulbs?

They run cooler than ordinary bulbs, so light fittings don't get as hot. They are available in a variety of shapes and sizes.

\*From time to time the Electricity Commission subsidises high quality energy saving bulbs. During those times, the subsidised bulbs can be purchased for substantially less than their normal price.



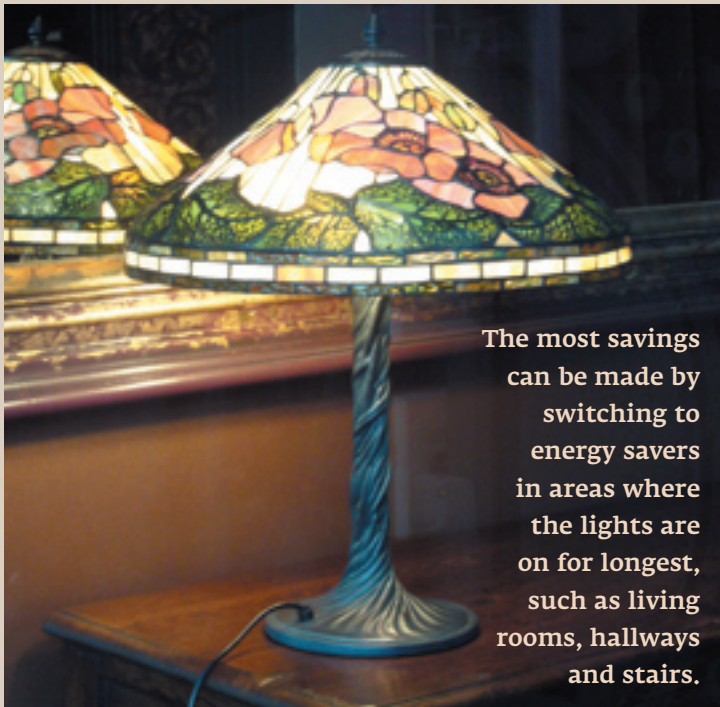
**How to get the maximum benefit from energy saving bulbs?**

They can be used pretty much anywhere you currently use ordinary bulbs. They're suitable for background or general lighting in any room – living rooms, bedrooms, studies, dining rooms, kitchens, hallways and stairwells. The most savings can be made by switching to energy saving bulbs in areas where the lights are on for longest, such as living rooms, hallways and stairs. Energy saving bulbs aren't ideal for rooms that will only be used for very short periods, such as lights in walk-in pantries. That's because they take a few seconds to warm up.

Some energy saving bulbs may stick out of recessed downlights or reflector fittings and the light may not project properly. Energy saving bulbs designed specially for downlights are available. Ask your lighting supplier for energy saving bulbs that are suitable for your fittings.

“Warm white” energy saving bulbs aren't ideal for spotlighting or task lighting, for example over a desk, workbench or kitchen workspace. Use a “cool white” bulb for these uses. You can get spotlight energy savers. Otherwise, your best option for spotlighting is a halogen-infrared lamp.

Most energy saving bulbs can't be used with dimmers. However, some can – if so, they will be clearly labelled.



The most savings can be made by switching to energy savers in areas where the lights are on for longest, such as living rooms, hallways and stairs.



**Is one energy saving bulb as good as another?**

No. Consumers' Institute testing in 2005 found the different makes of bulbs varied considerably. The best 20-watt energy saving bulb produced noticeably more light than a 100-watt ordinary bulb. The worst produced considerably less light.

Higher quality energy savers also last longer and should be able to withstand being switched on and off at least 4000 times.

The Electricity Commission recently invited the distributors of energy saving bulbs to submit samples for inclusion in the Commission's subsidised promotional campaign. The bulbs were rigorously tested in an internationally accredited lab.

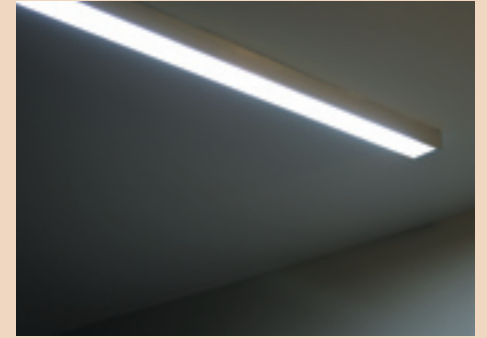
Of those submitted, the following were selected for the promotion: Ecobulb; e-lite (high performance lamp); Philips (Tornado). There are possibly other good bulbs available that were not submitted for testing.



**The range continues to grow – all these bulbs are energy savers**

**You can buy energy saving bulbs at supermarkets, hardware stores and specialist lighting shops.**

# Energy saver fittings



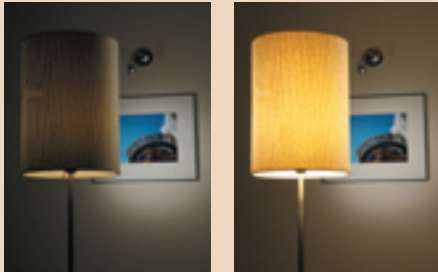
## Other energy efficient lighting options



### The right lighting

As a rule it's more efficient to use a task light or spotlight for a work area such as a kitchen bench, workbench, or desk, than it is to light the whole room to the required level. The most efficient options for task lighting or spotlighting are cool white, spotlight energy saving bulbs or halogen-infrared lamps.

For background lighting, only provide the level of lighting you need. If there's too little light it can be a safety issue, but too much can waste energy and cause glare. Use the minimum wattage bulbs that give adequate light. Alternatively, using a dimmer on your background lighting helps to save energy. You'll need to install energy saving bulbs that can work with a dimmer.



### Natural light

You can maximise natural light in your home by using light-coloured paint on the walls and other surfaces, and by pulling back curtains and blinds so they're not blocking daylight.

It may be possible to locate work areas such as desks near windows. However, this may not always be appropriate – in some situations direct sunlight will cause glare and overheating. Skylights and “solar tube” type fittings can increase natural light without glare. Diffuse natural light is more comfortable to work in than direct sunlight.



**Switching off** The simplest way to save energy is, of course, to turn off lights when you're not using them.



## Energy savers and mercury

Mercury is toxic and it accumulates in our bodies. Tiny traces of mercury exist in nature, so we're all exposed to it.

All fluorescent tubes contain small amounts of mercury. An energy saving bulb typically contains about 4/1000 of a gram. This mercury is safely contained unless the lamp is broken. If the lamp breaks the quantity of mercury is not enough to pose a hazard to users.

Mercury is also released into the environment from coal-fired and geothermal electricity generation, so widespread adoption of energy saving bulbs – because of the reduced demand for coal-fired energy generation – will possibly reduce the overall release of mercury to the environment.

The mercury is safely contained unless the lamp is broken. If the lamp breaks the quantity of mercury is not enough to pose a hazard to users.

### Safe disposal of energy saving bulbs

Energy saving bulbs should be recycled to ensure the mercury is safely contained. Ask your local council about safe disposal and recycling options. Some offer a Hazmobile collection service and others may provide drop-off points at landfills.

The Ministry for the Environment, other government agencies and the Lighting Council NZ are working on a national collection and recycling scheme. For more information, see [www.mfe.govt.nz](http://www.mfe.govt.nz) and [www.lcnz.com](http://www.lcnz.com).

You'll be able to find updates on the Ministry for the Environment website. The ministry has also produced a factsheet on disposal of household lamps, which is available from [www.energywise.org.nz](http://www.energywise.org.nz).

## Looking to the future

The range of energy saving bulbs is growing. Whereas a few years back you could only commonly get U-tube style bulbs, now there are spirals, reflector lamps, spot lamps, enclosed globe lamps, dimmable versions, and more. As the use of energy saving bulbs grows, the range of lamps and fittings will also continue to increase.

The next step in energy efficient lighting is likely to come from LEDs (light emitting diodes). You may have seen red LEDs in the bright flashing tail lights that cyclists use. There are also white LED torches on the market. A 1 to 2 watt LED spotlight is more than four times as efficient as the current compact fluorescent bulbs and 10 times more efficient than an ordinary bulb.

LEDs are available for home lighting now, but the price is high and current models are really only suitable for down lights and spotlights. As production volumes increase, the price is likely to come down and versatility improve. The other big advantage of LEDs is that they last for 50,000 to 100,000 hours – which means if you install one now and use it for three hours a day, you won't need to change it for about 50 years!

In future, LEDs have the potential to revolutionise home lighting. In the meantime, the current crop of compact fluorescent bulbs is a big improvement over ordinary bulbs.

### We say

- Replace the bulbs in your house that burn the longest with energy savers – it will save you money.
- For general and background lighting, the commonly available energy saver bulbs should be fine. If you have dimmer switches, look for models that can be dimmed.
- For spotlighting, look for energy saver spotlights or halogen-infrareads.
- If you are designing a new home, or renovating, ask your architect or designer to maximise use of diffuse natural light, and to specify fittings that will take energy efficient bulbs.
- Dispose of energy savers carefully. Ask your council or lighting supplier where to take them for recycling.

### More help

Energy saving calculators: [www.consumer.org.nz/powerswitch](http://www.consumer.org.nz/powerswitch)  
 Subsidised energy saver bulbs: [www.electricitycommission.govt.nz](http://www.electricitycommission.govt.nz)  
 More on efficient lighting: [www.energywise.org.nz](http://www.energywise.org.nz)

ISBN 0-908658-61-3

Published by Consumers' Institute 39 Webb Street, Wellington, New Zealand



As well as being very energy efficient, the other big advantage of LEDs is that they last for 50,000 to 100,000 hours – which means if you install one now and use it for three hours a day, you won't need to change it for about 50 years!



# Making better energy choices

By adopting energy efficient technologies we will not only save money on our power bills, we also reduce the demand for energy from non-renewable sources – which is good for the environment.

For more information about efficient home lighting and other ways to save energy check out the following websites:



[www.energywise.org.nz](http://www.energywise.org.nz) [www.consumer.org.nz](http://www.consumer.org.nz) [www.smarterhomes.org.nz](http://www.smarterhomes.org.nz)

This guide has been developed by the Consumers' Institute with funding by the Electricity Commission to enable consumers to make informed choices about efficient lighting. The Electricity Commission is a Crown entity set up in 2003 to oversee New Zealand's electricity industry and markets. Its principle objectives are to ensure that electricity is produced and delivered to consumers in an efficient, fair, reliable and environmentally sustainable manner; and to promote and facilitate the efficient use of electricity.

**To find out more, visit [www.electricitycommission.govt.nz](http://www.electricitycommission.govt.nz)**

The Consumers' Institute is New Zealand's leading organisation for consumer advocacy. Energy efficiency is a key measure in Consumer's extensive product testing and recommendations.

**To find out more about the Consumers' Institute visit [www.consumer.org.nz](http://www.consumer.org.nz)**