

CFLs – Compact Fluorescent Light Bulbs

TECHNOLOGY DESCRIPTION

Compact fluorescent light bulbs, or CFLs, are fluorescent lamps that screw or plug into regular light bulb sockets and use 75 percent less energy and last about 10 times longer than incandescent light bulbs.

CFLs produce light differently than incandescent bulbs. In an incandescent, electric current runs through a wire filament and heats it to make it glow. In a CFL, an electric current is driven through a tube containing argon and a small amount of mercury vapor. This generates invisible ultraviolet light that excites a fluorescent coating (called phosphor) on the inside of the tube, which then emits visible light.

CFLs need a little more energy when they are first turned on, but once the electricity starts moving, they use about 75 to 80 percent less energy than incandescent bulbs. A CFL's ballast helps kick-start the CFL and then regulates the current once the electricity starts flowing. Older CFLs used large and heavy magnetic ballasts that often caused a buzzing noise. Most CFLs today — and all ENERGY STAR qualified CFLs — use electronic ballasts, which do not buzz or hum.

CFLs come in a variety of shapes and sizes to fit almost any indoor or outdoor application. CFLs are also available in a wide variety of shades, or temperatures, of light, ranging from yellowish to white to bluish-white light, which allows you to customize the mood of your space. Many CFLs come in warm colors to match the yellowish light of incandescent bulbs. There are some CFLs designed with features to perform in specialized applications such as dimmers and three-way fixtures. However, you should make sure that the packaging specifically states that the CFL is designed for these types of applications.

APPLICATION

CFLs can be used to replace incandescent lamps anywhere, but there are some places where CFLs work better than others. Here are some simple guidelines:

- Install CFLs in locations where they will be lit for long periods of time, such as living rooms and bedrooms.
- Avoid locations with short burn times such as bathrooms or closets.
- Because CFLs do not need to be changed often, they are ideal for hard-to-reach areas.
- CFLs are sensitive to extreme temperatures, which reduce the bulb's lifetime, so place your CFLs in open fixtures indoors. For fully enclosed, unventilated fixtures use either reflector CFLs or cold cathode CFLs or replace the entire fixture with one designed specifically for CFLs.
- For outdoor applications, you can put certain CFLs inside enclosed fixtures. Check the bulb packaging.



POTENTIAL SAVINGS

Switching from incandescent bulbs to CFLs is one of the easiest ways to save energy. In addition to reducing electricity costs and lasting longer, CFLs also produce about 75 percent less heat, which helps to reduce space cooling costs. Although CFLs cost three to 10 times more than comparable incandescent bulbs, they last six to 15 times longer (6,000-15,000 hours). A typical CFL will pay for itself within six months of purchase. If all of the 100 million American households replaced just one of their 60-watt incandescent lamps with an equivalent CFL, the electricity savings would be enough to power a city of 1.5 million people.

The chart below shows typical energy savings from replacing just one incandescent lamp with a CFL.

Original Lamp	Equivalent CFL Watts	Energy Savings (kWh) *	Cost Savings **
60-Watt Incandescent	13	376	\$56
75-Watt Incandescent	20	440	\$66
100-Watt Incandescent	27	584	\$87
150-Watt Incandescent	40	880	\$132

*Energy saved over the life of the CFL, typically around 8,000 hours.

**Assumes \$0.15 per kWh.

CONSIDERATIONS

Because CFLs contain small amounts of mercury, they cannot be thrown out in the regular solid waste trash. Your local municipal entity responsible for solid waste or household hazardous waste collection can provide a list of facilities or collection events that accept CFLs for recycling.

For more information on disposal contact:
City of San Diego Environmental Services
www.sandiego.gov/environmental-services/ep/disposal.shtml
County of San Diego Household Hazardous Waste
www.sdcounty.ca.gov/deh

The Energy Resource Center will recycle your old CFLs.

ADDITIONAL INFORMATION

Rebates may be available for nonresidential customers only through SDG&E's Express Efficiency Program. For information: www.sdge.com/express

For more information on energy-efficient lighting:
www.conservingamerica.com
www.energystar.gov
www.energysavers.gov

Books available in CCSE's Energy Resource Library
Interior Lighting Design by Gary Gordon
Architectural Lighting Design by Gary Steffy

To buy CFLs in bulk: www.quantityquotes.net

