

**Green Offices Program**  
**Sustainable Lightbulb Shopping Guide**

*What are CFLs?*



Compact Fluorescent Lightbulbs are miniature versions of the lights most of us have in our office ceiling fixtures: they rely on exciting mercury vapor atoms to produce light. Easy to install and inexpensive, they consume a fraction of the energy consumed by a traditional incandescent bulb and last longer. However, they are easily broken, releasing mercury, and must be properly disposed of. Additionally, they have limited or no dimming capabilities and require 10-20 seconds to reach optimal light output. It's important to note, however, that the amount of mercury contained in a CFL is less than the mercury that would be released by a coal-burning power plant to power an equivalently bright incandescent bulb. See the comparison chart below for more details.

*What are LEDs?*

LED stands for Light Emitting Diode and is a newly market-ready lighting technology relying on semiconductor technology in place of a gas. LED bulbs use a fraction of the energy of an incandescent bulb while lasting much longer. The quality of light is higher than that of a CFL and it contains none of their hazardous compounds. Furthermore, an LED bulb is dimmable, "instant-on," has little risk of breaking and can be used in any conventional lighting socket. Despite the high initial cost (which is sure to drop as the technology matures), LEDs save electricity and maintenance costs over their lifetime. See the comparison chart below for more details.



Bulb Type	Bulb Life (assuming 8 hours daily usage)	Power Consumed (to produce light output of 60W incandescent)	Bulbs required to match life of one LED bulb (50,000 hours)	Purchase Price	Cost to Operate for 50,000 hours (life of one LED bulb)		Total Cost for 50,000 hours (life of one LED bulb)		Material Toxicity
					WUSTL	Home	WUSTL	Home	
Incandescent	8 months	60 Watts	25	\$0.40	\$180.00	\$300.00	\$190.00	\$310.00	Minimal toxicity. Broken bulbs can be disposed of in the landfill bin.
Compact Fluorescent (CFL)	3.5 years	13-15 Watts	5	\$1	\$42.00	\$70.00	\$47.00	\$75.00	When broken, CFLs release mercury vapor. Health risk is low; however, to minimize exposure, after breakage, leave pieces alone for a few minutes (do not vacuum). Then, collect the glass shards while wearing rubber gloves and place in a sealed bag for disposal through Environmental Health & Safety (Submit a pickup request at <a href="http://ehs.wustl.edu">ehs.wustl.edu</a> ).
Light Emitting Diode (LED)	17 years	6-9 Watts	1	\$25	\$22.50	\$37.50	\$47.50	\$62.50	Minimal exposure risk with everyday use; if broken, no fumes or chemicals will be released. However, if the bulb burns out or breaks, dispose of it like all electronics waste by scheduling a pickup with Environmental Health and Safety ( <a href="http://ehs.wustl.edu">http://ehs.wustl.edu</a> ).

**Bottom Line:** Whenever possible, purchase LED light bulbs to lower energy consumption, eliminate exposure to hazardous compounds and save money in the long-run. Switching to an LED bulb saves over \$140 at work and almost \$250 at home over its lifetime.