



The Facts of Light



Americans use electricity to power our lives. In homes and offices all over the country, people rely on electricity to operate most of our appliances, computers, and entertainment systems.

Electricity warms and cooks our food and our bodies. And, at the flip of a switch, electricity gives us light. Almost half of the electricity used by industry is for lighting. In the residential sector, up to 25 percent of our electric bill is for lighting.

Most of the light is produced by **incandescent light bulbs**, using the same technology developed in 1879 by Thomas Edison. These bulbs are surprisingly inefficient, converting up to 90 percent of the electricity into heat.

There are better ways. If the country converted to the newest, state-of-the-art technologies, the electricity consumed to produce light would be reduced by up to 70 percent! This would lower carbon dioxide emissions equivalent to removing one-third of the nation's cars (43 million) from the highways. Reducing the electricity consumed by just one percent would eliminate the need for an average-sized power plant.

Recent developments have produced **compact fluorescent lights (CFLs)** that are four times as efficient as incandescent bulbs and last up to ten times longer.

These new bulbs fit almost any socket, produce a warm glow and, unlike the earlier models, no longer flicker and dim.

Over the life of the bulbs, CFLs cost the the average consumer less than half the cost of traditional incandescent bulbs for the same amount of light. In addition, CFLs produce very little heat, reducing the need for air conditioning in warm weather.

Why doesn't everyone use CFLs? There are three reasons: lack of education about CFLs, the high initial cost (\$5 to \$10 per bulb) and consumer buying habits. Lots of people have never heard of CFLs, and few know that converting to CFLs can save so much money and electricity. Many people see the price tag and think they're getting a great bargain when they buy 10–20 incandescents for the same amount of money. They don't understand that they can reduce their electric bills by 25 to 50 percent by converting to CFLs.

Another consideration is consumer buying habits. Most people buy light bulbs at the supermarket or local discount store. It's a lot easier to hand over five dollars for ten incandescents than a hundred dollars for ten CFLs.

It will take a massive education campaign to change Americans' buying habits. People must be convinced that lighting is a long-term investment that can really save money, as well as save energy and contribute to air quality.

Do CFLs really save money?

DO THE MATH

Replacing a 100-watt incandescent bulb with an equivalent CFL can:

- save 600 pounds of coal
- reduce carbon dioxide emissions by 1,020 pounds
- reduce sulfur dioxide emissions by four pounds
- reduce nitrous oxide emissions by three pounds
- reduce mercury emissions by 40%

COST	INCANDESCENT	CFL
Life of bulb (how long it will burn)	1,000 hours	10,000 hours
Number of bulbs to get 10,000 hrs	10 bulbs	1 bulb
x Price per bulb	\$0.50	\$10.00
= Cost of bulbs for 10,000 hrs of light	\$5.00	\$10.00
Cost of Electricity		
Total hours	10,000 hours	10,000 hours
x Wattage (divide by 1,000 to get kW)	100 watts = 0.10 kW	30 watts = 0.030 kW
= Total kWh consumption	1,000 kWh	300 kWh
x Cost of electricity per kWh	\$0.08	\$0.08
= Cost of electricity	\$80.00	\$24.00
Life Cycle Cost		
Cost of bulbs	\$ 5.00	\$10.00
+ Cost of electricity	\$80.00	\$24.00
= Life Cycle Cost	\$85.00	\$34.00