



Facts of Light

Facts of Light

More than one-third of the electricity used by industry is for lighting. In homes, up to 11 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 they consume into heat.

If the country converted to new technologies, the electricity consumed to produce light could be reduced by up to 70 percent! This would lower carbon dioxide emissions equivalent to removing one-third of the nation's cars from the highways.

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 average consumer about a quarter of 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.

Once used mainly for exit signs and power on/off indicators, technology and lower prices are enabling **light emitting diodes (LEDs)** to be used in place of incandescents and CFLs.

ENERGY STAR rated LEDs must have a lifetime of 25,000 hours. They also use even less energy than a CFL. This means life cycle emissions for an LED will be far fewer than those of a CFL. The U.S. Department of Energy estimates widespread adoption of LED lighting over the next twenty years would reduce lighting electricity demand by 33 percent. This would avoid construction of 40 new power plants.

Why doesn't everyone use CFLs and LEDs? Few people realize that converting to CFLs and LEDs can save so much money and electricity. Many people see the price tag and think they're getting a great bargain when they buy ten incandescents for the same amount of money as one CFL. They don't understand how much they can reduce their electric bills due to lighting with CFLs. LEDs are currently expensive, but as demand increases, their prices are expected to decrease significantly.

Cost of 25,000 Hours of Light



COST OF BULB		INCANDESCENT BULB	COMPACT FLUORESCENT (CFL)	LIGHT EMITTING DIODE (LED)
	Life of bulb (how long it will light)	1,000 hours	12,000 hours	25,000 hours
	Number of bulbs to get 25,000 hours	25 bulbs	2.1 bulbs	1 bulb
x	Price per bulb	\$0.30	\$3.00	\$40.00
=	Cost of bulbs for 25,000 hours of light	\$7.50	\$6.30	\$40.00
COST OF ELECTRICITY		INCANDESCENT BULB	COMPACT FLUORESCENT (CFL)	LIGHT EMITTING DIODE (LED)
	Total Hours	25,000 hours	25,000 hours	25,000 hours
x	Wattage	60 watts = 0.060 kW	13 watts = 0.013 kW	12.5 watts = 0.0125 kW
=	Total kWh consumption	1,500 kWh	325 kWh	312.5 kWh
x	Price of electricity per kWh	\$0.12	\$0.12	\$0.12
=	Cost of Electricity	\$180.00	\$39.00	\$37.50
LIFE CYCLE COST		INCANDESCENT BULB	COMPACT FLUORESCENT (CFL)	LIGHT EMITTING DIODE (LED)
	Cost of bulbs	\$7.50	\$6.30	\$40.00
+	Cost of electricity	\$180.00	\$39.00	\$37.50
=	Life cycle cost	\$187.50	\$45.30	\$77.50
ENVIRONMENTAL IMPACT		INCANDESCENT BULB	COMPACT FLUORESCENT (CFL)	LIGHT EMITTING DIODE (LED)
	Total kWh consumption	1500 kWh	325 kWh	312.5 kWh
x	Pounds (lbs) of carbon dioxide per kWh	1.6 lb/kWh	1.6 lb/kWh	1.6 lb/kWh
=	Pounds of carbon dioxide produced	2,400 lbs carbon dioxide	520 lbs carbon dioxide	500 lbs carbon dioxide