

## Cost of electrical energy

1. You want 1600 lumens and you want it for 8 hours each day for 30 days, how much would it cost if you used an Incandescent lamp? What would the cost be if you used a CF (compact fluorescent) lamp? What would the cost be if you used an LED? Assume that locally the cost of electric energy is approximately \$0.18 per kWhr. (1 kilowatt hour = 3,600,000 joules)
2. You have a small air conditioner which is rated at 1650 W. By mistake, you left it on when you went on vacation for 3 weeks. Assuming it ran the entire time, how much did that mistake cost you?

Excerpted from Wikipedia, the free encyclopedia

The **lumen** (symbol: **lm**) is the [SI derived unit](#) of [luminous flux](#), a measure of the total "amount" of [visible light](#) emitted by a source. Luminous flux differs from [power](#) ([radiant flux](#)) in that luminous flux measurements reflect the varying sensitivity of the [human eye](#) to different [wavelengths](#) of light, while radiant flux measurements indicate the total power of all electromagnetic waves emitted, independent of the eye's ability to perceive it. Lumens are related to [lux](#) in that one lux is one lumen per square meter.

Electrical power equivalents for differing lamps<sup>[5]</sup>

Minimum <a href="#">light output</a> (lumens)	Electrical power consumption (watts)		
	<a href="#">Incandescent</a>	Compact fluorescent	<a href="#">LED</a>
200	25	3-5	?-?
450	40	9-11	6-8
800	60	13-15	9-12
1,100	75	18-20	13-16
1,600	100	24-28	18-22
2,400	150	30-52	30
3,100	200	49-75	32
4,000	300	75-100	40.5