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## Compact Fluorescent Light Bulb (CFL) & Light-Emitting Diodes Bulb (LED) Facts and Comparisons

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### CFL Bulbs

One of the simplest and least expensive ways to reduce energy use and prevent greenhouse gases is to switch from traditional light bulbs to compact fluorescent lights (CFLs). Lighting accounts for close to 20 percent of the average home's electric bill. Energy Star qualified CFLs use up to 75 percent less and last up to 10 times longer than incandescent light bulbs. CFLs are available in all department and hardware stores that sell traditional light bulbs.

If every home in America replaced just one incandescent light bulb with an Energy Star qualified CFL, in one year we would save enough energy to light more than three million homes and prevent greenhouse gas emissions equivalent to those of more than 800,000 cars.

You should know that CFLs contain a very small amount of mercury sealed within the glass tubing. The average amount is 5 milligrams compared to older thermometers contain about 500 milligrams of mercury. No mercury is released when the bulbs are intact or in use. Unfortunately, when released into the environment, mercury can pose a hazard to human health or harm the environment. Be careful when removing the bulb from its packaging, installing it, or replacing it, as it is made of glass and can break if dropped or roughly handled. Special cleanup procedures are necessary if a CFL is broken. Please refer to the instructions for cleaning a broken CFL at <http://www.epa.gov/hg/spills/>.

Spent CFLs should never be disposed of in regular household trash. As a matter of fact, it is against the law in New Hampshire to dispose of any mercury-containing products in landfills, incinerators, or transfer stations. N.H. Department of Environmental Services recommends that burned out CFLs be recycled at local recycling facilities or retail stores if at all possible. If recycling is not an option, DES recommends that they be taken to recycling/disposal of all fluorescent bulbs, including fluorescent tube lamps and CFLs. To identify your current local recycling and /or household hazardous waste collection options, you should always contact your local municipality.

Compiled by  
Maureen Hamel Energy Answers Volunteer  
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(over)

# LED Light Bulb Questions and Answers

(Light-Emitting Diodes bulbs)

- **Can you save money by buying a \$50.00 LED light?** YES
- **What watt LED light bulb will replace the 100W incandescent?** 13W
- **If an LED light is on 8 hours a day for 5 years, will I need to replace the bulb?** NO  
An LED light unit has a life expectancy of 50,000 hours compared to 750 hours for the standard incandescent light bulb.
- **Will it be a savings to replace my incandescent living-room-lamp-bulb?** YES. Most living-room lamps are on for an average of 3 hours a day. .An LED light will save the owner over \$80.00 in a five year period. (See chart below for longer hours & more savings)
- **Do LED bulbs flicker like the fluorescent units?** NO
- **Can LED bulbs be used on a dimmer?** YES
- **Can I get LED bulbs with the color selection?** YES
- **What are some comparisons of the LED over CFL bulbs?** LED lights do not flicker and do not need time to warm up. CFL bulbs have mercury which is a disposal problem. CFL bulbs are less costly for replacement over a five year period but use more power.
- **Is it true that incandescent light bulbs are being phased out?** YES  
Due to a new law that requires a higher efficiency standard for lighting, manufacturers will be required to stop producing the standard incandescent bulb that we have known all our lives. The Energy Independence and Security Act of 2007 has been enacted. It takes effect in 2012 for the 100W bulb.

## More Information

LED bulbs are even more efficient than CFL bulbs, however they are just coming on the market. As of February 2010, LED bulbs are more available for purchase online than in your local store. As this is new technology, the bigger box stores have begun carrying a small selection that will increase over time. It is also assumed that as the production increases the \$50.00 13W LED light bulb that has the same lumens as the 100W bulb will decline in price. See the attached charts for comparisons on energy and dollar savings. (The chart is calculated with a \$50.00 and a \$30.00 purchase price for the LED bulbs.)

Compiled by  
Spencer Brookes, Energy Answers Volunteer  
01/2010

## LED Bulbs compared to Incandescent Bulbs

Length of Time					
Hours used in a day	3	8	10	12	24
Hours used in a year	1095	2920	3650	4380	8760
<b>100W Incandescent Bulbs 750 hr Life</b>	<b>1.46</b>	<b>3.893333</b>	<b>4.866667</b>	<b>5.84</b>	<b>11.68</b>
<b>Number of Incandescent Bulbs - 1yr</b>	<b>2</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>12</b>
<b>Number of Incandescent Bulbs - 2yr</b>	<b>3</b>	<b>8</b>	<b>10</b>	<b>12</b>	<b>24</b>
<b>Number of Incandescent Bulbs - 5yr</b>	<b>8</b>	<b>20</b>	<b>25</b>	<b>30</b>	<b>59</b>
<b>Bulb Cost @ \$ 0.44 - 5yrs</b>	\$3.52	\$8.80	\$11.00	\$13.20	\$25.96
<b>Power use in Kilowatts - 5yrs</b>	548	1,460	1,825	2,190	4,380
<b>5yr Power Cost @ \$0.144 per KW</b>	\$78.84	\$210.24	\$262.80	\$315.36	\$630.72
<b>5yr Total Cost @ \$0.144 per KW</b>	\$82.36	\$219.04	\$273.80	\$328.56	\$656.68
<b>13W LED Light Bulbs 30,000 Life</b>	<b>0.0365</b>	<b>0.097333</b>	<b>0.121667</b>	<b>0.146</b>	<b>0.292</b>
<b>Number of LED Bulbs - 1 yr</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Number of LED Bulbs - 2 yrs</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Number of LED bulbs - 5yrs</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>
<b>Bulb Cost @ \$30.00 - 5yrs</b>	\$30.00	\$30.00	\$30.00	\$30.00	\$60.00
<b>Power use in Kilowatts - 5yrs</b>	71.175	189.8	237.25	284.7	569.4
<b>5yr Power Cost @ \$0.144 per KW</b>	\$10.25	\$27.33	\$34.16	\$41.00	\$81.99
<b>5yr Total Cost for 13W LED</b>	\$40.25	\$57.33	\$64.16	\$71.00	\$141.99
<b>SAVING USING LED @ \$30 - 5yrs</b>	<b>-\$42.11</b>	<b>-\$161.71</b>	<b>-\$209.64</b>	<b>\$257.56</b>	<b>\$514.69</b>
<b>Saving LED Bulb Cost @ \$50 - 5yrs.</b>	<b>-\$22.11</b>	<b>-\$141.71</b>	<b>-\$189.64</b>	<b>\$237.56</b>	<b>\$494.69</b>
Labor for bulb replacement cost not included in this data.					

## CFL Bulbs Compared to Incandescent Bulbs

Length of Time					
Hours used in a day	3	8	10	12	24
Hours used in a year	1095	2920	3650	4380	8760
100W Incandescent Bulbs 750 hr Life	1.46	3.893333	4.866667	5.84	11.68
Number of Incandescent Bulbs - 1yr	2	4	5	6	12
Number of Incandescent Bulbs - 2yr	3	8	10	12	24
Number of Incandescent Bulbs - 5yr	8	20	25	30	59
Bulb Cost @ \$ 0.44 - 5yrs	\$3.52	\$8.80	\$11.00	\$13.20	\$25.96
Power use in Kilowatts - 5yrs	548	1,460	1,825	2,190	4,380
5yr Power Cost @ \$0.144 per KW	\$78.84	\$210.24	\$262.80	\$315.36	\$630.72
5yr Total Cost @ \$0.144 per KW	\$82.36	\$219.04	\$273.80	\$328.56	\$656.68
23W Light Bulbs 8000 Life	0.136875	0.365	0.45625	0.5475	1.095
Number of LED Bulbs - 1 yr	1	1	1	1	2
Number of LED Bulbs - 2 yrs	1	1	1	2	3
Number of LED bulbs - 5yrs	1	2	3	3	6
Bulb Cost @ \$3.50 - 5yrs	\$3.50	\$7.00	\$10.50	\$10.50	\$21.00
Power use in Kilowatts - 5yrs	125.925	335.8	419.75	503.7	1007.4
5yr Power Cost @ \$0.144 per KW	\$18.13	\$48.36	\$60.44	\$72.53	\$145.07
5yr Total Cost for 23W CFL	\$21.63	\$55.36	\$70.94	\$83.03	\$166.07
<b>SAVING USING CFL @ \$3.50 - 5yrs</b>	<b>-\$60.73</b>	<b>-\$163.68</b>	<b>-\$202.86</b>	<b>\$245.53</b>	<b>\$490.61</b>
Labor for bulb replacement cost not included in this data.					