



Energy Saving Solutions from the
 UK Department of Biosystems and Agricultural Engineering

A Consumer Editorial
—The Light Bulb Dilemma—

Source: Gerald Hash: 06/10/2013

Shopping for home light bulbs has developed into a monumental task. The simple incandescent wattage decision has evolved quickly into a shelf-side research project ending in a startling price analysis. The 50¢ incandescent is leaving, replaced with compact fluorescents (CFLs) and light emitting diodes (LEDs) ranging from \$2 to over \$80. For the dedicated lighting geek, plenty of hi-tech data is available from manufacturers and specialty vendors. But what about mom and dad just wanting to replace the burned out incandescent in the den as they grocery shop? Well, let's become informed but not over-whelmed, with store shelf observation and simple decision making criteria.

The following chart gives your typical options and support data when replacing that burned out 60 watt incandescent that is soon to be outlawed.***

Lighting Options Equal to 60 Watt Incandescent	Actual Watts	Lumen Output	Kelvin T. coloration	Hours Life	Years* Life	Warranty Years	Price (\$)
Incandescent ** Soft White	60	850	2,700°	2,000	1.8	.25\$	0.50
Halogen	43	750	2,800°	990	0.9	.25\$	2.50
CFL Soft White	13	800	2,700°	8,000	7.3	2-7	2.00
CFL Bright White	13	900	4,100°	10,000	9.0	2-7	2.50
CFL Daylight	15	800	6,500°	12,000	10.9	5-11	3.50
LED Soft White	12	810	2,700°	25,000+	22.7	2-6	12.00

*Based on 3 hours per day.

**Enhanced "double life" - 2,000 hours

***Federal Regulations: All light bulbs must use 25% to 30% less energy than 2010 incandescent by 2012 to 2014 (incandescent phase out period). All bulbs must be 70% more efficient by 2020.

§Typical 90 day store return policy.

**WHICH BULB
 IS RIGHT FOR YOU?**

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Halogen bulbs use 25% less wattage but last only half the hours of a “double life” incandescent. Presently, halogens meet the 2012 standard but fall far short of the 2020 goal. At 5 times the price and half the life expectancy, the sole advantage of 25% energy savings earns little merit.

CFLs, when bought in multi-packs, cost around \$2.75. They price near the halogen but carry far superior features. Compared to incandescent, they are 75% more efficient (meet 2020 standard), 5 times the hours of the “double life” incandescent, and carry warranties ranging from 2 to 11 years. Incandescent and halogen bulbs are covered only by store return policies: 30 to 90 days. CFL warranties average about 6 years. It trails the 7 to 11 year life expectancy but adequately ensures the initial investment. CFLs contain a trace of mercury requiring special clean-up when broken. Lowe’s and Home Depot accept spent bulbs for recycling; otherwise, double bag them for regular trash pick-up.

LED household bulbs (replacement for a 60 watt incandescent globe bulb) slightly increase to 85% more efficient than incandescent. Now the disparity! This traditional LED bulb (soft white) claims a 22.7 year life expectancy (3 times its CFL counterpart), but is warranted for no more than 5 years. It seems no major issue until you factor in the BIG price of \$20.00. That screams for a much longer warranty! The grand longevity is the only notable justification for the grand price, yet the unwitting consumer’s investment is undermined with a dwarfed warranty.

Beware of rated life expectancy on hi-tech bulbs. CFLs have now been on the market long enough to assess the results. In September 2011, network news anchors reported a release by the lighting industry acknowledging unexpected high early failure rates on CFLs. Household LEDs reached stores around 2009, so market confirmation of longevity is far distant along with payback on your additional \$17.50 investment. Money aside, LEDs lead the environmental category, for unlike CFLs they contain no mercury (or lead); thus they are easily recycled.

CONCLUSION

For the ultra-green environmentalist with deep pockets, LEDs are the latest and greatest tools you have long awaited. Over time, with your help in attaining economics of scale, the prices should deflate as did CFLs. But note that changing out a typical 1,500 square foot home will now cost around \$2,000. That includes specialty bulbs that cost \$30 to \$60 each.

For those balancing a tight budget with energy efficiency and earthly stewardship in a struggling economy, let’s reconsider. CFLs more than fill the bill with their efficiency, longevity and correlating warranties, variety, availability, and reasonable pricing. Be patient, save your money and let the LED phenomenon play through to your advantage.

LEDs and CFLs offer various Kelvin temperature ratings in their product lines. At 2,700°K you get coloration (soft white) to which you are more accustomed. At 3,000°K to 5,000°K (bright white) you get brighter, cleaner, more natural color rendition. At 6,500°K (daylight) one gets true color rendition as through your ceiling is a sunny blue sky in summer at noon. Sounds beautiful but beware, the majority of consumers impressed with the ‘daylight’ concept are alarmed with the extreme change from their warm “soft white” lifetime experience. Buy one “daylight” and one “bright white”, try them, then buy in multi-packs if you decide it’s time to leave your “soft white” indoor world.

Update: 01/15/2015. As expected, LED sales are increasing and the resulting economies to scale are driving retail pricing downward. Consumer verification of the 20+ year life expectancy claim remains in the distant future. However, manufacturer warranties are slowly lengthening as they now span 2-6 years with at least one brand reaching 10 years on standard room bulbs. Patience pays!!

GOODBYE, WATTS.
Hello, LUMENS.

THE NEW WAY TO SHOP FOR LIGHT

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