LED Light Bulbs: Comparison Charts

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LED light bulbs will eventually be what we use to replace incandescent bulbs – CFLs are a temporary solution to energy-efficient lighting. The reason LEDs have not yet displaced CFLs from the market are twofold: the first generation LED bulbs had a narrow and focused light beam, and the cost of the LED bulbs was too high.

Recent developments in LED technology, however, have been addressing these issues. LEDs have been 'clustered' to provide more light, and mounted within diffuser lenses which spread the light across a wider area. And advancements in manufacturing technology have driven the prices down to a level where LED bulbs are more cost-effective than CFLs or incandescent bulbs. This trend is continuing, with LED bulbs being designed for more applications while the prices are going down over time.

The 'sticker shock' of the new LEDs remains a deterrent to their widespread acceptance by consumers. The following comparison charts illustrate the value of the latest LED bulbs when compared with CFLs and incandescents for overall efficiency as well as cost-effectiveness.

Cost Comparison between LEDs, CFLs and Incandescent light bulbs

	LED	CFL	Incandescent
Light bulb projected lifespan	**50,000 hours**	**10,000 hours**	**1,200 hours**
Watts per bulb (equiv. 60 watts)	**10**	**14**	**60**
Cost per bulb	**$35.95**	**$3.95**	**$1.25**
KWh of electricity used over 50,000 hours	**300 500**	**700**	**3000**
Cost of electricity (@ 0.10per KWh)	**$50**	**$70**	**$300**
Bulbs needed for 50k hours of use	**1**	**5**	**42**
Equivalent 50k hours bulb expense	**$35.95**	**$19.75**	**$52.50**
Total cost for 50k hours	**$85.75**	**$89.75**	**$352.50**

Energy Savings over 50,000 hours, assuming 25 bulbs per household:

Total cost for 25 bulbs	**$2143.75**	**$2243.75**	**$8812.50**
Savings to household by switching from incandescents	**$6668.75**	**$6568.75**	**0**

Notes:
- Cost of electricity will vary. The figures used above are for comparison only, and are not exact. Residential energy costs among the various states range from 28.53 cents (Hawaii) to 6.34 cents (Idaho) per KWH.
- The cost per bulb for LEDs may vary. We used the figure of $35.95 (for a 60 watt equivalent LED bulb) as an average among lighting retailers.
- Estimates of bulb lifespan are projected, since it would take about 6 years of continuous lighting to test. Some manufacturers claim the new LED bulbs will last up to 25 years under normal household use, but this is not proven.
- Bulb breakage and bulb replacement costs have not been factored into this comparison chart. Incandescent bulbs and CFL bulbs are more easily broken than LEDs, which increases their cost of use.
- Most LEDs come with a minimum 2-year guarantee. Any defective LED bulb will usually fail within this time.

Comparing the top LED lightbulbs for household use

LED bulb	Price	Watts	Lumens	Incandescent Equivalent Watts	Dimmable	CRI	Lifespan

FEIT Warm White	$37.95	13.5	800	60	yes	85	> 25,000 hrs
FEIT Dimmable Globe	$32.95	10	420	40	yes	85	> 25,000 hrs
FEIT MR-16 pin base for track lights	$24.95	4	170	n/a	no	85	> 30,000 hrs
LumiSelect MR-16 PRO, Warm White, Dimmable	$35.99	5	350	40 - 50	yes	75	> 50,000 hrs
FEIT Candelabra	$19.95	3.5	130	25 - 35	yes	85	> 25,000 hrs
FEIT PAR-20 Flood Warm White, Dimmable	$34.95	7.5	320	40	yes	85	> 25,000 hrs
FEIT PAR-30 Flood Warm White	$47.95	11	500	65	no	85	> 30,000 hrs
FEIT PAR-30 Flood Warm White, Dimmable	$53.95	13.5	650	65	yes	85	> 25,000 hrs
TCP PAR-38 Flood Warm White, Dimmable	$53.95	17	1050	75	yes	85	> 50,000 hrs
Cree CR 6 Bulb and Module, Warm White, Dimmable	$89.95	10.5	575	50 - 60	yes	90	> 50,000 hrs
Cree LR 6 Bulb and Module, Warm White, Dimmable	$134.95	12	650	50 - 60	yes	92	> 35,000 hrs

Notes:
- Dimmable LEDs cost about 40% more than non-dimmable LEDs of similar wattage.
- Estimates of bulb lifespan are projected, since it would take about 6 years of continuous lighting to test. The FEIT bulb life expectancies are considerably understated. Some manufacturers claim the new LED bulbs may last up to 25 years under normal household use.

Terms:
- **Lumens** - The unit of measurement of the flow of light, or 'luminous flux'. With light bulbs, it provides an estimate of the apparent amount of light the bulb will produce.
- **Coloring Rendering Index (CRI)** . CRI represents the quality of light and its ability to render colors correctly. The FEIT dimmable 13.5 watt warm white, for example, features a CRI of 75 for Cool White and 80 for Warm White making it one of the highest in the industry.

Equivalent wattages and light output of Incandescent, CFL and LED bulbs

Light Output	LEDs	CFLs	Incandescents
Lumens	Watts	Watts	Watts
450	4 - 5	8 - 12	40
300 - 900	6 - 8	13 - 18	60
1100 - 1300	9 - 13	18 - 22	75 - 100
1600 - 1800	16 - 20	23 - 30	100

2600 - 2800	25 - 28	30 - 55	150

Comparing the features of Incandescent, CFL and LED bulbs

	LEDs	CFLs	Incandescents
Frequent On/Off Cycling	no effect	shortens lifespan	some effect
Turns on instantly	yes	slight delay	yes
Durability	durable	fragile	fragile
Heat Emitted	low (3 btu's/hr)	medium (30 btu's/hr)	high (85 btu's/hr)
Sensitivity to temperature	no	yes	some
Sensitivity to humidity	no	yes	some
Hazardous Materials	none	5 mg mercury/bulb	none
Replacement frequency (over 50k hours)	1	5	40+

Choosing an LED light bulb

Many different models and styles of LED bulbs are emerging in today's marketplace. When choosing a bulb, keep in mind the following:

- **Estimate desired wattage - read the package to choose desired illumination level. For example, a 3W LED is equivalent in output to a 45 W incandescent.**
- **Choose between warm and cool light - new LED bulbs are available in 'cool' white light, which is ideal for task lighting, and 'warm' light commonly used for accent or small area lighting.**
- **Standard base or pin base - LEDs are available in several types of 'pin' sockets or the standard "screw' (Edison) bases for recessed or track lighting.**
- **Choose between standard and dimmable bulbs - some LED bulbs, such as the FEIT Electric bulbs, are now available as dimmable bulbs.**

The common styles of LED bulbs available for household use include the following:

Diffused bulbs

In this style LED bulb, clusters of LEDs are covered by a dimpled lens which spreads the light out over a wider area. Available in standard Edison bases, these bulbs have many uses, such as area lighting for rooms, porches, reading lamps, accent lamps, hallways and low-light applications where lights remain on for extended periods. Diffused LED bulbs

Dimmable Globe LED bulbs

Designed for bathroom vanities or anywhere a globe bulb is required, these bulbs produce light equivalent to a 40-watt incandescent bulb, yet only consume 10 watts of power. Dimmable from 100% to 10%, these bulbs have a 200 degree beam angle to cast light in a wide area.
Click for more information or to buy Dimmable Globe LED Bulbs

Track Lighting

Available in pin base or standard (Edison) base, LEDs are ideal for track lighting. LEDs do not contribute to heat buildup in a room because no matter how long they remain on, they do not get hot to the touch. Also, because they are 90% more efficient than incandescents, and last 10 times longer than CFLs, the frequency of changing bulbs is greatly reduced. Track Lighting pin-base LED bulbs

Flood Reflector LEDs for Recessed Cans and Track lights, screw-in base

LEDs are now available for standard recessed lighting pots and housings. They range from 7.5 to 17watts, with beam widths from PAR20 to PAR38. Several models are dimmable. Also, because they are 90% more efficient than incandescents. and last 10 times longer than CFLs, the frequency of changing bulbs is greatly reduced.
Click for more information or to buy Flood reflector LED bulbs

Flame Tip, Candelabra Base LEDs

Designed to replace incandescent candelabra bulbs, these flame tip LEDs deliver the equivalent

light of 25 - 35 watt incandescents while only drawing 3.5 watts of electricity. Because of the heat sink in the base, light doesn't disperse downwards as much as a typical incandescent candelabra bulb.

Click for more information or to buy Flame tip candelabra LEDs

LED Tube Lights

Designed to replace fluorescent tube bulbs, these LED tubes are available in 8 and 16 watts, which replace traditional 25-watt and 40-watt T8/T10/T12 fluorescent tubes. Because fluorescent lights are often installed in high ceilings in commercial sites, there are additional savings because the frequency of changing bulbs is greatly reduced.

Click for more information or to buy LED Tube Lights