

# THE LIGHTING REVOLUTION



## What you need to know to choose a lightbulb in 2012

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The Energy Independence and Security Act of 2007 takes effect in January, which means that shopping for lightbulbs will never be quite the same again. The act requires lightbulbs to deliver light levels similar to those of traditional incandescent bulbs but to use 25 percent less energy. Between now and 2014, conventional incandescent bulbs will be phased out, starting with the 100-watt bulb in 2012.

The good news is that there are excellent energy-efficient bulbs already on the shelves, with many more to come in 2012. The bad news is that shopping for new bulbs includes a learning curve because none are exact replicas of the incandescent bulbs we're used to. To make smart choices and avoid frustration, you'll need to know a bit more about lightbulbs.

And after reading this article, you will.

### **DON'T PANIC!**

Although most incandescent bulbs will be phased out, popular specialty bulbs, such as appliance bulbs, are exempt from the new standards. Other exempt bulbs include three-way, rough service and colored lights, as well as bug lights and plant lights. Visit [energysavers.gov](http://energysavers.gov) for a complete list of exempt bulbs (search for "11978").

# THREE MAIN LIGHTING TECHNOLOGIES: PROS AND CONS



## HALOGEN INCANDESCENTS

**Pros:** The most similar in looks, light quality and

light distribution to a traditional incandescent bulb, yet it's 30 percent more efficient and lasts several times longer. It starts up instantly, it's dimmable, its life span isn't affected by frequent on and off activity, and it doesn't contain mercury.

**Cons:** At about \$1.50, it costs four times as much as a conventional incandescent bulb and uses a lot more energy than CFLs and LEDs (both are at least 75 percent more efficient than traditional incandescent bulbs). It also burns much hotter and doesn't give off the exact same glow we're accustomed to. It produces a brighter, whiter light with an intense glare, so it needs to be shaded, shielded or directed so the filament isn't in your line of sight.

**Best uses:** Reading lamps, exterior floodlights, track lighting, under-cabinet lighting and accent lighting.

**Handling halogens:** Don't handle a halogen bulb with your fingers; use a clean rag. The oils from your skin will cause the bulb to burn hotter and shorten its life.



## CFLs

**Pros:** Compact fluorescents are now better than earlier incarnations at delivering a warmer light

without long warm-up times, flickering or buzzing. There are also more CFLs designed for different household fixtures, including recessed cans, outdoor lights and track lights. Most CFLs now contain 60 percent less mercury than five years ago, and prices for CFLs have plummeted. A quality CFL now costs less than \$2 a bulb and can save \$30 per bulb in electricity costs over its lifetime, compared with a conventional incandescent.

**Cons:** Some CFLs still warm up slowly and cast a bluer light than conventional bulbs, and most don't work well with three-way switches or dimmers (even CFLs designed to be dimmed may not work with all dimmer switches). They also contain some mercury. CFL longevity claims are still unreliable; bulb life can be diminished by vibration, cold, overheating in recessed fixtures and being operated in short spurts.

**Best uses:** Interior fixtures that are left on for extended periods, with a minimal amount of cycling them off and on. Also good for lighting large areas.



## LEDs

**Pros:** LEDs are at least as efficient as CFLs, mercury free and excellent for cold weather use. There's no

startup delay, and they work with dimmers. They also have a very long life: 25,000 hours vs. 6,600 for an equivalent CFL. And overall, their light quality is more pleasant than that of many CFLs.

**Cons:** There are almost no 60-, 75- or 100-watt equivalents on the market; most only shine light in one direction; and they cost \$20 to \$50. The few on the market that shine light in all directions run in the \$50-plus range. Also, LED bulbs that are brighter than 40 watts are still generally dim and don't fit most existing fixtures.

But the future will be brighter. Prices will come down radically over the next few years, quality choices will expand and most industry watchers believe LEDs are the future of lighting...eventually.

**Best uses:** High-use fixtures such as recessed cans and porch lights, and hard-to-reach fixtures (closets, high ceilings and crawl spaces), where changing a lightbulb is inconvenient.

**They're like old soldiers:** LEDs don't burn out; they just fade away.

## READ THE LABEL

Lightbulbs now carry package labels to help you choose the most efficient bulbs. For the best quality, buy Energy Star-rated bulbs from a reliable supplier. If you're buying high-priced LEDs, look for bulbs with at least a three-year warranty and hang on to your receipt.



### LIGHT OUTPUT/ BRIGHTNESS:

New bulbs are categorized in terms of lumens. The higher the lumens, the brighter the light. A conventional 60-watt incandescent is about 840 lumens.

### ENERGY USED/ WATTS:

A measure of energy use, not brightness.

### COLOR ACCURACY/ COLOR RENDERING

**INDEX:** How accurately the bulb will display the colors in a room. Anything higher than 80 is good.

### LIGHT COLOR:

Warmer, yellow light, similar to incandescent, has a lower color temperature on the Kelvin scale (2,700 to 3,000K). Cooler, bluish light has a higher color temperature (4,000 to 6,500K).

### LABELS MAY ALSO INCLUDE:

**LIFE:** Bulb lifetimes are an average based on ideal conditions. Traditional incandescent bulbs are rated for about 1,000 hours, so even CFL bulbs that last only half as long as they're supposed to will save you money.

**ENERGY STAR RATINGS:** These ratings indicate that the claims for lifetime, brightness and color temperature have been independently tested.

"From an energy standpoint, lightbulbs are the low-hanging fruit. As soon as you use more efficient lighting, the dial on the electric meter stops spinning so fast. It's a no-brainer."

Mary Beth Gotti,  
Manager of the Lighting and Electrical Institute at GE Lighting

## WHICH LIGHTBULB SHOULD I USE HERE?

**GARAGE DOOR OPENERS:** Choose a “rough service” incandescent bulb (yep, they’re still permitted under the new law). CFLs can’t handle the vibrations and may interfere with your remote control.

**HIGH CEILINGS:** Tough-to-reach fixtures are perfect spots for LED bulbs. Although LEDs are still expensive, they last for 10 to 20 years.

**LAMPS AND GENERAL LIGHTING:** CFLs are your best option and they come in both spiral and covered versions. Most LEDs are still too dim or too expensive for general use.

**OUTDOOR FLOODLIGHTS:** Halogen PAR bulbs are the most reliable outdoor bulbs, but if you live in a mild climate, weatherproof CFLs are also a good choice. (Read the package label to see if they can be exposed to rain.)

**MOTION DETECTORS:** LEDs or halogens are a better choice than CFLs. Fixtures with electronic controls can significantly shorten a CFL’s life.

**WORKBENCH, READING LAMP AND OFFICE LIGHT:** Halogen incandescent bulbs produce the brightest, purest light and are a good choice for task lighting.

**RECESSED FIXTURES:** LEDs or CFLs—read package labels carefully. Bulbs that are not designed for totally enclosed fixtures will state that on the package.

**CHANDELIER:** Choose dimmable halogens. Conventional incandescent candelabra bulbs are exempt under the new law, but halogens will last three times as long.

“Lightbulbs are becoming a long-term durable goods purchase rather than a quick consumable.”

**Peter Soares, Director of Consumer Marketing at Philips**

## HALOGEN

### Sylvania SuperSaver Halogen 100-watt equivalent.

Warm, well-dispersed light, dimmable. \$7 for two at amazon.com and other online retailers.

### Philips Halogená 40-watt equivalent, halogen chandelier.

Dimmable. Rated for 3,000 hours, which is three times longer than a comparable standard incandescent bulb. \$3 for two at Lowe’s and other home centers.

## HYBRID

### GE Hybrid Halogen CFL.

The halogen element starts up immediately and then shuts off when the CFL comes to full brightness. Good for stairs and hallways where immediate brightness is important. \$7 to \$10, lasts seven years. Available at Lowe’s, Target and other stores.

## CFL

### GE Energy Smart 13-watt CFL.

Very popular among consumers. Energy Star rated. 8,000 hours, 825 lumens and an incandescent-like 2,700 Kelvin. Excellent soft white lights and long lasting, but not dimmable. About \$5 at Lowe’s, Target, Wal-Mart and other stores.

### EcoSmart soft white 14-watt (60-watt equivalent) CFL.

Rated one of the best by reviewers; bright, good quality for reading and shining through lampshades; and a good CFL choice for fixtures that are turned on and off frequently. Most EcoSmart spirals are small enough to fit in most lamps. Lasts 10,000 hours. The downside is it brightens gradually and is not dimmable. \$8 for four at The Home Depot.

**CFL SECOND CHANCE:** If you swore off CFLs a few years ago, give them another try. They’re way better now. But don’t buy the cheapest ones. You’ll just be disappointed again.

# ANALYSTS AND CONSUMER GROUPS:

## LED

**EcoSmart LED A19, a 40-watt equivalent.** Good choice for track lights, dimmable. Available for \$20 at The Home Depot.



**EcoSmart LED Downlight.** 10.5 watts, dimmable for recessed or track lights. Nice, warm light and very popular among consumers. This fits most standard and shallow 6-in. incandescent cans, but it cannot be used in totally enclosed recessed fixtures. Available for \$40 at The Home Depot.



**GE Energy Smart LED 9-watt bulb (40-watt equivalent), omnidirectional light.** The fins spread light all around the bulb instead of in one direction, as most current LEDs do. Life span rating of 25,000 hours. Available for \$55 at Lowe's, Target, Wal-Mart and online retailers such as amazon.com.



**EcoSmart PAR38 LED indoor/outdoor floodlight.** Dimmable and can be used in totally enclosed recessed fixtures, but not for use in locations exposed to rain. Available for \$40 at The Home Depot.



**Philips AmbientLED 12.5-watt 60-watt equivalent (also called the EnduraLED).** This is the first Energy Star-rated 60-watt equivalent on the market that works well in table and floor lamps. Bright, warm light, dimmable, omnidirectional. \$40 at home centers and online retailers.

“LED lighting today is like the Wild West—many companies are making false claims about brightness, and are getting away with it.”

**Brett Sharenow,**  
CFO and CSO for Switch Lighting

## NEWEST ARRIVALS



**Switch60 Warm White LED liquid-cooled 60-watt equivalent.** At \$30, the least expensive 60-watt equivalent LED available—scheduled to hit the market in early 2012. Bright but hot to the touch. A 75-watt and 100-watt will come in late 2012. The glass orb is filled with a cooling agent and a bank of LEDs. [switchlightbulbs.com](http://switchlightbulbs.com)



**Philips 10-watt EnduraLED 60-watt replacement.** This bulb recently won the Department of Energy's \$10 million

“L Prize” to replace the 60-watt incandescent and the PAR38 halogen. (Not yet for sale but will cost about \$45.) Dimmable; same shape and size as an incandescent, so it fits traditional fixtures; has a strong and pleasing light; and will last 25,000 hours. [usa.lighting.philips.com](http://usa.lighting.philips.com)



**GE Energy Smart LED 60-watt incandescent replacement 13-watt LED.** This bulb (\$45) was scheduled to hit the market in December 2011. Seventy-five- and 100-watt equivalents are due out in 2012. [gelighting.com](http://gelighting.com)