



U.S. DEPARTMENT OF
ENERGY

July 2009

For more information visit:
www.energystar.gov
1.888.STAR.YES (1.888.782.7937)

U.S. DEPARTMENT OF ENERGY
ENERGY STAR® QUALIFIED LIGHT BULBS
2009 PARTNER RESOURCE GUIDE



LEARN MORE AT
energystar.gov

CONTENTS

This Partner Resource Guide is designed to help you promote ENERGY STAR qualified light bulbs. You are free to use any of the text, charts, or images to promote ENERGY STAR qualified light bulbs on Web sites, print advertisements, in-store promotional materials, and other marketing materials. The Guide is divided into three sections:

Section I **CONSUMER INFORMATION** includes the latest consumer messaging on product features and benefits, as well as fun facts and usage tips.

Section II **MARKET INFORMATION** summarizes the most recent data on ENERGY STAR market share.

Section III **ENERGY STAR CRITERIA** summarizes the efficiency and quality requirements of ENERGY STAR qualified compact fluorescent light bulbs.

INTRODUCTION

Switching from incandescent bulbs to ENERGY STAR qualified light bulbs is the easiest step consumers can take to save on energy bills and help the environment. An ENERGY STAR qualified compact fluorescent light bulb (CFL) will save about \$30 over its lifetime, and pay for itself in about seven months.¹ ENERGY STAR qualified CFLs use 75 percent less energy and last about 10 times longer than incandescent bulbs.

CFLs have come a long way in the last 20 years: today's ENERGY STAR qualified CFLs are small, efficient, produce better light, and are available in a variety of sizes, shapes and colors. There are even special CFLs that work on dimmers or three-way switches. New criteria effective December 2, 2008, provide additional reliability for ENERGY STAR qualified bulbs. On July 1, 2009 only bulbs that meet the new criteria will be allowed to carry the ENERGY STAR label.

SECTION I: CONSUMER INFORMATION

DRIVING CONSUMER DEMAND

Despite the dramatic increase in sales, household CFL saturation remains relatively low. With an estimated national household saturation at about 10 percent, there is still enormous energy savings potential for CFLs.²

Increasing the sales of ENERGY STAR qualified light bulbs requires effective consumer education. Educating consumers on the value of ENERGY STAR is a multi-step process, generally categorized into the following stages:

1. **AWARENESS:** Consumers discover ENERGY STAR qualified light bulbs as alternatives to incandescent bulbs.
2. **BENEFITS:** Consumers understand how ENERGY STAR qualified CFLs will benefit them.
3. **WHERE TO USE:** Consumers learn where ENERGY STAR qualified CFLs work best.
4. **HOW TO CHOOSE:** Consumers know which bulbs to purchase for which light fixtures.
5. **HOW TO RECYCLE:** Consumers realize that CFLs must be recycled and can locate local recycling options.



ENERGY STAR is a government-backed program that helps consumers identify the most energy-efficient products.



Despite increased awareness of CFLs, consumers need more education to understand how to choose and where to use CFLs.



DID YOU KNOW?

CFLs are made up of more than 50 parts, most of them in the ballast. Older CFLs used large and heavy magnetic ballasts that sometimes caused a buzzing noise. ENERGY STAR qualified CFLs use electronic ballasts, which don't buzz or hum.



With about 20 percent of your electric bill going toward lighting, the low, up-front cost and quick payback time for an upgrade to ENERGY STAR qualified light bulbs can really help shave electricity costs—a real bonus in tough times.

OUT WITH THE OLD

The basic design of incandescent light bulbs has not changed much since they were invented by Thomas Edison in 1879. Incandescent bulbs create light by passing electricity through a metal wire until it becomes so hot that it glows. These bulbs are very inefficient, converting only 10 percent of the electricity consumed into visible light. The remaining 90 percent of the electricity is actually released as heat!

IN WITH THE NEW

Compact fluorescent light bulbs can create the same amount of light as incandescent bulbs using only one-quarter of the energy and heat. ENERGY STAR qualified CFLs last between 6,000 and 15,000 hours, or 5 to 13 years, based on an average use of three hours a day.

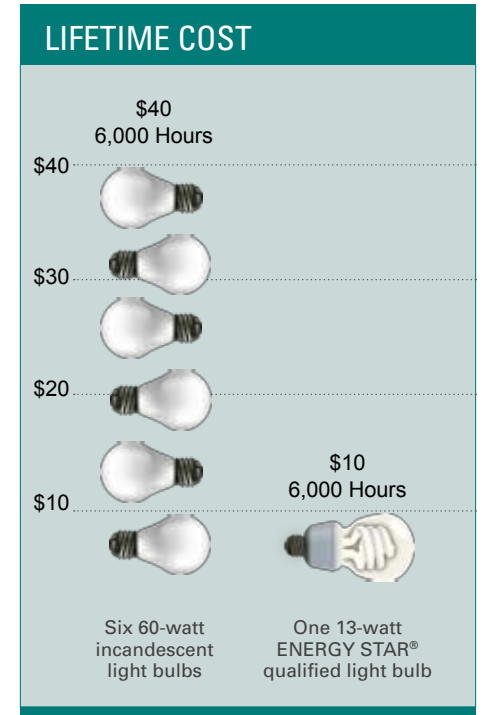
CFLs don't look or always act like incandescent bulbs because they use different technology to produce light. In a CFL, instead of electricity running through a simple wire (as in incandescent bulbs), electricity passes through a tube. The current excites gases inside the coated glass tubing, causing a reaction that produces light.

It isn't always simple to put CFLs into existing lighting controls with dimmers, timers, motion sensors, or photocells. Older controls were designed to work with the simple technology of the incandescent bulb and not the more complex technology that a CFL uses. This is why it's important to check to make sure you can use CFLs with your existing controls, and only use bulbs marked "dimmable" with dimmer switches.

ENJOY ENERGY SAVINGS AND MORE!

The average U.S. household has more than 40 sockets for light bulbs, ranging from table lamps to ceiling fixtures.³ Larger homes can have even more. Lighting accounts for about 20 percent of annual household electricity bills, or over \$200 per year in the average household.⁴ Replacing incandescent bulbs with ENERGY STAR qualified light bulbs provides significant benefits for consumers.

- **SAVE TIME AND EFFORT.** ENERGY STAR qualified light bulbs can last more than five years, compared to about 11 months for an incandescent bulb.⁵
- **SAVE ENERGY AND MONEY.** Over its lifetime, one ENERGY STAR qualified light bulb eliminates the need for at least six incandescent bulbs and saves you more than \$30. By changing five bulbs to ENERGY STAR, you save more than \$150!⁶
- **SAVE THE ENVIRONMENT.** When you choose an ENERGY STAR qualified light bulb, you are helping protect the environment by reducing air pollution and greenhouse gas emissions.
- **STAY COOL.** Because ENERGY STAR qualified light bulbs run cooler, they reduce cooling needs.



ENERGY STAR SAVINGS

INCANDESCENT LIGHT BULB (WATTS)	ENERGY STAR QUALIFIED LIGHT BULB (WATTS)	ANNUAL SAVINGS	LIFETIME SAVINGS			
			6,000 HOURS	8,000 HOURS	10,000 HOURS*	15,000 HOURS
40	9	34 kWh, \$4	\$20	\$28	\$34	\$52
60	13	51 kWh, \$6	\$31	\$42	\$52	\$78
75	20	60 kWh, \$7	\$37	\$49	\$61	\$91
100	23	84 kWh, \$9	\$51	\$68	\$85	\$128

*Most ENERGY STAR qualified CFLs are rated at 10,000 hours.

	13-WATT ENERGY STAR QUALIFIED LIGHT BULB	60-WATT INCANDESCENT LIGHT BULB
PURCHASE PRICE	\$3.00	\$0.50
LIFETIME	6,000 HOURS	1,000 HOURS
NUMBER OF REPLACEMENTS IN 5 YEARS	0	5
COST OF REPLACEMENT LIGHT BULBS	\$0.00	\$2.50
OPERATION COST (ELECTRICITY COST)	\$8.65	\$39.92
TOTAL COST	\$11.65	\$42.92



The average ENERGY STAR qualified light bulb is designed to last 10,000 hours—more than seven years, based on typical household use. That’s long enough to watch your first-grader transform into a teenager!

DID YOU KNOW?

If every American home replaced just one light bulb with an ENERGY STAR qualified bulb, we would save enough energy to light more than 3 million homes for a year, avoid more than \$600 million in annual energy costs, and prevent greenhouse gases equivalent to the emissions of more than 800,000 cars.

SAVE ENERGY

If you replace five regular light bulbs with ENERGY STAR qualified light bulbs, you’ll save more than 1,400 kWh over the lifetime of the bulbs.⁸ That’s enough energy to:

- Run your ENERGY STAR qualified clothes washer for more than seven years.⁹
- Light your whole house for nearly nine months.¹⁰

SAVE MONEY

Five ENERGY STAR qualified light bulbs will save more than \$150 in electricity costs over their lifetime.¹¹ That’s enough money to:

- Purchase ENERGY STAR qualified bulbs for the rest of your home.¹²
- Purchase an ENERGY STAR qualified room air conditioner.¹³
- Buy five tanks of gas at \$2 a gallon.¹⁴

SAVE TIME

An ENERGY STAR qualified light bulb will last six times longer on average than an equivalent incandescent bulb. The long life will save you:

- Five trips up a ladder to change out bulbs in hard-to-reach fixtures.
- Five bad jokes about “How many dads does it take to change a light bulb?”

SAVE THE ENVIRONMENT

If you replace five regular light bulbs with ENERGY STAR qualified light bulbs, it would save as much greenhouse gases as:¹⁵

- Is produced by burning over 1,000 pounds of coal.¹⁶
- Planting nearly 47 trees.¹⁷
- Avoiding a 2,000 mile trip in your car.¹⁸



For an interactive learning experience, visit www.energystar.gov/CFLs and click on the Choose a Light Guide.

WHERE TO USE: FIVE BRIGHT IDEAS

There are ENERGY STAR qualified light bulbs for nearly every household application. To maximize your savings and the bulbs’ performance, use these tips.

- **REPLACE THE BULBS YOU USE MOST.** ENERGY STAR qualified light bulbs provide the greatest savings in fixtures that are on the longest. In many homes, these bulbs are in the family room, living room, kitchen, dining room, and porch.
- **ALLOW FOR AIRFLOW.** Indoors, ENERGY STAR qualified bulbs perform best in open fixtures that allow airflow, such as table and floor lamps, wall sconces, pendants, and open ceiling fixtures.
- **PUT THEM UP HIGH.** ENERGY STAR qualified bulbs last an average of five years, and new performance requirements for indoor reflector bulbs ensure long life in recessed can fixtures. So put them in hard-to-reach places and give your ladder a break.
- **PROTECT BULBS OUTDOORS.** When used outdoors, bulbs should be placed in enclosed fixtures to protect them from the weather.
- **USE CAUTION WITH LIGHT CONTROLS.** Since most light controls were designed for incandescent bulbs, fluorescent bulbs should only be used with controls designed to work with fluorescent lights. If a light fixture has a dimmer or a three-way socket, you’ll need to use a special bulb designed to work in these applications. Check the packaging to find that special bulb.



“Warm light 60” means that this CFL provides the same light as a 60-watt incandescent bulb. “Warm” indicates a color temperature between 2700-3000K.

START WITH QUESTIONS

Finding the right ENERGY STAR qualified light bulb for your home is easy! Just ask yourself three questions:

1. What shape and size of light bulb will fit the fixture?
2. How much light do I need in the room?
3. Do I want a warm yellow glow or a cooler shade of white light?

WHAT SHAPE?

Different fixtures need different types of bulbs. Use the chart opposite to find your fixture and then see which bulbs work best in it.

- **DIMMABLES AND THREE-WAY BULBS.** Light fixtures with a dimmer or a three-way socket need to use a special ENERGY STAR qualified light bulb designed to work in these applications. Check the packaging to find that special bulb.
- **TROUBLESHOOTING.** Most photocells, motion sensors, and timers are not designed to work with CFLs. Check with the manufacturer of the control for compatibility.

THE RIGHT AMOUNT OF LIGHT

The higher the lumen rating, the greater the amount of light. To save energy costs, find the bulbs with the light output you need, then choose the ENERGY STAR qualified light bulb with the lowest watts. Light bulb manufacturers include comparison information on the packaging. Common terms include “Soft White 60” or “60-watt Replacement.”

HOW MUCH LIGHT DO I NEED?		
INCANDESCENT BULBS (WATTS)	MINIMUM LIGHT OUTPUT (LUMENS)	COMMON ENERGY STAR QUALIFIED BULBS (WATTS)
25	250	4 to 9
40	450	9 to 13
60	800	13 to 15
75	1,100	18 to 25
100	1,600	23 to 30
125	2,000	22 to 40
150	2,600	40 to 45

HOW TO CHOOSE THE RIGHT ENERGY STAR® QUALIFIED LIGHT BULB

	SPIRAL	COVERED A-SHAPE	GLOBE	TUBED	CANDLE	INDOOR REFLECTOR	OUTDOOR REFLECTOR
TABLE/FLOOR LAMPS							
PENDANT FIXTURES							
CEILING FIXTURES							
CEILING FANS							
WALL SCONCES							
RECESSED CANS							
TRACK LIGHTING							
OUTDOOR COVERED							
OUTDOOR FLOOD							

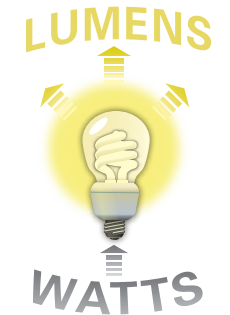
AVOID EARLY BURNOUT:

- Only bulbs marked “dimmable” or “three-way” will work on dimmers or three-way switches.
- Most photocells and timers are not designed to work with CFLs.
- For recessed cans, only choose bulbs marked “indoor reflector” or “for indoor use.”



LOOK FOR THE LUMENS

Watts are a measure of power; lumens are a measure of light. More lumens mean more light. ENERGY STAR qualified CFLs produce the same amount of lumens as incandescent bulbs, but use about one quarter of the power.



SECTION I: CONSUMER INFORMATION—HOW TO CHOOSE THE RIGHT SHADE OF LIGHT

DIFFERENT SHADES OF WHITE

Like all fluorescent lighting, CFLs are available in a wide variety of shades of white light, which allows you to customize the mood of your space. Many CFLs come in “warm” colors to match the yellowish light of incandescent bulbs, but you can also choose “cooler” colors with whiter or bluer light. The color of light is technically referred to as the “color temperature,” which is measured on the Kelvin scale. Lower kelvin numbers mean the light has a warmer glow, like a candle, while higher kelvin numbers mean the light appears cooler, like the sky.

ENERGY STAR qualified bulbs must fall within the range of one of the six designated color temperatures (2700K, 3000K, 3500K, 4100K, 5000K, or 6500K). The color temperature is listed on product packaging.

TYPICAL COLOR TEMPERATURES	
1500K	Candlelight
2680K	40-watt Incandescent Bulb
3000K	Halogen Bulb
3200K	Sunrise/Sunset
3400K	1-Hour from Dusk/Dawn
5500-5600K	Camera Flash
9000-12000K	Blue Sky

WARM LIGHT:

CFLs in the 2700-3000K range are commonly marked “soft white” or “warm white.” These bulbs will produce a familiar yellowish glow just like incandescents.



BRIGHT WHITE LIGHT:

CFLs in the 3500-4100K range are sometimes marked “bright white” or “cool white.” The light from these bulbs will appear more white than yellow. This light is great for working in the kitchen.



DAYLIGHT:

CFLs in the 5000-6500K range are often marked “natural” or “daylight” because the color of the light is like daylight at noon. This light will appear cooler—even bluish—the higher the number. This light is great for reading and work spaces.



SECTION I: CONSUMER INFORMATION—TROUBLESHOOTING



DO THE TWIST.

Screw in your CFL by holding the ballast (the white plastic part), NOT the glass tubing.



DON'T FLIP TOO FAST.

Turning the bulb on and off quickly will reduce the lifetime. While results will vary with different bulbs, you'll maximize the lifetime savings of your CFLs by using them when the light is on for several minutes at a time.



CHOOSE 3 FOR 3.

Only use bulbs labeled as three-way on three-way sockets.



DON'T DIM A NON-DIMMABLE.

Only use bulbs labeled as dimmable on dimmer switches.



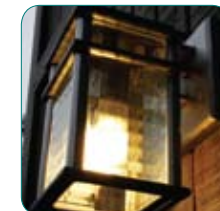
CHECK YOUR CONTROLS.

Most photocells, motion sensors, and electric timers are not designed to work with CFLs. Always check with the manufacturer of the control for compatibility.



GIVE THEM AIR.

CFLs are sensitive to extreme temperatures, so place your CFLs in open fixtures indoors. Using them in enclosed fixtures indoors can reduce the lifetime of the bulbs. Use covered reflectors in recessed cans.



PROTECT THEM OUTSIDE.

Outdoors, protect bulbs from the elements by placing them inside enclosed fixtures. In colder climates, check the packaging for optimal operating temperatures.

Learn more about ENERGY STAR qualified CFLs at www.energystar.gov/cfls.



DID YOU KNOW?

The average mercury content in CFLs has dropped significantly in recent years, thanks to technological advances and a commitment from members of the National Electrical Manufacturers Association. Manufacturers continue to make further reductions; some CFLs now contain as little as 1-2 milligrams of mercury per bulb.

RECYCLE USED CFLs

When your CFL is finished, you'll want to take it to be recycled. CFLs contain a small amount of mercury sealed within the glass tubing—usually less than 5 milligrams—about the size of the period at the end of this sentence. By comparison, an older thermometer contains about 500 milligrams of mercury.

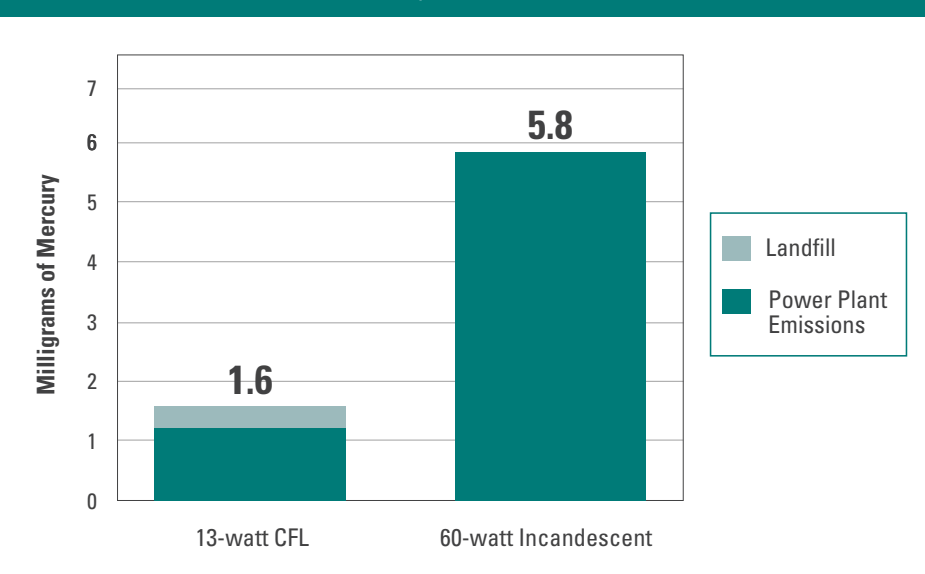
- For help locating a recycling center that accepts CFLs, visit www.epa.gov/bulbrecycling or www.lamprecycle.org. Search by ZIP code at www.recycleabulb.com or www.earth911.com.
- If your CFL breaks, you can easily clean it up. Follow the U.S. EPA's recommendations for cleanup at www.energystar.gov/CFLsandMercury.

CFLs REDUCE THE MERCURY IN THE ENVIRONMENT

Burning coal to produce electricity is the main source of mercury emissions in the United States. Because they use less electricity than incandescent lights, CFLs actually reduce the amount of mercury released into the environment. A 13-watt, 8,000-hour CFL will save 376 kWh over its lifetime compared to its 60-watt incandescent equivalent, thus preventing 4.6 mg of mercury from entering the environment.

If the bulb goes to a landfill, overall emissions savings would drop slightly to 4.2 mg. Because most mercury binds to the inside of a CFL as it is used, EPA estimates that only about 11 percent is released into the air and water when the CFL goes to a landfill (assuming it is broken). Recycle CFLs where possible to maximize mercury savings.

TOTAL MERCURY EMISSIONS, CFLs AND INCANDESCENTS



Source: U.S. EPA, June 2008

ENERGY STAR MARKET SHARE

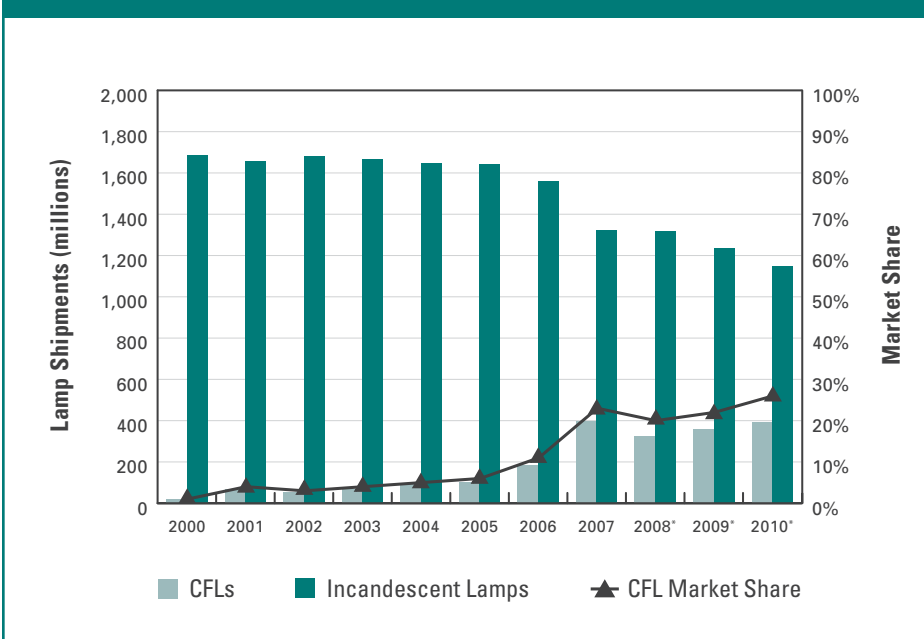
CFL shipments have grown tremendously, especially in the last three years. From 21 million lamps in 2000 to 397 million lamps in 2007, market share grew 52 percent (compound annual growth rate). CFLs have captured an increasing share of the market for medium screw-based lamps, growing from 1 percent to 23 percent between 2000 and 2007, or about 3 percentage points a year. Despite increased interest in and demand for energy savings, current data indicate that CFL shipments fell in 2008. This suggests that additional support may be needed to help sustain the market.¹⁹

The future market for incandescent lamps is also uncertain. Because each CFL effectively replaces at least five incandescent lamps over its lifetime, incandescent lamp sales have already begun to decline substantially and will continue to fall. In addition, the Energy Independence and Security Act of 2007 will increase efficiency standards for all lamps over the next six years. While incandescent lamps may improve in efficiency during this time, current ENERGY STAR qualified CFLs already meet the new energy efficiency standards, and the market will likely continue to shift to CFLs.



This poster is an example of collateral available to partners to promote the switch to ENERGY STAR qualified CFLs.

CFL AND INCANDESCENT LAMP SHIPMENTS BY YEAR



*Projections

Source: D&R International, Ltd., 2009.

SECTION III: ENERGY STAR CRITERIA



When installing CFLs, twist the bulb from the plastic part, not the glass tubing.

ENERGY STAR qualified CFLs must meet a number of efficiency and quality benchmarks to earn the label. A few examples are listed below.

- **ENERGY EFFICIENCY.** The efficiency of light bulbs is referred to as efficacy, which is the measure of light output (lumens) compared to the energy needed to power the bulb (watts). ENERGY STAR qualified CFLs generally provide three to four times more lumens per watt than incandescent bulbs.
- **LONG LIFETIME.** The minimum lifetime requirement is 6,000 hours, which is about five years, based on typical use. The most common lifetime of all ENERGY STAR qualified CFLs is 10,000 hours. Some last as long as 15,000 hours.
- **QUALITY ASSURANCE.** All qualified bulbs are required to carry a manufacturer warranty of at least two years for residential use and at least one year for commercial use. Qualified CFLs are subject to independent third-party testing.
- **QUICK START.** Bulbs must start in under a second. Note that start time is different than warm-up time, i.e., the time it takes for a CFL to come to full brightness. Bulbs must reach full brightness in less than three minutes.
- **SAFETY.** Bulbs must be UL listed for fire safety.
- **RELIABILITY.** Bulbs must pass tests that show they can withstand voltage surges and frequent on/off cycling.

NEW FOR 2009! ENERGY STAR CFL CRITERIA



Candelabra base CFLs are new to the ENERGY STAR family.

- **HIGH HEAT PROTECTION.** Indoor reflector CFLs must pass a high-heat test to ensure more reliable performance in recessed can lights.
- **CANDELABRA BASE.** The smaller screw bases are now eligible for qualification.
- **COLOR CONSISTENCY.** Bulbs must fall within the range of one of the six designated color temperatures (2700K, 3000K, 3500K, 4100K, 5000K, or 6500K), which must be listed on product packaging so consumers can find the color they prefer.
- **RECYCLING AND MERCURY EDUCATION.** Product packaging must include the (Hg) symbol for mercury and one of the approved Web site addresses for locating lamp recycling facilities. Manufacturers must file a commitment form for mercury reduction with the National Equipment Manufacturers Association. For more information, please visit www.cfl-mercury.org.

END NOTES

- ¹ Assumes the replacement of a 60-watt incandescent light bulb with a 13-watt ENERGY STAR qualified bulb, qualified bulb purchase price of \$3 and lifetime of 6,000 hours, incandescent purchase price of \$0.50 and lifetime of 1,000 hours, and an average electric rate of 11.09¢ per kWh over the life of the qualified bulb.
- ² CFL Market Profile March 2009 U.S. Department of Energy. www.energystar.gov/ia/products/downloads/CFL_Market_Profile.pdf
- ³ CFL Market Profile March 2009 U.S. Department of Energy. www.energystar.gov/ia/products/downloads/CFL_Market_Profile.pdf
- ⁴ An average household consumes 10,660 kWh per year in electricity total, including an average of 1,950 kWh for lighting. Cost assumes an average electric rate of 11.09¢ per kWh. ENERGY STAR Campaign Assumptions www.energystar.gov/ia/products/globalwarming/Facts_and_Assumptions.pdf.
- ⁵ Assumes three hours of use per day. The minimum lifetime of an ENERGY STAR qualified light bulb is 6,000 hours. The average lifetime of an incandescent light bulb is 1,000 hours.
- ⁶ Assumes the replacement of a 60-watt incandescent light bulb with a 13-watt ENERGY STAR qualified bulb, qualified bulb purchase price of \$3 and lifetime of 6,000 hours, incandescent purchase price of \$0.50 and lifetime of 1,000 hours, and an average electric rate of 11.09¢ per kWh over the life of the qualified bulb.
- ⁷ EPA ENERGY STAR Fact Sheet on CFLs and mercury found at www.energystar.gov/CFLsandMercury.
- ⁸ Assumes the replacement of five 60-watt 1,000-hour incandescent light bulbs with five 13-watt 6,000-hour ENERGY STAR qualified bulbs.
- ⁹ The average ENERGY STAR qualified clothes washer consumes 195 kWh of energy each year. This assumes electric water heating and an average annual use of 392 loads.
- ¹⁰ An average household consumes 1,950 kWh per year for lighting.
- ¹¹ Assumes the replacement of five 60-watt incandescent light bulbs with five 13-watt ENERGY STAR qualified bulbs, qualified bulb purchase price of \$3 and lifetime of 6,000 hours, incandescent purchase price of \$0.50 and lifetime of 1,000 hours, and an average electric rate of 11.09¢ per kWh over the life of the qualified bulbs.
- ¹² Assumes 35 CFLs at \$3-5 per bulb.
- ¹³ ENERGY STAR qualified room air conditioners come in a large range of price points, including some small units for less than \$150.
- ¹⁴ Assumes a 15-gallon tank.
- ¹⁵ All fun facts below assume CO₂ savings of 1.54 lbs per kWh of electricity saved, and more than 1,400 kWh for five bulbs changed. ENERGY STAR Campaign Assumptions www.energystar.gov/ia/products/globalwarming/Facts_and_Assumptions.pdf.
- ¹⁶ Typical coal emissions factor is 2.14 lbs of CO₂ per pound of coal. ENERGY STAR Campaign Assumptions www.energystar.gov/ia/products/globalwarming/Facts_and_Assumptions.pdf.
- ¹⁷ One sapling sequesters 85 pounds of CO₂ over 10 years, averaging 8.5 pounds per year. www.epa.gov/cleanrgy/energy-resources/refs.html.
- ¹⁸ The average vehicle produces 1.038 pounds of CO₂ per mile traveled. ENERGY STAR Campaign Assumptions www.energystar.gov/ia/products/globalwarming/Facts_and_Assumptions.pdf.
- ¹⁹ CFL Market Profile March 2009 U.S. Department of Energy. www.energystar.gov/ia/products/downloads/CFL_Market_Profile.pdf