

## Compact Fluorescent Light Bulbs (CFLs)

The typical American family spends more than \$1,500 a year on household energy bills—and many households spend considerably more. Costs could climb even higher in the future, as electricity and natural gas prices continue to rise. Investing money in energy-saving products like compact fluorescent light bulbs (CFLs) saves you money in the long run with lower energy bills.

CFLs are significant energy savers, but they still are not used by the majority of consumers. The initial cost, the perception

that CFL bulbs flicker, or the color may be factors. The cost of \$2–5 each seems like a lot; however, if you compare the replacement cost and life of incandescent bulbs, CFLs actually save you money even before their energy efficiency is taken into account. CFLs last 8–10 times longer than standard incandescent bulbs. The cost comparison is for one light fixture using 1 kilowatt/hour for 10 years. If you do the math in more detail, you realize the actual savings are greatly multiplied, as shown in the chart below.

**Cost Comparison**

|   | <b>Typical incandescent<br/>75-watt light bulb</b> | <b>Compact Fluorescent<br/>18-watt light bulb</b> |
|---|--|---|
| Purchase cost   | \$0.60   | \$ 5.00   |
| 10-year maintenance cost                                | \$4.20   | \$0.00  |
| 10-year operation cost (based on 8 cents/kilowatt hour) | \$60.00  | \$14.40   |
| <b>Total Cost</b>                                       | <b>\$64.80</b>                                     | <b>\$19.40</b>                                    |

<http://www.1000bulbs.com/> – prices

Energy experts state that fluorescents can cut the total cost of lighting your home by approximately 75 percent.

Another factor that consumers typically do not consider is the amount of heat that lights generate. During summer months when we are trying to air condition our homes, the added heat can be significant. Ninety percent of the energy that incandescent bulbs use becomes heat while only 10 percent becomes light. CFLs create less heat because more of the energy is converted to light.

ENERGY STAR-qualified lighting provides bright, warm light but uses at least 2/3 less energy than standard lighting, generates 70 percent less heat, and lasts up to 10 times longer. By changing five bulbs at home that you use most with ENERGY STAR-qualified models, a family would save about \$60 every year in energy costs. Today's fluorescents are available in a range of colors, including the 3,000 to 4,000 Kelvin range, which produces a warm light similar to that of incandescents.

Federal law requires both lumens and wattage on light-bulb packaging. A 100-watt incandescent bulb and a 26–28 watt compact

fluorescent bulb both emit about 1,700 lumens. The watts are the measure of energy used. The lumens are the measure of light output.

### **Look for the Energy Star Label**

Energy Star-qualified compact fluorescent light bulbs:

- use at least 2/3 less energy than standard incandescent bulbs to provide the same amount of light, and they last up to 10 times longer.
- save \$30 or more in energy costs over each bulb's lifetime.
- generate 70 percent less heat, so they're safer to operate and can cut energy costs associated with home cooling.
- in addition to other quality requirements, must turn on instantly, produce no sound, and fall within a warm color range or be otherwise labeled as providing cooler color tones.
- are available in different sizes and shapes to fit in almost any fixture, for indoors and outdoors.

### **Choose the Right CFL**

Matching the right CFL to the right kind of fixture helps ensure that it will perform properly. Read the packaging to be sure that the type you choose works for the fixture you have in mind. Examples are:

- If a light fixture is connected to a dimmer or three-way switch, select CFLs that are labeled for this use.
- For recessed fixtures, it is better to use a 'reflector' CFL rather than a standard-shaped bulb.
- Choose the light color that works best for you. In our homes, we typically prefer warm colors. However, a cooler color might work for task lighting.

- When replacing incandescent bulbs, choose CFLs that offer the same lumen rating as the bulb you are replacing. The higher the lumen rating, the greater the light output.

### **Dispose of CFLs Properly**

Mercury is one component in the manufacture of CFLs. Anything containing mercury – a toxic metal – needs to be disposed of properly, even if the amount is small. CFLs have about 5 milligrams (compared to 500 mg in a mercury thermometer and 5,000 mg in older style thermostats).

Proper disposal of CFLs is important. If one breaks in the home, the following clean-up procedures are recommended:

- Open nearby windows.
- Scoop up the bulb fragments using stiff paper or cardboard. DO NOT use a vacuum cleaner or your hands.
- Use a damp paper towel to make sure all fragments have been removed. Protect hands with disposable rubber or plastic gloves.
- Seal all fragments and materials used in the clean-up (paper towels, gloves, cardboard, etc.) in a plastic bag. Place the sealed bag inside another plastic bag and seal it. Place in an outside trash bin until it can be taken to a Household Hazardous Waste Collection Site.

To dispose of burned-out CFLs, the Environmental Protection Agency recommends disposal at a Household Hazardous Waste Collection Site. When that is not possible, the EPA recommends sealing the bulb in a plastic bag and placing it in regular trash. Check with city or county officials or your utility company to learn about disposal recommendations for your area.

## Summary

- Look for Energy Star-labeled CFLs.
- When you leave a room, turn off the lights.
- Select the lowest wattage bulb that provides the desired lighting.
- Use task lighting in the kitchen or other work areas.
- Use fluorescent instead of incandescent lighting when possible.
- Replace bulbs with CFLs where lights are on the most, such as your family and living room, kitchen, dining room, and porch
- Dispose of broken or burned out bulbs properly.

## References:

Wang, Katherine (Energy & Resource Team at Rocky Mountain Institute), “Save Very Big Money on Home Energy Costs,” Bottom Line Personal

Energy Star – [http://www.energystar.gov/index.cfm?c=cfls.pr\\_cfls](http://www.energystar.gov/index.cfm?c=cfls.pr_cfls)

“Use Care When Disposing of CFLs,” Texas Co-op Power, page 4, September 2007.

Fact sheet originally entitled, “Energy-Efficient Lighting,” was written by Janie Harris, Housing and Environment Specialist, 2007. Updated by Nancy Granovsky, Extension Family Economic Specialist for 4-H Consumer Decision Making Contest, September 2007.

