

## Energy-Efficient Lighting

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 CFLs 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 in the chart below 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.

**Cost Comparison**

	<b>Typical incandescent 75-watt light bulb</b>	<b>Compact Fluorescent 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:

### *References:*

U.S. Department of Energy - <http://www1.eere.energy.gov/consumer/tips/lighting.html>

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

1000Bulbs - <http://www.1000bulbs.com/>

Wang, Katherine (Energy & Resource Team at Rocky Mountain Institute), "Save Very Big Money on Home Energy Costs," Bottom Line Personal, Feb. 2007

- 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.

## 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.

Fact sheet written by Janie Harris, Extension Housing and Environment Specialist, Texas AgriLife Extension Service, Texas A&M System. Updated March 2008.