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CFL and LED Bulbs: Lighting for the Future

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All of us want to save money on our energy consumption. Efficient lighting choices can significantly cut home utility costs. Understanding CFL (Compact Fluorescent Light) and LED (Light Emitting Diode) bulbs will help us make wiser decisions for the environment and our pocketbook. What are CFL and LED bulbs?

Compact Fluorescent Lights (CFLs)

- CFL bulbs save energy and money compared to regular bulbs because they use a different method to produce light. Incandescent bulbs use continuous current to heat a wire filament until it glows. In comparison, Compact Fluorescent Lights become bright when very little electric current is passed through a tube containing argon and a small amount of mercury vapor. This interaction creates ultraviolet light, which excites a phosphor coating and emits more light. Because of this, fluorescent bulbs produce only a small amount of heat and are 4-6 times more energy-efficient than regular incandescent bulbs.

- A CFL bulb is more expensive than an incandescent bulb, but uses 2/3 less energy and lasts 10 times longer, providing a savings of 75 to 80%. CFL bulbs have a short warm-up period before they reach full brightness, which is why they may appear dim when first turned on, but technology is improving. Compact fluorescent lights are best used in fixtures that are left on for 15 minutes or more, because turning them on and off frequently shortens the life of the bulb.

- CFLs contain a small amount of mercury, which is toxic, so recycling spent lamps is recommended. Use caution to avoid breakage when opening and installing CFLs. If you do break a bulb, air the area for 10 minutes and scoop up broken glass with stiff cardboard. Use sticky tape on phosphor powder and small glass fragments and wipe the area clean with damp paper towels. If vacuuming is needed, dispose of the bag or clean the canister with a damp paper towel. Broken glass and all items used for cleanup should be sealed in glass jars with metal lids or sealed in plastic. Do not incinerate. For further clean up and disposal instructions, visit the Environmental Protection Agency's Web site: http://www.energystar.gov/ia/products/lighting/cfls/downloads/CFL_Cleanup_and_Disposal.pdf

- All CFL bulbs are not alike. Some may not be suitable for dimmers, fans, three-way switches or timers. Make certain you are purchasing the right lamp for the proper fixture and usage.

Cleanup tip: Spread a plastic tarp under the area where you are changing a CFL. If a bulb breaks,

simply fold up all broken shards and powder in the plastic tarp, tape it securely, and discard.

Light Emitting Diodes (LEDs)

- LED lights are becoming the lights of the future. They are found in all kinds of devices such as remote controls and light up watches. LED panels on appliances give the time and instructions for operation, as on microwaves and ranges, for example. These tiny lights do not have filaments which burn out. They fit into an electrical circuit and are illuminated by the movement of electrons and produce only a fraction of the heat generated by incandescent bulbs. They are totally encapsulated, making them virtually unbreakable and safe to use near flammable materials and substances. Because they do not contain glass or mercury, they can be easily disposed of.

- The efficiency of LED lighting is more than eight times that of incandescent lighting, and twice that of CFLs. LED lights will save you 90% of the energy used by incandescent bulbs. Operating 8 hours per day, LED lights can last 10 years or more. The high reliability of these lights increases safety and security. There is no waiting for light bulbs to warm up; they light up instantly at full brightness, even in the coldest weather.

- The “blue” hue of LED bulbs may be a drawback for some. Even bulbs labeled soft white, still have a strong blue hue. However, the sharp brightness of colored LED lights does not compare to other colored lights in purity. All light output from these bulbs can be a specific monochromatic color. With other lighting sources, the lights contain additional colors which must be filtered out, and filtering wastes energy.

- LEDs are considerably more expensive to purchase, but when considered as an investment, they return their cost due to longer life and significantly lower energy costs.

Conversions:

40 watt incandescent =	10 watt CFL or	3 watt LED
60 watt incandescent =	14 watt CFL or	6 watt LED
100 watt incandescent =	28 watt CFL or	13 watt LED

Savings Tip: Consider replacing indoor and outdoor Christmas lights with LED lighting. Set a goal to do this over a three year period and plan to purchase LED light strings at reduced cost during after-Christmas sales. You will have brighter holiday lights at a greater savings.

Sources:

http://www.gelighting.com;
http:// www.productdose.com
http://www.energystar.gov

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