



ENERGY E-TIPS

November 15, 2010

Some Thoughts about Holiday Lights

As the holiday season approaches, many Arkansas families will utilize holiday lights to help them celebrate the season. This edition of ENERGY E-TIPS will assist consumers in comparing the energy usage of various types of bulbs and may guide them while purchasing these bulbs. It also provides some safety tips related to holiday lights.

Traditional holiday lights versus light—emitting diode (LED)

As more lighting is used during the months of November and December and as energy rates climb, consumers find that decorating with lights is costing more. Most people currently use standard incandescent C7 lights or mini-lights. However, new technologies such as light-emitting diode (LED) lights and fiber-optic trees can reduce your energy costs. Certainly you will notice the difference if you turn on these lights for long time.

LED lights have a number of advantages over conventional lighting. LED lightings are safe. There is no chance of combustion, since the LED bulbs are cool to the touch regardless of how long they are left on. LED manufacturers mention that their long life span is up to 50,000 hours if used outdoors and may be longer if used indoors. In addition, the most important advantage is that LED uses only 0.08 watts per LED C7 multicolor bulb, compared to 6.00 watt per incandescent bulb. Multicolor LED lights are available in strings from 25 to 150 bulbs. Red, green, blue, white, yellow and multi-colored LED bulbs are available on the market.

A few citizens have concerns that LED bulbs do not emit the same amount of light as incandescent lamps. Some new LED models on the market are closer to the brightness of incandescent.

Energy Saving tips associated with LED

For simple comparison, we will assume that we like to decorate an 8-foot tree with holiday lights. We have five options, including LED mini-ice, LED C7 multicolor, incandescent premium (energy-saving), incandescent standard or incandescent C7. To obtain the same light intensity we need the corresponding number of bulbs as shown in the table below. The light will be turned on for one full season (30 days – 5 hours per day).

Bulb type	Number of bulbs	Wattage
LED mini-ice	280 bulbs	13 watts
LED C7 multicolor	300 bulbs	24 watts
incandescent premium (energy-saving)	300 mini-lights	108 watts
incandescent standard	300 mini-lights	144 watts
incandescent C7	125 bulbs	750 watts (6 watts per bulb).

From the above table, it is clear that the energy usage for LED mini-ice, LED C7 multicolor, incandescent premium (energy-saving), incandescent standard and incandescent C7 will be 13 W, 24 W, 108 W, 144 W and 750 W, respectively. Decorating with LED consumes less energy. In other words, we can decorate our tree or home and pay less compared to incandescent bulbs.

Fiber-optic artificial trees

Fiber-optic artificial trees are another relatively energy-efficient decorating strategy. If we imagine having hundreds of fiber optics exposed to a source of light such as an incandescent bulb, the light will transmit through these fibers. These decorative fibers can light up every “needle” on the tree. Typically, the tree uses a single incandescent bulb ranging from 5 – 50 watts depending on the size of the tree. Some trees have the option of a rotating color wheel, which changes the color the fibers emit.

Fiber optic lights are cool to touch, since only light—not heat—is transmitted through the fiber. The incandescent light source is located in the base of the tree with ventilating holes that must not be covered. Therefore, there is only one bulb to replace.

Safety concerns related to holiday lights

It is our anticipation that every citizen enjoys the holidays by decorating his/her home and tree safely. As you may know, every year we lose 400 American lives, injure 1,650 more and spend over \$990 million in damage during the holiday seasons (The U.S. Fire Administration). However, there are simple life-saving steps we can take to ensure a safe and happy holiday. Follow these steps to protect your family and home:

- Inspect your smoke alarms on every level of your home. Test them monthly and keep them clean and prepared with fresh batteries at all times.
- Examine holiday lights each year for worn wires, bare spots, gaps in the insulation, broken or cracked sockets and excessive kinking or wear before putting them up.
- Do not connect more than three light strands unless the directions indicate it is safe. Connect strings of lights to an extension cord before plugging the cord into the outlet. Make sure to check the wires on regular basis.
- Use timers to ensure safety as well as conserve energy.
- Use nonflammable or flame-retardant decorations and place them away from heat vents.
- Keep warping paper away from fireplace. It can result in fire, throwing off dangerous sparks and embers that may result in a chimney fire.
- Use flame-retardant trees if you are using a metallic or artificial one.
- Avoid using lit candles. If you do use them, make sure they are in stable holders and place them where they cannot be easily knocked down. Never leave the house with candles burning.
- Avoid putting lit candle on a tree. Stay away from the tree with an open flame—candles, lighters or matches.

References:

- “Energy Services—Holiday Lights Fact Sheet, November 2005.” Energy Services Web site (www.wapa.gov/es).
- “Light Up the Holiday and Save.” Pacific Gas and Electric Company, November 2009 CMM-1009-0143.
- “A Season for Sharing in Fire Safety, a factsheet on Holiday Fire Prevention.” U.S. Fire Prevention Administration (www.usfa.fema.gov).

A Factsheet on Holiday Fire Prevention

Samy Sadaka
ssadaka@uaex.edu
Rachel Lipsey
rlipsey@uaex.edu

University of Arkansas, United States Department of Agriculture and County Governments Cooperating.

The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, religion, gender, age, disability, marital or veteran status, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.