



# [GCEA News]

## Light-Emitting Diodes: You Have Options

ALANTHA GARRISON || ENERGY EFFICIENCY SPECIALIST

I often hear from members shopping for LEDs that they're unsure of the best type of light-emitting diode to replace their incandescent bulbs, halogen bulbs or compact fluorescent lamps when they burn out. There are so many options and it seems that each one is different in some way: lumens, watts, color temperature, life length and more. How do you know what to use and what is the best option?

The first step is to identify the type of bulb you're currently using and the fixture it's in. Are you satisfied with the light output and brightness (lumens) and the color temperature (yellow to blue and even red, orange and purple)? Is the fixture dimmable and can it accommodate a three-way bulb? Does it work with occupancy sensors? How long are your lights on per day, and do they get turned on and off frequently? Does your lighting need to be a flood bulb that projects the light to certain areas, or can it be an omnidirectional bulb, such as what you find in a desk lamp?

There are many features of LEDs and it can be confusing to determine the best fit. Here is detailed information to help you find the best LED for your needs.

- LEDs are measured in lumens, or brightness and light output. On the Lighting Facts labels on LED boxes, you'll see it called either "Brightness" or "Light Output." The higher the number of lumens, the brighter the light. The wattage of LEDs goes up as the lumens go up. A 60-watt incandescent bulb is roughly equivalent to an 800-lumen LED, and an 800-lumen LED typically uses 8 to 10 watts.
- LEDs produce light in different color temperatures that correspond to their light color. On the Lighting Facts label on LED boxes, it's often listed as "Light Appearance" or

"Light Color." This is measured in Kelvins and is based on heating an iron bar. The iron bar heats up to different temperatures in Kelvins, and these are the color temperatures you see listed on the packaging. A standard incandescent bulb is about 2,400 to 3,000K and is considered "soft white," which is the more yellow light we're accustomed to seeing and is most often present in homes. As the color temperature reaches about 3,500K, the light is less yellow and more white, and is considered "bright white." This color temperature is usually seen in offices. At about 4,000K the light is white with a tint of blue and is considered "cool white." When you reach 5,000 to 6,000K, the light becomes blue and is considered "daylight," and this is close to the direct sunlight we see outside during the day. Cool white and daylight color temperatures are most often used in warehouses and manufacturing plants. There are also special LEDs for growing plants that include color temperatures all the way up to 10,000K. Between 6,000K and 7,000K, the light mimics typical summer daylight, and at about 8,000K it's equivalent to average summer shade. LEDs that produce light in the 10,000K spectrum are the most blue and similar to the color temperatures found deep in lakes or oceans. They are used to promote extreme plant growth and also used in aquariums with reefs and fresh water marine life. Scientific studies suggest that the higher the color temperature, the more disruptive they may be to the human body's natural circadian rhythm, which can disrupt sleep patterns. Therefore, choose the color temperature of your LED wisely — you may not want to put a daylight LED in your bedroom. Instead install a soft white LED.

- LEDs and other types of bulbs receive a color rendering index (CRI) rating, which is based on a scale of 0 to 100. It refers to how accurate the light source makes the color of an object appear to the human eye and how well the subtle color shade variations are seen. This has to do with how we see lighting in the electromagnetic spectrum with wavelengths specific to human eyes. The higher the CRI, the better you can see true colors and the better the color display performance of the light source. It also often makes the objects you're viewing appear brighter. Incandescent and halogen lightbulbs always have CRIs close to 100. When accurate color viewing is necessary, such as in galleries or painting studios, choose LEDs with CRIs above 90.

- LEDs are given a life rating based on how long they will last. It's often based on three hours of use per day. The lifetime of an LED can vary among different types due to a variety of factors, including the type of fixture they're installed in, higher than expected temperatures in the fixture, poorly designed electronics and the style of the base of the bulb. This is why you may go to the store and see LEDs with many different life lengths. LEDs are sensitive to heat and do not last as long when exposed to heat, especially when they're unable to dissipate it efficiently. Smaller LEDs and LEDs with bases, such as MR16 or GU10, are more compact



**Alantha Garrison**

*[continued on page 8]*

## GCEA SENDS STUDENTS TO WASHINGTON, D.C.

GCEA is excited to sponsor two young adults from the service territory on an all-expense-paid trip to Washington, D.C. As a part of GCEA's commitment to the community it serves, it sends students to participate in a Washington, D.C., Youth Tour.

Two students were selected for this amazing opportunity based on a short 100-word essay describing the cooperative business model. They also had to come to GCEA's headquarters for a 15 minute interview with two GCEA employees.

This year we had nine applicants, and it was a close race among all of them. Madeline Johnson of Gunnison and Sydney Petersen of Crested Butte were selected to represent GCEA on the Washington, D.C., Youth Tour. They will visit the

nation's capital with 1,700 other students from across the country. Their trip will begin at the Colorado Capitol before heading to Washington, D.C., where they will meet members of Congress and visit national monuments, the Library of Congress, the Smithsonian museums and much more. We are excited to have these two young ladies represent GCEA in Washington, D.C., as tour participants.



**Madeline Johnson**



**Sydney Petersen**

[continued from page 7]

and therefore more equipment ends up being housed within the LED, which can shorten its life. External drivers can assist with managing thermal issues.

- LEDs are available in almost any shape, size, beam angle and lumen output these days. Important factors to review before your purchase include the following:
    - Do you have dimmer switches? If so, be sure to purchase a dimmable LED.
    - Do you have three-way fixtures? If so, purchase a three-way LED.
    - Do you have flood bulbs, such as those found in recessed light fixtures? Check the current bulb in the fixture and be sure to purchase the equivalent LED, such as BR30 (bulging neck reflector with a diameter of 30/8 inches), MR16 (multifaceted reflector on the inside) or PAR30 (parabolic aluminized reflector on its inside with the brightest output and a diameter of 30/8 inches).
    - Are you installing LEDs in traditional track light fixtures with electronic transformers? If so, you may find that LEDs do not work in some tracks due to lower line voltages, and a retrofit may need to be done or you may need to purchase a track designed for LEDs.
  - The Lighting Facts label on LED boxes often list an "Estimated Yearly Energy Cost" and the rate per kilowatt-hour. Keep in mind that these rates are based on national averages and typically three hours of use per day, so this cost may not match with your actual usage and GCEA's current rate.
  - LEDs are becoming more sophisticated and decorative. Smart LEDs of all shapes, sizes, color temperatures and lumens are available and can be programmed from your smartphone through an app. Some change colors with sound via Bluetooth and can be controlled remotely. There are also LEDs that look like a traditional Edison style filament bulb but are illuminated by LEDs. Others are purely decorative and create beautiful light designs and styles in fixtures.
- There are so many LED options to choose today, but be sure that any LED you purchase is Underwriters Laboratories listed and receives good reviews. Be sure to take advantage of Gunnison County Electric Association's LED rebate as well. For each LED 500 lumens or greater, no matter what style, color temperature or vendor, GCEA will provide a rebate of 50 percent of the cost of the LED up to a maximum of \$8 per bulb or fixture with LED lighting built in, for up to 50 LEDs per member account per year. You must provide a receipt showing your purchase, the Lighting Facts label for each type of bulb you purchase and GCEA's energy efficiency rebate application, and you must apply for the rebate within 120 days of installation.

For more information, contact GCEA at 970-641-3520.

## CELEBRATING 78 YEARS

Announcing the GCEA 78th Annual Meeting  
 Tuesday, June 27, 2017, at GCEA headquarters  
 Dinner and registration 5 p.m.  
 Business meeting begins at 6 p.m.

## CO-OP CALENDAR

**FEBRUARY 14 — Happy Valentine's Day**  
**FEBRUARY 20 — Presidents Day, office closed**  
**Daylight-saving time: Spring forward March 12**

## EMPLOYEE ANNIVERSARIES

**Paula MacLennan** — Financial Assistant/Benefits Administrator, 19 years  
**Chastity Miller** — Billing Assistant, 10 years  
**Wally Baker** — Meter Technician/Substation Technician, 9 years  
**Cindy Muirhead** — Accounting Assistant, 7 years  
**Congratulations! We value our employees at GCEA!**

## COMMUNITY LOVE

GCEA employees donated time and money to help a family in need this year to make sure their Christmas was full of joy and happiness. This year GCEA adopted a family with two young boys. Donations started rolling in the beginning of December and shopping took place on Tuesday, December 20. A group of employees enjoyed wrapping the gifts on December 21.

GCEA employees donated so much this year that we had leftover money to help others in need. With the left-over donations, we bought 10 hams. Those 10 hams were donated to the Gunnison Country Food Pantry on Wednesday, December 21.

We hope that the families we helped this holiday season had a special holiday. GCEA really appreciates the employees for always stepping up and donating to a great cause.



## NEW IT/GENERAL ADMINISTRATION EMPLOYEE

Gunnison County Electric Association doesn't only believe in helping employees further their education, it also enjoys helping college students further their knowledge with real-world experience. The electric co-op world is currently dealing with a lot of retirements, which means a lot of knowledge is walking out the door. GCEA needs to get new and excited people hired in the electric co-op industry. One way to help the younger generation get excited about electric co-ops is by giving them firsthand experience.

You might remember reading back in the September *Colorado Country Life* that GCEA hired Shane McGuinness as an intern in the information technology and general administration department for six months. Well, as of January 1, Shane joined the GCEA team full time as the new IT specialist. During his internship, Shane really stepped up and was a great asset to not only the IT department but the entire co-op.



Everyone enjoys working with him and the positive attitude he brings to the office on a daily basis.

His duties include, but are not limited to, providing technical assistance to GCEA employees; installing, modifying and repairing computer hardware and software; and assisting with the development and installation of infrastructure. Shane is a team player and helps out in any way he can.

Shane is a Gunnison local who loves the mountain lifestyle.

He graduated from Metropolitan State University of Denver with a bachelor's degree in computer information systems. He is the son of David and Tina McGuinness and has one brother, Dustin.

In Shane's free time, he enjoys being outdoors fishing, camping, hiking, skiing and rafting. He grew up playing ice hockey and still enjoys playing the game. Shane is also an avid sports fan and likes to watch Ohio State football and professional and college hockey.



## CONGRATS, KELLEY!

**GCEA is pleased to announce that Kelley Willis was promoted to accounting supervisor January 1, 2017. In her new role, Kelley will have added responsibility of overseeing the operations of the accounting department as well as supervising. Kelley has a strong background and education in accounting and recently completed intensive supervisor training at the Colorado Rural Electric Association. Kelley has worked hard and is certainly qualified to take on these additional responsibilities.**

**Congrats, Kelley!**

## ENERGY EFFICIENCY TIP

Feeling drafts in your home or business this winter? Common areas that allow drafts include around window and door frames and outlets; along weather stripping on doors and windows; and around skylights, baseboards and vents.

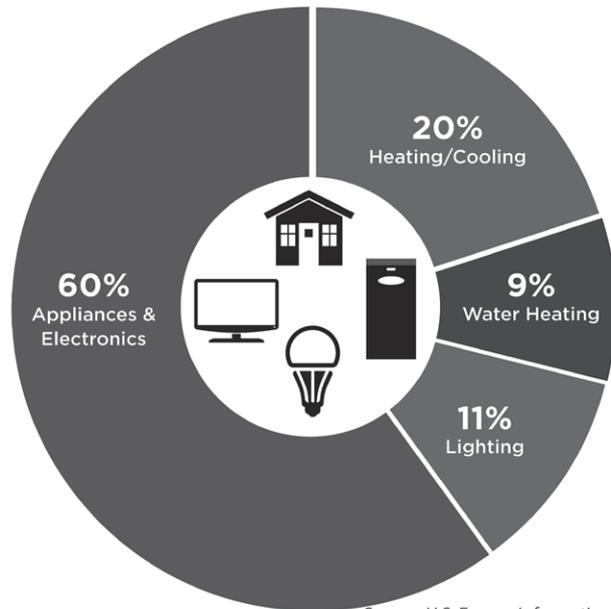
Look for gaps and cracks around these areas and consider caulking them or adding weather stripping. Foam gasket insulators and childproof plug covers can be used to reduce drafts around outlets, and vinyl weather stripping installed in continuous strips along each side of a door or window works well to reduce heat loss.

Door sweeps installed on the bottom of doors reduce cold air infiltration as well. Silicone caulk can be used around window and door frames to seal the leaks. Make sure the caulk you use works with the materials it's in contact with and can be easily removed if necessary.



## How Americans Use Electricity

The latest data from the U.S. Energy Information Administration shows that appliances and electronics account for the largest amount of electricity consumption in American homes.



AMERICA'S ELECTRIC COOPERATIVES

Source: U.S. Energy Information Administration, 2015 Annual Energy Outlook. \*U.S. residential sector electricity by major end uses.

## STAY SAFE ON WINTER ROADS

Winter months bring snow, ice and windy conditions, which create additional hazards for drivers. Should an accident occur, it is important to be prepared. Automobile crashes always present danger, but when electricity is involved, the decisions made in the moments after the accident are especially crucial. Safe Electricity provides tips to help prepare drivers to stay safe on winter roads.

According to the U.S. Department of Transportation Federal Highway Administration, 24 percent of weather-related vehicle crashes occur on snowy or icy pavement.

In case of an emergency, pack a kit that includes blankets, flares, a flashlight and a window scraper. If you are stranded in your car after an accident, watch for signs of frostbite or hypothermia. Do not stay in one position for too long, stay awake and do not overexert yourself as this could strain your heart.

Due to the potential for a winter storm to bring down power lines, individuals should only venture outside if absolutely necessary. Slow down when driving in icy conditions and always keep your eyes on the road to look out for hazardous conditions or downed power lines. Also, watch for debris near downed

poles and lines, as it may be energized as well.

The *Northwest Indiana Times* reported that treacherous driving conditions resulted in numerous vehicles sliding off roads, downing electrical equipment in December 2015. Although utility employees worked through the night to repair electrical damage, outages affected more than 25,000 customers in the reported area.



research collected from the U.S. Department of Transportation Federal Highway Administration

If you see a car in an accident with a power pole, your first instinct may be to rush toward the vehicle to offer help. Always remember to keep your distance from the vehicle and all electrical equipment that is damaged. Instruct those in the car to stay inside until power is shut off.

Keep in mind that a downed line does not need to be sparking to be energized. It is best to assume all low and downed lines are energized and dangerous.

Never drive over a downed line because that could pull down the pole and other equipment, causing additional hazards. If you see a downed line, do not get out of your car. The safest place is inside the vehicle. Contact 911 immediately.

For more electrical safety tips, visit [SafeElectricity.org](http://SafeElectricity.org).