PUBLIC POWER CONNECTIONS

Battle of the Bulb: Reduce Energy, Save Money

When it comes to efficiency, not all light bulbs are created equally

Today's CFL and LED light bulbs come in a variety of shapes and sizes, making it easier than ever to find the perfect light bulb for your home. Best of all, switching to LEDs or CFLs from incandescent lights is an easy way to use less energy and save money. ENERGY STAR® certified CFLs and LEDs use about 75 percent less energy than incandescent bulbs. By switching your five most frequently used incandescent lights to ENERGY STAR certified CFLs or LEDs, you can save around $70 a year on your energy bills, according to energystar.gov.

Lumens (Brightness)	Incandescent Watts	CFL Watts	LED Watts
400-500	40	8-12	6-9
800	60	13-18	8-12.5
1100	75-100	18-22	13+
1600	100	23-30	16-20

These savings add up over time. You can save between $30 and $80 over the life of a CFL or LED, since CFLs last 10 times longer and LEDs 25 times longer than incandescent light bulbs. According to the U.S. Department of Energy, about 49 million LEDs were installed in the United States in 2012, saving about $675 million in annual energy costs.

Although LEDs typically cost more to purchase initially, their lifespan combined with their energy savings provide the best value over time. Knowing what to look for can help ensure that you find the perfect light bulb for your home. When switching to either CFLs or LEDs, there are a few things to consider.

In the past, you may have looked for how many watts a light bulb had to understand how bright the light would be, but watts are just an indicator for how much energy a light bulb consumes. Since CFLs and LEDs produce the same amount of light while using less energy, the best way to determine the brightness of a bulb is by looking at the lumen level the light bulb produces.

The chart above shows the amount of lumens typical incandescent light bulbs provide. You can search for LEDs and CFLs with a comparable lumen amount to help provide the right amount of light for your needs.

Lighting color ranges from cool to warm tones, which is referred to as color temperature, and is measured in degrees Kelvin (K). Lower Kelvin numbers mean that the light will appear more warm, or yellow, while higher numbers mean the light is more cool, or bluer. Light bulbs are labeled at different color ratings, such as soft white, cool white, and bright white depending on their color temperature.

For instance, if you are trying to find a color temperature that is similar to typical incandescent light bulbs, look for a color temperature between 2700-3000K, often called warm or soft white. Cool white and bright white are within 3500-4100K, and natural or daylight is between 5000-6500K.

Pride of Public Power

Public power is something to be proud of – it provides benefits to all residents and businesses in the community. Public power utilities are not driven by a profit motive and their primary focus is providing service in a reliable and affordable manner. The lineworkers and employees of municipal electric systems are the neighbors of those they serve.

Public power communities have a strong track record of reliable service, diversification of energy portfolios, long-term planning, economic development and local decision making.

The hallmark of public power is that the utility is locally owned and locally controlled. Decisions regarding rates, operations and long-term planning are made by locally elected officials, at public meetings, with opportunities for input from customers. This is what separates a municipal electric system from other electric suppliers and it's a valuable aspect of public power.

Consumer-owned electric utilities are committed to reliability and work to meet the needs of long-term community goals.

Public power is one of the oldest forms of electric utility ownership in the United States. There are more than 2,000 public power systems across the country, which serve over 46 million people (about 14 percent of the nation's electricity consumers). On a national basis, public power residents pay less per kilowatt-hour than for-profit private power residential customers. Found in every state except Hawaii, public power utilities serve small communities as well as large cities such as Los Angeles, San Antonio, Memphis, Seattle and Orlando.

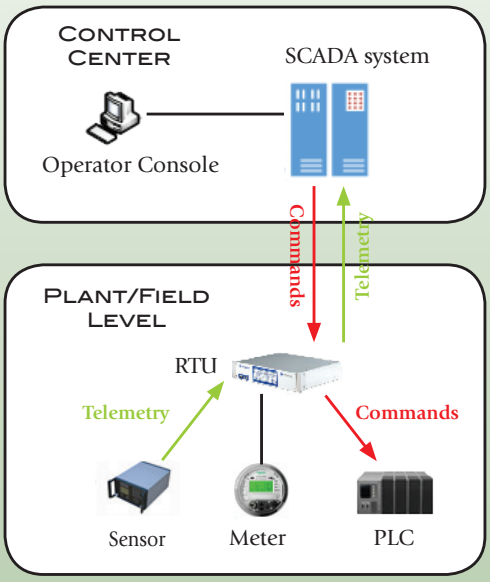
Municipal electric systems are dedicated to their communities. As not-for-profit local institutions, they provide electricity as an essential public service at a reasonable cost. Residents should remember the many benefits of public power and take pride in the fact that they have a voice in the decisions being made by their utility.

What Is SCADA and How Does It Work?

Delivering power to your home involves integrating a variety of facilities at numerous locations into one reliable system.

Helping keep this complex system operating is SCADA (pronounced "skay-duh"), which stands for Supervisory Control and Data Acquisition. SCADA is a type of industrial control system that electric utilities use to monitor and manage the large-scale processes involved in operating generating plants and transmission and distribution facilities.

SCADA is an integral part of overall system reliability because of three major functions it performs.



Simple Overview of a SCADA System

First, it provides real-time information and alarms to energy control center operators. This allows operators to add or reduce power generation as needed. For example, if a generation unit has a mechanical malfunction that causes it to fail, or "trip offline," an alarm message appears on the operator's screen. This alarm is sometimes accompanied by an audible noise (a horn, for example). The operator uses these alarms to notify the plant that there is an issue and to find out more details.

This real-time information also allows operators to head off potential problems by alerting maintenance personnel to operational issues. For example, should the temperature or vibration in a generation plant pump exceed a defined normal limit, an energy control center operator would notify a plant maintenance technician to service the pump.

Second, SCADA sends generation and transmission data to the regional transmission organization (RTO) that is responsible for maintaining system balance, reliability and electricity market operation. PJM and MISO are the two RTOs that oversee the power grid encompassing most AMP members. This exchange of data helps the RTOs maintain stability of the overall electric grid.

Third, SCADA captures consumption data that AMP and other utilities use in their power supply planning process to help forecast future power usage and power purchasing needs. This is valuable in projecting possible construction or purchase of new generation facilities and developing advantageous long-term power contracts to make sure communities will have the power they need.

The accompanying diagram (left) provides a basic look at a SCADA system. The system functions by sending coded signals over communications channels to remote field/plant equipment.

The most common piece of remote equipment a SCADA system communicates with is the remote terminal unit (RTU), which is connected to various sensors. The RTU converts signals from the sensors into digital data (known as "telemetry" as shown on the chart) that is sent to the SCADA system – and viewed by the energy control center operators.

SCADA systems can communicate directly to meters, programmable logic controllers (a PLC is a type of digital computer used to automate electromechanical processes), other control systems and field equipment. SCADA systems are well known for their ability to talk to many types of systems and equipment over multiple communications protocols.

However, as the chart shows, the RTU at a remote site typically talks to these devices instead, concentrating all the telemetry (data) in one place before sending it to the SCADA system. The RTU also relays control commands from the SCADA system to all of these devices.

In reality, SCADA systems are much more complicated than this diagram, and they relay telemetry and commands to hundreds, if not thousands, of devices. SCADA systems also need to be highly reliable as they perform some of the most critical operational functions that exist in the world today. It is for this reason that physical and cyber security of these systems is very important, and many of these systems are secured within high-security areas and "air-gapped," or separated, from outside networks and the Internet.

SCADA systems also exist in other industries such as transportation, building management and manufacturing. So the next time you turn on your lights, get on a subway train, or buy a new car, you can know that a SCADA system was behind it.

SAFETY TIP: *Most snow sledding injuries among those under 19 occur when the sled hits a stationary object or the rider falls off. That's why the National Safety Council recommends that parents purchase sleds that can be controlled with a steering mechanism and brakes. All sledders should also wear a helmet, the council advises, because sledding injuries often include skull fractures.*