

GCEA News



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Touchstone Energy®

The Electric Power System and Your Electric Bill

BY ROCKY FERRAN, STAFF ENGINEER

Click. With the simple flick of a switch or the push of a button, an electric circuit is completed and electricity begins to flow. It flows from a generating station possibly hundreds of miles away, through miles and miles of power lines and myriad electrical equipment; through cities and towns, deserts and forests, mountains and plains; across canyons; and over and sometimes even under rivers, lakes and highways. It flows at extremely high voltages as well as relatively low voltages, and just as a point of interest, it travels at nearly the speed of light, which is approximately 186,000 miles per second. (that's fast.)



Rocky Ferran

With relatively few interruptions, electricity flows day and night, during the heat of summer and cold of winter and the rest of the time in between. It flows during thunderstorms and blizzards, during calm days and windstorms. It flows into your home or business to light a lightbulb and run your heater or air conditioner, refrigerator, microwave oven, dishwasher, coffeemaker, clothes washer and dryer, television, cordless telephone, computer and power tools.

Electricity runs refrigeration compressors in grocery stores to keep food from spoiling, gasoline pumps at your local gas station, radar sites for weather forecasting or air traffic control, cooking equipment in restaurants, critical medical equipment at hospitals and nursing homes and radio and TV transmitters. It runs electric motors to operate heating, ventilating and air-conditioning systems in schools and other buildings, to manufacture cars or virtually anything else, to make concrete and asphalt and to run ski lifts. It even runs equipment required for other utilities to

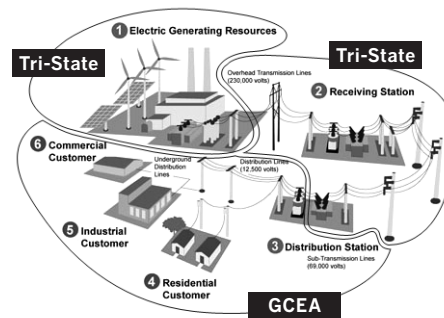
operate, such as wells and pumps for drinking water, fire suppression and crop irrigation; water and sewage treatment plants, natural gas compressors; cable TV amplifiers; telephone switches, relays and amplifiers; and cell phone towers.

It's pretty amazing what electricity can do, but you already knew all of that.

Have you ever wondered just how the electric power system really works, and what your monthly electric bill actually pays for? Maybe we can shed a little light on this subject.

The electric power system as a whole, or "the grid" as it is sometimes called, is actually a very complex network of generating stations, transmission and distribution lines, transformers, circuit breakers, switches, fuses, voltage regulators, relays, meters, communications equipment and other devices, which in total have cost billions of dollars to install and to operate and maintain safely and reliably on a daily basis. Below is a simplified diagram of what constitutes the grid. The majority of the electric power system can generally be separated into three main categories, the generation system, the transmission system, and the distribution system. These

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The Electric Power System

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each serve a crucial role in providing electricity to the end user.

Here in Gunnison country, Tri-State Generation and Transmission Association, Inc., serves as the generation and transmission provider to your rural electric distribution cooperative, Gunnison County Electric Association, Inc. (GCEA). Tri-State owns the generating stations and the high-voltage transmission system (230,000 and 115,000-volt power lines, substations, etc.) that provide wholesale electricity to GCEA at our distribution substation delivery points. GCEA then owns the medium-voltage (24,900-volt) and low-voltage (less than 600-volt, but still dangerous) distribution system power lines, transformers and other equipment from the substations all the way to the individual consumer's point of service. GCEA, which is a relatively small electric company in terms of number of consumers served, currently owns, operates and maintains nearly \$40 million in assets, which includes over 1,000 miles of distribution power lines spanning three Colorado counties, all with the ultimate purpose of providing electricity to its roughly 7,700 members and 10,300 metering points.

GCEA is solely an electric distribution company, which means that we purchase bulk wholesale electricity from Tri-State, then distribute and sell this electricity to each of our individual consumers at a retail rate. It is important to remember that GCEA, as a rural electric cooperative, is a nonprofit organization that is owned by its member-consumers. The intent of the electric distribution cooperative is to provide retail electricity to its members at a cost that covers the expense of doing so, without trying to earn a profit as an investor-owned utility would try to do. It is good to mention as well that Tri-State is also a nonprofit electric cooperative, with the intent to provide electricity to its wholesale consumers (like GCEA) at cost plus expenses.

GCEA's current General Service retail rate is \$0.11279 per kWh (the "energy charge" for residential and small commercial consumers). This energy charge is developed by rate consultants with the intent to recover GCEA's cost to purchase

the wholesale power from Tri-State (which pays for generation and transmission of the electricity to GCEA), as well as the additional administrative, operational and maintenance costs required to deliver that energy to each individual consumer.

In addition to the energy charge, a monthly service availability fee is also charged to each account, the amount of which depends on the type of service being provided and type of metering required. For the typical residential consumer, this is currently a \$16 monthly charge. This service availability fee is intended to recover a portion (currently about one-half) of GCEA's fixed costs to have a meter and the associated system infrastructure (power lines, etc.) in place to make electricity available to that member, whether any energy is used or not.

We will do our best to keep the lights on for you.

Even if you don't need electricity at a particular instant, you surely expect it to be available instantly at that flick of a switch. It costs money to have that electricity available on demand, and as a point of interest, GCEA has that electricity available at your beck and call for an average of 99.98 percent of the time. This corresponds to an average of about two hours during an entire year that it is not available to a typical consumer. That is for a system that, for all intents and purposes, runs 24 hours per day, seven days per week and 365 days per year. Don't you wish your car was that reliable?

Keep in mind that to safely and reliably provide and administer the delivery of electricity to each consumer, GCEA must employ a significant number of people with a variety of skills. These employees include engineering personnel to design the electric system; linemen to build, operate and maintain the system and restore power during outages; mapping personnel to maintain current system maps; member and consumer services personnel to administer energy programs and assist members in a variety of ways; and metering personnel

to calibrate, test, install and read electric metering equipment. There are also billing personnel to process meter readings and monthly electric bills and accounting personnel to keep track of everything from assets to financials and from taxes to payroll; not to mention all the other employees in various support roles from information technology to administrative functions, from vehicle maintenance to warehouse and purchasing, and from regulatory affairs to underground line locating.

Other expenses include vehicle purchases and fuel and maintenance expenses needed to operate a fleet of vehicles and other heavy equipment required to run an electric utility. There are also the property taxes that must be paid regularly for all of the assets (power lines, etc.) owned by the company, depreciation expenses and interest on long-term debt used to fund construction projects and more. Also, there are all of the regular expenses that a "normal" business incurs, such as computers, office supplies, copy machines, furniture, utility bills and more that are necessary to make the entire business work.

To help you better understand and to put in perspective what you are actually purchasing when you buy electricity from GCEA, let's look at some definitions and examples.

Power is typically measured in watts, or on a larger scale, in kilowatts (or kW, which is just equal to one thousand watts). One kilowatt (kW) is the amount of power it takes to run 10 100-watt light bulbs (10 bulbs x 100 watts per bulb = 1000 watts, or 1 kW). A typical hair dryer or portable electric space heater requires approximately 1,500 watts, or 1.5 kW. You can look on the manufacturer nameplates or near the electric cords of most appliances to see what their power ratings are, in watts. To get the kilowatt (kW) rating of the appliance, just divide the number of watts by 1,000 to get the number of kW.

The amount of energy that the appliance consumes (in kilowatt-hours or kWh) is then simply calculated by multiplying the power rating (kW) by the number of hours it continuously operates to get kWh. For instance, in our previous example of 10 100-watt light bulbs



Annual Meeting Announced

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requiring a total of 1,000 watts, or 1 kW, these lights would consume 3 kWh if they were all on continually for three hours (1 kW x 3 hours = 3 kWh). Also, if the 1.5 kW portable electric space heater ran continuously for four hours, it would consume 6 kWh during that time (1.5 kW x 4 hours = 6 kWh).

As you can see, at GCEA's current General Service rate, a residential consumer could run the 10 100-watt light bulbs for 3 continuous hours and consume 3 kWh of energy at a total cost of about 34 cents (3 kWh x \$0.11279 per kWh = \$0.3384), or slightly more than 1.1 cents per light bulb per hour. Similarly, the 1500-watt portable electric space heater could run continuously for 4 hours and consume 6 kWh of energy at a total cost of about 68 cents (6 kWh x \$0.11279 per kWh = \$0.6767).

When you consider the expansive infrastructure and immense cost to install, operate and maintain the electric grid, as well as its impressive reliability (99.98% for GCEA), it is pretty amazing to think about what you really get for just a few pennies.

With everything that is mentioned in this article, it only barely scratches the surface regarding the complexity of the electric grid, and what it really takes to make electricity available to a consumer at the flick of a switch or the push of a button. So the next time you turn on a light, cook a meal or watch TV, stop for a moment and think about what all it actually takes for your electric utility to deliver electricity to your home or business. The value of the product and service that you are receiving has hopefully become more apparent and you now have a greater understanding of how it all works.

We at GCEA are here to serve you, and we hope that you enjoy and appreciate what a little more than 11 cents per kWh really buys you. So enjoy the light in your home at night, enjoy that hot meal and enjoy a little time in front of the TV. We will do our best to keep the lights on for you safely, reliably, dependably and at the lowest possible cost to you.

Gunnison County Electric Association is celebrating 72 years of service at the Annual Meeting on June 28, 2011, at the headquarters building in Gunnison. The business portion of the meeting will begin at 6 p.m. and will include board elections.

Ballots and voting instructions will be sent to members by May 27, 2011. Members have the option of voting by mail or in person at the Annual Meeting. In the past, members who voted by mail had to revote if they came to the meeting. However, since the Colorado General Assembly passed House Bill 1098, members no longer need to revote if they attend the meeting. This change in the law should make registration more efficient and allow more time for members to chow down at the annual barbecue, visit with friends and view energy efficiency displays.

The free barbecue will begin at 5 p.m. Everyone is invited to come early for an open house and tour of the remodeled, energy-efficient headquarters building. The tours will begin at 4 p.m.

As usual, we will announce our new scholarship winners and raffle off door prizes. One lucky member will receive the \$300 grand prize, but you must be present to win.

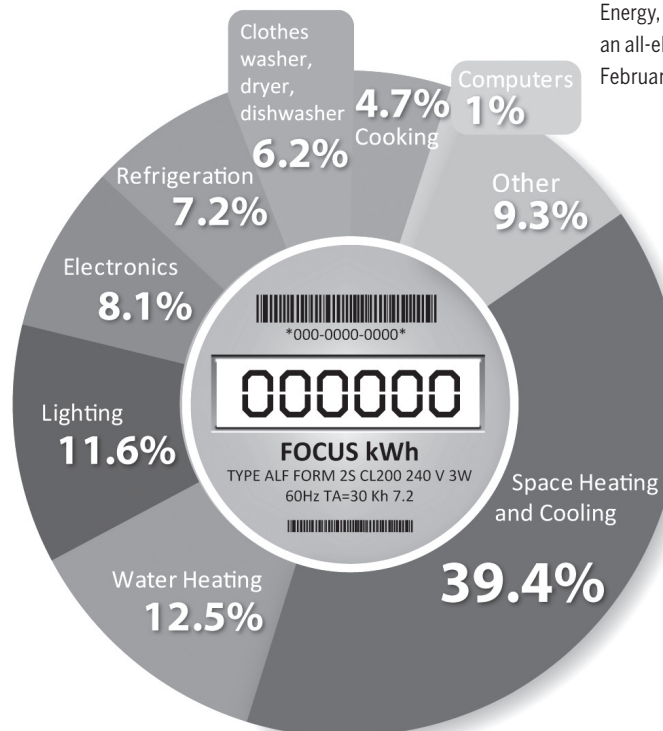


EMPLOYEE ANNIVERSARIES — CONGRATULATIONS!

- Dan McDonoughCustomer services supervisor, 37 years
- Tom CarlLake city lead lineman, 33 years

How Your Home Uses Electricity

Source: 2009 Buildings Energy Data Book, U.S. Department of Energy, Table 21.5. Represents an all-electric home. Updated February 2011.



ENERGY EFFICIENCY DOESN'T HAVE TO BE EXPENSIVE

BY MAGEN HOWARD

It's easy to get overwhelmed by two words: energy efficiency. What should I do? How should I do it? Do I have to replace my entire heating and cooling system to see savings?

The easy answer to the last question is "no." You can do a lot of upgrading with little money.

On your next trip to the home improvement or local hardware store, take the accompanying shopping guide with you. It lists a few simple energy efficiency investments that will produce savings right away.

Lighting

Since lighting accounts for about 11 percent of home energy use, switch your traditional incandescent lightbulbs with compact fluorescent lightbulbs (CFLs). An Energy Star-qualified CFL uses about 75 percent less energy than a traditional bulb, lasts up to 10 times longer and can save about \$40 in energy costs over its lifetime. A four-pack of 14-watt CFLs (equivalent to 60-watt incandescents) runs about \$6.

Filling the cracks

A tube of caulk and a roll of weather stripping can go a long way toward saving money on your electricity bill. It's easy to find where cold air leaks in around doors and windows — simply hold your hand out and feel. Caulk around windows, dryer vents and fans for about \$2 a tube, and weatherstrip around doors for about \$4 a roll.

There are also some not-so-obvious places for air to flow in and out of your home, notably outlets and behind switch plates. To see if you have air flowing through your outlets or switch plates, light a stick of incense, hold it in front of them and watch for the smoke to be disrupted. You can find special sealing kits for outlets and switch plates for about \$2.

And don't forget about applying weather stripping around your attic hatch or pull-down stairs. You may also want to install an insulator box over the opening. A kit costs around \$40.

Sealing these cracks can save you around \$200 a year, according to Together WeSave.com, a website by Touchstone



Sealing cracks around doors and windows can help save on your electric bill.

Energy Cooperatives, the branding program of the nation's electric co-ops, that shows how little changes add up to big savings.

Programmable thermostat

Beginning at \$40, a programmable thermostat becomes a larger investment, but you could save \$180 a year with the proper settings. For the biggest impact, program your thermostat to raise the temperature during summer and lower in the winter while you're out of the house. You can also program it to dip lower at night in the winter while you sleep. The thermostat can be set to automatically revert to a comfortable setting shortly before you arrive home or wake up.

Programmable thermostats are helpful, but they're not for everyone. These gadgets are best for people who are away from home for extended periods throughout the week.

Magen Howard writes on consumer and cooperative affairs for the National Rural Electric Cooperative Association, the Arlington, Virginia-based service arm of the nation's 900-plus consumer-owned, not-for-profit electric cooperatives.

Energy Efficiency Shopping List

Planning energy efficiency upgrades at home? Take this handy shopping list with you to your local home improvement store.

CFLs (4-pack)	\$6
Caulk	\$2
Weather stripping	\$4
Outlet sealing kit (10)	\$20
Attic door insulator kit	\$40
Programmable thermostat	\$40
Mastic	\$12
Water heater blanket	\$20
Investment:	\$144
Potential Annual Savings:	\$700

Sources:
HomeDepot.com,
TogetherWeSave.com