



A Touchstone Energy® Cooperative 
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**FLINT HILLS RURAL
ELECTRIC COOPERATIVE**

NEWS

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Substations: Stepping Up to Provide Power

BY MEGAN MCKOY AND KAREN NEJTEK

Electricity enhances your life, from lights and entertainment to the comfort level of your home. Since power plants usually aren't next door to homes, electricity must travel long distances to reach your doorstep. The complicated process needed to accomplish the feat of delivering power from a power plant to your home combines several key components, including substations.

Energy cannot be stored, so moving electricity requires packing power as heavily as possible onto transmission lines. By increasing electricity's voltage—an electromotive force that acts like water pressure—it moves more efficiently.

Substations serve as essential “transit” points in this system, with the ability to raise, or “step up,” and lower, or “step down,” voltage. High voltage is great for moving power along transmission highways, but if electricity enters your home at a high voltage your electronics could be damaged. Similar to when lightning strikes and causes damage.

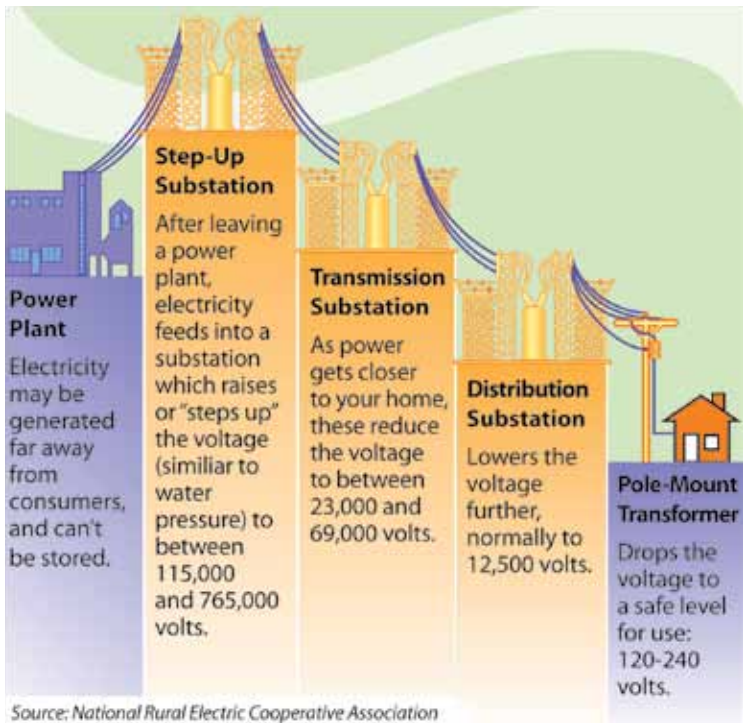
As power gets closer to its destination, substations decrease it to a safe level. Substations also keep voltages constant, preventing harmful fluctuations.

Several types of substations are found between power plants and homes. Each contains a wide array of equipment, including transformers, lightning arrestors, circuit breakers, insulators, and more. A transformer performs the heavy work, altering voltage as needed.

Initially, step-up substations at power plants increase electricity's voltage to various levels between (115,000 volts and 765,000 volts) so it can be shipped through high-voltage transmission lines. Once electricity gets closer to its destination, transmission substations typically reduce the voltage to between 23,000 volts and 69,000 volts.

From there, the power moves over smaller trans-

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Source: National Rural Electric Cooperative Association

FEMA Update

Flint Hills RECA was notified in April 2009 that we were approved for Federal Emergency Management Agency (FEMA) funds to repair and/or replace the electrical lines damaged by the December 2007 ice storm.

We have made progress on this project and wanted to keep you informed about the status of our crews.

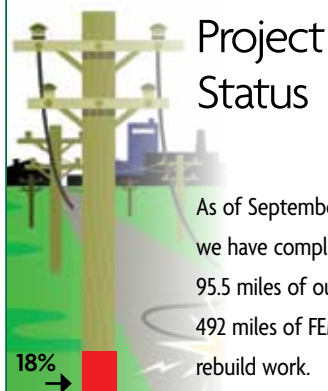
As of the end of September, we have completed 95.5 miles of line construction. We still have 396.5 miles left to complete—all within a two year period.

If you see a Flint Hills RECA work crew in your area, they are likely replacing the old power lines and poles. When they switch to the new line, you may experience an outage of an hour or two. Before this happens, we will call the phone number listed under your account to let you know about the outage.

Along with our line crews, we have a couple of contracted tree crews working in our service area also. These tree crews will be working ahead of the line crews to clear the area for the new lines to be built.

We will keep you updated on these FEMA projects on our web site. Just go to www.flinthillsrec.com and check the home page for current updates.

We all appreciate your patience with us as we work to improve our service to you, our members.



Project Status

As of September, we have completed 95.5 miles of our 492 miles of FEMA rebuild work.

18% →

Energy Efficiency—Proper Insulation

One of simplest ways to reduce your home's heating and cooling costs—and improve comfort—involves installing proper insulation. Doing so provides resistance to heat flow. The more heat flow resistance your insulation provides, the lower your heating and cooling costs.

Heat flows naturally from a warmer to a cooler space. In winter, heat moves directly from heated living spaces to adjacent unheated attics, garages, basements, and even outdoors. It can also travel indirectly through interior ceilings, walls, and floors—wherever there is a difference in temperature.

During the summer cooling season, the reverse takes place. Heat flows from the outdoors to the interior of a house.

To maintain comfort, heat lost in the winter must be replaced by your heating system. In summer, heat gained must be

removed by your cooling system. Proper insulation, though, decreases heat flow.

Heat flow resistance is measured or rated in terms of its R-value. The higher the R-value, the greater the insulation's effectiveness.

When calculating the R-value of a multilayered installation, add R-values of individual layers. Installing more insulation in your home increases the R-value.

Insulation effectiveness also depends on how and where it's installed. For example, insulation that gets compressed will not provide its full rated R-value. The overall R-value of a wall or ceiling will be somewhat different from the R-value of the insulation because some heat flows around the insulation through studs and joists. Therefore, it's important to properly install your insulation to achieve the maximum R-value.

Substations: Stepping Up to Provide Power

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mission facilities to electric co-op distribution systems. Distribution substation transformers then slash the voltage even lower, normally to 12,500 volts.

At this point, the distribution lines you see running up and down rural roads and across fields bring power to you. To make that energy safe for household use, a pole-

mount transformer (the round object resembling a small gray garbage can located near the top of a utility pole outside your home) or a pad-mount transformer (the gray boxes dotting your housing development) cuts the voltage once more, to between 120 and 240 volts.

Substations remain an important part of

your electric cooperative's system. Remember, the voltage entering and exiting substations far exceeds anything you'll find at home. Substation fences protect you and the equipment housed within and help ensure that your co-op can continue providing you with a safe, reliable, and affordable supply of power.



Flint Hills RECA's Office will be Closed for the Holiday

Flint Hills RECA wishes our members a happy Thanksgiving. We would also like to remind you that our offices will be closed Thursday and Friday, November 26-27, in observance of the holiday.

CO-OP Connections Update Have you taken advantage of your Connections Card yet?

	Prescriptions Filled	Savings to Flint Hills' Members
September	23	\$327.99
2009 Total	257	\$4,039.73



Saving Money? Think Again!

A few things to keep in mind when selecting a space heater

Even though our job is to provide you with safe, reliable and affordable electricity, we only want to sell you the electricity you need. To do that, we have this constant drive to help you make the most efficient choices when using electric energy. Although we can't control gas prices, we can offer suggestions to help you stay warm this winter.

Even though the cost of electricity here in the Midwest is more reasonable than residents in other parts of our nation experience, we continue to answer the question, "Why is my electric bill so high?" During the winter months, our answer to your question often starts with a question, "How do you heat your home?"

In an effort to save on gas costs, many of us are more than willing to turn our thermostats down a little, wear an extra sweater, or use another blanket. But there is also an urge to plug in an electric heater. Electric heaters are efficient and can be a means of saving on your gas costs as long as you understand how to properly use it and how it might affect your energy bill.

A space heater generally produces about 1,500 watts. An infrared heater is a space heater with a different design. Advertising will show differences in safety or construction quality, but two completely different 1,500 watt space heaters will cost the same to operate if used for the same periods of time.

Space heaters are designed for temporary use, not long-term. If your space heater runs 24/7 for an entire month, your gas bill may be somewhat lower. However, you should then expect your electric bill to raise, maybe as much as \$108.

For example, at an electric rate of \$0.10 per kilowatt-hour, a 1,500 watt heater will cost \$0.15 to run for one continuous hour. If the heater runs for 24 hours it will add \$3.60 to your bill. If it runs for 24 hours for 30 days, it will add \$108! You can imagine how this will increase with each heater that is running in lieu of a lower thermostat



Space heaters are designed for temporary use, not long-term. If your space heater runs 24/7 for an entire month, your gas bill may be lower, but your electric bill may increase.

setting. Will you save the equivalent amount of money on your gas bill? Are you just as comfortable with one or two space heaters as you are with heating your whole house?

There are lots of space heaters on the market today. Some as low as \$50 and others as high as \$500. They are available locally as well as through unknown sources including the Internet or door-to-door sales. The buyer should always beware. Know what you are buying, know from whom you are buying, how you are going to use it and what your payback will be.

Home improvements may be a better solution; spending \$50 on caulk may go further toward saving money than a new \$50 heater. Spending \$500 to replace two ancient windows or improve your attic insulation may have greater payback than a \$500 space heater with additional monthly costs.

Your cooperative is here to help you. This is your chance to utilize the benefits of being an owner of that cooperative. Call on us, replace band-aid savings with long-term savings so you can be comfortable in every room of your home.

Electric Space Heater Consumption Chart

Daily Hours of Operation
Cost based on Flint Hills RECA's rate of \$0.10224/kWh*

Heat Setting (watts)	1	2	4	6	8	10	12	24	Weekly Cost	Monthly Cost
600	\$0.061	\$0.123	\$0.245	\$0.368	\$0.491	\$0.613	\$0.736	\$1.472	\$10.31	\$44.17
750	\$0.077	\$0.153	\$0.307	\$0.460	\$0.613	\$0.767	\$0.920	\$1.840	\$12.88	\$55.21
900	\$0.092	\$0.184	\$0.368	\$0.552	\$0.736	\$0.920	\$1.104	\$2.208	\$15.46	\$66.25
1000	\$0.102	\$0.204	\$0.409	\$0.613	\$0.818	\$1.022	\$1.227	\$2.454	\$17.18	\$73.61
1250	\$0.128	\$0.256	\$0.511	\$0.767	\$1.022	\$1.278	\$1.534	\$3.067	\$21.47	\$92.02
1350	\$0.138	\$0.276	\$0.552	\$0.828	\$1.104	\$1.380	\$1.656	\$3.313	\$23.19	\$99.38
1500	\$0.153	\$0.307	\$0.613	\$0.920	\$1.227	\$1.534	\$1.840	\$3.681	\$25.76	\$110.42

* The chart above is calculated based on a customer usage of 1,500 kWh per month, the rate averages out to 10.224 cents per kWh. Note: If the heater also has a fan, the actual cost may increase over the amounts shown.



WHO KNEW A FRESH LAYER OF INSULATION WOULD HELP ME WEATHER THE ECONOMY?

There was money hiding in my attic. Not anymore. I'm saving \$240 a year just by adding insulation. What can you do? Find out how the little changes add up at TogetherWeSave.com.



TOGETHERWESAVE.COM