

# WATT'S HAPPENING

SCENIC RIVERS ENERGY COOPERATIVE

LANCASTER, DARLINGTON AND GAYS MILLS, WISCONSIN

## Geared up for safety

Can you imagine working a job that requires you to lift heavy equipment and perform detailed tasks near deadly high voltage? Now imagine doing this 40 feet in the air, and sometimes, in extreme weather. This is the life of a lineman.

These brave men answer when called – and they do so to ensure that you are provided with safe, reliable electric service. But how do they stay safe when working in these conditions? Scenic Rivers Energy Cooperative linemen are required to wear personal protective equipment (PPE) at all times when on the job to keep them safe.

### **Let's take a look at a lineman's PPE.**

**Fire resistant (FR) clothing.** While our linemen do everything possible to prevent them, unexpected fires can happen. Fires typically occur with an arc flash – an explosion that results from a low-impedance connection to a ground phase in an electrical system. FR clothing will self-extinguish, thus limiting injury due to burn.

**Insulated gloves.** Linemen must wear insulated rubber gloves when working on any type of electrical line. These gloves provide protection against electrical shock and burn, and are tested at 30,000 volts. Protective gloves, usually made of leather, are worn over the insulated gloves to protect the rubber from punctures and cuts.

**Hard hat.** No matter how tough or “hardheaded” our linemen are, they still need protection. Insulated hard hats are worn at all times to protect them

from blows and falling objects.

**Protective boots.** These heavy-duty boots are typically 16 inches tall and designed with extra support in mind. The height of the boot

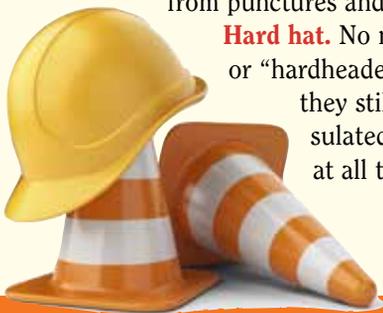
shields linemen from gouges, and serrated heels provide a better grip when climbing poles. The steel toe provides sturdier support and protects from objects that could potentially pierce the feet.

**Safety glasses/goggles.** Linemen must wear protective goggles or glasses, whether working on electrical lines or clearing rights-of-way. This protects them from loose debris and other hazards.

These items make up a lineman's basic PPE. While working on electrical lines, they also may be required to wear equipment belts, tool pouches, safety straps and other types of equipment. A lineman's gear usually weighs about 50 pounds – that's a lot of extra weight when working in hazardous conditions.

So, the next time you see a lineman – be sure to thank him for keeping the lights on. But more importantly, thank them for the hard – and often times dangerous – work they do, day in and day out.

*Abby Berry writes on consumer and cooperative affairs for the National Rural Electric Cooperative Association, the Arlington, Va.-based service arm of the nation's 900-plus consumer-owned, not-for-profit electric cooperatives.* ■



# Home heating: Calculating the benefits of electricity vs. propane

According to the U.S. Department of Energy, heating and cooling account for nearly half of the energy use in a typical U.S. home, making it the largest energy expense for most households. While few people enjoy spending money on home heating fuels, consumers are willing to pay for comfort in the form of heat.

In these colder months when the temperatures dip and the need to heat your home rises, it makes sense when trying to determine the most economical heating method to evaluate the cost per unit of heat. This is referred to as a British thermal unit (Btu).

## Evaluating cost per unit of heat for propane and electricity

The Btu content per gallon of propane is 91,500 Btu. The Btu content for electricity is 3,413 Btu per kilowatt-hour (kWh). It takes 26.8 kWh to equal the Btu content of one gallon of propane.

Using the U.S. Energy Information Administration's table on residential propane and electricity rates for November 2014, \$2.40 per gallon, excluding taxes, and 13.01 cents per kWh, we arrive at the following calculation:

$$\begin{aligned} 26.8 \text{ kWh} \times 13.01\text{¢} &= \$3.49 \text{ U.S. DOE} \\ 26.8\text{kWh} \times 10.96\text{¢} &= \$2.93 \text{ SREC residential} \\ 26.8\text{kWh} \times 6.62\text{¢} &= \$1.77 \text{ SREC controlled} \\ &\text{electric / dual fuel} \end{aligned}$$

If we used only Btu content to determine the best energy source for home heating, it would appear that propane is less costly than electricity if the price for propane is below \$1.77 per gallon.

## Comparing usable heat costs

While we may have determined the cost of the actual heat content, what matters even more is the cost of the usable heat (warmth). A low-efficiency propane furnace may have an efficiency rating of 80 percent, and a high-efficiency propane furnace may have an efficiency rating of 95 percent. Let's assume we have a 90 percent efficient propane furnace. That means 10 percent of the Btus are not converted to useable heat (warmth). Here is the math:

$$91,500 \text{ Btu} - 10\% \text{ Btu loss} = 82,350 \text{ Btu}$$

So now it only requires 24 kWh to equal the delivered Btu content of propane.

$$24 \text{ kWh} \times 13.01\text{¢} = \$3.12 \text{ U.S. DOE}$$

$$24 \text{ kWh} \times 10.96\text{¢} = \$2.63 \text{ SREC residential}$$

$$24 \text{ kWh} \times 6.62\text{¢} = \$1.59 \text{ SREC controlled electric / dual fuel}$$

## Electric heat is 100 percent efficient

What may surprise most consumers is that the least efficient electric heating system delivers 100 percent efficient heat. Yes, electric resistance heat (i.e., space heaters, baseboard heating) is 100 percent energy efficient. Every single Btu in a kilowatt-hour is delivered as usable heat. So if you are paying more than \$1.59 per gallon of propane for a 90 percent efficient propane furnace, it would be cheaper to use controlled electric resistance heat.

Are we recommending that you use electric resistance heat as your sole heating source? No. While we are proud to offer a reliable source of electricity, we don't want to empty your wallet. However, if your only choice is electric resistance heat, we are happy to share saving tips - visit [www.togetherwesave.com](http://www.togetherwesave.com).

## Pumping up efficiency

There are even more efficient electric heating systems called heat pumps. An air-source heat pump is at least 250 percent energy efficient. How is it so efficient?

In the heating mode, heat pumps do not use electric energy to create heat; they use it to pump heat into your home through a reversal of the refrigeration process. If you have central air conditioning, you have already experienced this process in reverse when your unit pumps heat out of your home in the summer. If you have ever stood next to the outdoor components you know the air conditioning system is exhausting very hot air. In winter,

### IN COMPARISON TO OIL OR GAS FURNACES, ELECTRIC HEATING HAS MANY ADVANTAGES

#### Electric resistance heat

(i.e., energy-efficient space heaters, baseboard heating):



...is 100% efficient - every single Btu in a kilowatt-hour is delivered as usable heat.



...is quick to respond and can be very quiet.



...takes up less space in the house than other conventional systems (assuming space heaters are used).



...can warm select rooms, allowing you to keep your main thermostat down while ensuring continued comfort.

#### Electric heating systems are:



...generally less expensive to purchase and install.



...safe because there is no combustion process. There is no chance of flames starting a fire or having combustion products contaminate the air.

it simply does the opposite, moving heat into your home. Air source heat pumps are equipped with some type of auxiliary heat for those times when temperatures are near freezing or dip below. The typical back-up is dual fuel propane with optional electric strip / plenum heater.

In calculating the Btu's per kilowatt hour for a heat pump we use this formula:

$$3413 \text{ Btu} \times 250\% = 8532 \text{ Btu.}$$

This means that it only takes 9.65 kilowatts using an air source heat pump to deliver the same amount of warmth as a 90 percent efficient propane furnace.

$$9.65 \text{ kWh} \times 13.01\text{¢} = \$1.25 \text{ U.S. DOE}$$

$$9.65 \text{ kWh} \times 10.96\text{¢} = \$1.06 \text{ (SREC residential)}$$

$$9.65 \text{ kWh} \times 6.62\text{¢} = \$0.64 \text{ (SREC controlled electric)}$$

The price of propane would need to drop to \$0.64 per gallon to breakeven with the cost of home heating using an air source heat pump. Efficiency increases even more sharply when looking at the 350+ percent efficiencies of a geothermal (water source) heat pump. An additional advantage of geothermal systems is that they can be equipped to provide free water heating most of the year.

### ***Providing reliable energy facts – regardless of fuel type***

At Scenic Rivers Energy Cooperative, we believe it is our responsibility to provide members with reliable energy facts regardless of fuel type so you can get the most from your energy dollars. We are committed to helping you find the best energy solution for your budget and lifestyle and hope you will consult with your local co-op before making any big home-heating decisions.

*Anne Prince writes on energy efficiency issues for the National Rural Electric Cooperative Association, the Arlington, Va.-based service arm of the nation's 900-plus consumer-owned, not-for-profit electric cooperatives* ■

### **Energy Efficiency Tip of the Month**



Did you know that 90 percent of the energy used to operate a washing machine comes from using hot water? A simple switch from hot to cold can save a great deal of energy! Also, consider air drying or even line drying to save even more household energy.

*Source: U.S. Department of Energy*

### **Electricity's advantages for home heating and hot water**

While most consumers are aware of the benefits of using propane or natural gas to heat their homes, many are not aware of the value of using electricity for home heating. Listed below are the numerous advantages of electricity-based home heating and hot water systems that may surprise even the most energy-savvy consumers.

### **In comparison to oil or gas furnaces, electric heating has many advantages.**

- Electric heating systems are generally less expensive to purchase and install than other systems and on the whole, enjoy fuel cost stability.
- Electric heat is quick to respond and can be very quiet.
- Electric heat can be added on a localized basis to heat specific areas of the home, and the temperature can be controlled easily by room or by zone.
- Electric heat can take up less space in the home than other conventional systems (assuming space heaters are used).
- The electric heating system is safe because there is no combustion process. There is no chance of flames starting a fire or having combustion products contaminate the air.
- Maintenance costs can be less with no chimney to worry about.

### **Choices for electric heat include:**

- Geo thermal heat pumps
- Air source heat pumps
- Plenum heaters
- Electric thermal storage (ETS)
- Baseboard heaters

Heating contractors, electricians, home improvement stores and Scenic Rivers Energy Cooperative are good sources for information about heating with electricity. For additional information about how you can be more energy efficient, visit our website at [www.sre.coop](http://www.sre.coop).

## Recipes

*The recipes below are a couple of my (Heidi Pierce) family favorites. The potato soup is so easy to make and is a great choice for those cold winter days. I like to pair it up with some homemade bread out of our bread machine. And for something sweet, the cherry bars are very delicious!*

### Slow Cooker Loaded Potato Soup

- 7 medium (about 8-9 cups) Potatoes, peeled and diced into 1/2-inch pieces
- 1 medium (about 1 cup) yellow onion, finely diced
- 3 (14.5 oz) cans low-sodium chicken broth
- 1 cup evaporated milk
- Salt and freshly ground black pepper, to taste
- 1/3 cup butter
- 1/3 cup all-purpose flour
- 1/2 cup sour cream
- 1 1/2 cups (6oz) shredded cheddar cheese
- 9 oz bacon, cooked and diced or crumbled
- 4 green onions, diced



### **Directions**

- To a 6 or 7-quart slow cooker, add potatoes, onion, chicken broth, evaporated milk and season with salt and pepper to taste. Cover with lid and cook on HIGH heat for 4 hours or LOW heat for 8 hours (poke potatoes with a fork to check make sure they're soft).
- Ladle out 2 cups liquid from soup mixture in crock pot into a liquid measuring cup, set aside. In a medium saucepan, melt butter over medium heat. Add flour and cook, stirring constantly, 2 minutes. While whisking, slowly pour 2 cups liquid in measuring cup into butter mixture (it will thicken quickly). Pour butter mixture into slow cooker and stir to blend. If desired, mash potatoes with a potato masher to break down into smaller pieces or use an emulsion blender to puree. Cover and cook on HIGH heat until thickened, about 10 minutes. Turn heat off (or to warm), stir in sour cream. Serve warm topped with cheddar, bacon and green onions (you can just mix in those three remaining ingredients into slow cooker or top individual servings).

### Very Cherry Bars

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|---|---|
| <ul style="list-style-type: none"><li>• 1 c. Butter, soft</li><li>• 2 c. Sugar</li><li>• 1 tsp. Salt</li><li>• 4 Eggs</li><li>• 1 tsp. Vanilla Extract</li><li>• 1/4 tsp. Almond Extract</li><li>• 3 c. Flour</li><li>• 2 (21 oz) cans Cherry Pie Filling</li></ul> | <b>Glaze:</b> <ul style="list-style-type: none"><li>• 1 c. Powdered Sugar</li><li>• 1/2 tsp. Vanilla Extract</li><li>• 1/2 tsp. Almond Extract</li><li>• 2-3 Tbsp. Milk</li></ul> |
|---|---|



### **Directions**

- Preheat oven to 350. In a large bowl, cream butter, sugar and salt until light and fluffy. Add eggs, one at a time, beating well after each addition. Beat in extracts. Gradually add flour.
- Spread 3 cups batter into a greased 15x10x1 inch baking pan (or 9x13). Spread with pie filling. Drop remaining batter by teaspoonful's over filling. Bake 30-35 minutes or until golden brown (9x13 pan will take a little while longer to bake). Cool completely in pan on a wire rack.
- In a small bowl, mix powdered sugar, extracts and enough milk to reach desired consistency. Drizzle over top.



## Vegetation Management

Zielies Tree Service Inc. will be permitting on the south circuit of the Kaiser substation and crews will be trimming on the east circuit of the Kaiser substation; all in Grant County by Cuba City area.

**It is important for SREC to maintain its rights-of-way for the following reasons:**

- Accessibility for field crews, vehicles and equipment
- Fire prevention
- Reliable electric service
- Quality service with the reduction of outages and blinks
- Safety for workers and the public
- Meeting state and federal code requirements

On a daily basis, SREC employees and contractors are working throughout the area, at times on your property, to operate and maintain the electric system and our rights-of-ways. We appreciate your cooperation. If you have questions, please contact Jay at [jgardner@srec.net](mailto:jgardner@srec.net) or call 800-236-2141, ext. 566.



*Watt's Happening* is published monthly as an information service to the member-owners of Scenic Rivers Energy Cooperative.

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