

# Energy Guide

The first step to better energy management is understanding how your home and habits affect your bill. Use this guide to help you make informed energy decisions.





## BECOME AN INFORMED CONSUMER

Your cooperative provides the same quiet, dependable electricity whether you plug in a laptop or a lamp. However, these devices use very different amounts of electricity – and have dramatically different costs to operate.

Because electrical outlets don't come equipped with gauges like cars, you need to make an extra effort to understand how much energy you're using when you plug things in.

This guide is designed to provide the tools and information you need to better understand how much electricity you use in your home, and how your habits affect your monthly bill.



## UNDERSTANDING YOUR ENERGY USE

We all know the wonderful things electricity makes possible. There's TV, radio, video games, computers. Not to mention that electricity keeps us warm in winter and cool in summer, cooks our food, heats our water, cleans our clothes and keeps our homes and schools bright. Electricity is always ready to make our lives a little easier.



Electricity's abundance and reliability are precisely why it's so tricky to tell how much you're using. Other types of energy require occasional reminders of how much you've consumed – your car will need a refill, or you'll empty the propane tank on your gas grill – but you never really "run out" of electricity. However, that doesn't mean you can't measure how much you use.

### First, waste less

You don't need to give anything up to reduce your energy use. By simply changing a few habits you can reduce the amount of electricity you waste and take control of your energy costs. Being a smart energy consumer means you're doing the same thing you've always done – only with less energy.

### Using your meter

Your meter is a highly accurate tool. If used properly, it gives you the most precise picture of your electricity use. The most important thing to remember is to read it on the same day of each month. If you check your meter every 30 days, you'll be able to monitor your use more accurately.

### We're here to help

Once you have a clear picture of your electricity use, your co-op is willing to do whatever it takes to help make your home, farm or business as energy efficient as possible. Ask the experts at your local cooperative what they can do to help you get the most from your energy dollar.



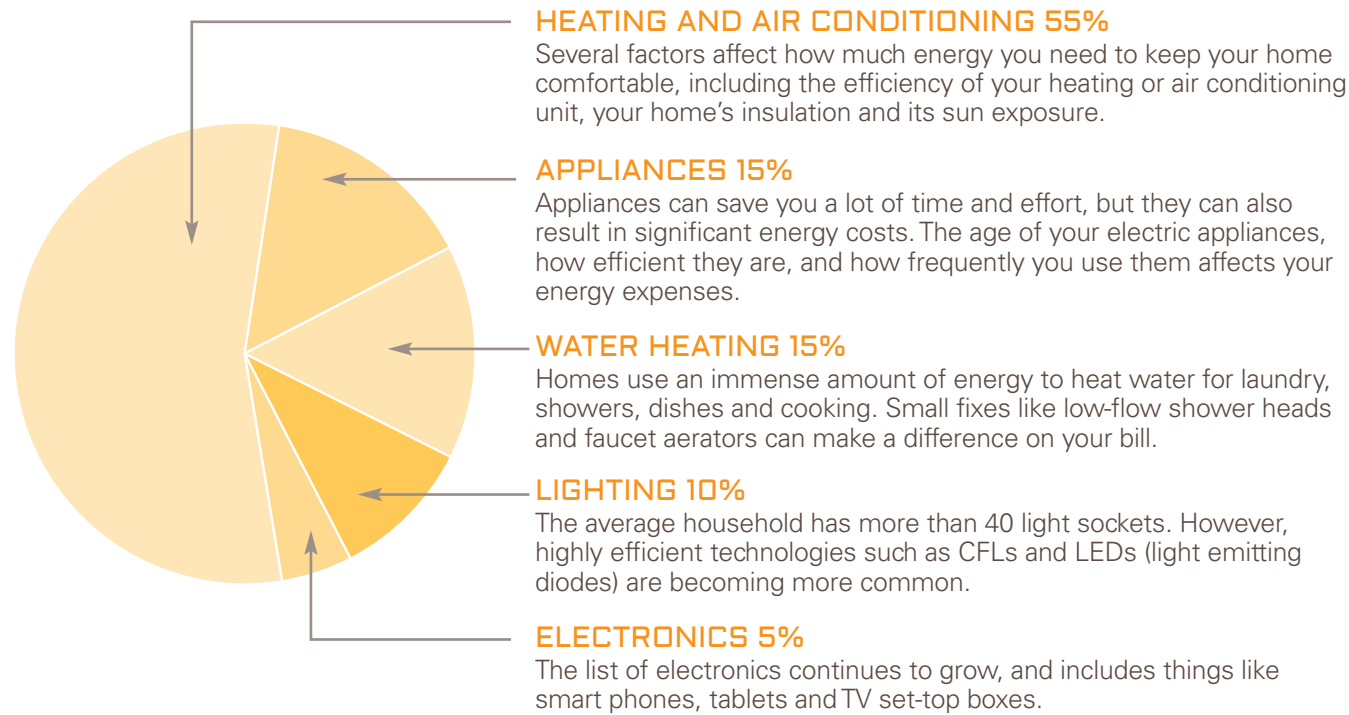
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## ENERGY NEEDS AT HOME

The typical family of four uses approximately 2,000 kilowatt-hours of electricity each month, but your home is unique. Factors that affect your energy use include the number of people in your family, the type of heating and cooling you use, how often you entertain guests and maintenance practices.

Other factors can affect energy costs as well. Was it colder or hotter than normal? Did you finally buy that new flatscreen TV you've been saving up for? The chart below shows what most people buy with their energy dollar.



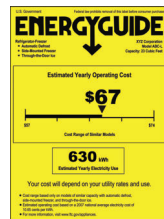
Source: Minnesota Department of Commerce, Division of Energy Resources

## THE MARKS OF EFFICIENCY



### ENERGY WISE MN

Your electric cooperative offers a variety of Energy Wise MN programs and materials to help make your home more energy efficient. Saving energy means saving money, and your co-op wants to help you do both – without sacrificing comfort. Energy Wise MN programs range from incentives for installing energy efficient lighting and appliances to rebates for implementing heating and cooling options that use minimal energy.



### ENERGYGUIDE

If you've shopped for appliances, you've likely seen the bright yellow EnergyGuide label. This resource provides an estimated annual operating cost for an appliance. The cost to operate an appliance should be a major consideration in your purchasing decision. A less expensive appliance may eventually cost you more due to the accumulation of higher energy bills.



### ENERGY STAR®

If you're not into crunching numbers to compare energy costs, just look for the ENERGY STAR logo. It's a simple way to ensure you're buying an efficient product. ENERGY STAR certified products meet strict energy efficiency guidelines set by the U.S. Environmental Protection Agency and Department of Energy.

## ESTIMATING ELECTRICITY USE AND COST

Appliance and equipment wattage and operating costs can vary greatly. The following formulas will show you how to determine where your electricity dollars are being spent.

### STEP 1

Your electric bill amount is determined by the number of kilowatt-hours (kWh) used during a billing period. The first step is to determine your average cost per kWh. Average kWh cost = \$ amount of the energy portion of your electric bill divided by kWh used.

**EXAMPLE**  $\$115 \div 1,000 \text{ kWh} = 11.5\text{¢ per kWh}$

### STEP 2

Since the wattage of an appliance determines the electrical use per hour, the second step is to determine the wattage of the appliances of concern. The wattage of an appliance is found on the serial plate. Electrical load may also be expressed in volts and amps, rather than watts. If so, multiply volts times amperes to determine the wattage.

**EXAMPLE**  $120 \text{ volts} \times 12.1 \text{ amps} = 1,452 \text{ watts}$

### STEP 3

Use the formula shown in the following example to estimate use and cost. A light uses 100 watts and is left on 15 hours. How many kWh are used and what does it cost you?

**EXAMPLE**  $\text{kWh used} = (100 \text{ watts} \times 15 \text{ hours}) \div 1,000 \text{ watts} = 1.5 \text{ kWh}$   
**Your cost**  $= 1.5 \text{ kWh} \times 11.5\text{¢} = 17.25\text{¢}$   
*1,000 watt-hours equal 1 kWh.*

### STEP 4

To find your daily cost for electricity, divide your bill amount by the number of days in the month.

**EXAMPLE**  $\$115 \div 30 \text{ days} = \$3.83 \text{ which is your daily cost}$

To find the daily cost per person in your family, divide the daily cost by the number of people in your family.

**EXAMPLE**  $\$3.83 \div 4 \text{ people} = 96\text{¢ per person per day}$

# ELECTRICITY USE TABLE

APPLIANCE	TYPICAL ENERGY USAGE	AVERAGE MONTHLY COST AT 11.5¢/kWh	ESTIMATED MONTHLY COST
<b>REFRIGERATORS</b>			
Top Freezer – Purchased 1993-2000	71 kWh/mo	\$8.17	
Top Freezer – Purchased 2001-2008	43 kWh/mo	\$4.95	
Top Freezer – ENERGY STAR Qualified	34 kWh/mo	\$3.91	
Side-by-Side – Purchased 1993-2000	91 kWh/mo	\$10.47	
Side-by-Side – Purchased 2000-2008	58 kWh/mo	\$6.67	
Side-by-Side – ENERGY STAR Qualified	44 kWh/mo	\$5.06	
Bottom Freezer – Purchased 1993-2000	73 kWh/mo	\$8.40	
Bottom Freezer – Purchased 2001-2008	50 kWh/mo	\$5.75	
Bottom Freezer – ENERGY STAR Qualified	38 kWh/mo	\$4.37	
<b>FREEZERS</b>			
Upright Freezer <16.5 cubic feet	56 kWh/mo	\$6.44	
ENERGY STAR Upright Freezer <16.5 cubic feet	47 kWh/mo	\$5.41	
Chest Freezer <16.5 cubic feet	34 kWh/mo	\$3.91	
ENERGY STAR Chest Freezer <16.5 cubic feet	29 kWh/mo	\$3.34	
<b>KITCHEN</b>			
Dishwasher	30 kWh/mo	\$3.45	
ENERGY STAR Dishwasher	26 kWh/mo	\$2.99	
Oven	45 kWh/mo	\$5.18	
Range Top	37 kWh/mo	\$4.26	
Microwave Oven	17 kWh/mo	\$1.96	
Toaster Oven	4 kWh/mo	\$0.46	
Coffeemaker	10 kWh/mo	\$1.15	
<b>LAUNDRY</b>			
Clothes Washer	8 kWh/mo	\$0.92	
Clothes Dryer	83 kWh/mo	\$9.55	

## LIGHTING

9-Watt LED Lamp	1.1 kWh/mo	\$0.13	
18-Watt Compact Fluorescent Lamp	2.2 kWh/mo	\$0.25	
60-Watt Incandescent Lamp	7.4 kWh/mo	\$0.85	
100-Watt Incandescent Lamp	12.4 kWh/mo	\$1.43	
300-Watt Halogen Torchiere Lamp	37.2 kWh/mo	\$4.28	
Incandescent Mini Holiday Lights	5.0 kWh/mo	\$0.58	
LED Mini Holiday Lights	0.5 kWh/mo	\$0.06	

## MISCELLANEOUS

Standard Electric Water Heater – Family of 4	400 kWh/mo	\$46.00	
Standard Electric Water Heater – Family of 2	200 kWh/mo	\$23.00	
Off Peak Electric Water Heater – Family of 4 (\$0.05/kWh)	400 kWh/mo	\$20.00	
Off Peak Electric Water Heater – Family of 2 (\$0.05/kWh)	200 kWh/mo	\$10.00	
Dehumidifier	81-690 kWh/mo	\$9.32-\$79.35	
Air Cleaner	60-120 kWh/mo	\$6.90-\$13.80	
Furnace Fan (Automatic)	100-200 kWh/mo	\$11.50-\$23.00	
Furnace Fan (Constant)	250-500 kWh/mo	\$28.75-\$57.50	

APPLIANCE	TYPICAL ENERGY USAGE	AVERAGE MONTHLY COST AT 11.5¢/kWh	ESTIMATED MONTHLY COST
Ceiling Fan	7-30 kWh/mo	\$0.81-\$3.45	
Air Handler/Heat Exchanger	62 kWh/mo	\$7.13	
Portable Heater (1,500 Watts)	280-1080 kWh/mo	\$32.20-\$124.20	
Water Bed Heater	100-200 kWh/mo	\$11.50-\$23.00	
Hair Dryer	3 kWh/mo	\$0.35	
Portable Spa/Hot Tub	200-500 kWh/mo	\$23.00-\$57.50	
Pool Pump (1 hp)	66-540 kWh/mo	\$7.59-\$62.10	
Well Pump	7-108 kWh/mo	\$0.81-\$12.42	
Desktop PC	20 kWh/mo	\$2.30	
Notebook PC	6 kWh/mo	\$0.52	
Stereo System	10 kWh/mo	\$1.15	
Heat Tape	130 kWh/mo	\$14.95	
Engine Block Heater (With Timer)	62 kWh/mo	\$7.13	

## ENTERTAINMENT

TELEVISIONS	TYPICAL ENERGY USAGE	AVERAGE MONTHLY COST AT 11.5¢/kWh	ESTIMATED MONTHLY COST
<40" Analog	15 kWh/mo	\$1.73	
>40" Analog	26 kWh/mo	\$2.99	
<40" Digital HD	25 kWh/mo	\$2.88	
>40" Digital HD	38 kWh/mo	\$4.37	
<i>TVs &lt;40" are estimated on 3 hours/day and TVs &gt;40" are estimated on 5 hours/day.</i>			
DVD Player/VCR	7 kWh/mo	\$0.81	
Set Top Cable Box	15 kWh/mo	\$1.73	
Video Game System	3.4 kWh/mo	\$0.39	
Cellular Phone	1-3 kWh/mo	\$0.12-\$0.35	

These figures are based on the average use of an appliance in good working condition and are based on national averages and independent research. Actual use will vary based on the number of hours used, and the age and condition of equipment.

Refer to your electric bill for the actual electric rates.

Lighting figures based on 4 hours of use per day.

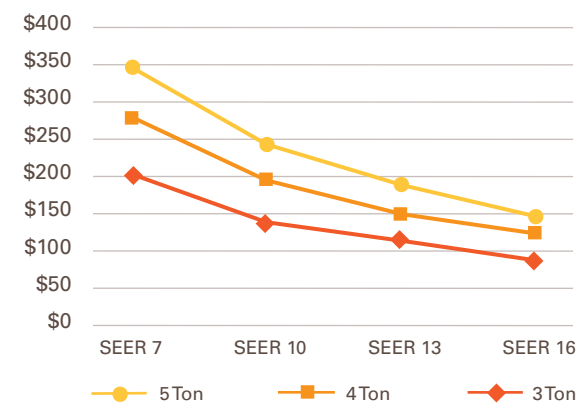
Calculations based on 414 cooling hours, the average annual cooling load in St. Cloud, Minn., according to ENERGY STAR.

SEER = Seasonal Energy Efficiency Ratio. Higher SEER means more energy efficient.

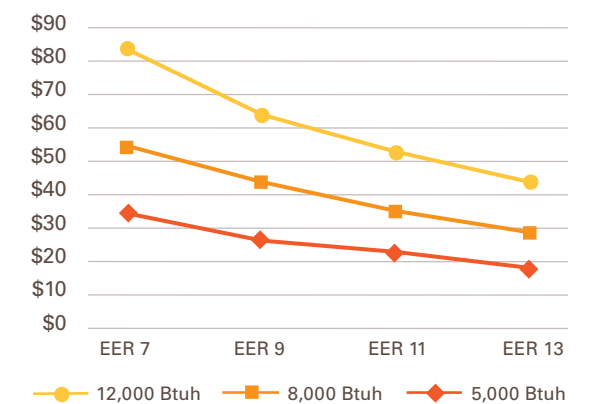
EER = Energy Efficiency Ratio. Higher EER means more energy efficient.

## SEASONAL (costs are calculated for an entire cooling season)

### Central Air Conditioning



### Room Air Conditioning



These cost estimates are based on a central air conditioner in good working condition used with a programmable thermostat.

## MONITOR YOUR USE AND COST

The most effective way to measure your electricity use is to use your meter and keep an accurate record. Take a few minutes each day (preferably at the same time) to jot down your electric meter reading. Start the first day of the month.

By subtracting the previous day's reading from the current reading, you'll get the number of kilowatt-hours (kWh) used during that 24-hour period. By adding the daily figures into a weekly total, you can see how much – and when – your family used power during that month.

Monitoring your kWh is a vital first step to understanding your electricity use. Understanding your electricity use is the first step to becoming more energy efficient at home.

DAILY READING	kWh USED DAILY	RECORD OF DAILY ACTIVITIES THAT AFFECTED YOUR ENERGY USE
1		
2		
3		
4		
5		
6		
7		
<b>WEEKLY TOTAL</b>		
8		
9		
10		
11		
12		
13		
14		
<b>WEEKLY TOTAL</b>		
15		
16		
17		
18		
19		
20		
21		
<b>WEEKLY TOTAL</b>		
22		
23		
24		
25		
26		
27		
28		
<b>WEEKLY TOTAL</b>		
29		
30		
31		
<b>EXTRA DAYS TOTAL</b>		
<b>MONTHLY TOTAL</b>		

## FACTORS THAT AFFECT ENERGY CONSUMPTION

You can take control of your electricity expenses with efficient habits and smart decisions, but there are some factors beyond your control that can dramatically affect your energy consumption.

### Season

Electric bills will typically jump in the summer due to air conditioner use. You may see similar increases in the winter if you heat with electricity. Electric bills tend to be lower in the spring and fall when temperatures are milder.

### 'Phantom' load

When you turn something off, that doesn't necessarily mean that it has stopped using electricity. Many electronics have a standby mode that draws an electric current even while turned off. Known as "phantom" loads, they can add up quickly. Unplug all electronics that display a clock or light while turned off, or use a smart power strip to limit phantom loads.

### Vacation

Many people believe that when they leave for vacation, their electric meter stops until they return. If you've ever wondered how an empty house can use so much energy, ask the following questions:

**Was the water heater turned down or off during your vacation?** Remember, if the water heater is left on during vacation, it will continue to operate and maintain the tank temperature even if you're not using any hot water.

**Did other appliances and electronic devices run while you were on vacation?** Clocks, cell phone chargers, DVD players, heating and air conditioning equipment, computers, fax machines and TV sets may draw some "phantom" electricity. Unplug them while you're away for an extended period of time.

### Vintage

Older appliances and electronic devices often draw more current than newer ones. While it can be difficult to invest in new appliances or electronic devices when you've got reliable older models, the cost savings from reduced energy use can, in some cases, recoup the cost of an upgrade.

### Get inside the outlet

The table on pages 4 and 5 will give you an estimate of your electricity use, and your meter is great for accurately measuring consumption for your entire home, but there are tools that can help identify those items that are particularly costly to operate.

A portable electric monitor fits between an appliance and the outlet to measure electricity use and cost. By isolating an individual device, you can watch how your habits affect your power bill.

Ask your electric cooperative how to find a portable electric monitor.



## IT STARTS WITH YOU

Your local electric cooperative offers a host of programs that can help you make your home more energy efficient, but there's one other factor that holds vast potential for improving your home's efficiency: you.

Making a habit out of any combination of the following measures can significantly reduce your electricity usage.



### Adjust thermostats

Turn down your thermostat during cool months and turn it up when air conditioning. Install a programmable thermostat to accommodate your weekly schedule (i.e., don't heat an empty home).

### Turn down the water heater

Although some manufacturers set water heater thermostats at 140°F, most households usually only require them to be set at 120°F. For each 10°F reduction in water temperature, you can save 3-5% in energy costs.

### Go low flow

Install water flow restrictors and aerators on sink faucets and shower heads. These measures save money by reducing water use – and minimize the burden on your water heater.

### Turn off lights

Just like mom and dad always said: leaving lights on wastes electricity.

### Swap for CFLs or LEDs

Compact fluorescent lamps (CFLs) and light emitting diodes (LEDs) use less energy and last longer than standard incandescent bulbs.

### Plug duct leaks

Leakage from areas such as joints, elbows and connections in your ductwork can be substantial. Use foil tape (not duct tape) or caulk to seal ducts.

### Insulate

You spend a lot of money and energy heating your home. Don't let it escape too easily. Use insulation with an R value of 45 or more in the ceiling and attic, and 20 or more in the walls.

### Replace filters

Replacing a dirty air filter can save money by reducing the amount of electricity needed to run a blower motor.

### Shut them off

Turn off electronic devices when not in use. Don't underestimate the energy savings realized by turning off or unplugging unused televisions, stereos and computers.

### Fill the cracks

Seal exterior cracks and holes and ensure tight-fitting windows. Small cracks or holes in the building's exterior can really add up to substantial heating or cooling losses.

### Make some shade

Sunlight streaming through windows in the summer can substantially increase air conditioning costs. Use shading methods (like window coverings, awnings, trees and bushes) wherever possible.

### Close the door

Don't heat or cool the outdoors. Keep exterior doors closed as much as possible. Block and insulate unneeded windows and other openings.

## WE'RE HERE TO HELP

Your electric cooperative is willing and ready to do whatever it takes to help make your home as energy efficient as possible. So, ask the energy experts at your cooperative what else they can do to help you get the most from your energy dollar.

### Great River Energy Owners and Distribution Partners

**Agralite Electric Cooperative**  
Phone: 320-843-4150  
Website: [www.agralite.coop](http://www.agralite.coop)

**Arrowhead Cooperative**  
Phone: 218-663-7239  
Website: [www.aecimn.com](http://www.aecimn.com)

**BENCO Electric**  
Phone: 507-387-7963  
Website: [www.BENCO.org](http://www.BENCO.org)

**Brown County Rural Electric Association**  
Phone: 507-794-3331 or 800-658-2368  
Website: [www.browncountyrea.coop](http://www.browncountyrea.coop)

**Connexus Energy**  
Phone: 763-323-2600  
Website: [www.connexusenergy.com](http://www.connexusenergy.com)

**Cooperative Light & Power Association**  
Phone: 218-834-2226 or 800-580-5881  
Website: [www.clpower.com](http://www.clpower.com)

**Crow Wing Power**  
Phone: 218-829-2827  
Website: [www.cwpower.com](http://www.cwpower.com)

**Dakota Electric Association**  
Phone: 651-463-6212  
Website: [www.dakotaelectric.com](http://www.dakotaelectric.com)

**East Central Energy**  
Phone: 800-254-7944  
Website: [www.eastcentralenergy.com](http://www.eastcentralenergy.com)

**Federated Rural Electric Association**  
Phone: 507-847-3520 or 800-321-3520  
Website: [www.federatedrea.coop](http://www.federatedrea.coop)

**Goodhue County Cooperative Electric Association**  
Phone: 507-732-5117  
Website: [www.gccea.com](http://www.gccea.com)

**Itasca-Mantrap Cooperative Electric Association**  
Phone: 218-732-3377  
Website: [www.itasca-mantrap.com](http://www.itasca-mantrap.com)

**Kandiyohi Power Cooperative**  
Phone: 320-796-1155  
Website: [www.kpcoop.com](http://www.kpcoop.com)

**Lake Country Power**  
Phone: 800-421-9959  
Website: [www.lakecountrypower.coop](http://www.lakecountrypower.coop)

**Lake Region Electric Cooperative**  
Phone: 218-863-1171 or 800-552-7658  
Website: [www.lrec.coop](http://www.lrec.coop)

**McLeod Cooperative Power**  
Phone: 320-864-3148  
Website: [www.mcleodcoop.com](http://www.mcleodcoop.com)

**Meeker Cooperative**  
Phone: 320-693-3231  
Website: [www.meeker.coop](http://www.meeker.coop)

**Mille Lacs Energy Cooperative**  
Phone: 218-927-2191 or 800-450-2191  
Website: [www.mlecmm.net](http://www.mlecmm.net)

**Minnesota Valley Electric Cooperative**  
Phone: 952-492-2313 or 800-282-6832  
Website: [www.mvec.net](http://www.mvec.net)

**Nobles Cooperative Electric**  
Phone: 507-372-7331  
Website: [www.noblesce.coop](http://www.noblesce.coop)

**North Itasca Electric Cooperative**  
Phone: 218-743-3131  
Website: [www.northitascaelectric.com](http://www.northitascaelectric.com)

**Redwood Electric Cooperative**  
Phone: 507-692-2214

**Runestone Electric Association**  
Phone: 320-762-1121  
Website: [www.runestoneelectric.com](http://www.runestoneelectric.com)

**South Central Electric Association**  
Phone: 507-375-3164  
Website: [www.southcentralelectric.com](http://www.southcentralelectric.com)

**Stearns Electric Association**  
Phone: 320-256-4241 or 800-962-0655  
Website: [www.stearnslectric.org](http://www.stearnslectric.org)

**Steele-Waseca Cooperative Electric**  
Phone: 507-451-7340 or 800-526-3514  
Website: [www.swce.coop](http://www.swce.coop)

**Todd-Wadena Electric Cooperative**  
Phone: 218-631-3120 or 800-321-8932  
Website: [www.toddwadena.coop](http://www.toddwadena.coop)

**Wright-Hennepin Cooperative Electric Association**  
Phone: 763-477-3000  
Website: [www.whe.org](http://www.whe.org)



There are many resources available to help cooperative members take control of their energy costs:

- [www.energywisemn.com](http://www.energywisemn.com)
- [www.greatriverenergy.com](http://www.greatriverenergy.com)
- [www.togetherwesave.com](http://www.togetherwesave.com)
- [www.energystar.gov](http://www.energystar.gov)
- [www.commerce.state.mn.us](http://www.commerce.state.mn.us)
- [www.aceee.org](http://www.aceee.org)
- [www.eere.energy.gov](http://www.eere.energy.gov)
- [www.energy.gov](http://www.energy.gov)

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