ENERGY guide

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

ENERGY® wise

Become an informed consumer

Your co-op provides the same quiet and reliable electricity whether you plug in a refrigerator 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 have to take a different approach to understanding how much energy you're using when you plug things in.

This guide is designed to provide the tools and information to give you a better understanding of how much electricity you use in your home, and how your electricity use affects your bill each month.

Table of contents

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, 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. The information and tools provided in this Energy Guide will help you become a smarter electrical consumer and make wise energy choices.

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.

This guide will introduce ways you can become Energy Wise® by providing tips to make your home more efficient. This is just a start. Check with your electric cooperative to find out what assistance they can offer.

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 is to remember 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 electricity use more accurately.

We're here to help

Once you've got 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.

Determining your electricity use

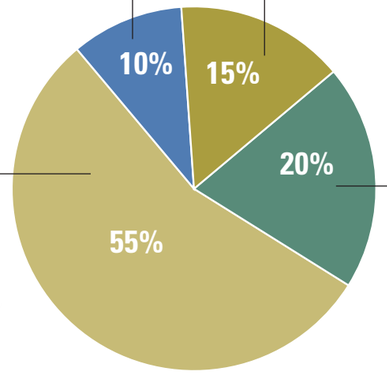
Your home is unique. Factors that affect your energy use range from the number of people in your family, to the type of heating and cooling you use, to how often you entertain guests.

Other factors can affect energy costs as well. Was it colder or hotter than normal? Did you finally buy that new flatscreen you've been saving up for?

The chart below estimates what most people buy with their energy dollar.

WATER HEATING

Your water use habits affect more than your water bill. Homes use an immense amount of energy to heat water for laundry, showers, dishes and cooking. Small fixes like low-flow shower heads and faucet aerators can make a difference on your bill.



APPLIANCES

Appliances can save you a lot of time and work, but they can hurt on your energy bills. The number of electric appliances you have, how efficient they are and how frequently you use them affects your energy expenses.

HEATING AND COOLING

More than half of your home energy use is dedicated to heating and cooling. However, several factors can affect how much energy you need to keep your home comfortable, including the efficiency of your heating or air conditioning unit, your home's insulation, and even its sun exposure.

LIGHTING

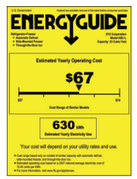
The average household has more than 40 light sockets. Depending on what type of light bulbs you use – compact fluorescent lamps (CFLs) or traditional bulbs – and your habits – whether you shut off unnecessary lights – you may be able to easily save energy on lighting.

Source: Minnesota Department of Commerce Office of Energy Security

The marks of efficiency

ENERGY WISE®

Your electric cooperative offers a variety of Energy Wise® programs to help make your home more energy efficient. Saving energy means saving money, and your co-op wants to help you save both – without sacrificing comfort. Energy Wise 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 label provides an estimated annual operating cost for an appliance. The cost to operate an appliance should be a major consideration in your purchasing decisions; 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 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 ÷ 1,000 kWh = **11.5¢ 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 volts x 12.1 amps = **1,452 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: kWh used = (100 watts x 15 hours) ÷ 1,000 watts = 1.5 kWh
Your cost = 1.5 kWh x 11.5¢ = 17.25¢

1,000 watt-hours equals 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 ÷ 30 days = **$3.83 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 ÷ 4 people = **96¢ per person per day**

Electricity use table

APPLIANCE	TYPICAL ENERGY USAGE	AVERAGE MONTHLY COST AT 11.5¢/kWh	ESTIMATED MONTHLY COST
Refrigerators			
Top Freezer – Purchased Before 1990	142 kWh/mo	$16.33	
Top Freezer – Purchased Between 1990 and 2000	86 kWh/mo	$9.89	
Top Freezer – Purchased After 2000	45 kWh/mo	$5.18	
ENERGY STAR® – Top Freezer	34 kWh/mo	$3.91	
Side-by-Side – Purchased Before 1990	183 kWh/mo	$21.05	
Side-by-Side – Purchased Between 1990 and 2000	114 kWh/mo	$13.11	
Side-by-Side – Purchased After 2000	58 kWh/mo	$6.67	
ENERGY STAR – Side-by-Side	44 kWh/mo	$5.06	
Bottom Freezer – Purchased Before 1990	157 kWh/mo	$18.06	
Bottom Freezer – Purchased Between 1990 and 2000	95 kWh/mo	$10.93	
Bottom Freezer – Purchased After 2000	50 kWh/mo	$5.75	
ENERGY STAR – Bottom Freezer	38 kWh/mo	$4.37	
Freezers			
Upright – 16.7 cu. ft.	62 kWh/mo	$7.13	
ENERGY STAR Upright – 16.7 cu. ft.	53 kWh/mo	$6.10	
Chest Freezer	34 kWh/mo	$3.91	
Kitchen			
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	
Laundry			
Clothes Washer	39 kWh/mo	$4.49	
ENERGY STAR Clothes Washer	17 kWh/mo	$1.96	
Clothes Dryer	83 kWh/mo	$9.55	
Lighting			
18-Watt Compact Fluorescent Lamp	1.6 kWh/mo	$0.18	
60-Watt Incandescent Lamp	3.3 kWh/mo	$0.38	
100-Watt Incandescent Lamp	6 kWh/mo	$0.69	
Halogen Torchiere Lamp	37 kWh/mo	$4.26	
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 ($0.04/kWh)	400 kWh/mo	$16.00	
Off Peak Electric Water Heater – Family of 2 ($0.04/kWh)	200 kWh/mo	$8.00	
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	
Ceiling Fan	7-30 kWh/mo	$0.81-$3.45	

APPLIANCE	TYPICAL ENERGY USAGE	AVERAGE MONTHLY COST AT 11.5¢/kWh	ESTIMATED MONTHLY COST
Air Handler/Heat Exchanger	62 kWh/mo	$7.13	
Portable Heater (1,500 Watts)	22-1080 kWh/mo	$2.53-$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 Computer and Monitor	22-60 kWh/mo	$2.53-$6.90	
Laptop Computer	7-40 kWh/mo	$0.81-$4.60	
Stereo System	10 kWh/mo	$1.15	
Televisions			
Flat Screen Digital TVs			
22-inch LCD (720P)	3-22 kWh/mo	$0.34-$2.53	
40-inch LCD (1080P)	12-98 kWh/mo	$1.38-$11.27	
42-inch Plasma (720P)	17-138 kWh/mo	$1.96-$15.87	
42-inch Plasma (1080P)	29-233 kWh/mo	$3.34-$26.80	
Standard Analog TVs			
27-inch Analog	7-54 kWh/mo	$0.81-$6.21	
53-inch Analog Projection	10-82 kWh/mo	$1.15-$9.43	
DVD Player/VCR	7 kWh/mo	$0.81	
Set Top Cable Box	15 kWh/mo	$1.73	
Video Game System (left on when unused)	8-130 kWh/mo	$0.92-$14.95	
Video Game System (turned off when unused)	2.5-12.5 kWh/mo	$0.29-$1.44	
Cellular Phone	1-3 kWh/mo	$0.12-$0.35	
Standby Power (electricity used by items turned off)	42 kWh/mo	$4.83	

Seasonal (costs are calculated for an entire cooling season)

APPLIANCE	AVERAGE SEASONAL COST AT 11.5¢/kWh				ESTIMATED SEASONAL COST
Central Air Conditioners **SEER**	**7**	**10**	**13**	**16**	
2 1/2 Ton with Programmable Thermostat	$171	$120	$92	$75	
2 1/2 Ton w/o Programmable Thermostat	$204	$143	$110	$89	
3 Ton with Programmable Thermostat	$206	$144	$111	$90	
3 Ton w/o Programmable Thermostat	$245	$171	$132	$107	
4 Ton with Programmable Thermostat	$274	$192	$148	$120	
4 Ton w/o Programmable Thermostat	$326	$229	$176	$143	
5 Ton with Programmable Thermostat	$343	$240	$185	$150	
5 Ton w/o Programmable Thermostat	$408	$286	$220	$179	
Room Air Conditioners **EER**	**7**	**9**	**11**	**13**	
5,000 Btuh	$34	$26	$22	$18	
8,000 Btuh	$54	$42	$35	$29	
12,000 Btuh	$82	$63	$52	$44	

These figures are based on the average use of an appliance in good working condition. Actual use will vary based on the number of hours used, and the age and condition of equipment. $0.115 was the approximate average price of residential electricity in May 2010 according to the U.S. Energy Information Administration.

Refer to your electric bill for the actual electric rates.

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.

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		
Weekly total		
8		
9		
10		
11		
12		
13		
14		
Weekly total		
15		
16		
17		
18		
19		
20		
21		
Weekly total		
22		
23		
24		
25		
26		
27		
28		
Weekly total		
29		
30		
31		
Extra days total		
MONTHLY TOTAL		

Factors that affect energy use

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.

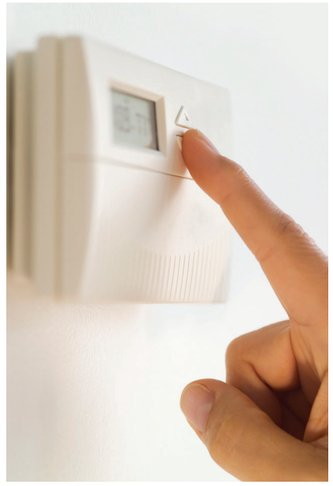
'Phantom' load

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. In fact, the average home wastes 42 kWh each month due to phantom loads – that's nearly $50 per year. Unplug all electronics that display a clock or light while turned off, or use a smart power strip to limit phantom loads.

Vacation

When you're gone for a couple of weeks, your electric bill should decrease significantly, right? Wrong!

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 on vacation.

Vintage

Older appliances and electronic devices often draw more current than newer models (televisions are the most common exception). 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.

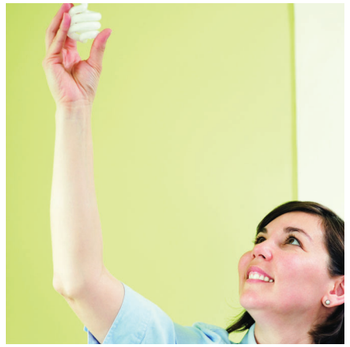
A portable electric monitor fits between an appliance and the outlet to measure electricity use and cost. By isolating an individual device, you can watch how your habits affect your power bill.

Contact your co-op to find out how to get a portable electric monitor and to learn about other tools available to give you a clearer picture of your electricity use.

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 140ºF, most households usually only require them to be set at 120ºF. For each 10ºF 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**
  Compact fluorescent lamps (CFLs) use 70% less energy and last up to 10 times 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 so 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
Web site: www.agralite.coop

Arrowhead Electric Cooperative
Phone: 218-663-7239
Web site: www.aecimn.com

BENCO Electric
Phone: 507-387-7963
Web site: www.BENCO.org

Brown County Rural Electric Association
Phone: 507-794-3331 or 800-658-2368
Web site: www.browncountyrea.coop

Connexus Energy
Phone: 763-323-2600
Web site: www.connexusenergy.com

Cooperative Light & Power Association
Phone: 218-834-2226
Web site: www.lakenet.com or www.clpower.com

Crow Wing Power
Phone: 218-829-2827
Web site: www.cwpower.com

Dakota Electric Association
Phone: 651-463-6212
Web site: www.dakotaelectric.com

East Central Energy
Phone: 800-254-7944
Web site: www.eastcentralenergy.com

Federated Rural Electric Association
Phone: 507-847-3520 or 800-321-3520
Web site: www.federatedrea.coop

Goodhue County Cooperative Electric Association
Phone: 507-732-5117
Web site: www.gccea.com

Itasca-Mantrap Cooperative Electric Association
Phone: 218-732-3377
Web site: www.itasca-mantrap.com

Kandiyohi Power Cooperative
Phone: 320-796-1155
Web site: www.kpcoop.com

Lake Country Power
Phone: 800-421-9959
Web site: www.lakecountrypower.coop

Lake Region Electric Cooperative
Phone: 218-863-1171 or 800-552-7658
Web site: www.lrec.coop

McLeod Cooperative Power Association
Phone: 320-864-3148
Web site: www.mcleodcoop.com

Meeker Cooperative
Phone: 320-693-3231
Web site: www.meeker.coop

Mille Lacs Energy Cooperative
Phone: 218-927-2191 or 800-450-2191
Web site: www.mlecmn.net

Minnesota Valley Electric Cooperative
Phone: 952-492-2313 or 800-282-6832
Web site: www.mvec.net

Nobles Cooperative Electric
Phone: 507-372-7331
Web site: www.noblesce.coop

North Itasca Electric Cooperative
Phone: 218-743-3131
Web site: www.northitascaelectric.com

Redwood Electric Cooperative
Phone: 507-692-2214

Runestone Electric Association
Phone: 320-762-1121
Web site: www.runestoneelectric.com

South Central Electric Association
Phone: 507-375-3164
Web site: www.southcentralelectric.com

Stearns Electric Association
Phone: 320-256-4241 or 320-259-6601
Web site: www.stearnselectric.org

Steele-Waseca Cooperative Electric
Phone: 507-451-7340 or 800-526-3514
Web site: www.swce.coop

Todd-Wadena Electric Cooperative
Phone: 218-631-3120 or 800-321-8932
Web site: www.toddwadena.coop

Wright-Hennepin Cooperative Electric Association
Phone: 763-477-3000
Web site: www.whe.org

For more money-saving energy efficient ideas, visit these websites:

www.mnbrighterideas.com
www.greatriverenergy.com
www.togetherwesave.com
www.energystar.gov
www.commerce.state.mn.us
www.aceee.org
www.eere.energy.gov
www.ftc.gov
www.energy.gov

ENERGY® wise

12/2010