

# Energy Guide

The first step to a better understanding of energy use is recognizing how your home and habits affect your bill. Elk River Municipal Utilities hopes the information in this guide will help you to use energy in your home more wisely; resulting in a lower monthly electric bill. If you have any questions, please feel free to contact us at 763-441-2020, or log onto our website at [www.elkriverutilities.com](http://www.elkriverutilities.com) for more information on energy conservation programs, education and rebates.



# Become an informed consumer.

Elk River Municipal Utilities (ERMU) provides the same quiet, dependable electricity whether you plug in a laptop or 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. Familiarizing yourself with how much energy your electronic devices use can be helpful. The nameplate on your appliance and this Energy Guide provide information that is similar to the nutritional information you find on food labels.

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.

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# 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 businesses 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.



# Energy needs at **home.**

The typical family of four uses approximately 1,400 kilowatt-hours (kWh) of electricity each month, but your home is unique. Factors that affect your energy use include:

- The number of people in your family
- Your behaviors
- The age and efficiency of your electric appliances
- The type of heating and cooling you use
- Maintenance practices
- 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 flat screen TV you've been saving up for? Is your furnace fan set on automatic, or does it run continuously?

## **Heating and Air Conditioning 55%**

Several factors 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 its sun exposure.

## **Appliances 15%**

Appliances can save you a lot of time and effort, but they can also result in significant energy costs. The age of your electric appliances, how efficient they are, and how frequently you use them affects your energy expenses.

## **Water Heating 15%**

Homes use an immense amount of energy to heat water for laundry, showers, dishes and cooking. Small fixes like efficient low-flow shower heads and faucet aerators can make a difference on your electric, water and sewer bills.

## **Lighting 10%**

The average household has more than 40 light sockets. However, highly efficient technologies such as CFLs (compact fluorescent lamps) and LEDs (light emitting diodes) are becoming more common and affordable, especially with rebate coupons from Elk River Municipal Utilities.

## **Electronics 5%**

The list of electronics continues to grow, and includes things like smart phones, tablets and TV set-top boxes.

*Source: Minnesota Department of Commerce, Division of Energy Resources*

# Understanding your electric bill.

It's important to note that your utility bill may reflect charges for multiple utility services. The typical electric portion is broken down into three components:

1. Customer Charge - This fixed charge does not change, regardless of how much or how little electricity you use during the month. It covers the cost for billing, meter reading, equipment, and maintenance.
2. Electric Usage - This is the charge based on the amount of electricity you use, and it usually varies from month to month. Elk River Municipal Utilities has separate summer and winter rates.
3. Power Cost Adjustment (PCA) - This also varies based on ERMU's wholesale power costs. The PCA is set at zero, but may fluctuate up as a surcharge or down as a credit that will be applied to your monthly energy use.

Electricity is measured in kilowatt-hours (kWh). One kWh of energy is equal to 1,000 watt hours and will power a 100 watt light bulb for 10 hours (100 watts x 10 hours = 1,000 watt hours = 1 kWh) 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** 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  $\$127.00 \div 1,000 \text{ kWh} = \$.127 \text{ per kWh}$

**STEP 2** To find your daily cost for electricity, divide your bill amount by the number of days in the billing cycle.

EXAMPLE  $\$127.00 \div 30 \text{ days} = \$4.23$  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  $\$4.23 \div 4 \text{ people} = \$1.06 \text{ per person per day}$

**STEP 3** Since the wattage of an appliance determines the electrical use per hour, the third step is to determine the wattage of the appliances of concern. The wattage of an appliance is found on the name plate. Electrical load may also be expressed in volts and amperes (amps), rather than watts. If so, multiply volts times amps to determine the wattage.

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

**STEP 4** Use the formula shown in the following examples 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 =  $1.5 \text{ kWh} \times \$.127 = \$.19$

A space heater uses 1,500 watts and is used 3 hours per night, every night in December. How many kWh are used and what does it cost you?

EXAMPLE  $\text{kWh used} = (1,500 \text{ watts} \times 3 \text{ hours per day} \times 31 \text{ days}) \div 1,000 \text{ watts} = 139.5 \text{ kWh}$

Your cost =  $139.5 \text{ kWh} \times \$.127 = \$17.72$

# The best way to **save energy** is to understand how it's used and wasted.

The Electricity Use Table included in this guide is a valuable tool that can be used to help assess energy consumption around your home. Saving energy begins with behavior and is supplemented by high efficiency equipment.

## **ENERGY SAVING BEHAVIORS MAKE A DIFFERENCE**

The most efficient refrigerator, LED light, or programmable thermostat will not save you as much money and energy as they could if you don't keep energy conservation in mind when you use them. In some cases customers buy the most high tech programmable thermostat and never program it, or they constantly hit the bypass button to manually control the air conditioning or heat. The energy savings result from installing the equipment correctly and using it as designed. LED lights can save a huge amount of energy, but leaving them on when they're not needed still costs you.

## **HIGH EFFICIENCY APPLIANCES**

Most of us have no idea which appliances use the most energy in our homes; the electricity use table in this guide will help you identify them. Based on your findings you can determine how to best use those appliances and/or replace them. A great example is the refrigerator in the garage that is used for cooling foods for the holidays and keeping beverages cold in the summer. Refrigerators that are used infrequently use electricity every day whether or not there is anything in them. These refrigerators can cost you well over \$100 per year to have plugged in.

## **PLUGGED IN = ENERGY USE**

Another thing to keep in mind as you are completing the energy assessment is that anything plugged into the wall outlet is using energy and costing you money. While these electric loads can be big or small, they all add up. Think of all of the electronics included in your entertainment center: television, cable or satellite set-top box, DVD, gaming systems and sound systems; if you can turn it on using a remote control, all of those appliances are using energy 24 hours a day, 7 days a week, 365 days a year. Just one cable set-top box can cost you \$1.75 per month, and with the average home having three televisions that equates to \$5.20 per month.

# What to look for when purchasing appliances.

## SYMBOLS OF EFFICIENCY



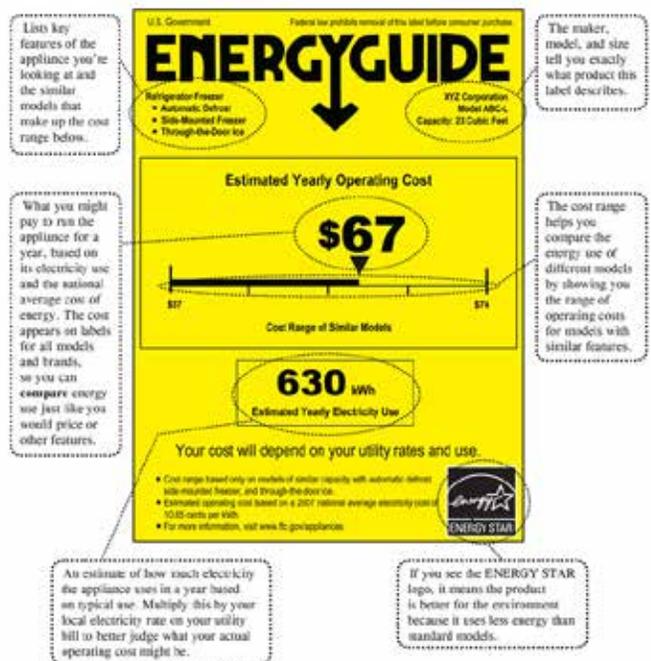
### ENERGY STAR®

ENERGY STAR® is a U.S. Environmental Protection Agency (EPA) voluntary program that helps businesses and individuals save money and protect the climate through superior energy efficiency. Appliances that are ENERGY STAR® rated save you money in two ways: they use less energy and they may qualify for rebates from Elk River Municipal Utilities. These appliances may cost a little more, but they're worth it. The additional cost is quickly paid for with energy savings and rebate funds from ERMU. Next time you are shopping appliances, look for the ENERGY STAR® logo. For a complete listing of available rebates visit [www.elkriverutilities.com](http://www.elkriverutilities.com).

## ENERGY GUIDE

All major home appliances must meet the Appliance Standards Program set by the U.S. Department of Energy (DOE). Manufacturers must use the standard test procedures developed by DOE to demonstrate the energy use and efficiency of their products. The results are printed on the yellow label and manufacturers are required to display the label on many appliances. This label will give you an estimate of yearly energy cost. If the appliance is ENERGY STAR® certified it must carry the EnergyGuide label. It's good practice to look at these labels while shopping for appliances to get a general idea of the energy cost. An appliance that costs less initially may end up costing you more in energy use over a period of time.

Source: [www.energystar.gov](http://www.energystar.gov)



<b>ENERGY-USING APPLIANCE</b>	<b>ESTIMATED MONTHLY ENERGY USE (KWH)</b>	<b>AVERAGE MONTHLY COST AT \$0.1236 / KWH</b>	<b>CALCULATE YOUR ESTIMATED MONTHLY COST</b>
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### REFRIGERATORS

Top Freezer - Purchased 1993 - 2000	71	\$9.01	
Top Freezer - Purchased 2001 - 2008	43	\$5.46	
Top Freezer - ENERGY STAR QUALIFIED	34	\$4.31	
Side-by-Side - Purchased 1993 - 2000	91	\$11.55	
Side-by-Side - Purchased 2001 - 2008	58	\$7.36	
Side-by Side - ENERGY STAR QUALIFIED	44	\$5.58	
Bottom Freezer - Purchased 1993 - 2000	73	\$9.26	
Bottom Freezer - Purchased 2001 - 2008	50	\$6.35	
Bottom Freezer - ENERGY STAR QUALIFIED	38	\$4.82	

### FREEZERS

Upright Freezer < 16.5 Cubic Feet	56	\$7.11	
ENERGY STAR Upright Freezer < 16.5 Cubic Feet	47	\$5.96	
Chest Freezer < 16.5 Cubic Feet	34	\$4.31	
ENERGY STAR CHEST FREEZER < 16.5 Cubic Feet	29	\$3.68	

### KITCHEN APPLIANCES

Dishwasher	30	\$3.81	
ENERGY STAR Dishwasher	26	\$3.30	
Oven	45	\$5.71	
Range Top	37	\$4.70	
Microwave Oven	17	\$2.16	
Toaster Oven	4	\$0.51	
Coffeemaker	10	\$1.27	
Cordless Phone (with answering machine)	2.5	\$0.32	
Water Softener	6	\$0.74	

### LAUNDRY

Clothes Washer (electrically heated water)			
Warm Wash, Cold Rinse	37	\$4.67	
Hot Wash, Warm Rinse	101	\$12.79	
Clothes Dryer	120	\$15.23	

### LIGHTING

T-12 Fluorescent 8 foot 2 lamp fixture 110 watt	31	\$3.96	
T-12 Fluorescent 4 foot 4 lamp fixture 40 watt	21	\$2.64	
T-12 Fluorescent 4 foot 2 lamp fixture 40 watt	11	\$1.33	
T-8 Fluorescent 4 foot 4 lamp fixture 32 watt	16	\$2.01	
T-8 Fluorescent 4 foot 2 lamp fixture 32 watt	8	\$1.04	
LED T-8 or T-12 Replacement Fixture 50 watt	6	\$0.79	
300 Watt Security Light	37	\$4.72	
LED Security Light 50 Watt	6	\$0.79	
100 Watt Incandescent	12	\$1.57	
23 Watt Compact Fluorescent	3	\$0.36	
16 Watt LED	2	\$0.25	
60 Watt Incandescent	7	\$0.94	
15 Watt Compact Fluorescent	2	\$0.24	
6 Watt LED	1	\$0.09	
Holiday Lights C-9 Incandescent	260	\$33.04	
Holiday Lights LED ENERGY STAR C9	36	\$4.57	
Holiday Lights Mini Incandescent	17	\$2.11	

\*Note: Estimated based on 4 hours of use per day \*\*Note: Holiday Lights are based on 300 bulbs

<b>ENERGY-USING APPLIANCE</b>	<b>ESTIMATED MONTHLY ENERGY USE (KWH)</b>	<b>AVERAGE MONTHLY COST AT \$0.1236 / KWH</b>	<b>CALCULATE YOUR ESTIMATED MONTHLY COST</b>
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### APPLIANCES

Clock Radio (LED Display)	3	\$0.38	
Electric Blanket (7 hours per night)			
Twin	18	\$2.26	
Double/Queen	22	\$2.81	
King	36	\$4.52	
Portable Fan (200 Watts, 10 Hours per day)	62	\$7.87	
Vacuum Cleaner	8	\$1.02	
Ceiling Fan	7 - 30	\$0.89 - \$3.81	
Air Handler/Heat Exchanger	62	\$7.87	
Portable Space Heater (1,500 Watts, 3hours/night)	140	\$17.70	
Hair Dryer	3	\$0.38	
Cell Phone Charger (4 hours charging/day)	1	\$0.08	
Portable Spa/Hot Tub (1,500 Watts)	60	\$7.61	
Pool Pump (1 hp)	66 - 540	\$8.38 - \$68.53	
Well Pump	7 - 108	\$0.89 - \$13.71	
Desktop Personal Computer	20	\$2.54	
Laptop Computer	6	\$0.76	
Stereo System	10	\$1.27	
Engine Block Heater (6 hours per night)	28	\$3.54	

### ENTERTAINMENT

<40" Plasma Television	19	\$2.41	
>40" Plasma Television	47	\$5.96	
<40" Digital HD Television (LCD)	7	\$0.89	
>40" Digital HD Television (LCD)	19	\$2.41	
<40" LED Television	6	\$0.76	
>40" LED Television	16	\$2.03	
* TVs <40" are estimated on 3 hours/day and TVs >40" are estimated on 5 hours/day			
DVD Player	7	\$0.89	
Cable TV/Satellite set top box	15	\$1.90	
Video Game system	4	\$0.51	

### MISCELLANEOUS

Standard Electric Water Heater - Family of 4	400	\$50.76	
Standard Electric Water Heater - Family of 2	200	\$25.38	
Storage Water Heater - Family of 4 (0.045 /kWh)	400	\$18.00	
Storage Water Heater - Family of 2 (0.045 /kWh)	200	\$9.00	
Baseboard Electric Heat (250 Watts/foot, 4 hr/night)	186	\$23.60	
Dehumidifier	81 - 690	\$10.28 - \$87.56	
ENERGY STAR Dehumidifier	69 - 587	\$8.76 - \$74.49	
Air Purification System	60 - 120	\$7.61 - \$15.23	
Furnace Fan (Automatic)	100 - 200	\$12.69 - \$25.38	
Furnace Fan (Constant)	250 - 500	\$31.73 - \$63.45	
Fish Tank (35 gallon)	83	\$10.53	
Humidifier	41	\$5.19	

### MEDICAL EQUIPMENT

Oxygen Concentrator	168	\$21.32	
Sleep Apnea Machine (CPAP)	9.6	\$1.22	

# Monitor Your Use and Cost

DAILY READING		KWh USED DAILY	RECORD OF DAILY ACTIVITIES THAT AFFECTED YOUR ENERGY USE
EXAMPLE WEEK			
Day 1	5656		
Day 2	5697	41	
Day 3	5720	23	On vacation, nobody home
Day 4	5788	68	Turned Central AC on outside temp 97 degrees, turned dehumidifier on
Day 5	5848	60	Washed 3 loads of clothes in hot water, outside temp 94 degrees
Day 6	5876	28	Turned circulating pool pump off, temperature 84 degrees
Day 7	5905	29	
Weekly Total	40490	249	41.5 Average per day Week 1
1			
2			
3			
4			
5			
6			
7			
WEEKLY TOTAL			
8			
9			
10			
11			
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14			
WEEKLY TOTAL			
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21			
WEEKLY TOTAL			
22			
23			
24			
25			
26			
27			
28			
WEEKLY TOTAL			
29			
30			
31			
EXTRA DAYS TOTAL			
MONTHLY TOTAL			

# 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**

Taking a vacation? This is a perfect time to benchmark your home for standard electric use. 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 yourself 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 you adjust your thermostat; up in the summer and down in the winter?***

***Did other appliances and electronic devices run while you were on vacation?*** – Clocks, cell phone chargers, DVD players, heating and air conditioning equipment, computers, gaming systems 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 use more electricity 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 a significant portion of the cost of an upgrade. Contact Elk River Municipal Utilities for available rebate options for household appliance replacement.

## **GET INSIDE THE OUTLET**

The table on pages 6 and 7 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. Portable electric monitors can be purchased, or checked out for use from Elk River Municipal Utilities or the Elk River Public Library.

# It starts with you.

Elk River Municipal Utilities 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.

## **ADJUSTABLE 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 restrictions 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. Contact ERMU to receive coupons for these types of bulbs.

## **SEAL 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. It's recommended you check your filter every month and replace it at a minimum of once every three months.

## **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.

# Available Resources

There are many resources available to help customers take control of their energy costs.

**[www.elkriverutilities.com](http://www.elkriverutilities.com)**

**[www.energystar.gov](http://www.energystar.gov)**

**Energy City: [www.elkrivermn.gov/energycity](http://www.elkrivermn.gov/energycity)**

**[www.commerce.state.mn.us](http://www.commerce.state.mn.us)**

**[www.aceee.org](http://www.aceee.org)**

## **The Connector**

Sign up today for Elk River Municipal Utilities' free monthly Connector ecommunication. It's filled with great information on ways to lower your energy use and save money. In addition to time relevant articles—this electronic newsletter comes complete with a searchable eLibrary; a set of energy Quick-Tips; and HVAC, home energy use, and carbon footprint calculators—all geared toward helping you better manage your energy.

The best part of the Connector is that it is delivered directly to your email inbox. We know everyone is looking for ways to save a few dollars and minimize their impact on the environment; the Connector is the answer.

To sign up, visit our website at [www.elkriverutilities.com](http://www.elkriverutilities.com), click on about us, newsletter, then click on residential to get registered.



