



# Use energy wisely

from the professionals  
at your local energy cooperative



Touchstone Energy<sup>®</sup>  
Cooperatives

## Try this & save...

Use this guide to create an awareness of your lifestyle and learn what effects it can have on your energy budget and the environment. Make this your first step to better energy management.

# Your Unique Energy Needs

As the cost of energy goes up, more and more people are concerned about their rising utility bills. Consumers are looking for ways to control their energy use and reduce their impact on the environment. The best way to do this is to first be aware of how much energy you use each month and how it is being used in your home. This involves learning how to read your meter, keeping track of energy use, and using your meter as a tool to locate problems.

In this way, you can budget your energy use just like you budget for groceries and other household items.

Take a few moments now to work through this guide. Then, if you still have questions about electrical use and costs, call the professionals at your local energy cooperative. We're here to help!



## Lifestyle Makes a Difference

You have complete control over how you use your electricity by choosing the ingredients that are necessary for you to maintain your standard of living.

The way you live and the way you use your electrical appliances have a greater impact on your consumption of electricity than the number of appliances you have.

For example, about 38 percent of the energy used in the average American home is for water heating. Hot water plays a very important role in everyone's lifestyle, but many lifestyles require substantial quantities of hot water, which results in high energy use.

Let's look at some of these "lifestyle considerations" that can make your electric bill seem higher than "normal."

## Family Size

There is a direct relationship between the number of people living in a home and the amount of energy that is used. That's especially true if you have teenagers at home. In addition, if friends and relatives are visiting, you can expect to use more energy for cooking, baking, laundry, and hot water.

## Space Heating & Cooling

From a comfort standpoint, most of us prefer to be relatively cool in summer and warm in winter. Others prefer temperature extremes. Humidity plays an important part in our year-round comfort, too. If we operate dehumidifiers in summer (and, to a lesser degree, humidifiers in winter), this contributes to our household energy consumption because they tend to run continuously. Portable space heaters, air conditioners, and fans in such places as the garage and basement also contribute to our energy consumption.

By taking a look at our "comfort" lifestyles in terms of maintaining relative humidity and temperature, we can use energy wisely in many ways. These range from adding insulation, weather-stripping and caulking, to turning down the heat and turning off the air conditioning in unused rooms.

## Water Heating

Hot water plays a very important role in everyone's lifestyle, but many people require substantial quantities of hot water, and that results in higher energy use.

## Try this & save...

**Install water flow restrictors and aerators in sink faucets. This can save you money by reducing water use.**

**Reduce the hot water temperature to 120°F. This can decrease heat loss from your tank. Dishwashers may require higher temperature settings. Many now have a temperature boost that allows you to keep the water heater temperature set lower.**



Ask yourself some of the following questions:

- When I take a bath, do I use hot water sparingly, or is the tub completely full?
- Do I take short showers, or do I stay in the shower until the hot water gets cold?
- Do I repair leaky faucets, or simply let them drip and waste hot water?
- Do I operate washers and dishwashers with a full load, or just when convenient?

### Appliance Use

We have a host of time and labor-saving devices at our service to aid us in our work whenever we need them. As you progress through this guide, you may notice how many more electrical servants you have than you expected. These appliances work for you around the clock, whenever you choose to use them. The wise use of appliances can have a positive effect on your energy consumption.

Ask yourself these questions:

- Do I turn off lights when a room is not in use, or do I leave them on?
- Does the television entertain the entire family or does it entertain an empty room?
- Do I use the oven to reheat one dish, or do I use the microwave?

These are prime considerations that affect the amount of electricity you use to maintain your lifestyle. All Americans are part of the residential sector, and energy management consciousness is likely to start at home.

The effects of a home energy management program can pay big dividends!

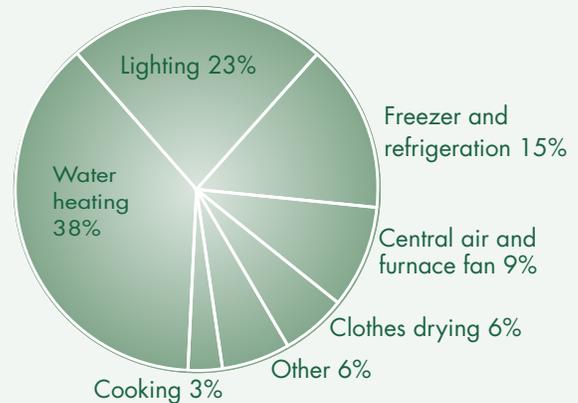
People in the Upper Midwest have relatively good lifestyles, and we tend to use more energy than the national average. This applies to all forms of energy, not just electricity. The pie-chart shows the amount of energy used in the residential sector in the Midwest.

### Why is my electric bill higher than my neighbor's?

You just answered this question yourself. It's YOUR electric bill, and it reflects the amount of electricity consumed by you and your family in your home.

Your neighbor may have a completely different set of circumstances—different number of people living in the home, different lifestyle, different size home, different equipment and methods, etc. These, and many other factors, make a comparison with your neighbor less meaningful.

### Midwest Electrical Energy Use Residential Sector



Derived from 2001 Department of Energy census data

## Make a Plan

### Vacations & Seasonal Use

When vacation time comes and you're planning to be 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. Ask yourself a few questions before assuming your electric bill should decrease by any considerable amount during vacation.

First, was the water heater turned down or off while you were gone? If the electric water heater is left energized during vacation, it will continue to operate and maintain the tank temperature even if you're not using any hot water.

Were the refrigerator and freezers emptied and turned off? If not, they will continue to operate to maintain the preset temperatures.



## Try this & save...

**Lower the thermostat during cool months and turn it up for air conditioning, especially when the building is not occupied.**

**You can use a programmable thermostat to automatically adjust temperatures to accommodate weekly schedules.**

## Try this & save...



**Seal exterior cracks and holes and ensure tight-fitting windows. Small cracks or holes in the building exterior (like walls, windows, doors, ceiling and floors) can really add up to substantial heating or cooling losses. Install weather stripping and caulking to stop air leaks.**

**Seal off unused areas. Don't heat or cool these rooms. Storage areas are a good place to start.**

Take a look at other electrical appliances that keep running while you are on vacation—clocks, fans and power ventilators, heating and air conditioning equipment, lights, computers, and TVs use some energy for their “instant-on” feature.

### **Make Arrangements**

Perhaps you can make arrangements with a neighbor to keep an eye on your place and adjust the heat, water and/or air conditioner shortly before you return.

In addition, you may wish to unplug all appliances not in use. If a light is to be left on, it should be connected to a timer. If you intend to be gone for an extended period of time, contact your energy cooperative and make arrangements so your electric service will remain uninterrupted.

Read your meter upon leaving and again when you return. This will let you determine the number of kilowatt-hours used while you were gone.

Also, many vacationers bring home several days or weeks of dirty laundry. This will give your electric water heater a workout your first day or two back home.

In addition to vacation, take a look at some of the seasonal uses for electricity that may cause an increase in consumption. This includes air conditioners, portable heaters in the garage or basement, engine heaters to keep your vehicles ready to run, heat tape to keep pipes from freezing...the list goes on and on.

Let's not overlook hobbies or businesses that operate from home. They also have an effect on the number of kilowatt-hours you use.



## Record

You can do something about how you and your family spend energy. A big, first step is tracking current energy consumption. Take a few minutes each day and jot down the reading on your electric meter. Your analysis will be more accurate if you take your readings at the same time each day.

Subtract the previous day's reading from the current reading to determine how many kilowatt-hours were used. Contact your energy cooperative for a portable meter to measure the consumption of individual appliances.

You may wish to call an electrician to check wiring and appliances for grounds, shorts, and other malfunctions.

### **Meter Reading Dates**

A factor that enters into higher-than-normal electric bills is the number of days between meter readings. Check the number of days in your billing cycle to make accurate comparisons. Many people often overlook this important consideration.

It's important to read your meter on the same day of each month. If you notice that your use has increased substantially from one month to the next for no apparent reason, you will be able to diagnose an equipment problem sooner.

### **Is the Meter Accurate?**

The electric meter is often accused of inaccuracy, but it's seldom the culprit. Your meter does not lie. When it records more electricity being used, try to find out why by looking at your family's activities during that period...was the weather colder or warmer than normal? See what activities, if any, can be altered to use energy more wisely.

The meter is a finely calibrated, highly accurate device used to measure electric power use. Your energy cooperative has a continuing program to test the accuracy of all its meters to assure that you are being billed for the exact number of kilowatt-hours used. All meters are tested on a regular basis. Historical data bears out the fact that in more than 99 percent of the cases, the electric meter is accurate. High bills are almost always traced to other causes.



# Check

## Common Sources of Trouble

Common sources of trouble include electrical faults in wiring systems that are usually due to physical damage, moisture and dirt, or improper connections.

Sometimes you'll find equipment using electricity that you thought was turned off. It could be a thermostat, well pump, baseboard electric heat, or basement and attic lights.

If no problems are found, your energy cooperative has test meters available to record the electrical consumption of items plugged into them. By comparing your recorded use with that of our list for home appliances and equipment, you can determine whether that equipment is using an unusually high amount of electricity.

However, if all methods fail, contact your electrician or seek further advice from your energy cooperative.

# Act

## Do Something About Your Electric Bill

You can do something about your electric bill by acting on the information presented in this brochure.

Take a few minutes each day (at the same time) to jot down the reading on your electric meter.

Record your daily meter readings for one month to get a better idea of your energy use patterns. Note the activities that increase your energy use.

## Keep Records

Keep records for a few months each season. Learn how changes in your activities can affect your energy budget.

## Use Less

Change your habits. Start with easy changes.

- Set thermostats for energy economy. Make changes in temperature levels gradually so you and your family can adjust.
- Adjust air conditioning a few degrees warmer in the evenings.
- During the winter months, lower the thermostat setting when you retire at night.



- Use lower wattage bulbs and buy higher efficiency compact fluorescents. Place them in areas where they are used most often.
- Keep heating and cooling systems working more efficiently by replacing filters and cleaning coils.
- Remove unneeded light bulbs in areas where lighting is too bright.
- Turn out lights whenever possible. Reduce or eliminate unnecessary lighting.

- Keep fixtures clean.
- Consider using high pressure sodium lightbulbs for outdoor lighting.
- Use less hot water. Lowering the temperature setting on the water heater can offer savings.
- Fix hot water faucet leaks.
- Insulate pipes.

When your meter records more electricity use than normal, try to find out why by looking at your family's activities during that billing period. For instance, was there above average heater or air conditioner use?



## Try this & save...

**Reduce lighting expenses. Turn off lights when not in use.**

**Compact fluorescent lighting is the most efficient lighting on the market. These bulbs use 70 percent less energy and last up to 10 times longer than incandescent bulbs. Different wattage sizes are available to fit your lighting needs.**

# Appliance Energy Use Guide

To calculate cost per month, take the suggested kWh/Mo usage multiplied by your kWh cost. See step 1 on page 8 to calculate kWh cost.

Kitchen	Avg Watts	Hours/Mo	kWh/Mo	Cost/Mo
BBQ Grill	1350	6	8.1	\$
Bread Maker	210	8	1.68	\$
Broiler	390	3	1.2	\$
Coffee Maker	900	50	45	\$
Deep Fat Fryer	1450	5	7.3	\$
Dishwasher (includes water heating)	1200	30	36	\$
Electric Skillet	1200	13	15.6	\$
Microwave	1450	15	21.8	\$
Range	12500	8	100	\$
Roaster	1330	13	17.3	\$
Slow Cooker	200	24	4.8	\$
Toaster	1150	3	3.5	\$
Waste Disposer	450	7	3.2	\$

Food Storage	Avg Watts	Hours/Mo	kWh/Mo	Cost/Mo
Refrigerator*				
Manual Defrost			70-150	\$
Frost-Free			75-175	\$
Side-by-Side			120-250	\$
Freezer*				
Manual Defrost			70-150	\$
Frost-Free			84-175	\$

\*Wattage and hours of run-time for refrigerators and freezers vary widely due to age, location, frequency of maintenance, and energy efficiency ratings.

Home Entertainment	Avg Watts	Hours/Mo	kWh/Mo	Cost/Mo
Radio	70	100	7	\$
Stereo	150	70	10.5	\$
Television (8 hours per day)				
19" Solid State	200	240	48	\$
25" Solid State	250	240	60	\$
27" with picture tube	200	240	48	\$
32" LCD HDTV	140	240	34	\$
42" LCD HDTV	240	240	58	\$
42" Plasma Integrated HDTV	450	240	108	\$
60" Plasma Integrated HDTV	650	240	156	\$
DVD, Game Boys, VCR	100	60	6	\$
Personal Computer (6 hours per day)	125	180	22.5	\$
Color Monitor (6 hours per day)	75	180	13.5	\$
Dot Matrix Printer (6 hours per day)	50	180	9	\$
Laser Printer	400	180	72	\$
Aquarium—20 Gallon	70	720	50	\$

General Household	Avg Watts	Hours/Mo	kWh/Mo	Cost/Mo
Water Heater (personal use only)				
1 person—685 gallons per month	4500		252	\$
2 people—900 gallons per month	4500		297	\$
3 people—1350 gallons per month	4500		374	\$
4 people—1800 gallons per month	4500		450	\$
5 people—2,250 gallons per month	4500		548	\$
6 people—2,700 gallons per month	4500		650	\$
Clothes Dryer (5 loads per week)	5000	20	100	\$
Clothes Washer (5 loads per week)				
Including electric water heating				
Hot/Warm setting	5000	20	100	\$
Warm/Warm setting	5000	20	70	\$
Warm/Cold setting	5000	20	40	\$
Cold/Cold setting	500	20	10	\$
Vacuum Cleaner	630	6	3.8	\$

<b>Heating and Cooling</b>	<b>Avg Watts</b>	<b>Hours/Mo</b>	<b>kWh/Mo</b>	<b>Cost/Mo</b>
Electric Heating (8 hours per day)				
Portable Space Heater	1500	240	360	\$
Air Conditioner (window type, 8 hours per day)				
6,000 btu per hour	800	240	192	\$
10,000 btu per hour	1350	240	324	\$
12,000 btu per hour	1600	240	384	\$
Air Cleaner (Ionizer)	70	720	50	\$
Humidifier	120	120	14.4	\$
Dehumidifier	600	360	216	\$
Fans				
Attic			24	\$
Ceiling (with lights)	180	360	130	\$
Ceiling (without lights)	60	360	43	\$
Window (20")			18	\$
Water Bed Heater	400	300	120	\$
Electric Blanket	10	240	24	\$

<b>Health and Beauty</b>	<b>Avg Watts</b>	<b>Hours/Mo</b>	<b>kWh/Mo</b>	<b>Cost/Mo</b>
Blow Dryer	1500	2.5	3.8	\$
Hair Curler	400	7.5	3	\$
Heat Pad	65	30	2	\$
Shaver	15	2.5	0.04	\$
Sun Lamp	280	15	4	\$
Hot Tub	(varies widely)		250-400	\$
Tanning Bed	2600	8.5	22	\$

<b>Lighting</b>	<b>Avg Watts</b>	<b>Hours/Mo</b>	<b>kWh/Mo</b>	<b>Cost/Mo</b>
60-watt Bulb	60	120	7.2	\$
100-watt Bulb	100	120	12	\$
Two 8-foot 65-watt Fluorescent Tubes	130	120	15.6	\$
Two 4-foot 35-watt Fluorescent Tubes	70	120	8.4	\$
70-watt Sodium Bulb	70	300	21	\$
175-watt Mercury Vapor Bulb	175	300	52.5	\$
250-watt Heat Lamp	250	720	180	\$

<b>Farm and Miscellaneous</b>	<b>Avg Watts</b>	<b>Hours/Mo</b>	<b>kWh/Mo</b>	<b>Cost/Mo</b>
Water Pump				
1/3 HP	333	60	20	\$
1 1/2 HP	1500	60	90	\$
Garage Door Opener	800	12	9.6	\$
Engine Block Heater (8 hours per day)				
500-watt	500	240	120	\$
800-watt	1000	240	240	\$
1500-watt	1500	240	360	\$
2500-watt (diesel engine)	2500	240	600	\$
6' Heat Tape (8 watts per foot)	48	720	34.6	\$
Aerated Septic System	384	720	276	\$
Tank Heater (varies by location and number of livestock)			40-300	\$
Electric Fence (varies)			0-7	\$
Motors (1/3 to 10 HP)	1000 per horsepower		varies	\$

<b>Phantom Loads</b>	<b>Avg Watts</b>	<b>Hours/Mo</b>	<b>kWh/Mo</b>	<b>Cost/Mo</b>
Instant-on TV	28	720	20	\$
VCR	14	720	10	\$
Microwave Oven with Clock	8	720	6	\$
Wall Cube Power Supply (AC Adapter/charger)	5	720	4	\$
Stereo with Remote Control	8	720	6	\$
Stove with Electric Ignition	14	720	10	\$

# How to Estimate Energy Use and Cost

The wattage of appliances (equipment) and the amount of operating time can vary greatly. The following information will show you how to determine where the energy dollars are going in your home.

## STEP 1

Since the cost of electricity is determined by the number of kilowatt-hours (kWh) used during a billing period, the first step is to determine your average cost per kilowatt-hour.

$$\frac{\$ \text{ amount of electric bill}}{\text{kWh used}} = \text{Average kWh Cost}$$

### EXAMPLE

$$\frac{\$144.20}{1400 \text{ kWh}} = \$0.103 \text{ per kWh}$$

## STEP 2

Since the wattage of an appliance (equipment) determines the electrical usage per hour, the second step is to determine the wattage.

The wattage of an appliance is found on the serial plate. But it is possible that the electrical requirements will be expressed in volts and amperes, rather than watts. If so, multiply **volts** by **amperes** to obtain **wattage**; e.g. 120 volts x 12.1 amperes = 1,452 watts.

### Example of Serial Plate

MICROWAVE OVEN			
AMPS	12.1	VOLTS	120
HERTZ	60	WATTS	1452
FORM NO.	000000	MODEL NO.	00000
CODE	0	SERIAL NO.	0000

## STEP 3

Use the formulas shown in the following examples to estimate usage and cost.

A light uses 100 watts and is left on 15 hours. How many kWhs are used and what does it cost?

$$100 \text{ watts} \times 15 \text{ hours} \times \frac{1 \text{ kW}}{1,000 \text{ watts}} = 1.5 \text{ kWh used}$$

Your cost = 1.5 kWh X \$0.103/kWh = \$0.1545 or 15½ cents

A microwave oven uses 1,450 watts and is used for 30 minutes. How many kWhs are used and what does it cost?

$$1,450 \text{ watts} \times 0.5 \text{ hours} \times \frac{1 \text{ kW}}{1,000 \text{ watts}} = 0.725 \text{ kWh or } 0.73 \text{ kWh used}$$

Your cost = 0.73 kWh X \$0.103/kWh = \$0.075 or 7½ cents

## STEP 4

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

$$\text{EXAMPLE } \frac{\$144.40}{30 \text{ days}} = \$4.81 \text{ which is your daily cost}$$

To find the daily cost for electricity per person in your family, divide the daily cost by the number in your family.

$$\text{EXAMPLE } \frac{\$4.81}{4} = \$1.20 \text{ per person per day}$$