

# Use Energy Wisely



**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

Today, many 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 electric 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 eighteen 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 you operate dehumidifiers in summer (and, to a lesser degree, humidifiers in winter), this contributes to household energy consumption because they tend to run often. 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 your "comfort" lifestyle in terms of maintaining relative humidity and temperature, you 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.

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?

## 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.

## 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?
- Are my appliances ENERGY STAR rated?
- 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 how electricity is used in U.S. homes.

## 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.

## Make a Plan

### Vacations & Seasonal Use

When vacation time comes and you plan to be gone for a couple of weeks, your electric bill should decrease significantly, right? Wrong!

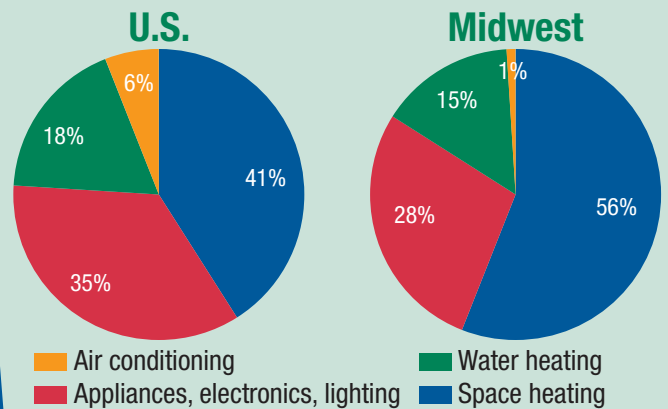
### Try this & save. . .

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.

## U.S. and Midwest Electricity Consumption by End Use

Since the weather in the Midwest is cooler than other areas of the United States, space heating (56%) makes up a greater portion of energy use in homes compared to the U.S. average, and air conditioning makes up only 1% of energy use.



Source: U.S. Department of Energy, Energy Information Administration  
--last updated May 2014

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 will decrease by any considerable amount during vacation.

First, did you turn the water heater down or off while you were away? 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.

Did you empty the refrigerator and freezers and turn them off? If not, they will continue to operate to maintain the preset temperatures.

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, computers, chargers, and docking stations. Many appliances, including TVs use energy when turned off due to their “instant-on” features. Most of these can be unplugged during vacation time to save energy while they are not needed.



## Try this & save. . .

I figured an afternoon of tracking down air leaks earned me a day out in the woods. Find out what you can do at [TogetherWeSave.com](http://TogetherWeSave.com).



## 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 electric 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.

Many vacationers bring home several days or weeks of dirty laundry when they return. This will give your electric appliances a workout your first day or two back home.

## Remember These

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, pool pumps, dehumidifiers, 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

Take action to change how you and your family spend energy. A smart first step is tracking current energy consumption. Take a few moments each day to 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 electric cooperative regarding portable meters to measure the

consumption of individual appliances. You may also download an app to your tablet or smart phone that will let you know the exact amount of energy being used at home by different items. Free or inexpensive apps are available on the Internet, and your device will pick up readings and alerts through Wi-Fi to help you see what is drawing energy while you are away from home.

## Meter Tracking

These days most electric meters are recorded through an automated system. You still have the ability to track your energy use at the meter to your home, or online if this is available at your co-op. If you notice a substantial increase from one month to the next for no apparent reason, you will be able to diagnose an equipment problem sooner.

Fluctuation in the number of days between meter readings may create a higher than typical electric bill. People often overlook this important consideration.

Check the number of days in your billing cycle to make accurate comparisons.

## 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 electric 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. Higher bills are nearly 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, dirt or improper connections.

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

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 electric 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 your own equipment is using an unusually high amount of electricity.

However, if all methods fail, contact your electrician or seek further advice from your electric 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 moments each day (at the same time) to jot down the reading on your electric meter.

Monitor 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.
- Select higher efficiency lighting options like compact fluorescents (CFLs) or LEDs. Place them in areas where you use lighting 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 off lights whenever possible. Reduce or eliminate unnecessary lighting.
- Keep fixtures clean.
- Use less hot water. Install low-flow shower head. Lowering the temperature setting on the water heater can offer savings.
- Fix hot water faucet leaks.
- Insulate pipes.

When your electric bill indicates 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 air conditioning or heating used?



## Energy Efficiency/Conservation References:

- Together We Save: [www.togetherwesave.com](http://www.togetherwesave.com)
- ENERGY STAR: [www.energystar.gov](http://www.energystar.gov)
- U.S. Department of Energy: Energy Efficiency & Renewable Energy: [www.energysavers.gov](http://www.energysavers.gov)
- U.S. Department of Energy (tax credits, rebates, savings, weatherization): [www.energy.gov](http://www.energy.gov)
- Energy Education Council: [www.energyeducation.org](http://www.energyeducation.org)

# Appliance Energy Use Guide

<b>Kitchen</b>	<b>Usage</b>	<b>kWh usage</b>	<b>kWh/month Cost</b>
BBQ Grill	6 hours/month	1.35/hour	8.1
Broiler	3 hours/month	1.5/hour	4.5
Coffee Maker	30 pots/month	0.375/pot	11.25
Deep Fat Fryer	5 hours/month	1/hour	5
Dishwasher	30 loads/month	1/load	30
Electric Griddle	13 hours/month	1.47/hour	19.11
Garbage Disposer	1 hour/month	0.67/hour	0.67
Microwave	15 hours/month	1.5/hour	22.5
Range (stove top & oven)	1 hr/day, 7 days/week	3.9/hour	117
Slow Cooker/"Crock-Pot"	12 hours/month	0.2/hour	2.4
Toaster	20 times/month	0.11/use	2.22
Toaster Oven	6 hours/month	1.2/hour	7.2

<b>Food Storage</b>	<b>Usage</b>	<b>kWh usage</b>	<b>kWh/month Cost</b>
Refrigerator: top/bottom freezer (before 1993)	24 hrs/day, 7 days/wk	0.1703/hour	124
Refrigerator: top/bottom freezer (1993-2001)	24 hrs/day, 7 days/wk	0.0975/hour	71
Refrigerator: top/bottom freezer (after 2001)	24 hrs/day, 7 days/wk	0.0611/hour	45
Refrigerator: side by side (before 1993)	24 hrs/day, 7 days/wk	0.2172/hour	159
Refrigerator: side by side (1993-2001)	24 hrs/day, 7 days/wk	0.1236/hour	90
Refrigerator: side by side (after 2001)	24 hrs/day, 7 days/wk	0.789/hour	58
Freezer: upright (before 1993)	24 hrs/day, 7 days/wk	0.1949/hour	142
Freezer: upright (1993-2001)	24 hrs/day, 7 days/wk	0.1154/hour	84
Freezer: upright (after 2001)	24 hrs/day, 7 days/wk	0.0872/hour	64
Freezer: chest (before 1993)	24 hrs/day, 7 days/wk	0.1197/hour	87
Freezer: chest (1993-2001)	24 hrs/day, 7 days/wk	0.0681/hour	50
Freezer: chest (after 2001)	24 hrs/day, 7 days/wk	0.0554/hour	40

<b>Electronics</b>	<b>Usage</b>	<b>kWh usage</b>	<b>kWh/month Cost</b>
Cable Box	4 hrs/day, 7 days/wk	0.02/hour	2.4
Computer and Monitor	4 hrs/day, 7 days/wk	0.17/hour	20.4
Cordless Telephone	24 hrs/day, 7 days/wk	0.003/hour	2.16
DVD Player	4 hrs/day, 7 days/wk	0.017/hour	2
DVR	4 hrs/day, 7 days/wk	0.03/hour	3.6
Gaming Console	4 hrs/day, 7 days/wk	0.09/hour	10.8
Laptop/Notebook	4 hrs/day, 7 days/wk	0.06/hour	7.2
Printer	10 min/day, 7 days/wk	0.07/hour	0.35
Satellite Dish	4 hrs/day, 7 days/wk	0.01389/hour	1.7
Stereo	1 hr/day, 7 days/wk	0.06/hour	1.8
Television: Standard	4 hrs/day, 7 days/wk	0.15/hour	18
Television: Plasma	4 hrs/day, 7 days/wk	0.339/hour	40.7
Television: LCD	4 hrs/day, 7 days/wk	0.214/hour	25.7
Television: LED (46")	4 hrs/day, 7 days/wk	0.11/hour	13.2
Television: Rear Projection	4 hrs/day, 7 days/wk	0.21/hour	25.2
Wireless router	24 hrs/day, 7 days/wk	0.007/hour	5

<b>Lighting</b>	<b>Usage</b>	<b>kWh usage</b>	<b>kWh/month Cost</b>
Fluorescent 4 foot tubes (35 watt)	4 hours/day/7 days/wk	0.035/hour	4.25
CFL (13-15 watts--equivalent of 60 watt incandescent)	4 hours/day/7 days/wk	0.01/hour	1.2
CFL (25 watt--equivalent of 100 watt incandescent)	4 hours/day/7 days/wk	0.03/hour	3.6
Incandescent (60 watt)	4 hours/day/7 days/wk	0.06/hour	7.2
LED (6-8 watts--equivalent of 60 watt incandescent)	4 hours/day/7 days/wk	0.01/hour	0.12
LED (19 watts--equivalent of 100 watt incandescent)	4 hours/day/7 days/wk	0.02/hour	0.24

<b>General Household</b>	<b>Usage</b>	<b>kWh usage</b>	<b>kWh/month Cost</b>
Clothes Dryer	20 loads/month	2.3 kWh/load	46
Clothes Washer: front loading	20 loads/month	1.4 kWh/load	28
Clothes Washer: standard top loading	20 loads/month	2.1 kWh/load	42
Vacuum Cleaner	2 hrs/month	0.62/hour	1.24
Water Heater (average for 4 people)	1800 gallons	4.5/hour	400

<b>Heating and Cooling</b>	<b>Usage</b>	<b>kWh usage</b>	<b>kWh/month Cost</b>
Air Cleaner (Ionizer)	24 hrs/day, 7 days/wk	0.07/hour	50
Central Air (3 ton, before 2006)	24 hrs/day, 7 days/wk	3.60/hour	1314
Central Air (3 ton, after 2006)	24 hrs/day, 7 days/wk	2.77/hour	1011
Dehumidifier	12 hrs/day, 7 days/wk	0.6/hour	216
Electric Blanket	8 hrs/day, 7 days/wk	0.1/hour	24
Fans-Ceiling	8 hrs/day, 7 days/wk	0.0778/hour	18.7
Fans-Portable	3 hrs/day, 7 days/wk	0.0296/hour	2.7
Heated Mattress Pad	8 hrs/day, 7 days/wk	0.04/hour	9
Humidifier	8 hrs/day, 7 days/wk	0.12/hour	28.8
Portable Space Heater (1,500 watt)	8 hrs/day, 7 days/wk	1.5/hour	360
Window Air Conditioner (12,000 btu/hour)	8 hrs/day, 7 days/wk	1.6/hour	384

<b>Miscellaneous</b>	<b>Usage</b>	<b>kWh usage</b>	<b>kWh/month Cost</b>
Aquarium	24 hrs/day, 7 days/wk	0.06/hour	43.2
Blow Dryer	10 min/day, 7 days/wk	0.67/hour	3.36
Clock	24 hrs/day, 7 days/wk	0.002/hour	1.44
Curling Iron	10 min/day, 7 days/wk	0.07/hour	0.35
Garage Door Opener	24 hrs/day, 7 days/wk	0.006/hour	4.32
Hot Tub	24 hrs/day, 7 days/wk	0.35-0.56/hour	252-403
Iron	12 hrs/month	1.1/hour	13.2
Swimming Pool Pump (1 HP)	8 hrs/day, 7 days/wk	1/hour	240

<b>Farm Miscellaneous</b>	<b>Usage</b>	<b>kWh usage</b>	<b>kWh/month Cost</b>
Aerated Septic System	24 hrs/day, 7 days/wk	0.38/hour	274
Electric Fence			0-7
Engine Block Heater: 500-watt	240 hrs/month	0.5/hour	120
Engine Block Heater: 800-watt	240 hrs/month	1/hour	240
Engine Block Heater: 1500-watt	240 hrs/month	1.5/hour	360
Engine Block Heater: 2500-watt (diesel engine)	240 hrs/month	2.5/hour	600
Heat Tape: 6'	24 hrs/day, 7 days/wk	0.05/hour	36
Tank Heater (varies by wattage and location)			40-300
Farm Motor: 10 HP	1 hr/day, 7 days/wk	7.46/hour	224
Water Pump: 1/2 HP	60 hrs/month	0.5/hour	30
Water Pump: 1 1/2 HP	60 hrs/month	1.5/hour	90

<b>Phantom Loads</b>	<b>Usage</b>	<b>kWh usage</b>	<b>kWh/month Cost</b>
Cell Phone Charger	24 hrs/day, 7 days/wk	0.001/hour	0.72
Computer in Sleep Mode (varies by model)	24 hrs/day, 7 days/wk	0-0.006/hour	0-4.32
Digital Cable Box	24 hrs/day, 7 days/wk	0.035/hour	25.2
DVD Player	24 hrs/day, 7 days/wk	0.001/hour	0.72
Gaming Console (varies by model)	24 hrs/day, 7 days/wk	0.003/hour	0.36
Instant-on TV	24 hrs/day, 7 days/wk	0.028/hour	20.16
Microwave Oven with Clock	24 hrs/day, 7 days/wk	0.008/hour	5.76
Satellite Cable Box	24 hrs/day, 7 days/wk	0.012/hour	8.64
Stereo with Remote Control	24 hrs/day, 7 days/wk	0.008/hour	5.76
Stove with Electric Ignition	24 hrs/day, 7 days/wk	0.014/hour	10.08
VCR	24 hrs/day, 7 days/wk	0.014/hour	10.08
Wall Cube Power Supply (AC Adapter/charger)	24 hrs/day, 7 days/wk	0.006/hour	4.32

# 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

$$\frac{\$154}{1400 \text{ kWh}} = \$0.11 \text{ per kWh}$$

Check with your local electric cooperative for current rate.

## 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 \$0.11/kWh = \$0.165 or 16 1/2 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 \$0.11 = \$0.083 or 8 cents

## STEP 4

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

$$\text{EXAMPLE } \frac{\$154}{30 \text{ days}} = \$5.13 \text{ which is your daily cost}$$

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

$$\text{EXAMPLE } \frac{\$5.13}{4} = \$1.28 \text{ per person per day}$$