

# Use Energy Wisely



*From the energy professionals at your local electric cooperative.*

*You can use this guide to create an awareness of your lifestyle and learn what effects it can have on your energy budget. Take time to make this your first step to better energy management.*



# Your family is unique.

**A**s 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. The best way to do this is first to be aware of how much energy you use each month and how it is being used in your home or on your farm. 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 energy professionals at your electric co-op. We're here to help!

## Your lifestyle can make 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 15% 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 higher energy use.



Let's take a look at some of these "Lifestyle considerations" that can make your electric bill appear to be higher than "normal."

### Family Size

There is a direct relationship between the number of people living at 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" lifestyle 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 simply turning down the heat and turning off the air conditioning in rooms not used.

### Water Heating

Hot water plays a very important role in everyone's lifestyle, but many lifestyles 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 of water?"

"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 automatic washers and dishwashers with a full load, or just whenever it's convenient? (Like with a pair of jeans or just a few dishes)?"

### Appliance Use

We have a host of time and labor saving appliances available to help us do our work whenever we need their service. As you work 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.

For example, ask yourself these questions. . .

"Do I turn off lights when a room is not in use, or do I leave them on?"

"Does my television set entertain the entire family or does it entertain an empty room?"

"Do I leave the oven on 'warm' for an extended period of time, or do I warm many dishes at once and then turn the oven off?"

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 a spirited energy management consciousness is likely to start at home.

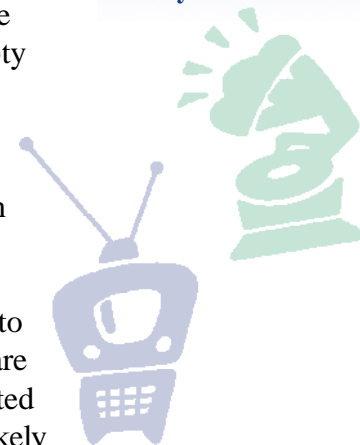
The effects of a home and farm energy management program can pay big dividends!

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 on the next page shows the amount of energy used in the residential sector nationwide.

*Throughout this booklet are simple steps that can help reduce your energy costs. Using combinations of these measures can save you 10% to 50% on your energy bills. See the first one below...*

## SAVE ENERGY by 10-50%

**Adjust thermostats.** Turn down your thermostat during cool months and turn it up when air conditioning, especially when the building is not occupied. Install a programmable thermostat to accommodate your weekly schedule.



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

by 10-50%

Install water flow restrictors and aerators in sink faucets. These measures can save you money by reducing water use (including hot water).

Seal off unused areas and don't heat or cool these areas. Storage areas represent a good place to start; turn off heating and cooling to these areas.



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 or on YOUR FARM.

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

# 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 on vacation, their electric meter stops until they return. Let's ask ourselves a few questions before we assume our electric bill should decrease by any considerable amount during vacation time.

First, was the water heater turned down or off during your vacation? Remember, 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.

Take a look at other electrical appliances that keep running while you are on vacation—clocks, attic fans and power ventilators, heating and air conditioning equipment, lights, personal computers, fax machines and even TV sets 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 heater 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 the energy professionals at your electric co-op 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.

Another reminder is that many vacationers bring home several days or weeks of dirty laundry. This laundry will give your electric water heater a workout during your first day or two back home.

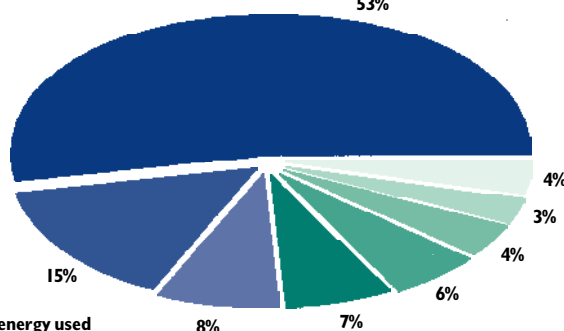
In addition to vacations, you may wish to take a look at some of the seasonal uses for electricity that may cause an increase in consumption. These include crop dryers, air conditioners, portable heaters in the garage or basement, engine heaters to keep your

## Electrical Energy Used Nationwide

### RESIDENTIAL SECTOR



This pie chart shows the amount of energy used in the residential sector nationwide. Figures are in percentages of the total.



car, truck, or tractor ready to run, heat tape to keep pipes from freezing, and the list goes on and on.

Let's not overlook hobbies or those businesses that operate from the home. Ceramics, beauty shops with a number of electric hair dryers, wood-working tools, etc., also have an effect on the number of kilowatt-hours you use.

# Record

You may wish to call an electrician to check your wiring and appliances for grounds, shorts and other malfunctions, or you may request a special meter test by contacting your local electric co-op. You can do something about your electric bill by learning more about how you and your family spend energy. A big step in this process begins with tracking current energy consumption.

The handy Meter Monitor Chart located at the back of this booklet offers a place to record meter readings. Take a few minutes each day and jot down the reading on your electric meter. Your analysis will be more significant if you take your readings at the same time each day. Start the first of the month.

## 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 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 fault 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 than normal? Was it a wash day? See what activities, if any, can be altered to use energy wisely.

The meter is a finely calibrated, highly accurate device used to measure electric power use. Your electric co-op has a continuing program to test the accuracy of all its meters to assure you 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% of the time, the electric meter is accurate. High bills are almost always traced to other causes.



## SAVE ENERGY by 10-50%

Reduce the hot water temperature to 120 degrees F. Reducing the temperature on your water heater thermostat can decrease heat loss from your tank. For washing hands, you may be able to turn the temperature to 110 degrees F (43 degrees C).

Dishwashing may require higher temperature settings such as 130 degrees F (54 degrees C). Many dishwashers now have a temperature boost, allowing you to keep your water heater temperature set at a lower temperature.



*“You can do something about your electric bill by learning more about how you and your family spend energy. A big step in this process begins with tracking current energy consumption.”*

# Cost

## How To Estimate Energy Use & Cost

### 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 kWh.

The average cost per kWh is computed this way:  
 Average Cost per kWh = \$ amount of bill / Total kWh used.

(Example — .06 = \$6/1,000 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 times amperes to obtain the wattage.

### STEP 3

Use the formula shown in this example to estimate usage and cost.

A light uses 100 watts and is left on for 15 hours. Compute the cost as follows:

kWh use = (100 watts 15 hours) / 1000 watts = 1.5 kWh.

### STEP 4

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

# Estimate

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.

## Estimate Energy Use in the Home

Appliance	Average Wattage	Hourly kWh	Estimated kWh/Mo.
Air Conditioner [(room) (varies)]	1000	1 kWh/hour	_____
Air Conditioner [(central) (varies)]	2500-3500	2½ -3½ kWh/hour	_____
Car Engine Heater	1000	1 kWh/hour	_____
Clothes Dryer	4350	5 kWh/hour	_____
Heater, Portable	1500	1½ kWh/hour	_____
		Home Subtotal:	_____
Appliance	Average Wattage	Monthly kWh*	
Automatic Blanket	200	15	_____
Clock	4	3	_____
Coffee Maker	850	8	_____
Dehumidifier (8.5 kWh/day if run continually)	300	200	_____
Dishwasher	1190	30-48	_____
Fax Machine 25 Standby, 50 Active		15	_____
Freezer (12-15 cu. ft.)	350	100-190	_____
Freezer, frost-free (12-15 cu. ft.)	440	150-240	_____
Food Mixer or Blender	110	1	_____
Frying Pan	1200	15	_____
Furnace, oil (cold months)	600	75	_____
Garbage Disposal	400	2	_____
Hair Dryer	1250	3	_____
Hot Tub	5500	250-350	_____
Humidifier	80	20	_____
Iron (hand)	1100	12	_____
Lighting (varies widely)	1600-4000	75-150	_____
Microwave	1450	16	_____
Personal Computer (on 9 hrs/day)	150	32	_____
Radio	20	4	_____
Radio-Stereo	40	6	_____
Range	1200	100-150	_____
Refrigerator, Dorm (2.5'-4.4')	175	25-40	_____
Refrigerator, Manual Defrost (12'-14')	265	40-75	_____
Refrigerator, Frost-free (16')	475	65-150	_____
Refrigerator, Frost-free (20')	540	80-180	_____
Sewing Machine	75	1	_____
Stereo	50	8	_____
Television (4 hours/day)	100-250	12-30	_____
Toaster	1100	4	_____
Vacuum Cleaner	700	3	_____
Video Cassette Recorder (VCR)	25	¼-½	_____
Washing Machine	600	8	_____
Water Heater (standard)	2500**	300-400	_____
Water Heater (quick recovery)	4500**	300-500	_____
Waterbed Heater (varies)	300	100	_____
Water Pump	750-1000	40	_____
		Home Total:	_____

\*\* Varies with family size.

# Collect

Use these tables to estimate your monthly energy needs. The wattage of appliances and equipment as well as the amount operating time can vary greatly. Collecting the information in these tables will show you how to determine where the energy dollars are going in your home or farm.

**SAVE ENERGY**  
by 10-50%

Reduce lighting expenses. Turn lights off when they're not in use. Compact fluorescent lighting is the most efficient lighting on the market today. These bulbs use 70% less energy and last up to 10 times longer than incandescent bulbs. Several wattage sizes are available to fit any of your lighting needs.



## Estimated Energy Use on the Farm

Equipment	Average kWh Use*	Comment	Estimated kWh/Mo.
Barn Cleaner	120 annually		_____
Barn Lighting	60/month		_____
Barn Ventilation (approx.)	2 1/2/cow/month		_____
Clipper	1/10 hours of Use		_____
Dairy Water Heater	1/3.6 gallons	Heated from 50° to 165° @ 100% efficiency	_____
Engine Heater (truck or tractor)	1-2/hour	1000 to 2000 watts	_____
Fence	7/month		_____
Grain Dryer (no heat)	1/bushel	Varies with weather & moisture to be removed	_____
(heated with electric heat)	2/bushel		_____
Grain Elevator	4/1000 bushel		_____
Grain Grinder	.2/100 pounds		_____
Incubator	1/25 eggs set		_____
Milking Machine (portable)	1 1/2/cow/month		_____
Milking Machine (pipeline)	2 1/2/cow/month		_____
Milk Cooler (can)	1/10 gallons	1/4 to 5 H.P.	_____
Milk Cooler (bulk)	11/100 gallons	1/2 to 7 1/2 H.P.	_____
Motor	1/H.P./hour	sizes 1/2 to 10 H.P.	_____
Poultry House (incandescent)	6/100 birds/month		_____
Poultry House (fluorescent)	2/100 birds/month		_____
Poultry Water Warmer	1/day		_____
Silo Unloader (grass)	4/ton	3 to 5 H.P.	_____
Silo Unloader (corn)	2 1/2/ton	3 to 5 H.P.	_____
Tool Grinder	1/2/hour of use		_____
Water Pump (deep well)	1 1/2/1000 gallons	rate: 8 gallons/min.	_____
Water Pump (shallow well)	1/1000 gallons	rate: 8 gallons/min.	_____
Water Stock Tank Heater-Hog	193/season	sheltered area	_____
Water Stock Tank Heater-Cattle	193/season	in barn	_____
Water Stock Tank Heater-Cattle	469/season	open shed	_____
Cattle-Hog Combination	535/season	open shed	_____
Cattle-Hog Combination	1208/season	open lot	_____
Welder	100/year	variable	_____
Yard Lighting (dusk to dawn)			_____
70 Watt Sodium Vapor	31/month		_____
100 Watt Sodium Vapor	47/month		_____
175 Watt Mercury Vapor	73/month		_____
250 Watt Mercury or Sodium Vapor	105/month		_____
400 Watt Mercury or Sodium Vapor	161/month		_____
		Farm Total:	_____

Note: \*The average monthly kilowatt-hour consumption figures shown on this chart are based on normal use. Your electrical consumption may be higher or lower, depending on how you and other people in your home or on your farm use the various appliances and equipment and on the season of the year.

SAVE ENERGY  
by 10-50%

# Check

Turn off equipment when not in use. Don't underestimate the energy savings you can get by turning off unused televisions, stereos, computers, etc.



## Trouble-shooting

You can use your electric meter to check on where energy is spent and for trouble-shooting.

If the results of the meter monitoring chart show that your daily electrical use has doubled for no apparent reason and you have ruled out lifestyle considerations and other unusual uses, you can use the following procedure to locate sources of trouble with the aid of your electric meter.

### Step One

Turn off the main disconnect. The disk in the electric meter only turns if electricity is being used. Therefore, the meter should have stopped. If the disk is still turning, check to see that the water pump is turned off at its own fuse box. Sometimes the water pump is wired ahead of the main disconnect for fire protection purposes.

Now that the meter has stopped, you can proceed with trouble-shooting. The idea is to energize as much of your electrical wiring system as possible, one circuit at a time, and still have a stopped meter disk.

### Step Two

Turn off the main fuse or breaker in all buildings. Then turn on the main disconnect. If the meter disk is still stopped, this tells you that all wiring from the main disconnect to each building main fuse or breaker is O.K.

### Step Three

Proceed with each individual building by unplugging or turning off everything that could use electricity. Then turn on that building's electrical box or breaker. To further pinpoint possible trouble, turn on

each main fuse or circuit breaker in each building, one at a time.

Continue this process until one of two things result. If the meter disk is stopped, the wiring and appliances are O.K.; but if the disk is turning and the appliances are off, you have discovered a source of trouble.

## 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 stock waterer, thermostat, or basement and attic lights.

If no problems are found, your electric co-op has test meters available to record the electrical consumption of whatever is plugged into them. By comparing your recorded use with that of our list for farm and 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 proper advice from your electric co-op.

# Act

## Do Something About Your Electric Bill

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



## SAVE ENERGY by 10-50%

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 these air leaks.



Using our handy Meter Monitor Chart, take a few minutes each day (at the same time) and jot down the reading on your electric meter. Start the first of the month.

Record your daily meter reading in column one on the Meter Monitor Chart. Subtract the previous day's reading from the current reading and place the difference in column two. Add the total number of kilowatt hours used during each 24-hour period to arrive at the weekly totals. Add these weekly figures into a monthly total. In this way you can see how much and when your family used power during that month.

### Keep Records

Keep records for a few months each season. Learn how changes in your activities can effect your energy budget and note them in column three.

Change. Make easy changes first. For instance, set thermostats for energy economy. Make changes in temperature levels gradually so you and your family can adjust. Turn off the air conditioning in the evenings. During the winter months reduce the thermostat setting when you retire at night.

Keep heating and cooling systems working more efficiently by replacing filters and cleaning coils.

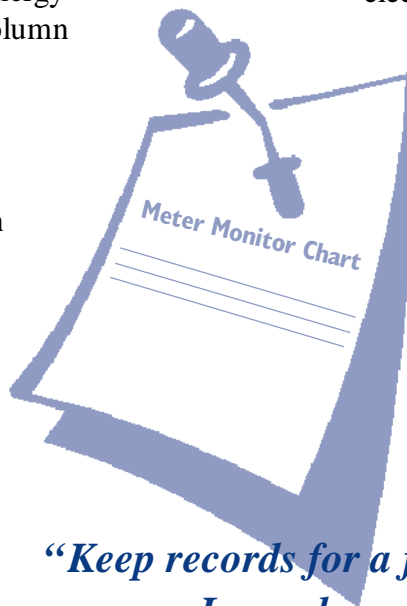
Remove unneeded light bulbs in areas where lighting is too bright. Turn out lights whenever possible. Reduce or eliminate unnecessary lighting. Use lower wattage bulbs and buy higher efficiency fluorescents or incandescents. Place them in areas where they are used most often. Keep fixtures clean. Consider using high pressure sodium light bulbs.

### Use Less

Use less hot water. Sometimes lowering the temperature setting on the water heater can offer savings. Fix hot water faucet leads. Insulate tanks and pipes.

Check with your co-op to see if you're eligible for any special energy programs.

When your meter records more electricity being used, try to find out why, by looking at your family's activities during that period . . .  
. . . was the tractor or car heater on more than normal? Was the weather colder than normal? Was it wash day? See what activities, if any, can be altered to use less energy.




***“Keep records for a few months each season. Learn how changes in your activities can effect your energy budget and note them...”***

# Meter Monitor

Daily Reading	Daily kWh Usage	Activities Affecting 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 Day		
Extra Day		
Extra Day		
Monthly Total		

Use Energy  
Wisely

A Touchstone Energy<sup>™</sup> Partner 

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your local electric cooperative.*

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