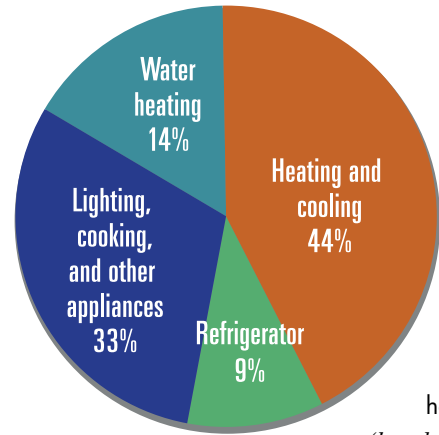


## How We Use Energy In Our Homes



The largest portion of a utility bill for a typical house is for heating and cooling.

(based on national average)

The single most important step in residential energy conservation is the installation of insulation. Check current insulation levels and properly insulate a new or existing home according to the updated U.S. Department of Energy's specifications.

Caulk and weatherstrip to ensure you're not wasting energy on heat or air conditioning that escapes to the outdoors. The U.S. Environmental Protection Agency (EPA) estimates that consumers could save approximately 10-40% on heating and cooling bills with proper sealing and weatherization. **For more information, contact your local electric cooperative.**



Appliances and electronics featuring the EnergyStar logo use less energy than similar models. The U.S. Environmental Protection Agency (EPA) introduced EnergyStar in 1992 as a voluntary labeling program to identify and promote energy efficient products. Computers and monitors were the first labeled products. The program now includes office equipment, household appliances and residential heating and cooling equipment.

## Heating

### Individual Baseboard Heater

	Wattage	Cost per hour of run time
Each foot	250	\$0.02

### Portable Space Heater/Oil-filled Radiator

750 Watts	750	\$0.06
1000 Watts	1000	\$0.08
1500 Watts	1500	\$0.12

### Electric Fireplace (heating mode)

1500	\$0.12
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## Forced Air Systems

### Central Electric Furnace & Blower

15 kW	15,350	\$1.23
20 kW	20,490	\$1.64
25 kW	25,670	\$2.05

### Air Source Heat Pump (without backup running)

3 Ton	\$0.43
4 Ton	\$0.57
5 Ton	\$0.71

### Air Source Heat Pump (with backup running)

3 Ton with 15 kW backup	\$1.66
4 Ton with 15 kW backup	\$1.80
5 Ton with 15 kW backup	\$1.94

### Ground Source Heat Pump (without emergency backup running)

3 Ton	\$0.31
4 Ton	\$0.41
5 Ton	\$0.51

### Ground Source Heat Pump (with emergency backup running)

3 Ton with 15 kW backup	\$1.23
4 Ton with 20 kW backup	\$1.64
5 Ton with 20 kW backup	\$1.64

## Cooling

### Fans

	Wattage	Cost per hour of run time
Attic	370	\$0.03
Ceiling	150	\$0.01
Box Fan (20")	180	\$0.02
Furnace (1/2 hp)	500	\$0.04

### Room Air Conditioner

6000 Btu/hr	706	\$0.06
12,000 Btu/hr	1412	\$0.11
24,000 Btu/hr	2824	\$0.23

### Central Air Conditioner

3 Ton	\$0.43
4 Ton	\$0.57
5 Ton	\$0.71

### Air Source Heat Pump

3 Ton	\$0.43
4 Ton	\$0.57
5 Ton	\$0.71

### Ground Source Heat Pump

3 Ton	\$0.31
4 Ton	\$0.41
5 Ton	\$0.51

Note: In an all-electric home, run time of a cooling system is typically less than run time of a heating system.

## Did you know...

you can reduce your cooling bill by two percent just by raising your thermostat by one degree in the summer. Likewise, in the winter, lowering your thermostat by only one degree can reduce heating bills by three percent.

## Water Heating, Laundry & Cleaning

### Water Heating

(Rule of thumb calculation: 100kWhs/person/month + 100 kWhs/month to keep water heated)

Number of people	Gallons per month	kWhs per month	Cost per month
1	450	200	\$16.00
2	900	300	\$24.00
3	1350	400	\$32.00
4	1800	500	\$40.00
5	2250	600	\$48.00
6	2700	700	\$56.00

	Wattage	Cost per hour of run time
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### Dishwasher

With cold water	1440	\$0.12
With hot water		\$0.20

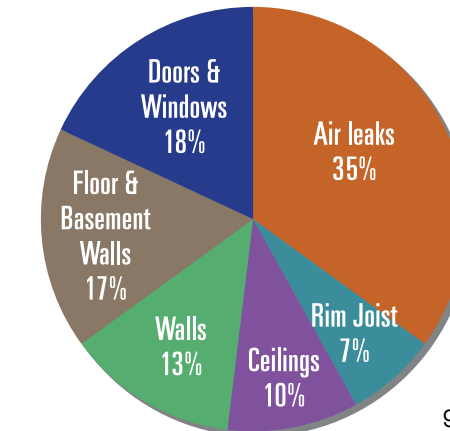
### Clothes Dryer (per load)

5000	\$0.40
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### Clothes Washer (per load)

With cold water	500	\$0.04
With hot water		\$0.12

## Where a Typical Home Loses Energy



Where energy escapes in the home gives you ideas where you can make improvements.

# Home Energy Use Guide



**Mid-State 8 Electric Cooperatives**

## What Is A Kilowatt-hour?

We pay for electricity in kilowatt-hours (kWhs). One kilowatt-hour is the equivalent of using 1,000 Watts for one hour or using a 100-Watt light bulb for 10 hours. While electric rates may vary among electric suppliers, we will use a central Missouri average of \$0.08 per kilowatt-hour for the examples in this brochure.

When these kilowatt hours add up, electric bills get higher. And kilowatt-hour usage is adding up more and more each year. According to statistics, the average family's use of electricity is increasing at a rate of 4-7 percent per year. Therefore, it seems reasonable that if we become more aware of how we use these kilowatt hours, we can learn how to use them more efficiently.

## What Does It Cost To Run My Appliances?

The appliance use charts listed in this brochure show the most commonly used appliances and office equipment in homes, the average wattage of that equipment, and an estimated cost of usage. To calculate the exact use of your appliances, or for those not listed in the charts, use the following formula:

$$\begin{aligned} \text{amps} \times \text{volts} &= \text{Watts} \\ \text{Watts} \times \text{hours} &= \text{Watt hours} \\ \text{Watt hours}/1000 &= \text{kilowatt hours (kWhs)} \\ \text{kWh} \times \$0.08 &= \text{estimated cost of using the appliance} \end{aligned}$$

Look for the serial plate on the bottom or back of the appliance. It lists the power used in terms of Watts (120 Watts might be written 120W) or amps and volts. We will use an electric hand mixer as an example. This appliance requires about 127 Watts. Here is how you would figure its usage for 15 minutes:

$$\begin{aligned} 15 \text{ minutes} &= 1/4 \text{ hour, so} \\ 120 \text{ Watts} \times 1/4 \text{ hour} &= 30 \text{ Watt hours} \\ 30 \text{ Watt hours}/1000 &= .03 \text{ kWh} \\ .03 \text{ kWh} \times \$0.08 &= \$0.0024 \\ &(\text{two tenths of one cent}) \end{aligned}$$

For a larger appliance such as a water heater, remember that it is only running when it has clicked on and is actually heating water. The time your water heater is on varies according to how often you do laundry, take baths, or run the dishwasher. Let's say your water heater is on for three hours on a particular day (the national average):

$$\begin{aligned} 4,500 \text{ Watts} \times 3 \text{ hours} &= 13,500 \text{ Watt hours} \\ 13,500 \text{ Watt hours}/1000 &= 13.5 \text{ kWh} \\ 13.5 \text{ kWh} \times \$0.08 &= \$1.08 \end{aligned}$$

From another angle, you can see that you would be using 4.5 kWh for every full hour that your water heater is on. This means it costs you 36 cents per hour.

## Refrigeration

	Wattage	Cost per hour of run time
<b>Refrigerator-Freezer (Frost Free)</b>		
18 cu.ft.	720	\$0.06
24 cu.ft.	810	\$0.07
<b>Refrigerator-Freezer (Manual Defrost)</b>		
18 cu.ft.	630	\$0.05
24 cu.ft.	720	\$0.06
<b>Refrigerator-Freezer Side-by-Side (Frost Free)</b>		
26 cu.ft.	1020	\$0.08
<b>Freezer (Frost Free)</b>		
12 cu.ft.	650	\$0.05
24 cu.ft.	845	\$0.07
<b>Freezer (Manual Defrost)</b>		
12 cu.ft.	650	\$0.05
24 cu.ft.	845	\$0.07

## Kitchen Appliances

	Wattage	Cost per hour of run time
Barbecue Grill	1350	\$0.11
Coffee Maker	900	\$0.07
Deep Fat Fryer	1450	\$0.12
Garbage Disposal	700	\$0.06
Hot Plate	660	\$0.05
Microwave	1450	\$0.12

## Kitchen Appliances, continued

Range	12500	\$1.00
(Self cleaning cycle, each use)	2260	\$0.18
Sandwich Grill	1160	\$0.28
Slow Cooker	200	\$0.02
Toaster	1150	\$0.09
Toaster Oven	1440	\$0.69
Waffle Iron	1120	\$0.09

## Home Entertainment

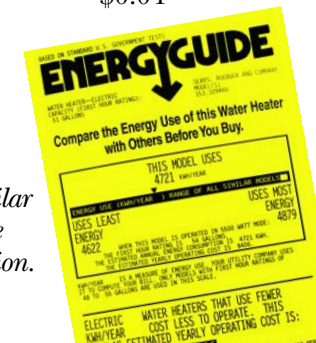
	Wattage	Cost per hour of run time
Radio	70	\$0.01
Stereo	150	\$0.02
Component System	500	\$0.04
Videocassette Recorder	35	\$0.01
DVD Player	50	\$0.01
Television - Color		
19"	110	\$0.01
25"	113	\$0.01
36"	133	\$0.01
53" Projection	170	\$0.01
42" Plasma	250	\$0.02
50" Plasma	550	\$0.05

Note: Instant-on TVs consume 75% of total wattage when not in use.

## Home Office

	Wattage	Cost per hour of run time
Personal Computer	80	\$0.01
Color Monitor	75	\$0.01
Fax Machine	105	\$0.01
Inkjet Printer	35	\$0.01
Laser Printer	400	\$0.04

Look for the EnergyGuide labels on household appliances as well as heating and cooling equipment. The label helps you compare the efficiency or annual energy use of competing brands and similar models. If you don't see an EnergyGuide label, ask a salesperson for the information.



## Miscellaneous

	Wattage	Cost per hour of run time
Air Cleaner	250	\$0.02
Humidifier	177	\$0.01
Dehumidifier	390	\$0.04
20 gal. Aquarium	150	\$0.01
Water Bed Heater	400	\$0.04
Vacuum Cleaner	630	\$0.05
Electric Blanket (full size)	100	\$0.08
Garage Door Opener	800	\$0.06

## Swimming Pool And Spa

Hot Tub Heater	6000	\$0.48
Hot Tub Pump, 1 hp	1800	\$0.14
Low Speed (if two-speed)	300	\$0.03
Swimming Pool Filter Pump		
1 hp	1200	\$0.10
1 hp	1800	\$0.14
2 hp	2400	\$0.20
Swimming Pool Sweep Pump		
1 hp	900	\$0.08

## Farm Operations

	Wattage	Cost per hour of run time
<b>Water Pump</b>		
1/3 hp	250	\$0.02
1.5 hp	1120	\$0.11
Well pump 1 hp		\$0.22
Stock Tank Water Heater	1500	\$0.12
Heat Lamp	250	\$0.02

## Head Bolt (Engine Block) Heater

500 Watt	500	\$0.04
800 Watt	800	\$0.06
1500 Watt	1500	\$0.12
Livestock Fencer	100	\$0.80 per month
Security Light (consumer-owned)	90	\$7.00 per month

## Smart Energy Resources

- The Alliance to Save Energy - ASE is a not-for-profit coalition promoting energy efficiency: [www.ase.org](http://www.ase.org).
- The Department of Energy (DOE) and the Environmental Protection Agency (EPA) host the *Home Energy Saver* website, an online resource to help homeowners calculate and look for energy efficient improvements: <http://hes.lbl.gov>.
- Obtain a free booklet, *Energy Savers: Tips on Saving Energy and Money at Home*, by calling 1-877-337-3463 or [www.energysavers.gov](http://www.energysavers.gov).
- A free copy of *Guide to Energy-Efficient Cooling and Heating* is available by calling 1-888-STAR-YES (1-888-782-7937) or [www.energystar.gov](http://www.energystar.gov).

Call the energy advisor at your electric cooperative to learn more about energy efficiency and smart energy choices.



## Mid-State 8 Electric Cooperatives

- Boone Electric Cooperative**  
1413 Rangeline, Columbia, MO 65201-3931  
573-449-4181 • [www.booneelectric.coop](http://www.booneelectric.coop)
- Callaway Electric Cooperative**  
503 Truman Road, Fulton, MO 65251-1266  
573-642-3326 • [www.callawayelectric.com](http://www.callawayelectric.com)
- Central Missouri Electric Cooperative**  
22702 N. Hwy 65, Sedalia, MO 65301  
660-826-2900 • [www.cmecinc.com](http://www.cmecinc.com)
- Co-Mo Electric Cooperative**  
29868 Highway 5, Tipton, MO 65081  
660-433-5521 • [www.co-mo.coop](http://www.co-mo.coop)
- Consolidated Electric Cooperative**  
3940 E. Liberty, Mexico, MO 65265  
573-581-3630 • [www.consolidatedelectric.com](http://www.consolidatedelectric.com)
- Cuivre River Electric Cooperative**  
1112 East Cherry Street, Troy, MO 63379-1518  
636-528-8261 • [www.cuivre.com](http://www.cuivre.com)
- Howard Electric Cooperative**  
Hwy. 5 & 240 North, Fayette, MO 65248  
660-248-3311 • [www.howardelectric.com](http://www.howardelectric.com)
- Three Rivers Electric Cooperative**  
1324 E. Main, Linn, MO 65051-9708  
573-897-2251 • [www.threeriverselectric.com](http://www.threeriverselectric.com)