

YOUR UNIQUE ENERGY NEEDS

Many members are looking for ways to control their energy use and reduce their impact on the environment. The best way to do this is to be aware of how much energy you use each month and where it is being used. You can use your cooperative's online billing tool (or read your meter) to track your electricity use. With that information, you can use this booklet to help incorporate more energy-efficient habits into your daily routine.

If you still have questions, call the professionals at your local electric cooperative. They're here to help!

Lifestyle Makes a Difference

You have control over your electricity use by choosing the appliances and devices you use on a regular basis.

The way you use these electric devices has a greater impact on your consumption of electricity than the number you own.

There are other factors to consider when reviewing your monthly electricity use.

Family Size

There is a direct relationship between the number of people living in a home and the amount of energy used. If friends or relatives visit, you can expect to use more energy for hot water, charging and using electronics, cooking/baking, doing laundry, etc.



Space Heating & Cooling

According to the U.S. Department of Energy, space heating, space cooling and water heating are some of the largest energy expenses in any home. Humidity also plays an important role in our year-round comfort. Dehumidifiers will contribute to household energy consumption. Portable space heaters, air conditioners and fans also add kilowatt-hours (kWh) to our electric bills. There are many ways to use energy wisely while maintaining a comfortable temperature and humidity level in your home. These range from adding insulation, weather-stripping and caulking around windows.

Set the thermostat to 68°F or lower during the winter; 78°F or higher in the summer, especially when your home is not occupied.

You can use a programmable thermostat to automatically adjust temperatures to accommodate weekly schedules. Consider buying a smart thermostat that can be controlled from your smartphone.



Try This & Save

Install water flow restrictors and aerators in faucets and shower heads to help reduce water use without sacrificing water pressure. To prevent scalding and reduce energy consumption, make sure the water heater's thermostat is set **no higher than 120°F**.

Try This & Save

Light-emitting diode (LED) light bulbs use 80% less energy than incandescent bulbs and can last up to 25 times longer! LEDs also emit much less heat than CFL or incandescent bulbs, which release 80% to 90% of their energy as heat. Source: energy.gov



Electric Water Heaters

Your cooperative offers incentives to members who purchase an electric water heater; some also enroll electric water heaters in the cooperative's load management program. In the program, the water heater is equipped with a receiver that ensures the element heats the water at certain times of the day during times of low electricity demand. When the demand for electricity increases, the element can be shut off, but the home still has access to the hot water stored in the tank. The load management program helps to keep electric rates low.

NORMAL

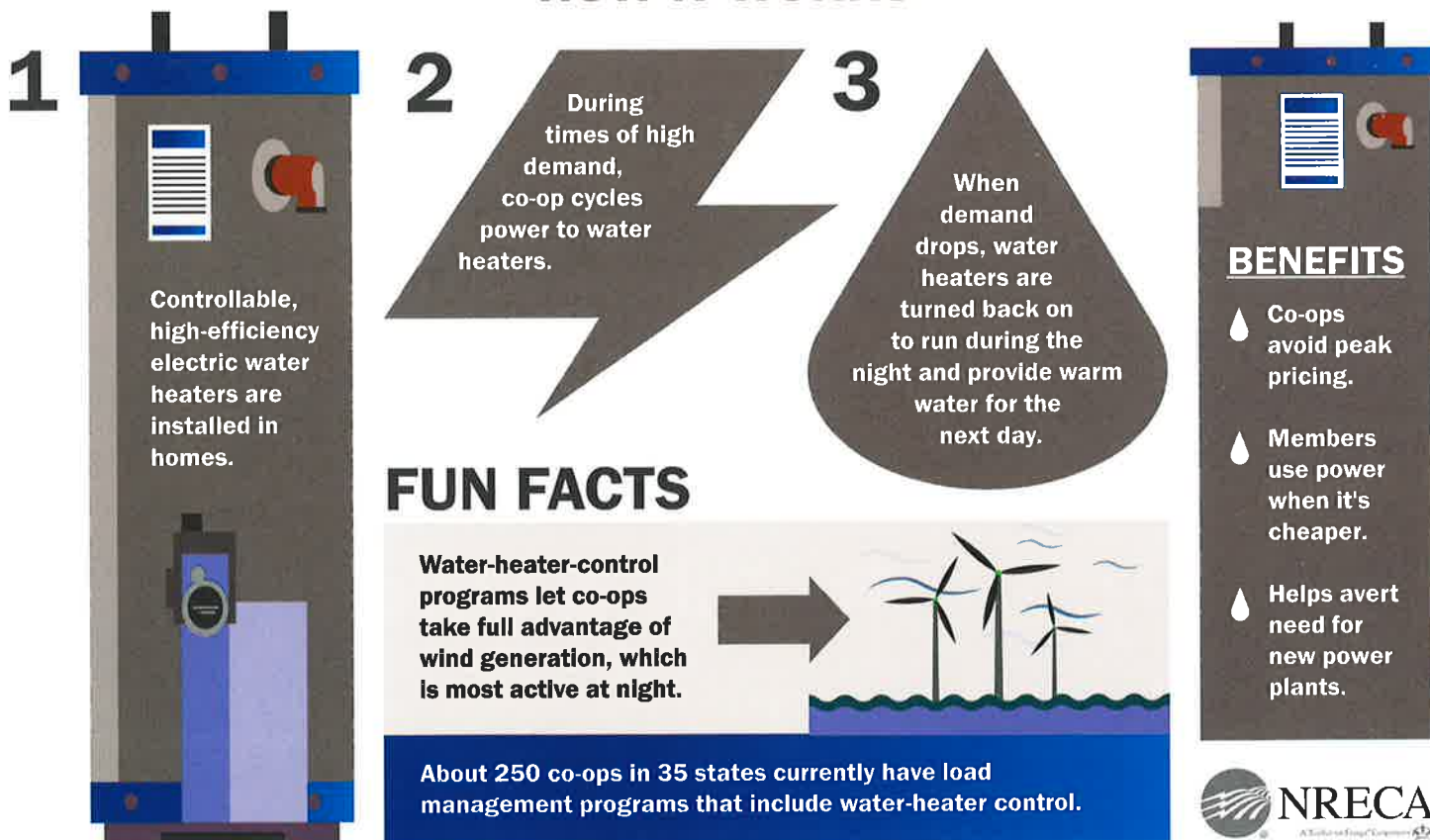


Reduce peak demand. Lower rates.

Energy demand is high when your co-op website's peak-demand gauge registers yellow or red, at which time we ask that members consider reducing energy consumption. You can reduce energy use by turning off appliances such as your washing machine, dryer, space heaters and air conditioner as well as unplugging any unused chargers and other electronics.

WATER HEATER DEMAND RESPONSE

HOW IT WORKS



Appliance Use

Electricity powers many time- and labor-saving devices. These appliances work around the clock, whenever you need them. The wise use of appliances can reduce your electricity consumption.

Think about how you use your appliances:

- Are your appliances **ENERGY STAR®** certified?
- Turn off the television (and connected devices)

when you leave the room.

- If you have more than one refrigerator or freezer, are they all utilized? Even unplugging one that you do not need can help save electricity. (pg. 7)

These are prime considerations that affect the amount of electricity you use to maintain your lifestyle. Everyone can make small changes that make a difference!

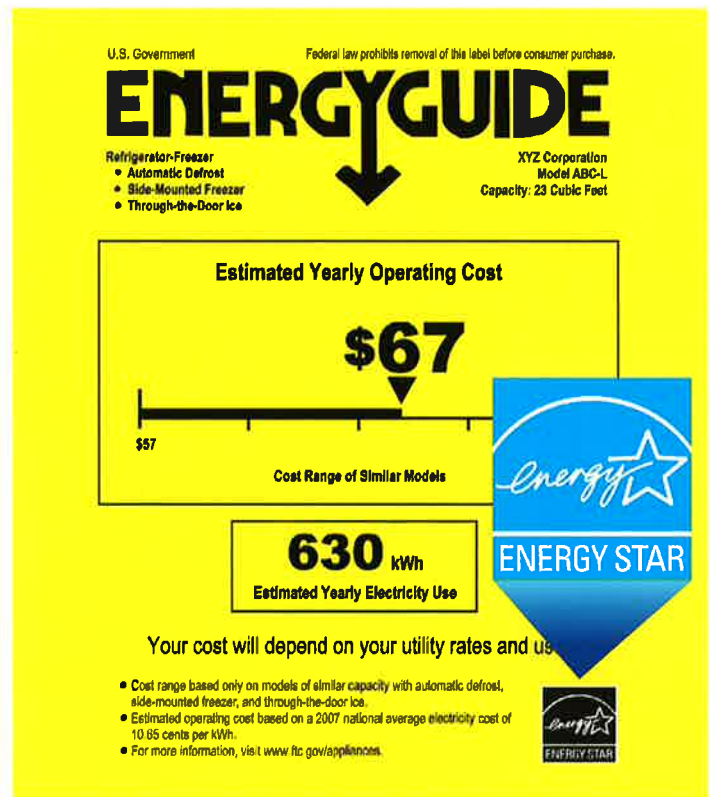
LOOK FOR THE BLUE LOGO

To qualify for your cooperative's incentive program, appliances must be ENERGY STAR® certified. Products that have earned this designation will have a blue ENERGY STAR® sticker visible on the appliance.

Since 1992, more than 6 billion ENERGY STAR® certified products have been sold, saving nearly 4 trillion kilowatts of electricity and achieving over 3 billion metric tons of greenhouse gas reductions - equivalent to the annual emissions of more than 600 million cars.

ENERGY STAR® is a program within the U.S. Environmental Protection Agency (EPA) that provides simple, credible and unbiased information for consumers and businesses. Be sure to look for the blue ENERGY STAR® box when you shop for your next appliance or light bulb.

The blue **ENERGY STAR®** box is different than the yellow **Energy Guide** affixed to appliances. An item can have a yellow Energy Guide tag and claim to be energy efficient, but not be ENERGY STAR® certified. Look for an Energy Guide tag with an ENERGY STAR logo at the bottom to ensure you maximize energy efficiency.



ENERGY EFFICIENCY AND CONSERVATION REFERENCES:

Touchstone Energy Cooperatives: www.touchstoneenergy.com

ENERGY STAR®: www.energystar.gov

U.S. Department of Energy (tax credits, rebates, savings, weatherization):
www.energy.gov

Energy Education Council: www.energyeducation.org





Save now

- | | | |
|--------------------|---------------------|--|
| 1. Pull the plug | 4. Lower the blinds | 7. Adjust water heater |
| 2. Turn off lights | 5. Seal air ducts | 8. Wash clothes in cold water; hang to dry |
| 3. Seal the cracks | 6. Add insulation | |

Find out what you can do at TouchstoneEnergy.com/Efficiency.

WHY IS MY ELECTRIC BILL HIGHER THAN MY NEIGHBOR'S?

Your electric bill is a result of your habits and behaviors, as well as the choices you make to stay comfortable. It reflects the amount of electricity consumed by you and your family in the past month.

Your neighbor's home may be different in terms of the number of people living there, lifestyle, size and age of the home, equipment/electronics, etc. These and other factors make a comparison with your neighbor less meaningful.

Don't overlook hobbies or businesses that operate from home. They also affect the amount of electricity you use.



of electricity. If you still have questions, contact your electric cooperative.

Record

Take action to better understand how energy is used in your home. To start, track your current consumption utilizing your cooperative's online bill pay program. Advances in technology allow you – the member – to utilize these tools to monitor trends or patterns over time. If you're not enrolled in an online bill pay program, set a time each day to jot down the reading on the electricity meter outside your home. 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 kilowatt-hours used. Track how many people were home, how they used electricity and the weather conditions to see how this impacts daily energy use.

Contact your electric cooperative if you have questions regarding your energy use. Their trusted energy experts can walk you through what could be causing increased electricity consumption throughout the day. They can also recommend a qualified electrician to check wiring and appliances for faults or other malfunctions.

Check

If your electric bill seems higher than expected, sometimes you'll find equipment using electricity that you thought was turned off. It could be a well pump; heat tape; baseboard electric heat; or basement, closet or attic lights.

If no problems are found, your electric cooperative may have a portable Kill-A-Watt meter you can borrow. These devices allow members to see the electricity consumption of items plugged into them. By comparing your recorded use with our list for home appliances and equipment (pgs. 7-8), you can determine whether your equipment is using an unusually high amount



Act: Use less and impact your electric bill

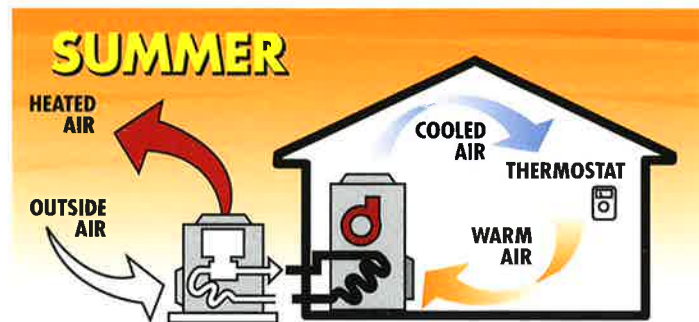
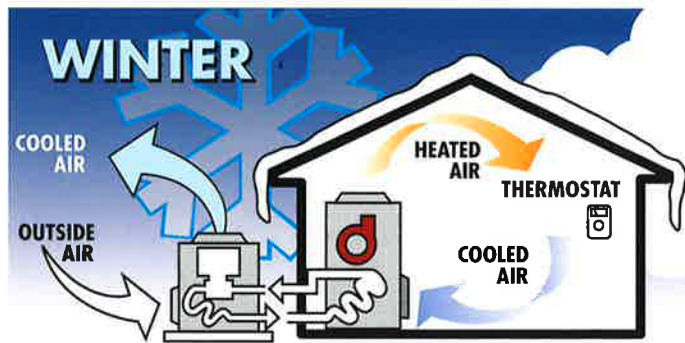
Change your habits. Start with easy changes.

- Adjust the AC a few degrees warmer.
- Maintain heating and cooling systems by replacing filters and cleaning coils.
- Advanced power strips can reduce the amount of standby electricity used. They can sense when certain devices are on, off or in standby mode and automatically cut power to certain outlets.
- Turn lights off when leaving a room.
- Insulate hot water pipes.
- Utilize the energy-efficiency rebate program offered by your local electric cooperative.

AIR-SOURCE/GEOTHERMAL HEAT PUMPS

Air-source and geothermal heat pumps can efficiently heat and cool your home with one system. Members can receive a rebate after installation for either type of unit. Either system can be installed in a new or existing home, but there are differences.

Air-source heat pumps use air from outside the home to heat or cool inside. Cold climate air-source heat pumps are being tested below 0°F. When it gets really cold, a back-up heat source is needed, such as a gas or propane furnace. This is known as a dual-fuel system, and it is still efficient because it is easier to pull heat out of the air than to make heat.



Geothermal heat pumps use the consistent temperature of soil below the frost line (about 52 degrees). A geothermal heat pump uses fluid-filled coils installed underground to move heat. In the summer, the system pulls heat from the home and transfers it to the soil through the fluid in the coils. In the winter, it works in reverse and the indoor unit compresses heat from the soil to a higher temperature to heat the home. Because the fluid in the coils enters the home at 52 degrees, it doesn't need as much energy to add more heat to the home.

A geothermal system can help a home owner save up to 70 percent in annual heating and cooling costs. While the initial installation cost is more than a traditional HVAC unit, the savings over the life of the system help members save energy and money in the long run.



POWERED SMART Efficient | Smart | Green

Electricity generated in our region from renewable energy is growing. **A greener grid paired with improved energy-efficient products is beneficial electrification.**

Beneficial electrification

encourages choosing appliances or equipment powered by electricity that have – historically – been powered by fossil fuels. Examples include water heaters, HVAC (heating, ventilation and air conditioning) systems,

vehicles, stoves, clothes dryers and even lawn tools and commercial forklifts. When this happens, members benefit from reduced exposure to emissions or fumes, no open flames in the home, quieter operation and more efficient appliances.

As electric utilities incorporate more renewable energy sources into their generation portfolios and make existing generation technologies cleaner, less fossil fuels are used to generate electricity. Even with more electronics than ever, improved energy efficiency means members are making the most of every kilowatt-hour.

POWERED SMART ELECTRIC VEHICLES

	HYBRID	PLUG-IN HYBRID (PHEV)	BATTERY ELECTRIC VEHICLE (EV)
RANGE	11-gallon tank	12-48 mi. (electric); 200-640 mi. total	110-400 mi.
FUEL TYPE	gasoline	gasoline + battery	battery
MILES PER GALLON EQUIVALENT	43-58 mpg	42-133	68-141
PLUG-IN TO CHARGE?	No	Yes	Yes

How Will You Charge The Vehicle?

TIP: DOWNLOAD AN APP ON YOUR SMARTPHONE TO HELP LOCATE CHARGING STATIONS WHEN YOU TRAVEL.

Based on surveys of electric vehicle (EV) owners, 80 percent of charging occurs at home. There are different levels of charging stations available. The information below may help you decide which is best for your needs. If you do not want to charge a vehicle, a conventional hybrid will use less gasoline than non-hybrid models.

LEVEL 1 3 to 5 electric miles



Requires access to a 120-volt outlet in an area where you can recharge the car overnight (or have a qualified electrician install one in a convenient location).

LEVEL 2 10 to 30 electric miles



Requires installation of a 240-volt hardwired EV charger or the appropriate 240-volt receptacle for a plug-connected charger (installation must be completed by a qualified electrician). Some businesses offer Level 2 charging stations for their employees.

Electric Vehicle Charging Levels

	LEVEL 1 CHARGING	LEVEL 2 CHARGING	DC FAST CHARGING <small>not for home charging or most PHEVs</small>
VOLTAGE	120V single-phase AC	208-240V single-phase AC	480V single-phase AC
AMPS	12-15	<50 (typically 30)	60 to 420
CHARGING LOAD	1.8 kW	3.6-11 kW (typically 7.2 kW)	50-150 kW
CHARGING TIME	3-5 electric miles per hour	10-30 electric miles per hour	2-9 electric miles per minute

volts x amps = watts | watts / 1,000 = kilowatts (kW) | typical range per kilowatt-hour (kWh) = 3 miles

BEFORE YOU BUY

Talk to your local electric cooperative before purchasing an EV or PHEV to make sure the proper infrastructure is available to accommodate a home charger. Co-op employees can also discuss possible EV programs available at the cooperative, including incentives for Level 2 chargers. Members looking for more affordable EVs should check with local dealerships to see if they offer used EVs for sale.

Other considerations

- Install the charger in a place near a frequent parking spot, such as in a shed, garage or carport. Sheds and garages limit exposure to the elements and prevent others from using your equipment. A Level 2 charger plus installation can cost between \$250 and \$1,000.
- Ensure available space on the floor, walls and ceilings. Be mindful of overhead doors or objects that may obstruct a vehicle's ability to plug in. Avoid locations that will require the cord to be wrapped around or draped over a vehicle.

APPLIANCE ENERGY USE GUIDE

Figures are to be used as a general guide for electricity use. Your specific appliance's use may vary. For this purpose, one month is 30 days.

Kitchen	Use	kWh use	kWh/month	Cost
Air Fryer	2 hours/month	1.2/hour	2	
Coffee Maker	30 pots/month	0.375/pot	11	
Deep Fat Fryer	5 hours/month	1/hour	5	
Dishwasher (air dry)	30 loads/month	0.27/load	8	
Dishwasher (heated dry)	30 loads/month	0.73/load	22	
Electric Griddle	13 hours/month	1.4/hour	18	
Electric Grill (BBQ)	6 hours/month	1.75/hour	11	
Garbage Disposal	0.5 hours/month	0.67/hour	0.3	
Instant Pot	7 hours/month	1/hour	7	
Microwave	15 hours/month	1.45/hour	21	
Range (stove top & oven)	30 hours/month	3/hour	90	
Induction Range	30 hours/month	2.5/hour	75	
Slow Cooker (6 qt)	12 hours/month	0.24/hour	3	
Toaster	20 times/month	0.024/use	0.5	
Toaster Oven	6 hours/month	1.4/hour	8	
Food Storage				
	Use	kWh use	kWh/month	Cost
<i>There was a significant improvement in energy-efficiency standards for refrigerators in 2000; negligible changes since.</i>				
Refrigerator: side by side (pre-2000)	24 hours/day, 7 days/wk	0.15/hour	109	
Refrigerator: side by side	24 hours/day, 7 days/wk	0.076/hour	55	
Refrigerator: top freezer (pre-2000)	24 hours/day, 7 days/wk	0.118/hour	85	
Refrigerator: top freezer	24 hours/day, 7 days/wk	0.05/hour	36	
Refrigerator: bottom freezer (pre-2000)	24 hours/day, 7 days/wk	0.127/hour	91	
Refrigerator: bottom freezer	24 hours/day, 7 days/wk	0.062/hour	45	
Refrigerator: Compact	24 hours/day, 7 days/wk	0.025/hour	18	
Refrigerator: Compact with top freezer	24 hours/day, 7 days/wk	0.037/hour	27	
Freezer: upright with manual defrost (pre-2000)	24 hours/day, 7 days/wk	0.07/hour	50	
Freezer: upright with manual defrost	24 hours/day, 7 days/wk	0.05/hour	36	
Freezer: upright with auto defrost (pre-2000)	24 hours/day, 7 days/wk	0.215/hour	155	
Freezer: upright with auto defrost	24 hours/day, 7 days/wk	0.081/hour	58	
Freezer: chest (pre-2000)	24 hours/day, 7 days/wk	0.078/hour	56	
Freezer: chest	24 hours/day, 7 days/wk	0.043/hour	31	
Electronics				
	Use	kWh use	kWh/month	Cost
Cable Box	4 hours/day, 7 days/wk	0.032/hour	4	
Computer and Monitor	4 hours/day, 7 days/wk	0.17/hour	20	
Cordless Telephone	24 hours/day, 7 days/wk	0.003/hour	2	
DVD Player	3 hours/day, 7 days/wk	0.012/hour	1	
DVR	4 hours/day, 7 days/wk	0.03/hour	4	
Gaming Console	4 hours/day, 7 days/wk	0.039/hour	5	
Laptop/Notebook	4 hours/day, 7 days/wk	0.044/hour	5	
Printer	10 min/day, 7 days/wk	0.07/hour	0.4	
Television: Standard	4 hours/day, 7 days/wk	0.15/hour	18	
Television: 55"-59" LCD (LED; 4K UHD)	5 hours/day, 7 days/wk	0.083/hour	13	
Television: Rear Projection	4 hours/day, 7 days/wk	0.186/hour	22	
Wireless Router	24 hours/day, 7 days/wk	0.007/hour	5	
Lighting				
	Use	kWh use	kWh/month	Cost
Incandescent (60-watt)	4 hours/day/7 days/wk	0.06/hour	7	
Incandescent (100-watt)	4 hours/day/7 days/wk	0.1/hour	12	
LED (6-8 watts--equivalent of 60-watt incandescent)	4 hours/day/7 days/wk	0.001/hour	0.1	
LED (19 watts--equivalent of 100-watt incandescent)	4 hours/day/7 days/wk	0.002/hour	0.2	

General Household	Use	kWh use	kWh/month	Cost
Clothes Dryer	20 hours/month	2.8/hour	56	
Clothes Dryer (heat pump)	20 hours/month	0.73/hour	15	
Clothes Washer: front loading	25 loads/month	0.33/load	8	
Clothes Washer: standard top loading	25 loads/month	0.77/load	19	
Roomba®	66 cycles/month	0.048/cycle	3	
Vacuum Cleaner	2 hours/month	0.62/hour	1	
Water Heater (average for 4 people)	1,800 gallons	4.5/hour	400	

Heating and Cooling	Use	kWh use	kWh/month	Cost
Air Cleaner (Ionizer)	24 hours/day, 7 days/wk	0.07/hour	50	
Air-Source Heat Pump (heat + AC)	varies by season	7,200/year	600	
Central Air	400 hours/season	3/hour	1,200/season	
Dehumidifier	12 hours/day, 7 days/wk	0.6/hour	216	
Electric Blanket	8 hours/day, 7 days/wk	0.1/hour	24	
Electric Fireplace	4 hours/day, 7 days/wk	1.5/hour	180	
Fans-Ceiling	8 hours/day, 7 days/wk	0.078/hour	19	
Fans-Portable	3 hours/day, 7 days/wk	0.03/hour	3	
Geothermal System	varies by season	9,200/year	767	
Heated Mattress Pad	8 hours/day, 7 days/wk	0.04/hour	10	
Humidifier	8 hours/day, 7 days/wk	0.12/hour	29	
Portable Space Heater (1,500 watts)	4 hours/day, 7 days/wk	1.5/hour	180	
Window Air Conditioner (12,000 btu/hour)	8 hours/day, 7 days/wk	1.6/hour	384	

Miscellaneous	Use	kWh use	kWh/month	Cost
Aquarium	24 hours/day, 7 days/wk	0.04/hour	29	
Hot Tub	24 hrs/day, 7 days/wk	0.35-0.56/hour	252-403	
Swimming Pool Pump (1 HP)	8 hours/day, 7 days/wk	1/hour	240	

Farm Miscellaneous	Use	kWh use	kWh/month	Cost
Aerated Septic System	24 hours/day, 7 days/wk	0.38/hour	274	
Engine Block Heater: 500-watt	240 hours/month	0.5/hour	120	
Engine Block Heater: 800-watt	240 hours/month	0.8/hour	192	
Engine Block Heater: 1500-watt	240 hours/month	1.5/hour	360	
Engine Block Heater: 2500-watt (diesel engine)	240 hours/month	2.5/hour	600	
Farm Motor: 10 HP	1 hour/day, 7 days/wk	7.46/hour	224	
Heat Tape: 6'	24 hours/day, 7 days/wk	0.05/hour	36	
Tank Heater (varies)			40-700	
Water Pump: 1/2 HP	60 hours/month	0.5/hour	30	
Water Pump: 1 1/2 HP	60 hours/month	1.5/hour	90	

Phantom Loads	Use	kWh use	kWh/month	Cost
Cell Phone Charger	24 hours/day, 7 days/wk	0.00026/hour	0.2	
Computer in Sleep Mode (varies by model)	24 hours/day, 7 days/wk	0.021/hour	15	
Digital Cable Box	24 hours/day, 7 days/wk	0.018/hour	13	
DVD Player	24 hours/day, 7 days/wk	0.0016/hour	1	
Gaming Console - Off (varies by model)	24 hours/day, 7 days/wk	0.001/hour	0.7	
Gaming Console - Standby/Ready (varies by model)	24 hours/day, 7 days/wk	0.023/hour	17	
Microwave Oven with Clock	24 hours/day, 7 days/wk	0.003/hour	2	
Satellite Cable Box	24 hours/day, 7 days/wk	0.015/hour	11	
Stove with Electric Ignition	24 hours/day, 7 days/wk	0.014/hour	10	
Wall Cube Power Supply (AC Adapter/charger)	24 hours/day, 7 days/wk	0.006/hour	4	