

## **COMMON HOUSEHOLD APPLIANCE ENERGY USE**

Listed below are some common appliances, their typical or average wattage and an estimated kilowatt. There is also a simple formula for calculating operating costs below.

<b>Appliance</b>	<b>Watts</b>	<b>Hours/Mo</b>	<b>kWh/Mo</b>
Air Conditioner (Room) 6,000 BTU	750	120 – 730	90 – 548
Air Conditioner (Central) 2.5 Tons	3500	240 -730	1 – 47
Ceiling Fan	65	15 – 730	1 -47
Clock	5	730	4
Clothes Dryer	5000	6 – 28	30 – 140
Clothes Washer, Automatic (With Electric Water Heating)	1800	7 -40	13 -72
Clothes Washer, Automatic (With Non-Electric Water Heating)	500	7 -40	4 – 20
Coffee Maker	900	4 – 30	4 – 27
Computer (Monitor & Printer)	200	25 – 160	5 – 32
Crock Pot	250	8 – 24	2 – 6
Dehumidifier	350	120 – 730	42 – 256
Dishwasher (With Electric Water Heating)	1500	8 – 40	12 – 60
Dishwasher (With Non-Electric Water Heating)	400	8 – 40	3 – 16
Drill	300	3 – 7	1 – 2
Electric Blanket	180	30 – 90	5 – 16
Electric Heater (Portable)	1200	30 – 90	36 – 108
Fan (Portable)	115	18 – 52	2 – 6
Food Blender	390	3 – 5	1 – 2
Food Freezer (15 cu. Ft.)	335	180 – 420	60 – 141
Frying Pan / Hot Plate	1150	10 – 20	12 – 23
Furnace Fan Motor (Intermittent)	350	160 – 415	56 – 145
Furnace Fan Motor (Continuous)	350	730	256
Heating Pad	65	15 – 30	1 – 2
Heat Tapes	200	250 – 500	50 – 100
Humidifier (Portable)	100	80 – 540	8 -54
Iron (Hand)	1000	1 – 10	1 – 10
Lighting Single Lamp (60W)	60	17 – 200	1 -12
Compact Fluorescent (60W Equiv)	18	17 – 200	3 -4
Ceiling Fixture (3 bulbs)	180	6 – 195	1 – 35

Tri-Light (Table Lamp)	100	10 – 200	1 -20
Chandelier (5 Lamp)	300	10- 183	3 – 55
Fluorescent (2 Tube 4 ft)	100	10 -200	1 -20
Microwave Oven	1000	5 – 30	5 – 30
Power Saw	275	2 – 4	6 – 1
Range	1250	10 – 50	125 – 625
Range (Self Cleaning Cycle Only)	3200	1	3
Refrigerator – Freezer Frost Free (17 cu. Ft.)	500	150 – 300	75 – 150
Refrigerator (Non Frost Free (13 cu. Ft.)	300	190 – 300	57 – 90
Sewing Machine	75	4 -14	3 -1
Stereo	30	1 – 170	.03 – 5
Television – 27” Color or Flat Screen	120	60 – 440	7 – 53
Television – 53” – 61” Projection Screen	170	60 – 440	10 – 75
Toaster	1150	1 – 3.5	1 -4
Toaster Oven w/broiler	1350	4 – 10	5 -14
Vacuum Cleaner (Portable)	800	2 – 6	2 – 5
Vehicle Headbolt Heater (Medium)*	1000	60 – 243	60 – 243
Vehicle Headbolt Heater (large car or truck)*	1500	60 – 243	90 – 365
Video Cassette Recorder / DVD	40	50 – 200	2 -8
Water Bed Heater	400	150- 300	60 – 120
Water Heater – Typical Family of 4	3800	100 -1 50	380 – 570
Water Pump (Deep well – moderate power)	500	10 – 50	5 25
Water Pump (Dee p well – higher powered)	1100	10 -50	11 -55

A 100 watt bulb burning 10 hours uses only (1) kW. In order to calculate the average operating cost for any electrical appliance you can use the following formula:

$$\text{watts} \div 1000 = \text{kW} \times \text{hours of operation} = \text{kWh} \times \text{kWh rate} = \text{cost}$$

Watts can usually be found on the appliance nameplate. If the nameplate lists amp:

$$\text{volts} \times \text{amps} = \text{watts}$$

Example: How much does it cost to operate a portable electric heater? Wattage is usually given on the unit itself, or with the literature that comes with it. Our example is 1000 watts. For working purposes, let's say you use the heater an average of 45 hours during winter months (1/2 hour per day for the three coldest winter months) and that the electric rate is \$.10 per kWh hour.

To calculate for an 8 amp heater, the formula changes just a bit.

$$8 \text{ amps} \times 120 \text{ volts household current} = 960 \text{ watts} / 1000 = .96 \text{ kW} \times 45 \text{ hours} = \$43.2 \text{ kWh} \times \$0.10 = \$4.32.$$

\*Even in the coldest weather a vehicle only needs to be plugged in for two (2) hours.

## **Member Information Bulletin**

### **Customer Test for Shorts, Shocks, and High Bills**

MEA recommends that a member arrange to have a qualified electrician check their electrical wiring should there be an indication of a short circuit or shocks. However, there are a few checks the homeowner can make:

- Step 1: Turn off all circuit breakers, including the mains, usually found directly below the meter. The meter should slow down and come to a complete stop.
- Step 2: With all circuit breakers off, turn on the mains. The meter should remain stopped. If the wheel turns even slightly, this would indicate some leakage between the mains and the circuit panel. **CALL YOUR ELECTRICIAN.**
- Step 3: With the mains on, proceed to turn each circuit on separately. If one should make the meter move, determine what that circuit is for and unplug any appliances. If the meter still turns, this could be an indication of a partial short. Whenever the wheel in your meter is turning, it indicates electrical current is flowing somewhere.
- Step 4: If all the circuits appear to be correct at this point, high use or shocks could be caused by faulty appliances. Check anything that works automatically, such as water pumps, water heater, heat tapes, freezers and small room heaters. Other things to consider are frost build-up in wall outlets and switches, uninsulated hot water pipes, anti-sweat valves on toilets that can cause excessive use of hot water, or anything that has recently not been functioning as it should.

Not all electrical problems are easy to find. If you have any further questions on any of the above, call your electrician or one of our district offices.

#### **Big Lake**

Mile 51.5 Parks Hwy  
892-7398 or 761-9450  
From Anchorage: 689-9450

#### **Palmer**

163 E. Industrial Way  
745-3231 or 761-9300  
From Anchorage 689-9300

#### **Eagle River**

11623 Aurora St.  
694-2161 or 689-9600  
From Mat-Su: 761-9600

#### **Wasilla**

Creekside Plaza, Suite A-130  
376-7237 or 761-9500  
From Anchorage: 689-9500

### **ENERGY SAVING TIPS**

1. Turning down the thermostat 6 degrees can save up to 20% of your heating bill.
2. Moving furniture away from warm air registers gives a more even room temperature.
3. Open drapes on sunny days to allow warmth from the sun: close them at sundown.
4. Use lines or insulated drapes on windows.
5. Turn off the lights when not in use.
6. Keep light bulbs and fixtures clean.
7. Use one 100-watt bulb instead of two 60-watt bulbs.
8. Use florescent fixtures when possible.
9. Keep water heater temperature at the lowest recommended setting. (120-140 degrees)
10. Correct leaking faucets.
11. Use cold water whenever possible.
12. Don't leave faucets running.
13. Turn off electric ranges immediately after use.
14. Use a steamer or pressure cooker when possible for faster cooking.
15. Don't open the oven door unnecessarily.
16. Thaw frozen food ahead of time.
17. Use the self cleaning feature of your oven while the oven is still warm.
18. Use high heat only to start the cooking process.
19. Buy manual defrost refrigerators when possible, rather than self-defrosting.
20. Defrost refrigerator when frost is one quarter inch thick.
21. Vacuum cooling coils beneath or behind refrigerator at least every month.
22. Check gaskets occasionally on refrigerators and freezers.
23. Do not open the refrigerator door more than necessary.
24. If buying a freezer, select a chest type.
25. Cool leftovers before refrigerating.
26. Buy multi-door units on refrigerators whenever possible.
27. Use dishwashers for full loads only.
28. Stop the dishwasher before the dry cycle begins and air dry the dishes.
29. Select a clothes washer large enough to handle big loads.
30. Use cold water to wash clothes.
31. Use the soak cycle on heavily soiled clothes to prevent double washing.

32. Clean lint filters on clothes washer and clothes dryer often.
33. Place your clothes drying where it gets plenty of ventilation. (Non-humid air).
34. Dry clothes outside whenever possible.
35. Be sure and vent your dryer when possible to the outside air.
36. Hang clothes immediately to prevent ironing.
37. Do all ironing at once to avoid heating the iron several times.
38. Unplug all appliances or drop cords that are seldom used.
39. Walk around and unplug all duplicate appliances, for example two alarm clocks.
40. Try to run household appliances during non-peak time periods.

## **COMMON HOME PROBLEMS and SOLUTIONS**

Is your home cold, drafty, or uncomfortable? Do you have high energy bills? Peeling paint? Excessive dust? Addressing these types of home problems can make your home more comfortable, and at the same time improve its energy efficiency – saving you money on utility bills and helping to protect the environment too.

### **High Energy Bills**

High utility bills in summer and winter can often be traced to air leaks in your home's envelope, inefficient windows or inefficient or incorrectly installed heating and cooling equipment, or poorly sealed and insulated ducts.

### **Mold, Mildew or Musty Odors**

Water leaks or high humidity can lead to mold and mildew. This can cause wood rot, structural damage, peeling paint, and a variety of health problems. High humidity in homes with central air conditioners can be traced to improperly sized or installed air conditioners.

### **Damp Basement**

A damp basement is commonly caused by moisture migrating through the foundation. As this moisture evaporates, it increases indoor humidity and can promote the growth of mold-resulting in an uncomfortable house.

### **Cold Floors in Winter**

Some types of floor coverings (such as wood, stone, tile, or concrete) will naturally feel cold on bare feet. However, insufficient insulation of air infiltration can also cause cold floors.

### **Drafty Rooms**

Cold air coming into or going out of your house, especially through leaks hidden in the attic and basement, can cause rooms to feel drafty and uncomfortable.

### **Dust**

Increased dust could be a sign that it is time to change your air filter or that your ductwork is not well sealed.

### **Moisture on Windows**

Inefficient windows or high indoor moisture levels from air leaks can result in condensation, frost, or pools of water on windows and sills.

### **Ice Dams**

Warm air inside your home leaks into the attic and will warm the underside of the roof causing snow and ice to melt and refreeze as it runs off your roof-forming icicles and dams.

### **Peeling Paint**

Peeling or cracking paint on your home's exterior may be a sign of a humidity problem or improper paint application.

### **Hot or Cold Rooms**

Significant differences in temperature from one room to another could be caused by several factors, including inadequate insulation, air leakage, poor duct performance, and improperly installed heating, ventilation, and air conditioning (HVAC) system.

\*Even in the coldest weather a vehicle only needs to be plugged in for two (2) hours.

## **ANOTHER 28 WAYS TO SAVE ON YOUR ELECTRIC BILL**

1. Air dry dishes instead of using your dishwasher's drying cycle
2. Defrost refrigerators and freezers before ice buildup becomes ¼ inch thick.
3. Cooking less in the summer saves energy while cooling down your house and your body. Pay attention to long-range weather forecasts'. Take advantage of cooler days to prepare a few extra meals and stash them in the freezer. It will be micro-wave ready during a hot spell.
4. Lower the thermostat on your hot water heater to 120 degrees.
5. Take short showers instead of baths.
6. Install aerating, low-flow faucets and showerheads.
7. Clean the lint filter in the dryer after every load to improve air circulation.
8. Consider air-drying clothes on clothes lines or drying racks. Air-drying is recommended by clothing manufacturers for some fabrics.
9. Don't over-dry your clothes. If your machine has a moisture sensor, use it
10. Dry towels and heavier cottons in a separate load from lighter-weight clothes
11. Periodically inspect your dryer vent to ensure it is not blocked. This will save energy and may prevent a fire. Manufacturers recommend using rigid venting material, not plastic vents that may collapse and cause blockages.
12. Use the cool-down cycle to allow the clothes to finish drying with the residual heat in the dryer.
13. Wash and dry full loads. If you are washing a small load, use the appropriate water-level setting.
14. Use task lighting; instead of brightly lighting an entire room, focus the light where you need it. For example, use fluorescent under-cabinet lighting for kitchen sinks and countertops under cabinets.
15. Use dimmers, motion sensors, or occupancy sensors to automatically turn on or off lighting as needed and prevent energy waste.
16. Take advantage of daylight by using light-colored, loose-weave curtains on your windows to allow daylight to penetrate the room while preserving privacy. Also, decorate with lighter colors that reflect daylight.
17. Installing a skylight can provide your home with day lighting and warmth, minimizing your heating, cooling, and lighting costs.
18. Install shades, awnings or sunscreens on windows facing south and/or west to block summer light. In winter, open shades on sunny days to help warm rooms.
19. During the heating season, keep the draperies and shades on your south facing windows open during the day to allow the sunlight to enter your home and closed at night to reduce the chill you may feel from cold windows.

20. Consider using three-way lamps; they make it easier to keep lighting levels low when brighter light is not necessary.
21. Use outdoor lights with a photocell unit or a motion sensor so they will turn on only at night or when someone is present. A combined photocell and motion sensor will increase your energy savings even more
22. Set your thermostat as low as is comfortable when home
23. Rearrange your rooms. Move your furniture around so you are sitting near interior walls – exterior walls and older windows are likely to be drafty. Don't sit in the draft
24. Close the damper when the fireplace is not being used. Try not to use the fireplace and central heating system at the same time.
25. Unplug battery chargers when the batteries are fully charged or the chargers are not in use.
26. Plug home electronics, such as TV's and DVD players, into power strips; turn the power strips off when the equipment is not in use. (TV's and DVD's in standby mode still use wattage).
27. Turn off your computer and monitor when they are not in use.
28. Consider buying a laptop for your next computer upgrade; they use much less energy than desktop computers.

U.S. DEPARTMENT OF ENERGY

<http://www.energy.gov/applianceselectronics.htm>



## Common Energy Misconceptions

1. There is a common misconception that screen savers reduce energy use by monitors; they do not. Automatic switching to sleep mode or manually turning monitors off is always the better energy-saving strategy.
2. Studies have shown that using rechargeable batteries for products like cordless phones and PDAs is more cost effective than throwaway batteries.
3. According to research, a load of dishes cleaned in a dishwasher requires 37 percent less water than washing dishes by hand. However, if you fill the wash and rinse basins instead of letting the water run, you'll use half as much water as a dishwasher.
4. An electrical wiring problem can lead to electricity "leaking," out of the wires and into the abyss, causing a person to pay for electricity that they don't use. You can check this for yourself. Turn off everything in your home, (and unplug things that use standby power, like TV's), and go look at your electric meter. Notice it isn't spinning any more.
5. If you're gone for an extended period of time your energy use should drop considerably. Untrue, the items in your home which consume the most energy continue working while you're away: furnaces, hot water tanks, refrigerators and freezers for example. In fact, the energy needed to heat your unoccupied house may be greater when the dwelling is left empty. When home people generate heat simply by what they do while there, when sitting empty the house has only the furnace to generate heat.

## ***Energy Efficiency FACTSHEET***

Set refrigerator temperatures between 37 and 40 degrees (F). Clean the coils. Keep the refrigerator stocked: it takes more energy to cool an empty refrigerator.

When washing and rinsing clothes use cold water. In the summer air dry clothes, but not indoors as this creates unwanted mold and moisture problems.

Always use the bathroom or kitchen exhaust fans while showering or cooking and baking to avoid potential moisture problems.

Cook with a microwave or toaster oven for smaller items.

Install a sheet metal fireplace cover, especially if the flue damper does not fit tightly.

Increase attic insulation to R-38, (the current requirement for new homes).

Insulate floors over unheated spaces to R-19.

EnergyIdeasClearinghouse

Visit <http://www.energyideas.org>

## Winter Holiday Time Energy-Saving Tips

When holiday time rolls around, your energy bills can rise considerably, what with your stove, oven, and dishwasher running overtime, and the door to your refrigerator standing open frequently as family members search for hidden treats. Thankfully, it's not difficult to keep added holiday energy costs to a minimum.

Turkey is traditionally stuffed early in the morning and roasted for hours. Since it's a long, slow cook, there's no need to preheat your oven, even when the recipe suggests it. This is also true for a holiday ham: unless you're baking breads or pastries, you may not need to preheat the oven at all.

Don't open the oven door: instead, turn on the oven light and check thru the window. Opening the oven door lowers the temperature inside-by as much as 25 degrees, which increases cooking time and wastes energy.

As long as your oven is on, cook several items at the same time. Just leave enough room for the heat to circulate around each baking dish.

In an electric oven, you can turn the heat off several minutes before your food is fully cooked as long as the door remains closed. The same principle applies to your electric range-top, the metal heating elements stay hot even after the electricity is turned off.

Don't overlook the other cooking appliances: fast and efficient microwave ovens use around 50 percent less energy than conventional ovens, and they don't heat up your kitchen. Use them to bake yams, steam vegetables, or heat up leftovers. They're especially efficient for smaller portions or items.

Remember your small appliances are great energy savers that can save you money all year long. Crock-pots, on average, will cook a whole meal for about 17 cents worth of electricity. Electric skillets can steam, fry, sauté, stew, bake, or roast a variety of foods. And, if you're baking or broiling small food items, a toaster oven is ideal because they use one-third the power of a large oven.

Your refrigerator and freezer also get a workout over the holidays. They remain one of the largest energy consumers in your house, often accounting for as much as 15 percent of your homes total energy use. Keep their doors closed as much as possible. It's easy to keep these appliances full over the holidays. It's also energy efficient, because when full, the cold items help your appliance recover each time the door is opened. Make sure cool air can still circulate properly around the food.

Those festive little lights we all enjoy putting up can turn a jubilant reveler into a bitter Ebenezer Scrooge when the electric bill rolls in. To avoid this, take an energy efficient look at the bulbs you're stringing on your trees and the eaves of your home. Did you know those large, traditional colored bulbs you use may require up to 10 watts per bulb? Consider buying new miniature lights, or L.E.D. lights, which use about 70 percent less energy and last much longer. If you prefer the brilliance of the larger lights, switch to 5-watt bulbs, which use about 30 percent less energy than 7- to 10-watt bulbs. Use an automatic timer, both indoors and out, removing the burden of turning the lights on and off. Make sure the timer you use is rated to handle the total wattage of your lights.

<http://www.consumerenergycenter.org/tips/holiday.html>

## **Do Things Use Power When They're Turned Off?**

How are we actually saving the electricity in our house and where is this saved electricity stored when we are not using it? Don't the electricity power generators keep on generating electricity all day?

**Yes, the generators run 24/7, but when you use more electricity, the generators have to burn more fuel. When you switch off the lights, the generators need less fuel. If you were powering some light bulbs with a stationary bicycle, it would take you a lot more effort to power ten light bulbs than five. The generator works the same way.**

I was shocked to find you could run 200 ceiling fans using the same amount of power needed to run one electric clothes dryer.

**Actually, you could run 200 to 800 ceiling fans with the electricity required to run an electric clothes dryer. Ceiling fans are just really efficient, and dryers are just huge energy hogs, simple as that.**

I've heard several times that toaster ovens use electricity even when they're off.

**Not unless it has a clock of some kind, and I've never seen a toaster oven with one. Some devices, like microwaves and VCR's, draw a small amount to power the time display, often 5 watts or less.**

If an appliance is turned off but the wall switch is left on, does this use power?

**No. Remember, though, that some devices draw power even when they're "off," such as televisions, home computers, etc.**

If you turn on the switch to operate a lamp, and the lamp has no light bulb, does it consume any electricity?

**No, it doesn't. Same as if it has a light bulb that's burned out.**

I am wondering with all the technology available to humans today why we are so slow to switch or adapt to other ways of producing electricity or heat.

**You're assuming that we have the capability of discovering or inventing some other cheap form of energy. Most observers think this is unlikely. The research hasn't been ignored, you just don't hear about it because it hasn't been very productive.**

## *Why is my Electric Bill so High?*

To figure out why your electric bill is “so high,” the first thing you need to do is to **figure out what’s normal**. If your bill has spiked recently that’s easy: just look at your old bills and see how much your usage has gone up. Look only at the amount of electricity you used in kilowatt hours. Don’t look at the cost, because the cost could have gone up for other reasons, such as an increase in rates.

**Maybe your bill hasn’t gone up but you just think it’s always been too high?** In that case the first thing you can do is to compare your use to what’s normal. A typical Alaskan family uses 800 KWH per month. If you are anywhere near that with a 3-person household you’re normal.

If you still think there’s an unknown reason why your electrical use has been so high recently the next thing you should do is make sure the bill you received is accurate. Read your meter and compare its reading to the reading on your bill, they should be reasonably close. If your meter reading matches your bill, your next step is to **verify that your meter isn’t running gratuitously**.

Shut off all the breakers and see if the meter is still spinning. If it is there is an electrical short in something plugged into one of your breakers. Doing a breaker test will identify what breaker the suspect item is plugged into. The next step is to make **sure the meter doesn’t run when everything is turned off**. That way when you start turning appliances back on to measure their use, we can be sure you’re measuring only that appliance and not some other appliance as well. To do this turn off every light in the house and physically unplug every appliance from the wall, (simply turning it off isn’t good enough for some appliances). Once everything that can be unplugged is unplugged, and the rest is turned off, flip the breakers back on one at a time and verify that the meter does or does not still spin. If it does not still spin you have unplugged the item with the short. Plugging each item in one at a time will determine the bad item. Once the bad item has been identified discard it.

**If your meter stopped cold when you turned off all the breakers** it means you do not have a short in your system. Turn the main breaker(s) back on again, but keep the inside breakers turned off. Next check each individual inside breaker. Do this by turning one on, and then turning on one item on the breaker, like a light, and then look at the meter to see how fast the meter is moving. If the light appears to measure correctly, then turn it off, and start turning on other items and measuring them. At this **point your assumption is that one of your devices is drawing more power than it should**, such as your hot water heater or your refrigerator. Use an appliance energy guide to figure what your total use should be.

## **Member Information Bulletin II**

### **Customer Test For Turtled LCD Meters**

MEA recommends that a member arrange to have a qualified electrician check their electrical wiring should there be an indication of a short circuit or shocks. However, there are a few checks the homeowner can make, read through completely before beginning.

- Step 1: Turn off all circuit breakers, including the mains, usually found directly below the meter. The meter should slow down and come to a complete stop.
- Step 2: With all circuit breakers off, turn on the mains. The meter should remain stopped, if not, this would indicate some leakage between the mains and the circuit panel. **CALL YOUR ELECTRICIAN.**
- Step 3: With the mains on, proceed to turn each circuit on separately. There is a 5 digit display that shows the kWh reading: under it, in the lower right corner are three downward pointing triangles. These three triangles appear on the display in order from left to right. When all three triangles have appeared, they then disappear, again from left to right. These triangles are the visible indication of power flow and are similar to watching the front edge of a mechanical meter turn from left to right. Look at the speed of the triangles as they appear and disappear on the LCD screen. The faster the triangles move across the more power is being consumed. If one breaker makes the triangles move more quickly than another, determine what the circuit is for and unplug any appliances. To check the circuits using the most power you must observe the speed of the triangles scrolling across the screen. Turn off one breaker at a time and observe if the triangles scroll more slowly.
- Step 4: If all the circuits appear to be correct at this point, high use or shocks could be caused by faulty appliances. Check anything that works automatically, such as water pumps, water heater, heat tapes, freezers and small room heaters. Other things to consider are frost build-up in wall outlets and switches, uninsulated hot water pipes, anti-sweat valves on toilets that can cause excessive use of hot water, or anything that has recently not been functioning as it should.

#### **Big Lake**

Mile 51.5 Parks Hwy  
892-7398 or 761-9450  
From Anchorage: 689-9450

#### **Eagle River**

11623 Aurora St.  
694-2161 or 689-9600  
From

#### **Palmer**

163 E. Industrial Way  
745-3231 or 761-9300  
From Anchorage 689-9300

#### **Wasilla**

Creekside Plaza, Suite A-130  
376-7237 or 761-9500