

# Electricity



Electricity accounts for almost 70 percent of a home's energy use. While much of that electrical energy is used to run large appliances like refrigerators and air conditioners, the multitude of small appliances and electronics that we use every day can add up to big energy expenditures if we are not careful about how we use them.

The electric power used by a device is measured in watts, which is calculated by multiplying the current by the voltage. Most household electrical devices run on 120 V circuits; the exceptions are big items like stoves and clothes dryers. The wattage of electrical devices and electronics can be determined by looking at the Underwriter Laboratories (UL) label on the device. It will list the maximum energy consumed, often in watts but sometimes as current and volts.

Electric utilities meter the energy we use by charging us for kilowatt-hours. A kilowatt is a thousand watts; therefore a kilowatt-hour is the energy needed to power 1,000 watts for one hour. The national average residential electricity rate is roughly \$0.13 per kilowatt-hour (\$0.129), but your rate may be higher or lower. You can determine your electricity rate by looking at your utility bill. Determining how much it costs to run devices is easily accomplished when the power of the device and your electricity rate are known.

## Morning Money Crunch

How much does it cost to get ready every morning? You know how much your clothes and food cost. What about the energy you use?

### Materials

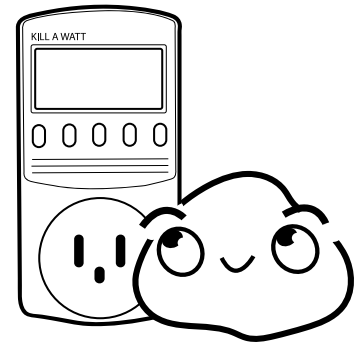
- Access to UL label on electrical devices
- Calculator
- Clock or timer

### Procedure

1. Use the list on the next page and check off the devices you use almost every morning when getting ready for your day. Add other devices not listed as needed on an additional page or transfer your list to a spreadsheet.
2. Where practical, use the UL label on each device you use to find the power that it uses in watts. You may have to record the current from the UL label and then multiply by 120 V to get the power in watts.
3. If you cannot easily access the UL label, use the table on the top off the next page to determine how much energy the average device uses.
4. Use a timer or clock to determine how many minutes each device is in use.
5. Divide the time in minutes by 60. Record this number to two decimal points as the number of hours in the table.
6. Multiply the watts of the device by the number of hours, then divide by 1,000, to get kWh for each device each morning.
7. Read your electric bill to determine the rate you are charged per kilowatt-hour. If you don't know this, use the national average of \$0.13/kWh.
8. Multiply the kWh of each device by the cost of electricity for the cost to run that device.
9. Add the "cost to use" column for each of the devices to determine how expensive your morning is. Multiply by 5 for a work week, or by 7 if you do these same things on the weekend. How expensive is your week?
10. Multiply the weekly charge by 52 to determine the yearly cost for getting ready in the morning. If it is a device you don't use all year, estimate and multiply by the number of weeks it is used.

Some devices use electricity even when turned "off." Electronics with a remote control, such as a DVD player or television, use power all the time. Microwave ovens with LED clocks, and any other device with an internal clock, also use power constantly. These are called phantom loads because while the device appears to be turned off, it is actually using energy. A smart power strip can eliminate phantom loads by turning off the power to everything plugged into it. Phantom loads are also eliminated by unplugging the device when it is not in use.

A Kill A Watt® meter is a great tool for measuring the amount of power that is being used by devices in your home. They are a relatively inexpensive purchase, and many local libraries have them available to borrow at no charge. Some local utilities make them available to their customers, too.



# Morning Money Crunch

## Average Kilowatt-hour Consumption for Common Household Devices

Device	Estimated Energy Usage
Alarm clock	3 kWh / month
Cell phone	0.08 kWh / month
Clothes dryer	3.2 kWh / load
Clothes washer	3.5 kWh / load
Coffee maker	0.4 kWh / hr
Computer	0.05 kWh / hr
Curling iron	0.05 kWh / hr
Dishwasher	1.5 kWh / load
Electric toothbrush	0.08 kWh / month
Fan	0.03 kWh / hr
Fitbit	0.08 kWh / month
Freezer	90 kWh / month

Device	Estimated Energy Usage
Garage door opener	0.01 kWh / up-down cycle
Hair dryer	1.5 kWh / hr
Internet router or modem	0.15 kWh / day
iPod	0.08 kWh / month
Iron	1.08 kWh / hr
Microwave	0.12 kWh / 5 min
Radio	0.02 kWh / hr
Refrigerator	150 kWh / month
Stove	1.25 kWh / hr
Straightening iron	0.05 kWh / hr
Toaster	0.04 kWh / use
TV	0.2 kWh / hr
Well pump (2 HP)	1.5 kWh / hr

### Data Table—Your Morning

Source: Silicon Valley Power, National Grid

Device	Power (W)	Minutes used	Hours used	kWh total	Electricity rate	Cost to use
Alarm clock (example)	2.0	60	1.00	0.002	\$0.13	\$0.0003
Cell phone						
Clothes dryer						
Clothes washer						
Coffee maker						
Computer						
Curling iron						
Dishwasher						
Electric toothbrush						
Fan						
Fitness tracker						
Freezer						
Garage door opener						
Hair dryer						
Internet router or modem						
iPod						
Iron						
Microwave						
Radio						
Refrigerator						
Stove						
Straightening iron						
Toaster						
TV						
Well pump (if you have a well)						

# Morning Money Crunch

## CONTINUED

### Discussion

1. How much does it cost to get ready every morning? \$\_\_\_\_\_.  
  
How much does it cost to get ready every morning for a year? \$\_\_\_\_\_.
2. What is the most expensive part of your morning?
3. Which parts of your morning are more expensive than you thought they would be?
4. Which parts of your morning are less expensive than you thought they would be?
5. Are there items you didn't include on the list? List these below. How do you think they compare in cost to others on the list?
6. Name three things you can do to reduce the cost of your morning. Calculate how much money you can save.