**The Cost of Electricity**

Watts and kilowatts are measurements of the work being done as electric current passes through a circuit. The higher the wattage of an appliance or device, the more work is being done and the more electricity is consumed.

One kilowatt is equal to one-thousand watts. You can convert using this formula:

**Watts / 1000 = Kilowatts**

Electricity consumption is measured by the kilowatt-hour. This is the amount of electrical energy converted over one hour of time.

You can calculate kilowatt-hours using this formula:

 **Kilowatts x Time in Hours = Kilowatt-hours**

Electricity costs vary by region, let’s use the prices shown in this sample electric bill from Southern California Edison.





The baseline-summer line shows a cost of about 13 cents, or $0.13 per kWh (kilowatt-hour). You can figure out the cost of a device by multiplying its electricity consumption in kWh by this cost.

**Electricity Consumption(kWh) x Price($) = Total Cost**

Use these formulas to determine the cost of each of these appliances of devices over a given period of time.

1. You wake up and unplug your cellphone from the wall socket. A cell phone, while charging, uses 2.6 watts/hour. Assume it charged overnight (8 hours).
2. You take out a bagel and place it in the toaster for 5 minutes. The toaster uses 1050 watts/hour.
3. One of your classes at school takes place in the computer lab. You work on an assignment for an hour. The school lab has old desktop computers that use 100 watts/hour and large CRT (tube) monitors that use 75 watts/hour.
4. Arriving back from school, you decide to microwave a Hot Pocket for a snack. You have a 1500W microwave that took 3 minutes to cook the Hot Pocket.
5. Noticing the sink full of dishes, you place them in the dishwasher and let it run for an hour and a half (including the drying cycle). Your dishwasher uses 2000 watts per hour.
6. You decide to relax for the night by playing video games on your Playstation 3. You lose track of time, and end up playing for 3 hours. The PS3 uses 197 watts/hour. You have an expensive plasma TV that uses 339 watts/hour.
7. Before going to bed for the night, you realize that you accidentally left the kitchen lights on all day (12 hours). The lighting fixtures in the kitchen have a total of 4 incandescent bulbs, each of which uses 75watts/hour.
8. What was your total electricity consumption (in kilowatt-hours) for the entire day? How much did this cost?

You decide to try to reduce your energy consumption and lower your electric bill. You make each of the following changes to your day. Calculate the difference in cost after the change.

* You fully charge your cell phone for 2 hours before you go to sleep, then unplug it for the night.
* The school finally upgrades its computers. The new desktops use 60 watts/hour, and the new LCD monitors use only 35/watts/hour.
* You purchase a more efficient Energy Star-certified dishwasher that only uses 1200 watts/hour.
* You connect your Playstation 3 to the LCD television in a different room. This TV only uses 110 watts/hour.
* You switch out your 4 incandescent kitchen light bulbs for compact fluorescent (CFL). The new ones only use 13 watts/hour. You also make an effort to only leave the lights on while in the room, which is about an hour.

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| **Appliance / Device** | **Cost Before Change** | **Cost After Change** |
| Cell Phone |  |  |
| Computers / Monitors |  |  |
| Dishwasher |  |  |
| Playstation 3 |  |  |
| Light Bulbs |  |  |