


Cost of Electricity For Everyday Items

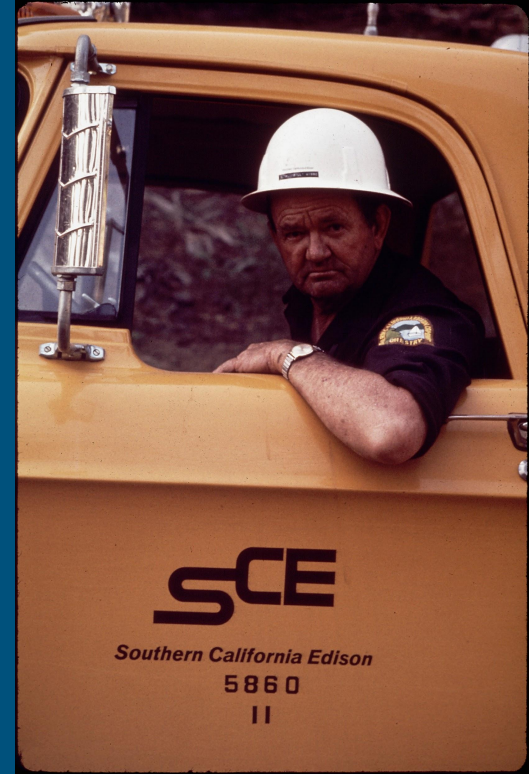


Chad V. Portugal



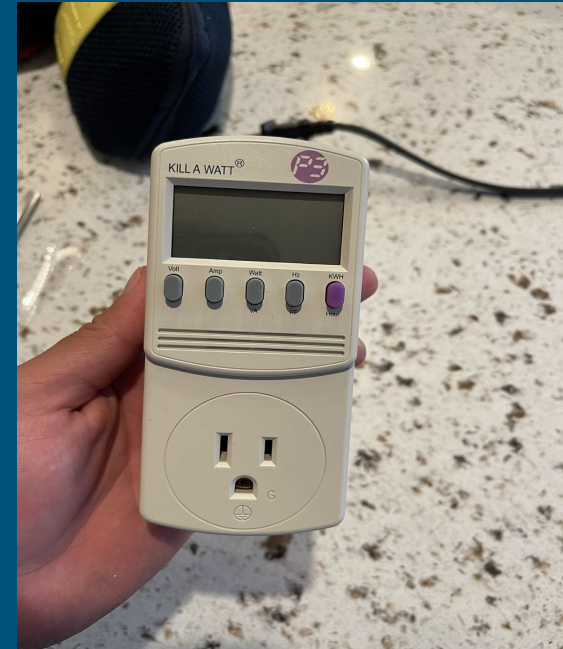
Introduction

In this experiment, I calculated the total cost of energy used for everyday electrical devices that I use in my house. This was done by measuring the wattage for each item using a wattmeter and then calculating the cost based off of hours used per day cost of kWh charged by electric company.



Measurement Tool

Wattage for each device was plugged into the wattmeter called the Kill-A-Watt. With this tool, we measured the amount of Watts used for each device while turned on and also while turned off.



Devices Measured

Electric Can Opener



65-inch LED Television



Guitar Amplifier



Devices Measured Cont.

Microwave



Macbook



iMac



Devices Measured Cont.

Electric Toothbrush



Toaster



Iphone Charger



Main Concept

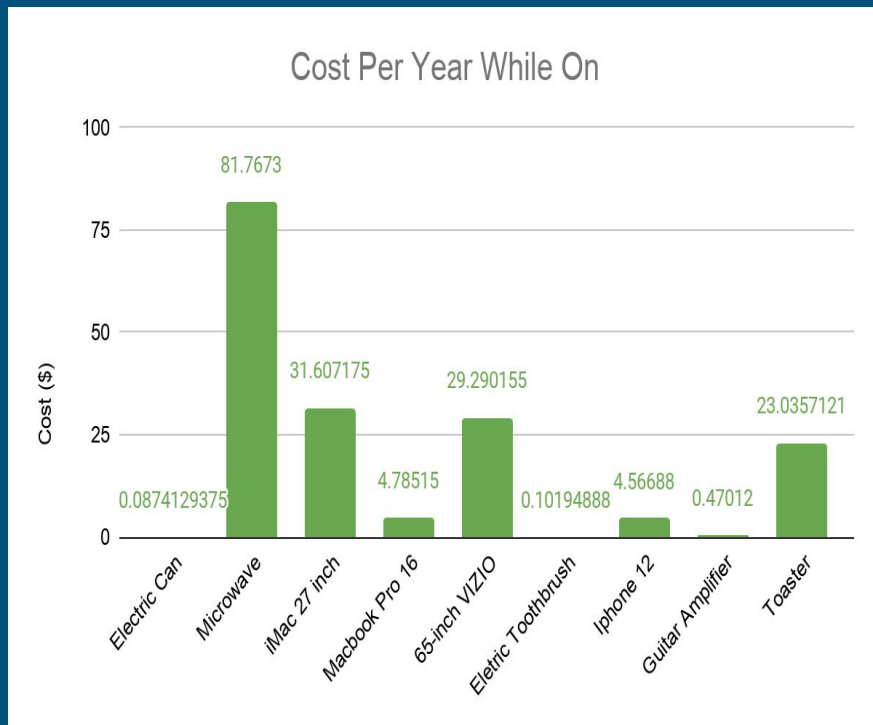
Cost of electrical energy is dependent on the total energy consumption and cost of electricity in your area. Total energy consumed is the relationship between power and time. This can be calculated by measuring wattage and time used.

Formulas Used

- Electrical Energy (kWh)= (Watts)(time in hrs)/1000
- Cost of Electricity In Area (\$) = \$0.23/kWh
- Cost of Electricity Per Day (\$) = (Electrical Energy)(Cost of Electricity In Area)
- Cost of Electricity Per Year (\$) = (Cost of Electricity Per Day)(365)

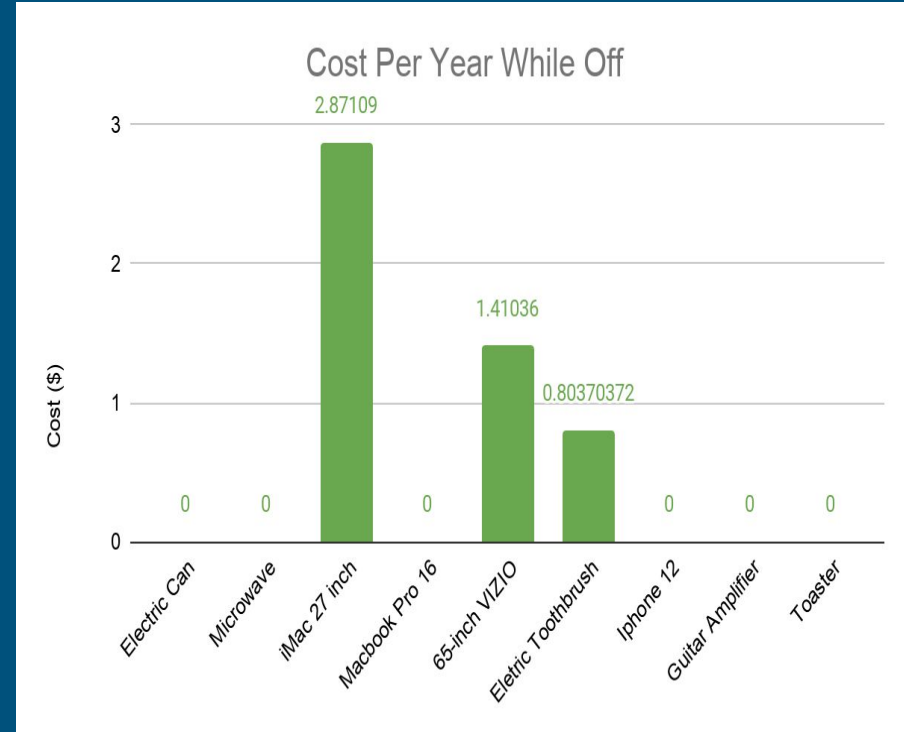
Devices Turned On

	On			
	Watts (W)	Hours Per Day (h)	kilowatt-hours Per Day (kWh)	Cost Per Year (\$)
Electric Can Opener	62.5	0.01666	0.00104125	0.0874129375
Microwave	1948	0.5	0.974	81.7673
iMac 27 inch	75.3	5	0.3765	31.607175
Macbook Pro 16 inch Charger	57	1	0.057	4.78515
65-inch VIZIO LED TV	116.3	3	0.3489	29.290155
Electric Toothbrush	18.4	0.066	0.0012144	0.10194888
Iphone 12 Charger	6.8	8	0.0544	4.56688
Guitar Amplifier	2.8	2	0.0056	0.47012
Toaster	1653	0.166	0.274398	23.0357121



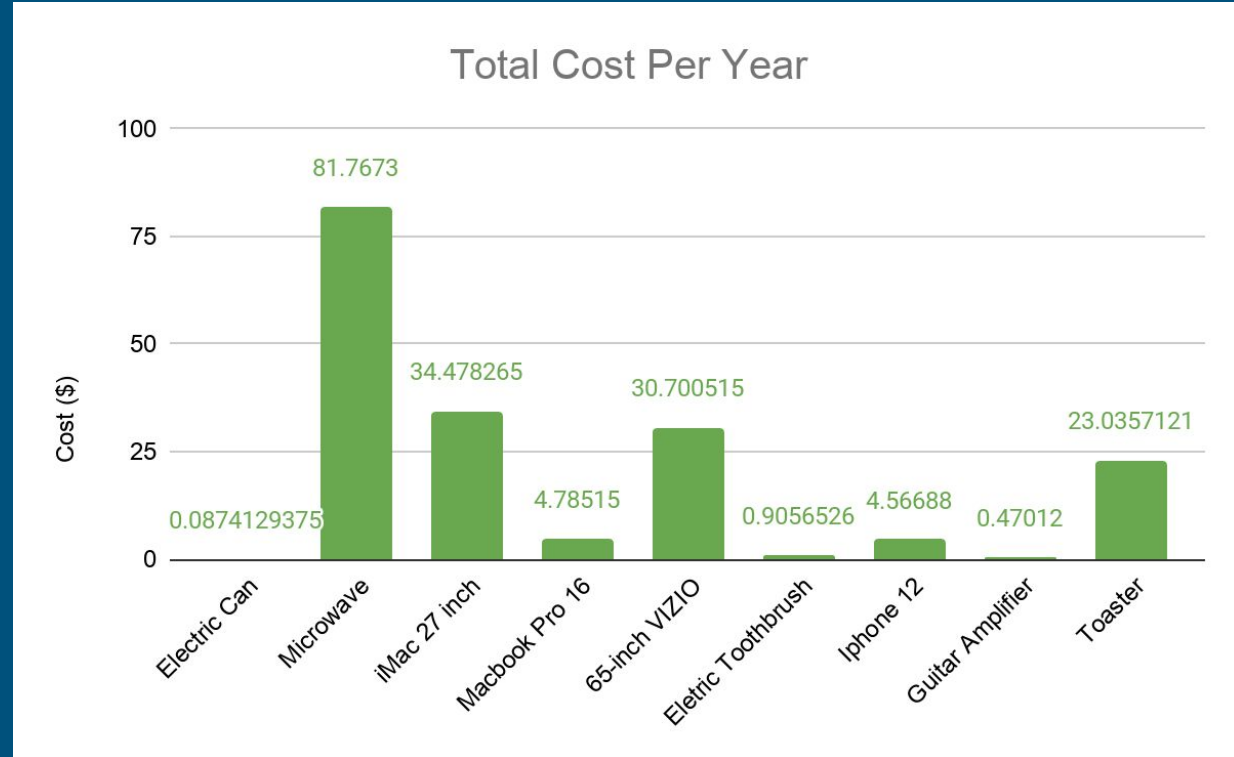
Devices Turned Off

	Off			
	Watts (W)	Hours Per Day (h)	Kilowatt-hours Per Day (kWh)	Cost Per Year (\$)
Electric Can Opener	0	23.98334	0	0
Microwave	0	23.5	0	0
iMac 27 inch	1.8	19	0.0342	2.87109
Macbook Pro 16 inch Charger	0	23	0	0
65-inch VIZIO LED TV	0.8	21	0.0168	1.41036
Electric Toothbrush	0.4	23.934	0.0095736	0.80370372
Iphone 12 Charger	0	16	0	0
Guitar Amplifier	0	22	0	0
Toaster	0	23.834	0	0



Total Cost Per Year

	Total
	Total Cost Per Year(\$)
Electric Can Opener	0.0874129375
Microwave	81.7673
iMac 27 inch	34.478265
Macbook Pro 16 inch Charger	4.78515
65-inch VIZIO LED TV	30.700515
Electric Toothbrush	0.9056526
Iphone 12 Charger	4.56688
Guitar Amplifier	0.47012
Toaster	23.0357121



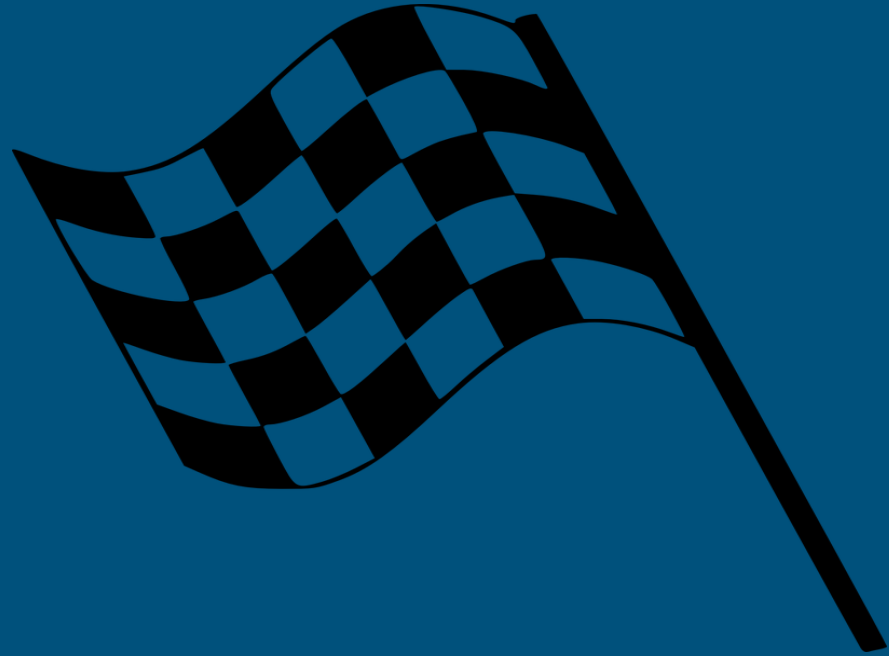
Possible Errors

- Wattage was estimated due because it never settled
- Wattage changes through different uses
- Accuracy of wattmeter used is off by .4%



Conclusion

In conclusion, I was able to calculate the cost of electricity for different devices that I use daily at home. Going into this I predicted that the device that would cost the most would be the iMac, however the microwave ended up costing the most money per year.



Questions?

