

Due

With the exception of filling up our cars with gasoline, we are generally very removed from thinking about where our energy comes from. This is especially true with electricity use; we flip a switch and – presto Mr. Wizard – the lights come on. This assignment is designed to get you to think a little more about the electricity you use and some of the possible impacts of that energy use. You will be tracking your electricity use for a handful of major appliances/devices for one week, converting that use into units of electricity (watts), and then summing your totals. In addition, this assignment asks you to think about your electricity use habits and where you might make behavioral changes that could save electricity, and also to calculate your CO₂ emissions from this energy use. Here are the steps you need to follow:

1. For seven (7) days, you need to carefully monitor your electricity use for the appliances/devices listed on the accompanying Daily Appliance/Device Use Worksheet. *For the purposes of this assignment, you can confine your measurements to those appliances and devices that you use directly (e.g. you don't have to measure your use of lighting in a classroom or the library).* For each day, list the number of **hours** the appliance/device was used, **OR** the number of **times** it was used, depending on what the worksheet calls for. For example, if you used a computer from 9 a.m. to 1 p.m. and then again from 6 p.m. to 11 p.m. you would write “9 hours” in the box next to computer for that day, and then sum the total hours for the week in the last column. When a device is used for minutes only (e.g. microwave oven), estimate the number of minutes per day and total these at the end of the week. Twenty minutes would be 0.33 hours, thirty minutes would be 0.50 hours, and so on.
2. Once you have your weekly totals from the daily appliance/device use worksheet, transfer these to column #2 of the Electricity Consumption Worksheet. Then multiply your usage (column #2) times the electricity consumption per usage (column #3) to determine the weekly electric use for that appliance device (enter in column #4). Finally, convert this weekly electric use (in watts) into kilowatts (kW) by dividing column #4 by 1,000 and enter this figure into column #5. Sum your totals from column #5 in order to get your weekly electricity use for the appliances/devices we are studying.
3. After reviewing your electricity consumption patterns, write a 450 word essay that addresses the following:
 - What appliances/devices account for most of your electricity use? Are you surprised by this? Do you think your electricity use patterns are typical of other students? Why or why not?
 - Discuss three specific behavioral changes that **you** could adopt that would help to reduce your electricity use. Why might you not already be doing these things?
 - Discuss three specific behavioral changes that you think **other students** should adopt in order to reduce their electricity use. Why might other students not already be doing these things?
4. Lastly, go to the web page <http://www.climatecare.org/us/>. You will need to tabulate your Carbon contribution for your car, flights, and house (dorm room) separately and then add the totals together. A calculator box will appear, click “start” to begin your session. If you have a car, complete the questions asked about type of fuel, miles driven per year, and the approximate mileage of your car in miles per gallon (it's OK to estimate your cars mpg, but if

you're really not sure, visit <http://www.fueleconomy.gov/feg/sbs.htm> in order to determine this figure). If you do not have a car, but borrow one or travel with someone else, estimate your annual mileage from that. To make the calculation for your house take the results of your weekly electricity use from the bottom of column 5 in the Electricity Consumption Worksheet, and then **multiply this figure by 52** in order to determine your annual electricity use in KWh. Enter this figure in the box, "How much electricity do you use?" Finally, the average student at Allegheny consumes 4926.5 ccf (hundred cubic feet) of natural gas every year for space heating and water heating. Leave the heating oil blank unless you are in a rental that uses heating oil. Add together your car, house, and flights to calculate your total CO₂ emissions.

5. Record your total CO₂ emissions on the assignment in tons and dollars. The dollar figure you come up with represents the cost of "offsetting" your carbon emissions, in other words the cost of planting trees or other activities that will account for your emissions. Imagine if you had to pay that amount as a tax on your energy purchases; do you think this would have an impact on the way you use energy and the amount that you consume? Explain and discuss briefly.