

LIFESTYLE PROJECT

Part 2

Now that you have recorded your activities for two days, you can translate your actions into figures. Use the data, equations and examples below to quantify some of your environmental impacts.

1A. Energy Consumption

1A. Transportation (mandatory)

$$\frac{\text{total miles driven}}{\text{gas mileage of your car (miles/gallon)}} = \text{gallons of gas used}$$

$$\text{gallons of gas} \times 125,000 \text{ BTUs/gallon} = \text{total BTUs}$$

Example: $\frac{23 \text{ miles}}{28 \text{ miles/gallon}} = 0.8 \text{ gallons}$

$$0.8 \text{ gal} \times 125,000 \text{ BTU/gal} = 102,678 \text{ BTUs}$$

1B. Industrial Energy Consumption (mandatory)

This is not something that can be easily quantified, so just record the list of products that you purchased.

1C. Residential Energy Use (mandatory)

Hot Water-

Multiply each water usage by the appropriate flow rate (in gallons/minute) to determine the total gallons of water heated. Skidmore heats the water to approximately 140 degrees F, and the water enters the system at 55 degrees. To raise the temperature of one gallon of water by 85 degrees requires 440 BTU. To determine your total energy usage for hot water heating, multiply by 440.

Example: I took a ten minute shower

$$10 \text{ min.} \times 5 \text{ gal/min.} = 50 \text{ gal}$$

$$50 \text{ gal} \times 440 \text{ BTU/gal} = 22,000 \text{ BTU}$$

hot shower _____ minutes \times 5 gallons/minute = _____ gallons

sink _____ minutes \times 3 gallons/minute = _____ gallons

laundry (hot) _____ minutes \times 25 gallons/load = _____ gallons

laundry (warm) _____ minutes \times 10 gallons/load = _____ gallons

dishwasher _____ minutes \times 12 gallons/load = _____ gallons

other _____ gallons other _____ gallons

TOTAL _____ Gallons \times 440 BTU/gal = _____ BTU

Electricity-

For each of the appliances you used, multiply the number of hours used by the number of watts. Then divide that number by 1000 to get kilowatt-hours (KWH). Each kilowatt-hour is equivalent to 3412 BTU, so multiply KWH by 3412 to find BTU.

Example: I watched TV for 1.5 hours

$$1.5 \text{ H} \times 300 \text{ W} = 450 \text{ W}$$

$$\frac{450 \text{ W}}{1000} = 0.45 \text{ KWH}$$

$$0.45 \text{ KWH} \times 3412 \text{ BTU/KWH} = 1535 \text{ BTU}$$

If you want to find out what the wattage (W) is for something that is not given below (indicated by a blank instead of a number) then look on the back or bottom of the item, and it usually is written there. If it does not indicate the wattage, then look for the amperage (A). The number of amps multiplied by 120 (volts) is equal to the wattage.

example: this computer uses 1 amp x 120 volts = 120 watts

	Wattage		Wattage
refrigerator (large)	750	microwave	1450
refrigerator (med. dorm size)	330	stove	12,000
refrigerator (small dorm size)	300	oven	12,000
washing machine	375	clock	4
incandescent lights	(read wattage on bulb)	dryer	5000
fluorescent lights	18	iron	1100
radio	20	hair dryer	1600
tape player "box"	24	elec. razor	_____
TV	300	humidifier	_____
VCR	19	blender	_____
answering machine	_____	computer	120 - 240
dishwasher	200	Inkjet	5 watts idle, 30 watts printing
coffee maker	750		
other _____	_____	other _____	_____
other _____	_____	other _____	_____
TOTAL _____	BTU		

2. Food

It's hard to quantify how much energy and resources go into what we eat, so we're just going to make some general observations. Generally, the less processed a food is, the less energy goes into making it; so fruits and vegetables require the lowest energy input (and waste output) per calorie. A highly processed food (twinkies, for example) requires more energy input and waste output per calorie compared to a more simple food like an apple. The category of food with the highest environmental toll in terms of energy and water input and waste output is meat. For example, it takes 2,500 gallons of water to produce one pound of meat. This is because energy and water must first go into the production of grain crops, which are then fed to the livestock. Most animals are about 10 percent efficient at converting the energy from eating plants into muscle. The other 90 percent is used in the daily activities of the animal or is dissipated as heat. So this means that it takes approximately ten times the resources to produce meat as it does to produce vegetables.

To record your food intake, break down all the foods you ate into four categories: unprocessed (fruits, vegetables, whole grains), minimally processed (pasta, bread), highly processed (twinkies, cheese doodles), and meats.

3. Water

Use the flow rates given below to find your total water usage

shower _____ minutes x 5 gal/min. = _____ gallons

bath _____ minutes the tap runs x 5 gal/min. = _____ gallons

sink _____ minutes x 3 gal/min. = _____ gallons

toilet flushes _____ x 6 gallons each flush = _____ gallons

dishwasher loads _____ x 12 gallons/load = _____ gallons

washing machine loads _____ x 40 gallons/load = _____ gallons

other _____ gallons

TOTAL _____ gallons

4. Waste

This is something we don't really need to quantify, because we can keep track of it by listing the items individually. If you really wanted to quantify it, you could weigh the amount of stuff you throw out, but it's probably easier to just write it all down. So just record the list of garbage, recycling, and compost that you generated over the two day period.