

A.P. Environmental Science Home Energy Audit

Name: _____

Period: _____

How much energy do you use at home? Can you cut down? What effect would changing your energy use have in the "big picture". We will begin to consider these issues by developing some understanding of the energy use practices we employ at home each day.

Procedure

1. Examine the data sheet provided. You will need to record your data either on this sheet or on a spreadsheet.
2. Record all of the electrical appliances in EACH room of your house in the first column. Don't forget light bulbs!! In the second column, write the wattage of each appliance based on the plates located on the back, side, etc. If you cannot get at it (refrigerators, air conditioners, etc), you may use the data table handout. UNPLUG ALL APPLIANCES before searching for tags. Tags will either say WATTS or W or possibly kW.
3. Convert the Watts to Kilowatts by dividing the wattage by 1000. Therefore:
Record this answer in COLUMN C.
4. Calculate the average cost of electric (kWh) To do this, look at your parents' electric bill. Divide the total cost by the kW used. Record this rate in COLUMN F (will be the same for all appliances.)
Example: bill is \$86.88 and 724 kW used, the cost is $\$86.88/724 = \0.12 per kWh
5. In the fourth column, write the number of days per month that EACH appliance is used (if you have more than one of any given appliance, you count each separately). Next to that, write down the hours per day that the appliance is used. Use a decimal for fractions (such as 15 minutes = 0.25, 6 minutes = 0.1 etc) You may have to estimate how long it takes an electric coffee pot to brew or a toaster to pop bread. Don't forget that it may be many times a day! Don't forget to include the number of people in your house using the appliance! Note: Refrigerators and freezers don't operate continuously --calculate these as 10 hours per day --not 24.
6. Calculate the cost per month for each appliance. Multiply columns 3 x 4 x 5 x 6. Enter your cost in the last column.

Samples Calculation:

a 200W color television watched 3 hours per day each month at \$0.12 kW

Color TV	200W	0.2 kW	30 days	3 hrs	0.12	\$2.16
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7. When you are done, add up the last column and write the total at the bottom. This is your calculated cost. When you are done with this, create a begin the second data table. Total the cost in the final column of Table 1 for each entry in a given category on Table 2 and record as *Total Monthly Cost*.
Example: 2 TV sets = 2.16 and 3.51; a VCR costs 0.84 and the computer costs 1.01. The total would be \$7.51.
8. Divide each *Total Monthly Cost* by the total cost and multiply by 100%. Enter these percentages.
9. Finally, multiply each *Total Monthly Cost* by the percentages at the top of the remaining columns. This would be the dollars saved each month if you reduced usage by that amount.

Interpretations (answer on a separate sheet and attach to your data tables)

1. Compare your result in step 5 with the actual electric bill. If you are off by more than 10%, how can you explain the difference?
2. Construct a pie graph or a bar graph of the energy categories in table 2.
3. If you cut back your electrical use for the single top energy user in your home by 5%, how much energy money would your family save each month?
4. List the 3 most necessary electrical uses in your home. Tell why each is so necessary and if there are any alternatives.
5. List the 3 least necessary electrical uses in your home. Tell what you would do without each.
6. Based on information in the energy facts handout and your answers to questions 3 and 4, discuss this statement: "We can reduce electrical use in our homes by 15% and still maintain good lifestyles." How much money would be saved if the bill was reduced by 15% and what could your family do with that money?
7. How can saving energy in the home help the environment?
8. Discuss these statements:
 - a. If we cut back on air conditioning, we don't have to conserve lighting.
 - b. If we eliminate 3 of our smaller electricity users, that's enough.
 - c. Why should I conserve if other people won't?
 - d. There's nothing that I can do because my parents (the landlord) pays the bill.
9. Predict your next month's electric bill. When it comes in, explain any differences of more than 10%.

Table 2: Category Tabulation

CATEGORY	Total Monthly Cost	% of Total Cost	5%	10%	20%
lighting					
refrigerator & freezer					
television, VCR, DVD					
cooking					
water heating					
audio systems(radio, CD, etc.)					
space heating/air conditioning					
clothes care (wash, dry, iron)					
grooming (hairdryer, curlers)					
computer, typewriter, etc.					
other (explain category)					