Analyzing My Energy Consumption

E2.9 – Determine energy consumption and cost to operate
E1.3 – produced a plan of action to reduce electrical consumption / cost of energy consumption

#1. Choose 5 electrical devices/appliances you use and create a chart for each one. You will be recording how long you use these devices/appliances each day for a week.

Sample Chart – you need 5!

Date	Appliance	Power rating (kW)	Time use (hours)	kWh of energy
Mon. Dec. 1st	Hairdryer			
	Hairdryer			
	Hairdryer			
	Hairdryer			
	Hairdryer			
	Hairdryer			
	Hairdryer			
			Total kWh of energy for week →	

- To convert watts to kilowatts you divide by 1000. (1000 watts = 1 kW)

#2. Attach these completed charts at the end of this assignment.

#3. Calculate the kWh used in the last column by multiplying the power rating (kW) by time used (hours)
kWh = (kW) x (hours). Record this in the last column of all charts.

#4. Calculate total kWh of electricity for week for each appliance. Identify each appliance and total kWh.

Appliance #1 (what was it) = _____ → _____ kWh in the week.

Appliance #2 (what was it) = _____ → _____ kWh in the week.

Appliance #3 (what was it) = _____ → _____ kWh in the week.

Appliance #4 (what was it) = _____ → _____ kWh in the week.

Appliance #5 (what was it) = _____ → _____ kWh in the week.

#5 Calculate how many kWh of electricity you used in total all week (add the 5 appliances together)
*__Show your calculation*__

My total kWh consumption for the week was _____kWh for the whole week.

Criteria - # 1 - 5	Total /5
Inquiry A1,.6 Student can gather daily data and begin to organize usage patterns.	

#6. Using the cost of electricity as $0.099/kWh (or 9.9¢/kWh), calculate how much it cost to run:

Appliance #1 _____ (what was it) for the week: Show calculation.

Cost to run for week = _____

Appliance #2 _____ (what was it) for the week: Show calculation.

Cost to run for week = _____

Appliance #3 _____ (what was it) for the week: Show calculation.

Cost to run for week = _____

Appliance #4 _____ (what was it) for the week: Show calculation.

Cost to run for week = _____

Appliance #5 _____ (what was it) for the week: Show calculation.

Cost to run for week = _____

All appliances for the week: ***Show calculation***.

Cost to run all 5 appliances all week = _____

#7. I gave you the 'mid peak' rate. Calculate the cost to run

All appliances for the week @ **peak rate** of $0.118/kWh (11.8¢/kWh). ***Show calculation*.**

Peak rate - Cost to run all 5 appliances all week = _____

All appliances for the week @ **off-peak rate** of $0.063/kWh (6.3¢/kWh). ***Show calculation*.**

Peak rate - Cost to run all 5 appliances all week = _____

Criteria # 6, 7	Total /5
Inquiry E2.9 Student can calculate operating cost.	

#8. a) In 2006, Canadians used, approximately 5.37×10^{11} kWh of electricity. Assuming the population of Canada was approximately 33,000,000 calculate the average use of energy (in kWh) per person in Canada that year. Show your work.

b) You calculated your energy consumption for a week. Using this weekly data, calculate what you would use for a whole year (1 year has 52 weeks). Show your work.

c) How does your consumption of energy compare to the average Canadian in 2006? (more/less/equal?)

d) Is this a fair comparison? Explain your answer.

Criteria #8	Total /5
Application A1.10 draw conclusions based on inquiry results & research findings, and justify their conclusions	

#9. Off–peak hours (winter) = 7 p.m. → 7 a.m. Cheapest time to use electricity
Mid-peak hours (winter) = 11 a.m. → 5 p.m. medium expensive
Peak hours (winter) = 5 p.m → 7 p.m. and 7 a.m. → 11 a.m. Very expensive to use.

Your challenge is to reduce the cost of the energy you use. You chose 5 appliances. With 3 of them, suggest a reasonable way you could 'cost less'. You could consider how much time you use the appliance or the time of day at which you use this appliance.

Criteria #9	Total /5
Application E1.3 Student can produce an action plan to reduce cost of electricity usage. 3 appliances/devices targeted. Plans are logical & realistic	