Knowing Energy: How Intense is Your Electricity Usage?

Energy Revealed
Learner Worksheet Answer Key
Level 1-2: Grades 3-8
Level 3-4: Grades 9-12

Reminder:

- kWh = kW x Time (hours)
- 1 kW = 1000 W
- Canadian Average Electivity Bill = 750 kWh (OEB)
- Canadian Average House Size = 1250 feet squared

Level 1 Questions/Activities:

1. **With the assistance of people in your household, login into your local utility providers website and locate the MONTHLY consumption of electricity or ask a guardian for a copy of ONE electricity bill.**
   For this example, we will use the 750kWh national average.

2. **Using your investigation skills find out how many square feet your house is, which is?**
   1250 feet squared (national average)

3. **Divide your average electricity consumption by the square footage of your home to see what we call 'the energy intensity' of your home in kWh/square foot.**
   750 kWh/1250 sq^2 = 0.6 kWh/sq^2

4. **Submit this number to your educator to graph and display anonymously. Discuss with the class why there is a wide range of numbers.**

Level 2 Questions/Activities:

<u>Note:</u> Complete level 1 questions/activities first if you haven't already done so.

1. **Repeat the intensity analysis for ONE natural gas bill as well (if you do not use gas in your home, great! You are ahead of the curve in savings GHG's, sit back and move onto the next question). <u>BONUS:</u> convert your natural gas intensity to an equivalent kWh/square foot (this may require a bit of research).**
   0.6 kWh/sq^2 x 10.4 (conversion factor) = 6.24 m^3/ft^2, or 750 kWh x 10.4 (conversion factor) = 7800 m^3 /1250 feet squared = 6.24 m^3/ft^2.

2. **What is the range of intensities you see (highest and lowest)? Why do you think you see this much variety in electricity consumption?**
   The range could be quite large here, the main reason is home size, but at the same time, small homes can sometimes have very intense energy. usage. So, it's not always that simple, you can think about other things in the home that varies from house to house.

3. **What is the average intensity for your class? Given the range of values do you think the average for your class is high or low compared to the national average (Ontario Energy Board, OEB)? Why do you think your class lays where it does, think beyond the obvious discussed in level 1?**
   Location matters here because the climate and weather can drastically affect the energy intensity.