

Knowing Energy: How Intense is Your Electricity Usage?



Energy Revealed Activity

Level 1-2: Grades 3-8

Level 3-4: Grades 9-12

Main Objectives

This activity and the associated video allow learners to discover how intense their home's energy usage is by dissecting a household energy bill.

Learning Outcomes

By the end of this activity, learners will:

- Develop an understanding in reading household energy bills
- Calculate their homes energy intensity and compare it to the nation's average

Length of Activity

1 - 2 hours

Materials List

General Overview Guide

How Intense is Your Electricity Usage? Learner Worksheet

How Intense is Your Electricity Usage? Learner Worksheet Answer Key

Energy bills (learners will need them from their guardians' house if possible)

If learners are to complete level 2, they will also need one gas bill

Step 1

Review the General Overview Guide to understand how the Knowing Energy Video Series works with its associated activities.

Step 2

- Allow learners to view the Energy Intensity and Electricity Grid (11:47 minutes) and hand out the How Intense is Your Electricity Usage? Worksheet. Depending on the learner's grade level, direct them to complete either or all of levels 1-2.
- The video itself will direct learners on what to do, so allowing them to re-watch, or to go over their task as a class is vital for their understanding. The activity itself can be done individually at home.
- Be sure to remind learners of the concepts that were introduced to them in the videos. These concepts can be further discussed as a class before learners tackle this worksheet.
- Once learners are finished Level 1 they can submit their energy intensity number and the educator can display the class numbers anonymously for further class discussion.

Step 3

Be sure to go over as a class the answers to the worksheet and refer to the How Intense is Your Electricity Usage? Learner Worksheet Answer Key for any confusion.

Teaching Tips

- Level 1**
 - The national average is 750 kWh, however, the range for this can be quite large so big numbers aren't wrong.
 - Google Earth can help with this if it is unknown.

- This will produce a kWh/sq² number that the learners can now compare with each other.
 - Create a simple bar graph to show the learners and have a discussion. House size, people, appliances, insulation, insolation, location, plug load are all a few reasons why there is a large range.
2. **Level 2**
- Bonus: once they have a m³/square foot number, simply multiply this by 10.4 which is the conversion factor between kWh and Natural Gas (m³).
 - Provide the data back to the class. The lowest intensity should be ranked #1. 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.
 - Location matters here because the climate and weather can drastically affect the energy intensity, try taking the discussion beyond level one, have the learners look at why these differences create change.