

Take a Look

Energy Revealed
Grab & Go Activity
Grade Level 4-6



Main Objective

Learners will investigate both the energy metering hardware and software to get a full understanding of how the technology works and what it does.

Note: This learning activity requires having access to the room with the energy metering technology installed. Make sure you have the necessary permissions to access these areas, or alternatively take a picture of the circuit meter attached to the circuit breakers, as well as how the breaker panel is labelled in advance.

Learning Outcomes

By the end of this activity, learners will:

- Demonstrate safe methods for the study of magnetism and electricity, identify methods for measurement and control, and apply techniques for evaluating magnetic and electrical properties of materials.
- Recognize that the amount of electricity we use in our homes is measured in kilowatt hours.
- Interpret and explain the treading on a household electrical meter, efficiency labels on electrical appliances.

Length of Activity: 1.5-2 hours

Step 1+2: Introduce energy meters and what they do.

Step 3+4: Look at a household breaker panel and see how they are labeled.

Step 5: Class discussion about how energy use is monitored.

Materials Required

- Energy Metering Technology
- Laptop
- Pencil and Paper
- Clipboard

Activity

Step 1: Introduction to Energy Metering Technology

- Explain to learners that the school has energy metering installed. Explain to them that this technology will allow them to understand how the school is using their electricity in the area being monitored.
- Explain to the learners that there are two parts to the energy metering technology the energy metering hardware and the energy metering software. Explain that the energy metering hardware is attached to the circuit breakers and that the energy metering software allows them to see their energy use.

Step 2: Examine the Energy Metering Technology

- Log onto the energy metering technology software and allow the learners to see the real time energy use
- Using the software, note how the circuits being monitored are labelled. Write them down on a piece of paper.

Step 3: Introduction to a Household Breaker Panel

- Explain to them that their house has a breaker panel to manage the electricity in their home. This short video below will give your learners an idea as to how breaker panels in the homework.



- Tell them they are going to be seeing the hardware part of the technology at their breaker panel. Bring the list of labelled circuits with you! Alternatively, as noted above have a picture of the circuit meter installed on the circuit breaker panel.

Step 4: Read the Labels of a Household Breaker Panel

- If you are able to, take a walk to see the energy metering hardware.
- Have the learners look at the circuit panel, and how the circuits are labelled, and then look at how the energy metering technology is attached.
- Take a look at the list of labelled circuits being monitored and see if the learners can identify the circuits on the breaker panel.
- Note how many circuits are in the breaker panel vs those that are being monitored so the learners understand how much energy is needed to power the area being monitored.

Step 5: Class Discussion

- Come back to class and have a discussion about the hardware and the area being monitored.
- Brainstorm some ideas for what they think they will be noticing about the energy use based on their new understanding of what is being monitored.
 - Where do they think they'll see changes in energy use?
 - What energy use will be consistent?
 - How do they expect the energy use to change over the weekend of after-hours?
- Post their ideas around the room and check the software periodically with some of their ideas mind and see if their predictions were right.