

Energy Detectives



LESSON 4: Looking at Our School's Energy Data

OVERVIEW & PURPOSE:

Students will analyze their school electricity consumption data and pose problems and use the engineering design process to come up with solutions. The data used will be actual District data obtained from PG&E. To prepare this lesson, you will need to contact your district for log-in information. A link to a Google Slide presentation for the class discussion is below.

CONTENT STANDARDS

NGSS: ETS1.A: Defining and Delimiting Engineering Problem

CCSS Math: CCSS.MATH.CONTENT.8.F.B.5

Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.

OBJECTIVE:

Students will analyze data and ask questions to begin an analysis of the school's PG & E electricity usage. Students will pose problems/questions and design investigations to answer/solve them using the engineering design process.

HISI 7-8 Fortuna Elementary School District

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VOCABULARY: Kilowatt/hour, energy, electricity, x-axis, y-axis, units, rate.

MATERIALS NEEDED:

Part 1: Google Slide presentation and student Google Form.

https://docs.google.com/presentation/d/1AIJDa_aHRj_L6gTwYYusML4Kpxj-ABk5D251AdMnCD/edit?usp=sharing

Part 2: Engineering Design Process Worksheet

TEACHER QUESTIONS

What do you notice?
What questions do you have?
What ideas do you have?

ACTIVITY

Part 1:

Using the Google Slides to present district data and ask students what they notice. You can use a google form to have students enter their responses electronically or do this as a class discussion. Each slide reveals a little more information. Students may come up with reasons for the differing use of electricity on different months, days and times. (1 class period)

Part 2:

Students work in groups to brainstorm questions or problems related to the school energy data. Use the engineering design process worksheet for this lesson to help students come up with a problem and pose solutions.