

Exploring Pennsylvania Energy on the River with Google Earth Teacher Guide

In this activity, students will use Google Earth to explore energy-generating power plants on two rivers in Pennsylvania. They will

1. Explore energy-generating hydro power plants on the Allegheny River.
2. Explore energy-generating hydro and nuclear power plants on the Susquehanna River.

Model the following procedural instructions with your students. It is recommended that you display your computer image at the front of the classroom.

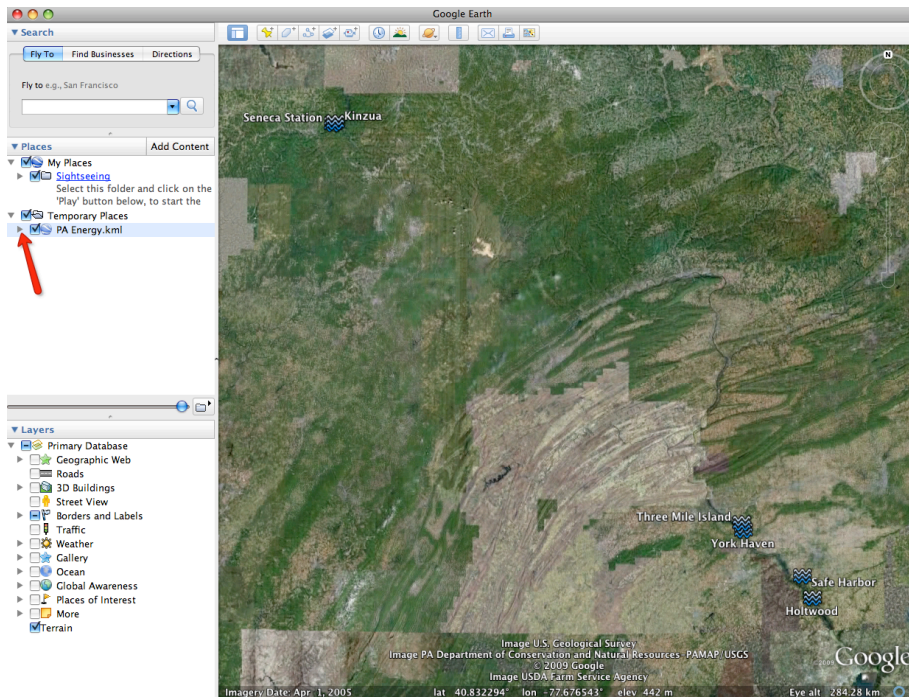


Step 1: Download data.

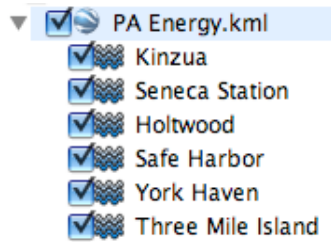
- a. Open your Web browser. Go to **www.ei.lehigh.edu/learners/energy/**
- b. Click on **Exploring Pennsylvania Energy on the River with Google Earth.**

The file is displayed in Google Earth.

- c. Click the arrow to the left of **“PA Energy.kml”** in the left panel (see arrow below).

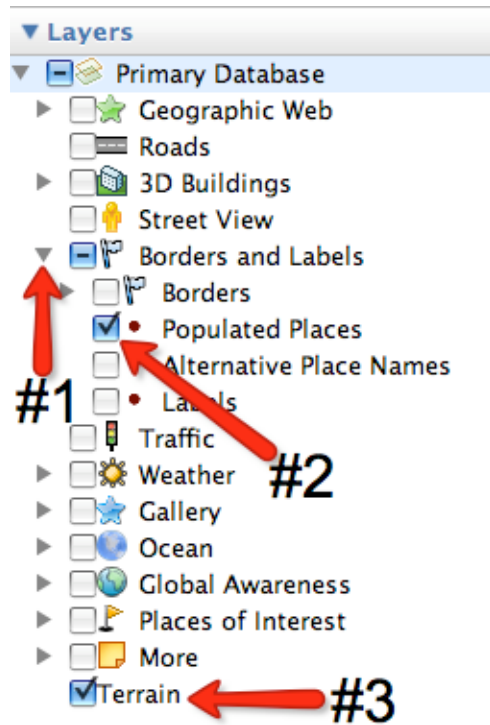


The PA Energy drop-down list will extend (see below). If you cannot see the whole list, scroll down.




Step 2: Turn on the Populated Places and Terrain layers.

- In the **Layers** window (lower left panel), click the arrow to the left of **Borders and Labels** (see arrow #1 below).
- Click the box to the left of **Populated Places** to **place a checkmark** in the box (see arrow #2 below).
- Click the box to the left of **Terrain** to **place a checkmark** in the box (see arrow #3 below).





Step 3: Explore and measure the width or diameter of the energy-generating power plants. Also, measure each power plant's distance to nearby population centers.

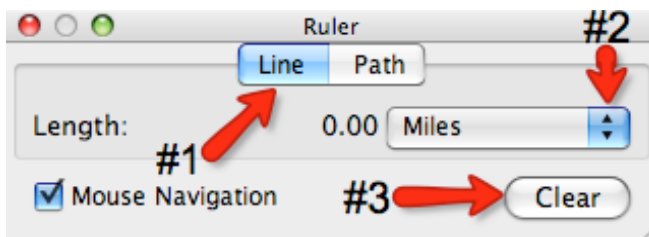
- Double-click** on **Kinzua** to fly to the Kinzua Dam.
- Click on the **Ruler** tool  on the **tools menu** at the top of the screen. The ruler dialog box appears (see below). If the dialog box covers up the dam, move it to a different area on your screen.
- Click on **Line** (arrow #1 below). Click on the drop-down arrow (arrow #2 below) and select **Miles** if it is not already selected.
- Click on one end of the dam to begin measuring its width. Click on the other end of the dam.



Instruct students to write the **width** of Kinzua in the **Pennsylvania Energy on the River Data Chart** on their field guide.

NOTE: If you make a mistake, click **Clear** (arrow #3 below) and start measuring the length from the starting point.

- Click **Clear** (arrow #3 below). Do not close the ruler dialog box.





- Zoom-out** to explore the **area surrounding** the Kinzua Dam. What does it look like? Is the Kinzua Dam area surrounded by a forest, mountains, an urban area, or something else?



Instruct students to write a description of the **area surrounding** the Kinzua Dam in the **Pennsylvania Energy on the River Data Chart**.

Helpful hint: Use the **navigation controls** at the top right of the screen to explore the surrounding area.

- Find the nearest **population center** (city or town) that is located closest to the Kinzua Dam.
Helpful hint: Tell students they will need to **zoom out**  to view a population center near the dam. The nearest population center is marked with a small red circle .
- Measure the distance from the Kinzua Dam to the nearest population center that is within 10 miles from the dam. Using the **Ruler** tool, click on the Kinzua Dam and then drag your line to the population center.



Instruct students to write the name and distance of the population center in the **Pennsylvania Energy on the River Data Chart** on their field guide.

- i. Measure the distance from the Kinzua Dam to the nearest population center that is between 20 - 50 miles from the dam.



Instruct students to write the name and distance of the population center in the **Pennsylvania Energy on the River Data Chart** on their field guide.

- j. Click **Clear** (arrow #3 above). Do not close the ruler dialog box.
- k. **Double-click** on **Seneca Station** to fly to it. This is the Seneca Pumped Storage Generating Station. This is a hydroelectric power plant that uses pumped storage of water to generate electric power.
- l. Click on one end of Seneca Station to begin measuring its **diameter**. **The diameter** is the distance from one point on a circle to another point **through the center** of the circle. Click on the other end of the dam.



Instruct students to write the **diameter** of Seneca Station in the **Pennsylvania Energy on the River Data Chart**.

- m. **Double-click** on the next dam (Holtwood). Instruct students to repeat **Steps d, e, f, g, h, l, and j** above to complete the **Pennsylvania Energy on the River Data Chart** for **Holtwood, Safe Harbor, and York Haven**.
- n. **Double-click** on **Three Mile Island** to fly to it.
- o. Instruct students to repeat **Steps f, g, h, and i** to complete the **Pennsylvania Energy on the River Data Chart**.
- p. Instruct students to click clear and close the ruler dialog box when they finish.



Instruct students to answer **questions 1 - 3** on their field guide.