

Exploring Solar Power Plants with Google Earth Teacher Guide

Solar energy comes from the sun. In this activity, students will use Google Earth to explore solar power plants. They will

1. Learn some basic features of Google Earth.
2. Explore five existing solar power plants around the world.
3. Use the **Ruler** tool to measure the perimeter of solar power plants.

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

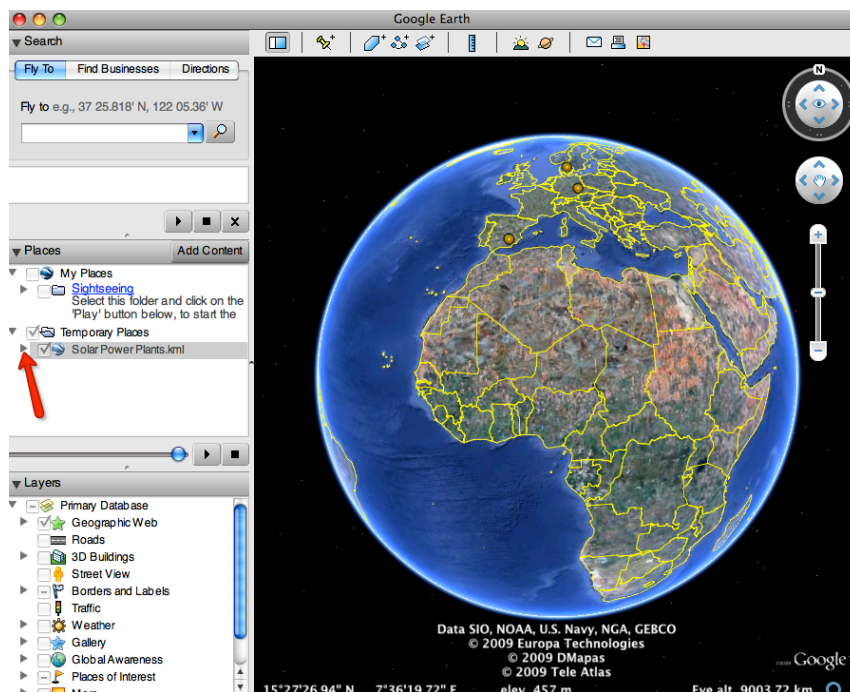


Step 1: Download data.

- a. Open your Web browser. Go to **www.ei.lehigh.edu/learners/energy/**
- b. Click on **Exploring Solar Power Plants with Google Earth.**

The file is displayed in Google Earth.

- c. Click the arrow to the left of “**Solar Power Plants.kml**” in the left panel (see arrow below).



The Solar Power Plants drop-down list will extend (see below). If you cannot see the whole list, scroll down.

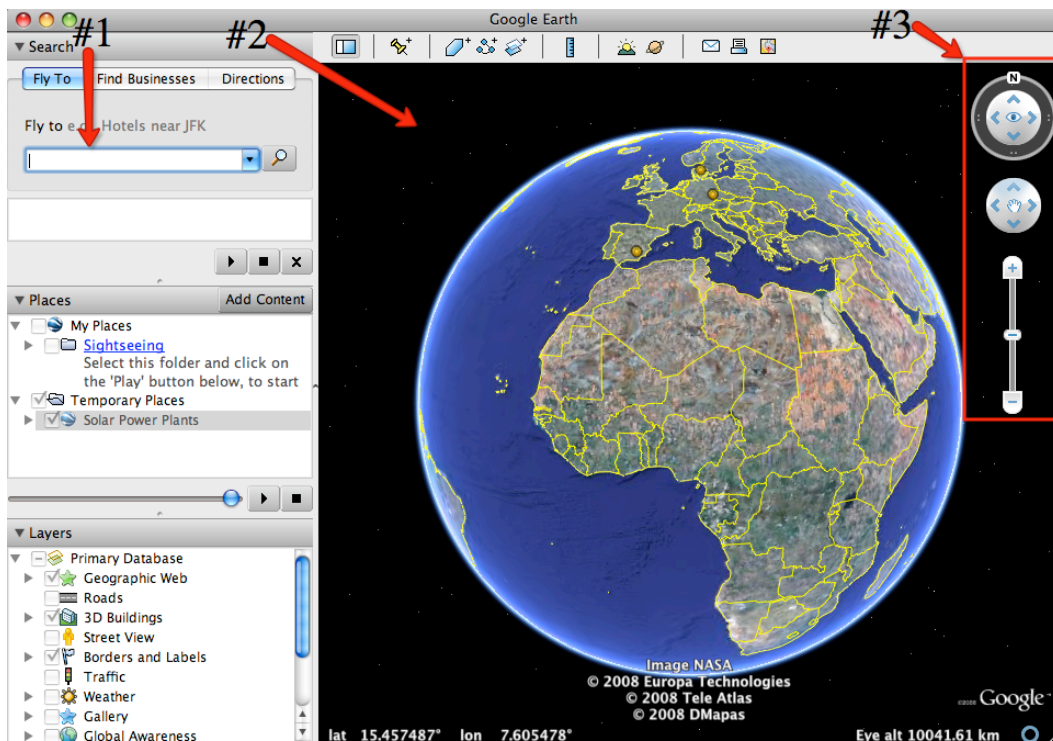
- ▼ ☒ Solar Power Plants.kml
 - ☒ Marstal
 - ☒ Plataforma Solar de Almeria
 - ☒ Solarpark Bavaria
 - ☒ Kramer Junction
 - ☒ Hermannsburg



Step 2: Basic features of Google Earth


Note the following Google Earth features, tools, and navigation controls in the figure below.

1. **Search Panel** (arrow #1) – Type in the white box to find a location.
2. **3-dimensional (3D) Viewer** (arrow #2) – This window shows the Earth and its terrain.
3. **Navigation controls** (arrow #3) – Use these controls to zoom, look, and move around. If the navigation controls are not visible click on View>Show Navigation>Always.



Step 3: Explore solar power plants and measure the perimeter.

Your students will explore solar power plants and use the ruler tool to measure the perimeter of each solar power plant. Model how to use the **Ruler Tool** in Google Earth to measure the perimeter of the first solar plant (Marstal).

- Double-click** on **Marstal** in the **Places** window. Google Earth will zoom you in to the Marstal solar plant for you to view it.
- 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 solar power plant, move it to a different area on your screen.
- Click on **Path** (arrow #1 below). Click on the drop-down arrow (arrow #2 below) and select **Miles** if it is not already selected.

NOTE: We recommend that you explain to students how they should measure the perimeter around a solar plant. For example, you may wish to have students just measure around the area of the solar panels. Alternatively, you may wish students to include any buildings located adjacent to the solar panels as part of the perimeter. The assessment information takes into account these variations.

- d. Click on a corner of the solar power plant to begin measuring its perimeter. Continue to click on all corners around the solar power plant until you get back to your starting point. Click and drag the last point to join it to the starting point.



Instruct students to write the perimeter of Marstal in the **Solar Power Plants Data Chart** on their field guide.

NOTE: Show students possible mistakes they could make while measuring, for example, measuring the fence around the solar power plant. Show students that if they make a mistake, they can click **Clear** (arrow #3 below) and start measuring the perimeter from the starting point.

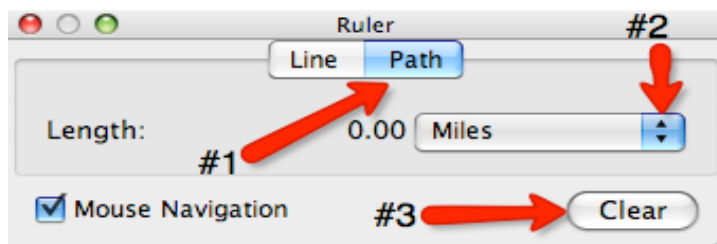
NOTE: Plataforma Solar de Almeria has three different solar array areas. You can have students measure each individual solar array area then add up the measurements, or measure around all three solar array areas.

- e. Look at the **ground cover** area around the solar plant. The ground cover is the appearance of the land. Prompt students with the following questions: What does it look like? Is it on a flat or hilly surface? Does it look like a desert, a farm area, a forest, or something else?



Instruct students to write a description of the ground cover in the **Solar Power Plants Data Chart** on their field guide.

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



- g. **Double-click** on the next solar power plant. Instruct students to repeat **steps d, e, and f** on their handout to measure the perimeter of the other 4 solar power plants and analyze the ground cover around it.



Instruct students to complete the **Solar Power Plants Data Chart** on their field guide. Instruct students to click clear and close the ruler dialog box when they finish.



Instruct students to answer **questions 1 – 6** on their field guide.