

## Exploring Wind Farms with Google Earth

Wind is moving air. In this activity, you will use Google Earth to explore wind farms. You will

1. Explore seven existing wind farms around the world.
2. Investigate ideal features of wind farms.
3. Use the **Ruler** tool to measure the estimated perimeter of wind farms.

Read **all** instructions and answer **each** question on your field guide.



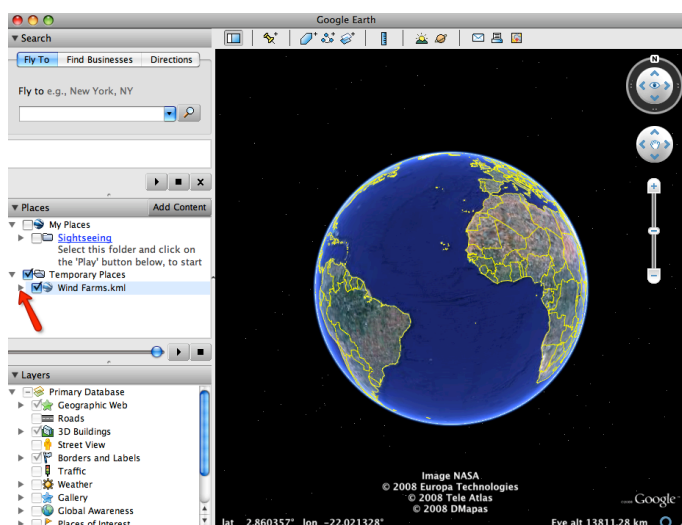
### Step 1: Download data.

a. Open your Web browser. Go to **www.ei.lehigh.edu/learners/energy/**

b. Click on **Exploring Wind Farms with Google Earth**.

c. Click the arrow to the left of “**Wind Farms.kml**” in the left panel (see arrow).

**NOTE:** If the navigation controls are not visible click on View>Show Navigation>Always.



The Wind Farms drop-down list will extend. If you cannot see the whole list, scroll down.

- ▼ ☒ Wind Farms.kml
  - ☒ [Taff Ely](#)  
Taff Ely wind farm is located in Wales, UK. The
  - ☒ [Kittsee](#)  
Kittsee wind farm is located in Austria. The
  - ☒ [Comodoro Rivadavia](#)  
Comodoro Rivadavia wind farm is located in
  - ☒ [McBride Lake](#)  
McBride Lake wind farm is located in Fort McLeod,
  - ☒ [Altamont Pass](#)




## Step 2: Explore wind farms and measure the estimated perimeter.

You will explore wind farms and use the **ruler tool** to measure the **estimated perimeter** of each wind farm. Perimeter is the **distance around** the wind farm area.

- a. **Double-click** on **Taff Ely** in the **Places** window.


Look at the size of the wind farm and the number of **wind turbines**.

**Zoom-in**  a bit more to see a **wind turbine** in more detail.  
**Helpful hint:** Look for dark shadows for turbine locations.

- b. Click on the Taff Ely push-pin  in the **3D viewer** to read information about this wind farm.



Write the **average wind speed** at the **Taff Ely** wind farm in the **Wind Farms Data Chart** on your field guide.

- c. Click on the **Ruler** tool  on the **tools menu** at the top of the screen.

The ruler dialog box appears. If the dialog box covers up the wind farm, move it to a different area on your screen.

- d. Click on **Path** (arrow #1).  
 Click on the drop-down arrow (arrow #2) and select **Miles** if it is not already selected.
- e. Click on a corner of the wind farm where you see a wind turbine to begin measuring the **estimated perimeter** of the wind farm.

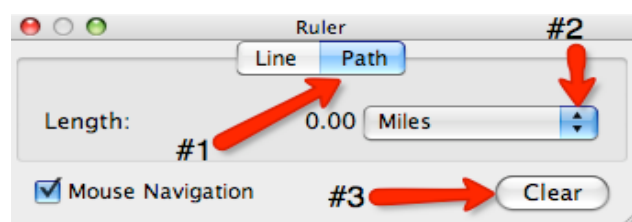
Continue to click around the wind turbines until you get back to your starting point.

Click and drag the last point to join it to the starting point.



Write the **estimated perimeter** of the **Taff Ely** wind farm in the **Wind Farms Data Chart** on your field guide.

- f. Click **Clear** (arrow #3). Close the ruler dialog box.



- g. Look at the **land cover** around the wind farm.

**Land cover** refers to the **vegetation** found on an area of land. This includes the types of trees or plants or the absence of trees or plants.

What does the land cover at the wind farm look like? Does it look like a forest, a desert, or a farm area?



Write a description of the **land cover** in the **Wind Farms Data Chart** on your field guide.

- h. Look at the **topography** around the wind farm.

**Topography** refers to the **terrain** of the land. This includes the presence of hills, mountains, valleys, flat land areas, and bodies of water.


What does the topography look like? Does it look like a mountain, a flat land area, river banks, or something else? Is the wind farm on a flat or hilly surface?




Write a description of the **topography** in the **Wind Farms Data Chart** on your field guide.

- i. **Double-click** on the next three wind farms, **Kittsee**, **Comodoro Rivadavia**, and **McBride Lake**, and repeat steps **b**, **c**, **d**, **e**, **f**, **g**, and **h** above to complete the **Wind Farms Data Chart**.


**NOTE:** Look at the differences in sizes of the wind farms and the number of turbines. Use the **navigation controls** at the top right of the screen to **zoom-in** and move around the wind farm area to view the **wind turbines**.


- j. **Double-click** on  **Altamont Pass** in the places window to view this wind farm.

This wind farm has many **wind turbines** that cover a **very large** area. The **dark blue line** outlines the area covered by the wind farm.

- k. **Double -click** on  **Altamont Pass\_Center** in the places window or on the **Altamont Pass\_Center yellow push-pin** in the **3D viewer** to see some of the wind turbines.



Use the **navigation controls** at the top right of the screen to **zoom-in** and move around the wind farm. Navigate to view the **wind turbines** in the far corners of the wind farm area near the **dark blue line**.

**Helpful hint:** **Double-click** on  **Altamont Pass** in the places window to zoom out. **Double-click** a corner of the wind farm to wind view turbines.

Click on the push-pin  in the **3D viewer** to read information about this wind farms.




Write the average **wind speed** at the **Altamont Pass** wind farm in the **Wind Farms Data Chart** on your field guide.

- l. **Double-click** on  Altamont Pass to zoom out. Click on the **Ruler** tool  on the **tools menu** at the top of the screen. Click along the dark blue line around the wind farm to measure its estimated perimeter.




Write the **estimated perimeter** of **Altamont Pass** in the **Wind Farms Data Chart** on your field guide. Complete the **land cover** and **topography** descriptions on the data chart for **Altamont Pass**.

- m. Click **Clear**. Close the ruler dialog box.

- n. **Double-click** on  **Lake Benton** in the places window to view this wind farm.

This wind farm has many **wind turbines** that cover a **very large** area. The **dark blue line** outlines the area covered by the wind farm.

- o. Repeat steps **k**, **l**, and **m** for Lake Benton.

- p. **Double-click** on  **Muppandal** in the places window to view this wind farm.

This wind farm has many **wind turbines** that cover a **very large** area. The **dark blue line** outlines the area covered by the wind farm.

- q. Repeat steps **k**, **l**, and **m** for Muppandal.



Answer **questions 1 - 6** on your field guide.