Where is the Best Place to Locate a Geothermal Power Plant?

Geothermal energy comes from heat stored within the Earth. In this activity, you will use Google Earth to explore where the Earth is hot. You will

- 1. Explore two volcanoes.
- 2. Explore features in "hot Earth" areas in Iceland and in the United States.
- 3. Determine where to locate a geothermal power plant in the Northwest United States.

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



- a. Open your Web browser. Go to www.ei.lehigh.edu/learners/energy/
- b. Click on Where is the Best Place to Locate a Geothermal Power Plant? and minimize the Web page to the dock.



d.	Click the arrow to the left of Gallery in the Layers window in the left panel (see arrow #1). Make sure Gallery is not checked. Scroll down and check to make sure the box to the left of Volcanoes is not checked (see arrow #2).	 Weather Gallery Gallery Gallery Gallery Shock the Rome 3D Discovery Networks Earthquakes Every trail Every trail European Space Agency Gigap an Photos Gigap an Photos Google Book Search Google Book Search Google News NASA National Geographic Maga New York Times Rumsey Historical Maps Tracks4A frica Travel and Tourism Trimble Outdoors Trips Volcanoes Web cams.travel
e.	Click the arrow to the left of "Hot Earth Areas.kml" in the left panel (see arrow).	Image: Control Image:

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Step 2: Explore two volcanoes.

a. Double-click on Mount Fuji in the Places window.

Google Earth will zoom you in to Mount Fuji for you to view it. Mount Fuji is in Japan.

Mount Fuji is a cone-shape mountain. Note that it has a crater at the top. Mount Fuji is a volcanic mountain with very high elevation. Note the snow on the mountain. This tells you that the mountain is high.

b. Double-click on Aleutian Volcanic Chain to view it.

This is a chain of volcanic islands that marks the boundary between the Pacific and North American tectonic plates.

c. Double-click on Mount Cleveland to view it.

Mount Cleveland is part of a cluster of volcanic islands in the central Aleutian Islands of Alaska. It is a cone shaped volcanic mountain that has a crater.

Step 3: Explore hot Earth area features in Iceland.

a.	Double-click on Iceland Hotspot in the Places window to fly to this hotspot.	
	A hotspot is an area with high volcanic activity because of high heat flow from within the Earth. The country of Iceland is located on a hotspot.	
b.	Double-click on Askja in the Places window to view it.	
	NOTE: Uncheck the box to the left of I leland Hotspot in the Places window. This will turn off the red overlay and you will see features more clearly.	
	What does Askja look like? Does it appear to have a volcanic crater or dome? Does it have a crater that now looks like a lake? Do you see evidence of a lava flow? Or does it look like something else?	
	Write a description of Askja and the area around it in the Features in Hot Earth Areas Data Chart on your field guide.	
	Helpful hint: Use the navigation controls at the top right of the screen to explore features.	
C.	Double-click on Hofsjökull (pronounced /hof yo cul/) in the Places window to view it.	
d.	Double-click on Blue Lagoon Area in the Places window to view it.	
	What does the Blue Lagoon Area look like? Does it appear to have water? Do you observe smoke? What do you think the nearby buildings are for?	
	Write a description of the Blue Lagoon Area in the Features in Hot Earth Areas Data Chart on your field guide.	
e.	Double-click on Reykjanes Area (pronounced /re:kjə,nɛs/) in the Places window to view it.	
	What does the Reykjanes Area look like? Does it appear to have water? Do you observe smoke? What do you think the nearby buildings are for?	
	Write a description of the Reykjanes Area in the Features in Hot Earth Areas Data Chart on your field guide.	

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Step 4: Explore hot Earth area features in Yellowstone.

- a. **Double-click** on **Yellowstone Hotspot** in the **Places** window to fly to this hotspot. This is one of the hot Earth areas in the US.
- b. Double-click on Shoshone Lava Field in the places window to view it. NOTE: Uncheck the box to the left of Vellowstone Hotspot in the Places window. This will turn off the red overlay and you will see features more clearly.
- c. Does it appear to have a volcanic crater or dome? Does it have crater that now looks like a lake? Do you see evidence of a lava flow? Or does it look like something else?
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Write a description of **Shoshone Lava Field** and the **area around** it in the **Features in Hot Earth Areas Data Chart** on your field guide.

Helpful hint: Use the navigation controls at the top right of the screen to explore features.

d. **Double-click** on **Craters of the Moon** and **Yellowstone** to view them. Repeat step **c** above and complete the **Features in Hot Earth Areas Data Chart.**



- a. **Double-click** on **Cascade Range** in the **Places** window to fly to it. This is a mountain range that includes both volcanoes and non-volcanic mountains.
- b. Double-click on Rainier in the places window to view it.

NOTE: Uncheck the box to the left of **Cascade Range** in the **Places** window. This will turn off the red overlay and you will see features more clearly.

c. What does Rainier look like?

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Write a description of Rainier and the **area around** it in the **Features in Hot Earth Areas Data Chart** on your field guide.

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

d. **Double-click** on **Mount Saint Helens** and **Crater Lake** to view them. Repeat step **c** above and complete the **Features in Hot Earth Areas Data Chart.**

Step 6: Examine metropolitan areas (areas with cities and suburbs) in the Northwest US to determine where to locate a geothermal power plant.

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a. Click on your Web page in the dock to maximize it. Do not quit the Google Earth application.					
b. Click on Metropolitan Areas in the Northwest US on the student resources page.					
The file is displayed in Google Earth.Five metropolitan areas are displayed in yellow: Seattle, Portland, Spokane, Boise, and Salt Lake City. A metropolitan area is a large population area. The populations of these areas are presented in the table below.Metropolitan AreaPopulation Seattle3,263,497Portland2,159,720Spokane456,175Boise587,689Salt Lake City1,099,973					
c. Check the box to the left of the Yellowstone Hotspot and Cascade Range in the Places window to see the areas where the Earth is hot in the northwest US.					
Examine the locations of the metropolitan areas and the locations of the hot Earth area features and answer questions 1 - 4 on your field guide.					
Answer questions 5 - 8 on your field guide.					