

Analyzing U.S. energy infrastructure: Where does electricity come from?

Energy Literacy Essential Principle 4:
Various sources of energy can be used to power human activities, and often this energy must be transferred from source to destination.

C3 Framework for Social Studies Focus Indicators

- D1:** Explain why compelling questions are important to others (e.g., peers, adults). (D.1.1.3-5)
- D2:** Use maps, satellite images, photographs, and other representations to explain relationships between the locations of places and regions and their environmental characteristics. (D2. Geo.2.3-5)
- D3:** Use evidence to develop claims in response to compelling questions. (D3.4.3-5)
- D4:** Draw on disciplinary concepts to explain the challenges people have faced and opportunities they have created, in addressing local, regional, and global problems at various times and places. (D4.6.3-5)

Grade Level: 9-12. **Time Required:** 3-4 class periods.

Connection to Energy Literacy

Humans transport energy from place to place (Energy Literacy 4.4). In this activity, students examine the sources of energy that are used to generate electricity. Students use maps to identify the locations of energy resources. Then, they consider how energy resources are converted into electricity and how that electricity is transmitted and delivered to people at various locations.

Activity Outline

- Ask students to describe the different sources of energy that are used to generate electricity. Record their ideas. Responses include fossil fuels (coal, oil, and petroleum), nuclear energy, hydroelectric energy, geothermal energy, solar energy, wind energy, and biomass energy.
- Provide students with natural resources maps and population maps.
- Have students analyze the maps, focusing on the locations where energy resources are concentrated and where that energy might be needed the most (highly populated areas).
- Assign energy resources, e.g. coal, geothermal, wind, and solar, to individual students or groups of students.

- Provide students with blank maps of the United States. Tell them to assume that electric power plants are located at the energy resource locations and are using those resources to generate electricity.
- Have students outline, on their maps, the locations of the energy resource they have been assigned.
- Have students outline, on their maps, population centers.
- Ask students to draw lines that connect natural resource areas to population centers. These lines represent transmission lines that carry electricity from electric power plants to users.
- Have students or groups present their findings to the class. Discuss with them how the use of a natural resource for generating electricity can be affected by the distance of that resource from those who need the electricity.