

## REGIONAL ELECTRICITY GENERATION

### Part I

Much of the information and discussion in this introductory lesson gives students a “big picture” of electricity generation in the United States. If students can grasp the role of nuclear energy in providing the electricity used in the United States and the relationship between daily life and electricity, they should be better prepared to grapple with the issues surrounding nuclear waste and more interested in trying to understand the tradeoffs involved in utilizing any energy source, including nuclear energy.

Students may be interested in identifying the energy sources used to generate electricity in their State and/or region and in comparing sources used around the country. A discussion of the table *Net Generation by Energy Source, Census Division and State, 1994* (p. 126) should introduce this activity. Students may be interested to know that a gigawatt is a billion watts. To help students visualize such a volume of energy, bring in a lamp with a 100 watt light bulb. Remove the shade and turn on the switch. Ask students to imagine that light if it were a million times brighter.

Draw the class attention to your State and encourage students to discuss the following:

1. Which source is used to generate most of the electricity in our State?

*(Answers will vary by State)*

2. Why?

*(Encourage students to consider natural resources readily available in the State - number of waterways, coal, uranium, petroleum, natural gas, etc.)*

3. How dependent is our State on nuclear energy?

*(It may be useful to have students consider their daily use of electricity in all forms and then ask them to think of reducing that use by cutting out nuclear energy as a source. If students live in a State where no utility uses nuclear energy to generate electricity, they may discuss 1) the possibility that the utilities in their State may purchase electricity generated by nuclear powerplants or 2) the possibility that they use products made using electricity from nuclear powerplants.)*

4. What might be included in “other” sources?

*(The sources included in the data shown here are solar energy, waste to steam, wind energy, geothermal energy, and wood burning. Although tidal energy is not included in this table, students may suggest it as another possible energy resource.)*

Because each group will be working with different census divisions, it will be difficult to work through a first example together. You may want to model this activity by calculating and drawing a pie chart illustrating the net generation by energy source for the entire United States on the board with your class. Use the following example *Making a Pie Chart – United States* (p. 128) as a guide.

**Part II**

Divide students into ten groups and assign each group a census division. Students should work together to complete the activity sheet entitled *Regional Electricity Generation* and to draw the pie charts (circle graphs) for their division. Numbers in bold-faced print represent totals for each energy source in each division. Students will need at least one protractor per group. A calculator will be helpful for finding percentages and converting to degrees.

**Part III**

It may be helpful to make a transparency from the answer sheets: *Net Generation by Energy Source and Census Division - Pie Charts*, so that each group may quickly evaluate their work. Allow students time to complete and check their graphs. Using the pie chart as a reference, discuss the following:

1. Which census division uses the greatest percentage of each source?

*Coal — East North Central; Petroleum — Pacific Non-Contiguous; Natural Gas — West South Central; Nuclear — New England; and Hydroelectric — Pacific Contiguous*

2. Why?

*(Again, you may want to discuss resources readily available in each division and even relate that to the geography of the region.)*