

# Lesson 1: Our Energy

Encourage students to work in groups to research the variety of energy sources used in the United States and creatively present their findings to the class.

## OBJECTIVE

**Goals:** Language Arts—gather and use information for research; Physical Science—understand the structure and properties of matter

**Time Required:** One 40-minute class period, plus research and homework time

## MATERIALS

[Student Worksheet 1 Our Energy \(PDF\)](#), pen/pencil, access to library resources

## DIRECTIONS

1. Explain that in the United States electricity is generated using a variety of energy sources. These sources include coal, wind, natural gas, hydroelectric, and solar power. Each source comes from a different state and is collected in a different way. Some energy sources are dug out of the ground, while some are collected from the movement of air or water.
2. Divide the class into five teams and assign each team an energy source. Distribute copies of [Student Worksheet 1 \(PDF\)](#). Instruct them to use library resources to research their topic as homework. Have them use the questions on Worksheet 1 to guide their research. The questions will help them focus on the important information surrounding their topic. Students should collect notes and use them to create a written report.
3. Each team member should present a specific part of the report. Encourage students to be creative in their presentation. Visual aids can include posters with photos or illustrations, drawings on the chalkboard, graphs and tables, scale models, or even puppets. Teams can make a short video in the form of a newscast or documentary. Teams could also write a short skit in the form of a talk show about the topic and perform it for the class.

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## KEY TERMS

**Hydroelectric** - Water is currently the leading renewable energy source used by electric utilities to generate electric power. Hydroelectric plants operate where suitable waterways are available; many of the best of these sites have already been developed.

Energy Information Administration

<http://www.eia.doe.gov/>

**Coal** (as an energy source) - Coal is used primarily in the United States to generate electricity. In fact, it is burned in power plants to produce more than half of the electricity we use.

The United States Department of Energy: A Brief History of Coal Use

[http://fossil.energy.gov/education/energylessons/coal/coal\\_history.html](http://fossil.energy.gov/education/energylessons/coal/coal_history.html)

**Wind** (as an energy source) - The wind flow, or motion of energy when harvested by wind turbines, can be used to generate electricity. Wind-based electricity generating capacity has increased markedly in the United States since 1970, although it remains a small fraction of total electric capacity.

Energy Information Administration

<http://www.eia.doe.gov/>

**Natural Gas** (as an energy source) - Millions of years ago, the remains of plants and animals decayed and built up in thick layers. This decayed matter from plants and animals is called organic material -- it was once alive. Over time, the mud and soil changed to rock, covered the organic material and trapped it beneath the rock. Pressure and heat changed some of this organic material into coal, some into oil (petroleum), and some into natural gas -- tiny bubbles of odorless gas. The main ingredient in natural gas is methane, a gas (or compound) composed of one carbon atom and four hydrogen atoms.

Energy Information Administration

<http://www.eia.doe.gov/kids/energyfacts/sources/non-renewable/naturalgas.html>

**Solar Power** - Solar thermal devices use direct heat from the sun, concentrating it in some manner to produce heat at useful temperatures. The modern solar industry began with the oil embargo of 1973-1974 and was strengthened with the second embargo in 1979.

Energy Information Administration

<http://www.eia.doe.gov/>

Name: \_\_\_\_\_

# Our Energy

These questions will help you organize the research about your topic. You may need an additional sheet of paper.

**1** What source of energy are you researching? \_\_\_\_\_  
\_\_\_\_\_

**2** How long has this kind of energy been used? \_\_\_\_\_  
\_\_\_\_\_

**3** How is this energy collected from nature? \_\_\_\_\_  
\_\_\_\_\_

**4** What kind of equipment is used to collect this energy? \_\_\_\_\_  
\_\_\_\_\_

**5** In what states is this energy found? \_\_\_\_\_  
\_\_\_\_\_

**6** What are the benefits of this kind of energy? \_\_\_\_\_  
\_\_\_\_\_

## Your Sources

Keeping track of your sources is an important part of research. List the titles of the books, Web sites, magazine articles, or newspaper articles that you used in your research. Use an additional sheet of paper if necessary.

|                                    |   |
|------------------------------------|---|
| Books: _____<br>_____<br>_____     | Magazine articles: _____<br>_____<br>_____  |
| Web sites: _____<br>_____<br>_____ | Newspaper articles: _____<br>_____<br>_____ |