



# Solar Ovens

## Solar Ovens Lesson 1: What is Energy? Where does it come from?

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**DESCRIPTION:** Students will be introduced to the scientific meaning of energy and complete a lesson on forms of energy vs. sources of energy. They will learn that most of the energy they use comes from fossil fuels. (Petroleum 35%, Natural Gas 27%, Coal 18%=82%)

**Engagement Teaser:** The teacher will let the students know that they will be using what they learn about energy in this unit to cook and egg using the sun's energy.

**GRADE LEVEL(S):** 4 and 5

**SUBJECT AREA(S):** Science, energy, energy transformation, potential energy, kinetic energy, chemical, nuclear, elastic, gravitational, electric, light, heat, sound, motion, energy sources,

**ACTIVITY LENGTH:** 00 hours, 45 minutes

**LEARNING GOAL(S):** Students will obtain basic background information on energy. Students will use their background knowledge to determine what different examples of energy are.

**STANDARDS MET:**

### Next Generation Science Standards:

5-ESS3-1 Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

5-PS3-1 (element) Energy can be transferred in various ways and between objects.

5-PS3-1 Use models to describe that energy in animal's food (used for repair, growth, motion, and to maintain body warmth) was once energy from the sun.

5-ESS2-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. (Clarification Statement: Examples could include the influence of the ocean on ecosystems, landform shape, and climate; the influence of the

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atmosphere on landforms and ecosystems through weather and climate; the influence of mountain ranges on winds and clouds in the atmosphere. The geosphere, hydrosphere, atmosphere, and biosphere are each a system.)

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### Student Background:

None necessary.

### Educator Background:

Approx. 82 % of the energy used in the U.S comes from fossil fuels.  
(Petroleum 35%, Natural Gas 27%, Coal 18%, Other 2%=82%)

### Materials List:

- Solar Energy Student Workbook
- Access to website: <http://www.eia.gov/kids/>
- Chart paper and markers
- Free Workbooks from Portland General Electric: [http://www.e-smartonline.net/portland/teachers/68110\\_materials/index.html](http://www.e-smartonline.net/portland/teachers/68110_materials/index.html) (Your Renewable Energy World, Energy Efficiency World, The Clubhouse Kids Make a Big Difference)

### Vocabulary:

- Energy: The ability to do work.
  - Forms of Energy: potential, kinetic
  - Types of Potential Energy: Chemical, electrical potential, nuclear, elastic
  - Types of Kinetic Energy: thermal, electrical kinetic, sound, light
  - Source of Energy: sun, fossil fuels, wind, battery, food, etc.
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### Lesson Details:

- Question of the day/exit slip: What is energy? Where does energy come from?
- STEP 1: Begin the lesson by asking students, "What is energy?" Have them write their definition in their Energy Student Workbooks on page 5. Most likely, they will struggle. After a few minutes, tell that that if they are struggling to define energy that they can simply list activities that they need energy for. Have several students share their ideas. Eventually, show them the definition on the Energy Kids website under Energy Basics.
- STEP 2: Ask students to point out things in the classroom that are doing work. In their student workbooks, have them do a quick sketch of the items working and then list where

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that item is getting its energy. EXAMPLES: person=food, calculator=battery, lights and other items=coal

- STEP 3: If possible, give the students time to explore the Energy Kids website on their own.
- **Possible extension lesson:** Renewable vs. nonrenewable may be a difficult concept for some students to master. A great activity to drive this home is this lesson plan using popcorn:

[http://www.msichicago.org/fileadmin/Education/learninglabs/lab\\_downloads/RE\\_renewable\\_or\\_not.pdf](http://www.msichicago.org/fileadmin/Education/learninglabs/lab_downloads/RE_renewable_or_not.pdf)

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