Renewable Energy

www.earthday.net

www.rprogress.org

Grade Level: High School
Subject Correlation: U.S. History, Science, Math
Objective: By discussing the history of energy in the U.S and the technological inventions of the 20th century, students will examine the United States' current and future energy needs.

1. Students will analyze the increasing need for energy in the US based on the accessibility of new technological innovations.
2. Students will be able to describe different forms of renewable energy sources and compare the impacts of renewable and non-renewable energy sources on the earth and society.
3. Students will identify where renewable energy options are appropriate and their effect on overall energy use in the US.

Future Use: Terms used will recur in current and future classes. The lesson will raise awareness of how energy-use trends can be seen throughout history.
Teacher Preparation: Download and prepare copies for individuals or groups of students of *Renew Our Future*. (http://www.earthday.net/pdf/howto/schools/renew.pdf) To get ideas about major modern innovations to use in this lesson, browse the Web site, 20th Century Inventions, (Visit http://inventors.about.com/ and click on "20th Century Inventions.")
Length: One class period- one science section
Homework Assignment:

1. Prior to class, students should research renewable and non-renewable energy sources and the uses for each. Download EDN's *Renew Our Future* resource by signing up or logging into Earth Day Network's Teachers Corner from the homepage of the Web site, www.earthday.net.
2. Also see the following EDN Web site and links page on energy: http://www.earthday.net/goals/energy.stm
3. After the class discussion, write-up a proposed "future- history" as influenced by our future energy sources (will it still be petroleum based? Or renewable?), and what will the environment be like in accordance with our energy use and supply?

Outline (with times)
10 minutes
Create a timeline of the 20th century, inserting inventions which require increased energy use (automobile, airplane, air conditioner, home electricity, heater…). For ideas, see 20th Century Inventions link noted above. Note western society's increased dependence on energy to operate increasingly demanding modern innovations.

10 minutes
Based on the readings (Renew Our Future, Energy), compare and contrast renewable and non-renewable energy sources, their availability, and the advantages and disadvantages of each.

15 minutes
Small group discussion – divide the class into groups. Each group should take a few minutes to discuss the following questions:

a) How does energy influence history and society?
b) Compare 20th century inventions with the demand for energy.
c) What is the current status of our energy supply? What problems might we encounter in the future if we rely too heavily on these resources?
d) What are some potential new sources of energy?

10 minutes
As a class, discuss the following:

a) What are the advantages/disadvantages for a society to switch from non renewable to renewable sources of energy?
b) Is switching to renewable energy sources an easy process? Is it a necessary process? How long will it take?
c) Why don't companies manufacture more products that use renewable energy?
d) Does U.S. government policy affect these decisions?

Homework
Students can write an essay defending their opinions or describing the status quo in 25 years as it relates to energy use. Students can submit essays as editorials to the school and local newspapers.

Teacher may want to research environmental organizations operating in their community. Find organizations by conducting a Web search or looking on Earth Day Networks' database of environmental organizations by location. (*Visit EDN's homepage at* www.earthday.net *and go to "Groups and Events" to find an environmental organization near you.*) Inquire into hot local environmental topics and what can be done about them. How can your students get involved? Invite a volunteer from a local environmental group to speak to your class.

Extension Activities: Students can look into their energy sources at home and at school.

- Find out where the local utility is buying energy.
- Is any percentage from renewable sources?
- Are there state policies that encourage utilities to include more renewable energy sources?
- Many rural communities are considering building wind turbines. Is your community investigating this? What has it found out or decided?
- Students researching these questions may write letters to the editors of local papers based on their findings.