



\$100 challenge  
Teacher's Guide

Clean Foundation  
126 Portland St  
Dartmouth, Nova Scotia  
B2Y 1H8



**EnviroEd**

Email: [EnviroEd@clean.ns.ca](mailto:EnviroEd@clean.ns.ca)  
Phone: 902-420-3474  
Fax: 902-982-6768

## \$100 challenge

Give the students 100\$ to spend. Can spend on anything.

Each person has to advocate for where to spend the money, based on the pros and cons of each resource. Alternatively, have each student represent just a single type of resource and have them make a presentation (of the pros and cons) and have them explain why they should be the chosen energy source. Pg. 58

Discuss the possible socioeconomic effects of a large-scale transition to renewables. Devise a simulation in which different students represent different members of the community: fossil-fuel power plant worker, a townspeople, a utility company, etc. Have each student imagine what a transition to renewables would be like from his or her perspective. Debate whether a renewable energy generating plant should be built in your hometown

Study the availability of different types of renewable resources—solar, wind, hydropower, geothermal, and biomass—in different regions of the United States. You can use the maps provided in the “Coal Comes to Anytown” activity (pg. 64) as a resource. Have students determine which type(s) of renewable energy might be most feasible in each region of the country. Find out which regions or states currently use the most renewable energy and which use the least.

Have students draw a “futures wheel” for a transition to specific renewable energy sources in the United States. A futures wheel is a teaching tool designed to help students sort out what might happen if a particular event were to occur. To prepare the wheel, a single topic or event is placed at the center. Off this “hub,” students place events or actions that might result from this central idea.

These secondary actions in turn trigger tertiary actions and the wheel keeps expanding.

For example, a shift to greater use of biomass for auto fuels could produce the following effects (draw your own diagram):

- More land for energy crops—more money and jobs for farmers and workers in farm-related industries—less unemployment—less migration from Farm Belt states • less land for food crops—less food to export—more world hunger
- Increased use of fertilizers and pesticides on land—water contamination and erosion increase • less demand for gasoline—lower gas prices
- More factories for fuel production—more jobs—less unemployment
- Auto fuels pollute less —less money spent on pollution abatement—less air pollution—health improves—less money spent on health care Discuss how likely or unlikely these scenarios are.

Study energy use at 50-year intervals in U.S. history, beginning with the colonial period. What kinds of energy were used during each period? What caused changes in the types of energy being used? How did changes in the types of energy used change the economy and society of the United States? Have students write a story about what their life might have been like during each of these periods, incorporating the types of energy they would have used to cook food, get to school, do chores, entertain themselves, etc.

Have students research energy use in different countries around the world. Which countries use the most renewable energy? Which use the most in proportion to their total energy use? What types of renewable energy are most widely used? How does the type of energy used in a country affect people's lifestyles?

Research historical uses of wind, solar, and water power. Collect historical photos and create a display on the history of these technologies.

Now tell the class to take a mental trip into the future. It is 50 years from now. Half of all the energy we use in the United States comes from renewables: sun, wind, water, biomass, earth heat (geothermal). Ask students to think of some inventions that have made this possible. How are houses, offices, and schools heated and lighted? Where does the energy used to run factories come from? What do people use for transportation? Have students write down their ideas or draw pictures. (Alternatively, you can use this as a homework assignment.) Collect these pictures and ideas.

In this activity, students will trace their personal energy supply to its sources.

## OBJECTIVES:

- To examine the many different ways students use energy
- To understand how that energy is produced and transmitted to students' homes, vehicles, and schools
- To determine how much of the energy students use comes from renewable sources
- To get students to think more broadly about the subject of energy and their use of energy

## 2 SUBJECTS:

Social studies, science

## TIME:

two 45-minute class periods, at least a week apart

## PROCEDURE:

### Day 1

1. Tell students that they are going to participate in an activity to discover where and how they get the energy they use.
2. Ask students to list all the ways they use energy in their daily lives. You can either do this as a class, in small groups, or with each student writing out his or her own list. Make the lists as comprehensive as possible. You should probably restrict the list to students' direct use of energy (e.g., to power their

televisions, school buses), rather than including such indirect uses as providing energy for the factory that manufactures the jeans they wear.

3. Group the lists by energy source used (e.g., wood for wood stoves, sunlight for calculators, natural gas for home heating, oil/gasoline for cars). For those energy uses that run on electricity, place them in a category titled “electricity.”

4. Ask the students if they can trace any of the other materials used for energy back to their original sources. Write the answers on a chart. For example, if students have wood stoves, how do they get the wood and where does it come from? Where do they get the gasoline for their cars? They should trace the energy as far back toward its origin as they can: Where does the gas station get its gasoline? Where does the school get its electricity?

5. When students are unable to trace a particular energy use back to its source, place a question mark on the chart. So, if they do not know where the gas station gets its gasoline, your chart would look as follows: Car ← gas ← gas station ←?

10 UNION OF CONCERNED SCIENTISTS Renewables Are Ready Teacher’s Guide 11

6. Then assign individual students or groups of students to find answers to replace the question marks. Tell them that their job is to trace the energy back to its source and that they will be asked to report back to the full class. A group of students can go to local gas stations to see if they can find out where the gasoline is shipped from, where it is refined, and so on. Several students should work together on the subject of electricity. They should find out what energy sources their local utility uses to supply electricity, where the power plants are located, and how much electricity comes from each energy source.

## **Day 2**

1. After students have had time to complete their homework assignments, have them report back to the class.

2. As the students present their information, add to the chart that traces the various energy uses back to their sources.

3. After all the students have presented their reports, look over the chart and identify any ways in which students use renewable energy sources.

## **Optional follow-up activities**

1. Science classes can study the various processes power plants use to generate electricity.

2. Invite a representative of the utility company to visit the class to discuss how the company obtains and distributes its electricity.