



The Government Energy Budget: A Simulation

This simulation encourages students to weigh the relative merits of various energy sources and envision the future of energy use in the United States.

Each year, the Department of Energy (DOE) spends about \$4 billion on research and development of future energy supplies. In this simulation, students will decide how this money should be spent. Through this activity, students will:

- understand that no single energy source can supply all of the nation's energy; a variety need government support
- be able to identify some of the advantages and disadvantages of different energy sources
- practice decision-making skills and prepare oral presentations aimed at persuasion
- experience the difficulty of developing fair energy policies that satisfy everyone

GRADES: 9–12

SUBJECTS: social studies, economics, science

TIME: two to three 45-minute class periods

NUMBER OF STUDENTS: 12 or more

PROCEDURE:

A. Setup: one half-period

1. At least one week before you plan to conduct the simulation, tell the class that they will be participating in a simulation on the future of America's energy policy.
2. Appoint at least three students to represent the Department of Energy. Tell them that they will determine future government spending on energy. Their decisions will help determine which energy sources will prosper and expand in coming decades.
3. Appoint one or two students to be advocates for each of the following energy sources. (If you would like the students to work together in larger teams, you can use just a portion of this list.)
 - biomass
 - coal
 - energy conservation and efficiency improvements
 - geothermal

- hydrogen
- hydropower
- natural gas
- nuclear fission
- nuclear fusion
- oil
- solar
- wind

Tell these students that their job is to get the Department of Energy to give as much money as possible to their particular energy source.

4. Explain that the Department of Energy provides money for the research and development of various energy sources. The agency submits a budget to Congress that sets out which energy sources need research money the most and which are most crucial to the nation's future.

In the past, most of the money has gone for research on nuclear fission, nuclear fusion, and fossil fuels. In the late 1970s and again recently, energy conservation and, to a lesser degree, renewable energy have also received significant amounts, although these sources still receive only a small fraction of the total budget.

In part to satisfy the various politically powerful energy industries, the DOE budget has been split among a wide range of energy sources. But even if politics were not a factor, this strategy would still make sense, since the United States will need a variety of sources in the future.

For the purposes of this simulation, the Department of Energy will have 100 energy dollars to split among the various energy sources.

5. Give the students who will be the advocates for the various energy sources a homework assignment. They will have to prepare a three- to five-minute presentation asking the Department of Energy for money. In order to make their presentation, they need to find out as much as they can about their energy source. In particular, they should find out the following:

- what its advantages are (possibilities include current low cost, potential future low cost, safety, low environmental impact, plentiful supply, availability within the United States, flexibility in terms of where and how it can be used)
- what its disadvantages are (possibilities include high cost, safety concerns, environmental problems, limited supply, reliance on foreign suppliers, only works in certain places or for limited uses)
- what its current state is (how widely it is used, what it is used for)
- why it needs government research and development money (to develop cheaper or more efficient technologies for using it, to find new uses for it, to find ways to reduce its environmental impact)

With this information in mind, the students should prepare a presentation that will persuade the Department of Energy to give them a large share of the department's \$100. Their presentation should include:

- why their energy source needs government support
- why their energy source is important to America's future
- why the use of their energy source should be expanded

B. The simulation: one to two periods (depends on how many of the 12 energy sources are used)

1. Have the students who represent the Department of Energy sit in the front of the class.
2. Explain that each of the energy advocates (or teams of energy advocates) will have an opportunity to present the case for their energy source.
3. Have each energy advocate or team make a three- to five-minute oral presentation to try to persuade the Department of Energy representatives to support their energy source.
4. After each presentation, the DOE representatives should be allowed to question the energy advocates. The DOE representatives should especially try to find out each energy source's disadvantages. The energy advocates should respond to all questions truthfully, but should nevertheless try to place their energy source in the best possible light. They should not volunteer negative information about their energy source.
5. After all the energy advocates have made their presentations, give the DOE representatives an assignment (either for homework or class time). Tell them they have to prepare a \$100 budget. They can divide this money any way they choose among as many energy sources as they would like to fund. They should meet as a group to make their decisions. Tell them that they will have to justify their decisions and explain them to the class.

C. The Department of Energy's decisions: one half-period

1. In another class period, after the DOE representatives have had a chance to meet and prepare their presentation, ask them to present their budget to the class. Remind them that they need to explain why they decided to give different energy sources their recommended amounts of money.
2. In follow-up discussions, other students can comment on whether they agree with the DOE's budget recommendations.

D. Optional follow-up activities

- As a class, students can develop a list of the advantages and disadvantages of all the energy sources.
- Write letters to your congressional representatives and to the Department of Energy explaining the class's budget recommendations. Ask for their reactions.