ENERGY SCIENCE

Geology and chemistry are the major fields of science in the study of energy. The U.S. Geological Survey's (USGS) Energy Resources Program has geologists that specialize in petroleum and coal research. Geologists work with a variety of other specialists that include geophysicists, sedimentologists, geochemists and other scientists.

We use mainly non-renewable energy sources to make electricity. In the United States, coal is the number one energy source for generating electricity. Even if we were able to generate all our electricity needs from non-renewable energy sources, we still could not live without oil, gas, and coal. Oil, gas, and coal are the essential raw materials needed for many common products in the world such as: plastics, paints, fertilizer, antifreeze, dyes, photographic film, medicines, tar, synthetic fibers, ink, crayons, eyeglasses, tires, and heart valves.

Molten rock (magma) associated with active volcanoes and deep in the Earth's crust provides the heat needed to create most high-temperature geothermal resources that have potential for electricity generation. USGS geologists and volcanologists are working to answer the question, "Can the Earth's natural heat be usefully harnessed?"

The World War I Lever Act led to the creation of the United States Fuel Administration that implemented conserving and increasing the production of coal and gasoline in the war effort. The new agency funded posters targeting home-front efforts that promoted various conservation efforts.

Library of Congress

Visit the USGS Energy Resources Program at:
http://energy.usgs.gov/

RECYCLING AND ENERGY

Aluminum is a very lightweight, versatile metal that is made from a kind of clay called bauxite. It takes huge amounts of electricity to make aluminum from bauxite.

Today, it takes less electricity to produce a pound of aluminum than it did 25 years ago, mainly because of recycling. Using recycled aluminum requires about 95 percent less energy than converting bauxite to metal. Recycling cans also saves tons of greenhouse gases that are produced to make new cans from virgin materials.

The U.S. uses more aluminum than any other country, mostly in beverage cans. We recycle about 50 to 65 percent. Currently, there is a decline in recycling. In fact we are at the lowest rate in 15 years according to the Container Recycling Institute. This becomes a huge energy waste. THINK, CAN DO!

ECONOMY AND ENVIRONMENT: FINDING A BALANCE

The development of energy resources provides jobs for many people and contributes to our Nation's economic health. Removing coal, oil, and natural gas from the Earth, however, can affect the environment. Most geologic energy resources contain materials that can harm the environment (and people), especially if these materials are released in large amounts. These harmful effects can last for several years or longer. The USGS studies ways to minimize the negative effects of developing and using energy resources.

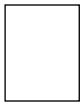
This photomicrograph of a coal sample shows the mineral pyrite (the whitish area), the principal source of sulfur emissions from burning coal. When burned, the sulfur in the pyrite may be released to the air. Large amounts of sulfur can mix with water in the air to form acid rain. Acid rain has affected lakes (and fish populations) in the northeastern United States. Acid rain can also have corrosive effects on limestone and marble buildings or sculptures and even automobile paints and other coatings.

1910 California oil gusher. (Library of Congress)

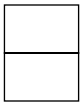
The first well to strike oil in Southern California was drilled in 1892 and by the early 1900's California was in the midst of an oil boom. This early oil production resulted in environmental effects that would later become part of the "reclamation" movement.

FOLDING INSTRUCTIONS

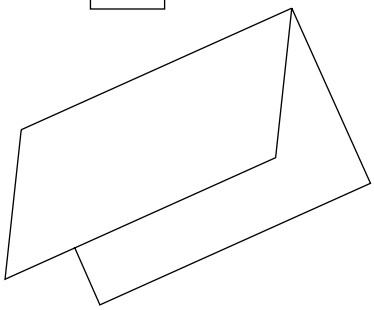
You can print out the second page of this Adobe PDF file and fold and cut according to the following instructions—collect them all!

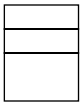


1. Start with the 8.5x11 piece of paper you printed out.

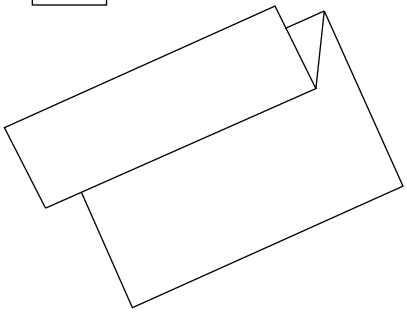


2. Fold in half shortwise, printed side out.

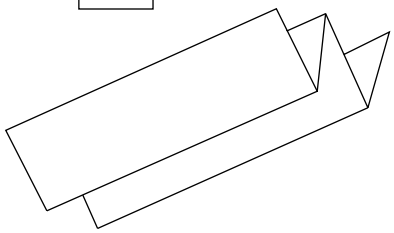


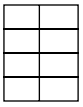


3. Fold back one edge to the middle fold.

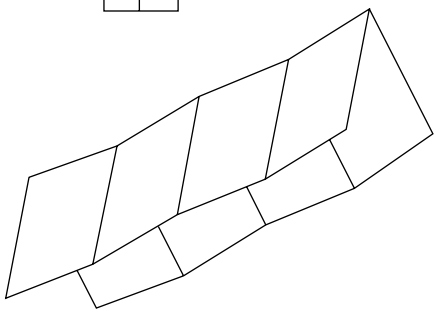


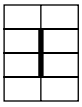
4. Fold back the other edge to the middle fold.



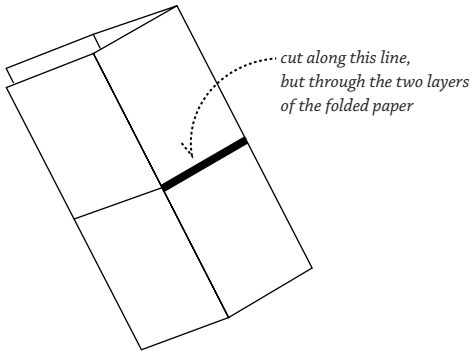


5. After unfolding the sheet, fold longwise, printed side out.

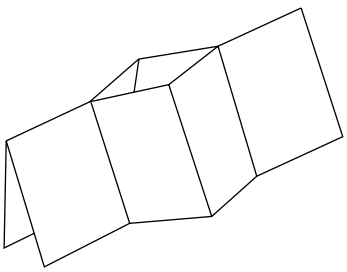




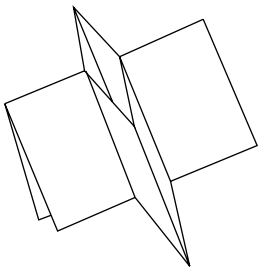
6. Refold shortwise, then use scissors to cut along the line marked here in bold.



7. Holding each end, push to the middle to open up where you made the cut.



8. Push all the way in.



9. Fold the left edge over to create the cover. Now it is a book!