Empowering Students

In times of national crisis, many children become frustrated by feelings of helplessness. They want to do something to help. Let them know that learning is an important job. Empower your students by encouraging them to do their job well by learning all they can. Students can help their country by learning about energy and using it wisely.

NEW SOLAR ACTIVITIES

NEED has developed hands-on solar energy units for primary and intermediate grade levels, with funding from the Illinois Department of Commerce and Community Affairs.

The Energy From the Sun (K-4) unit introduces primary students to basic concepts of solar energy with background information and hands-on activities. Students cook with solar ovens, build cardboard houses with PV cells that run lights and fans, and more. The Energy From The Sun Kit includes multiple thermometers, radiometers, solar balloons, solar ovens, solar house kits, and sun-sensitive paper. The Teacher and Student Guides will be available for review on NEED’s website in November. The kit will be available for purchase in December for $350.

The Exploring Solar Energy (5-8) unit provides a more in-depth understanding of solar energy with background information and center-based activities. The kit includes five sets of radiation cans, thermometers, PV cells, motors, concave mirrors, and solar collection materials. The Teacher and Student Guides will be available for review on NEED’s website in November. The kit will be available for purchase in December for $300.

See pages 3-4 for sample solar activities.

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CALENDAR OF EVENTS

For more information, contact info@need.org or 1-800-875-5029.

November 2001

11/2 ILEED Workshop - Mt. Carroll, IL
11/2 AL-NEED Workshop - Baldwin, AL
11/6 ILEED Workshop - Charleston, IL
11/6 KyNEED Workshop - Bowling Green, KY
11/7 ILEED Workshop - Mt. Vernon, IL
11/7 RI NEED EnergyWise Schools Workshop - Cranston, RI
11/8 ILEED Workshop - Alton/Godfrey, IL
11/8 Cicero Public Schools NEED Workshop - Cicero, IL
11/8 RI NEED EnergyWise Schools Workshop - Cranston, RI
11/9 Chicago Public Schools NEED Solar on Schools Workshop - Chicago, IL
11/8-10 NEED Sessions and exhibits at the National Science Teachers Association Regional Convention - Columbus, OH. A NEED reunion event is planned for current and former NEED teachers - email Mary Spruill (mspruill@need.org) for more information.

11/10
Wake County NEED Workshop - Raleigh, NC
11/12 KyNEED Workshop - Perry County, KY
11/12 Bayfield NEED Workshop - Bayfield, CO
11/13 La Plata County Science Cluster Workshop - Bayfield, CO
11/13 KyNEED Workshop - Leslie County, KY
11/14 KyNEED Workshop - Knott County, KY
11/14 RI NEED Workshop - Providence, RI
11/15 ILEED Workshop - Schaumburg, IL
11/19 ILEED Workshop - Quincy, IL
11/19 KyNEED Workshop - Highland Heights, KY
11/20 KyNEED Workshop - Mayfield, KY
11/22-23 NEED Office closed for Thanksgiving holiday
11/27 KyNEED Workshop - Berea, KY
11/28 KyNEED Workshop - Owensboro, KY
11/30-12/2 Energy Training Certification - Energy Management for High School Teachers and Students - Bloomington, IL

December 2001

12/2-3 ILEED Teacher Advisory Board - Chicago, IL
12/10 KyNEED Workshop - Paducah, KY
12/11 KyNEED Workshop - Independence, KY
12/12 KyNEED Workshop - Whitesburg, KY

(for a listing of Ohio workshops see www.ohioenergy.org/workshops2.htm)

June 2002

6/21-24 National Youth Awards for Energy Achievement - Hyatt Regency Crystal City, VA

July 2002

7/6-11 ILEED Camp KEEP (Kids for Energy and Environmental Protection) - Algonquin, IL
7/8-12 KyNEED Statewide Energy Conference for Educators
7/13-17 NEED National Energy Conference for Educators - Galveston, TX
7/13-19 ILEED Camp KEEP (Kids for Energy and Environmental Protection) - Cantrall, IL
7/20-24 NEED National Energy Conference for Educators - Charleston, SC
Karen Reagor Wins Governor’s Environmental Excellence Award

Congratulations to Karen Reagor, NEED’s Regional Director and Kentucky Coordinator. Karen was awarded the Governor’s Award for Environmental Excellence in the energy education category at the Kentucky Governor’s Conference on the Environment on October 30, 2001. Karen was recognized for her outstanding achievement in developing the KyNEED Project into one of the nation’s best energy education programs with collaborative partnerships throughout Kentucky.

Youth Awards WILL Be Held In June!

We’ve received several calls since September 11 wondering about the status of the Youth Awards program. We know that some school systems have restricted field trips until the end of the year, but are confident that the Youth Awards program will be a success. The hotel has assured us that they will make whatever accommodations are necessary to ensure the safety of all participants, and Reagan National Airport has reopened. If flights into Reagan become a problem, we will redirect flights to Dulles or BWI and arrange bus service. The program is from June 21-24, 2002. The registration fee is still $500.

Park View Students Shine

The Park View Middle School NEED Team of Cranston, RI, led by Joanne Spaziano, were the stars at a recent Home Depot Energy Expo. Their presentations on energy efficient lighting and NEED’s Energy Conservation Contract will help Rhode Islanders save valuable energy dollars. The group also hosted a booth at the Rhode Island Energy Expo at the Providence Civic Center. Both expo presentations were sponsored by Narragansett Electric and the Rhode Island State Energy Office.

Energy$mart Schools Partnership

The NEED Project is pleased to announce that it is an official Education Partner with the Department of Energy’s Energy$mart Schools Program. For more information on Energy$mart Schools, contact Blanche Sheinkopf at bsheinkopf@energysmartschools.net or Mary Spruill at mspruill@need.org.

New Program in Colorado

NEED launched a new program in Bayfield Public Schools in September. Educators participated in a two-day workshop and received a full complement of NEED materials and kits, thanks to the support of BP. For more information on the Bayfield program, contact info@need.org.

Illinois Program is Rocking

For 2001-2002, the Illinois Department of Commerce and Community Affairs is sponsoring a full NEED/IILEED workshop series. Fifteen workshops are being conducted throughout the fall, introducing hundreds of new teachers and students to the NEED program.

Energy Ant is on the Move

The EIA Kid’s Page Mascot – Energy Ant – received an all-expenses-paid trip to Ventura, California in October. Energy Ant was hosted by the U.S. Minerals Management Service and Pacific Region Public Affairs Officer John Romero. Energy Ant boarded a helicopter and toured a Venoco, Inc. offshore oil and gas production platform with cameras rolling. The three foot tall Energy Ant is being used to chronicle energy field trips to locations that most students and teachers will never have a chance to see. Log-on to www.eia.doe.gov/kids for Energy Ant’s latest adventures!
PRIMARY ENERGY ACTIVITY: Energy from the Sun

When solar energy hits objects, some of the energy is reflected and some is absorbed and changed into heat. Some colors absorb more solar energy than others.

Step 1: Put three thermometers in a sunny place.
Step 2: Cover the bulb of one with black paper. Cover the bulb of one with white paper.
Step 3: Predict which thermometer will get hottest. Number them 1-3, with 1 as the hottest.
Step 4: Wait five minutes.
Step 5: Record your results by coloring the tubes of the thermometers.
Step 6: Look at the results and number the thermometers 1-3 with 1 as the hottest.

How well did you predict?
ELEMENTARY EXPLORATION: Solar Collectors

Solar collectors absorb radiant energy, convert it into heat and hold the heat.

PURPOSE: To explore solar collection.

MATERIALS: 4 plastic containers, black & white construction paper, water, thermometer, plastic wrap, rubber bands, scissors

Step 1: Cut two circles each of white and black construction paper to fit the bottom of the containers. Place the circles on the bottom of the containers and cover with 100 ml of cold water. Record the temperature of the water.

Step 2: Cover one black and one white container with clear plastic wrap held in place with rubber bands.

Step 3: Place the containers in a sunny place so that the sun is directly over the containers. Record the temperature of the water after ten minutes.

Step 4: Calculate and record the changes in temperature.

| RECORD THE DATA |
|-----------------|-----------------|-----------------|-----------------|
|                 | WHITE NO COVER  | BLACK NO COVER  | WHITE WITH COVER|
| Original        |                 |                 |                 |
| Temperature-C   |                 |                 |                 |
| Temperature-C   |                 |                 |                 |
| After 10 min    |                 |                 |                 |
| Change in       |                 |                 |                 |
| Temperature     |                 |                 |                 |

CONCLUSIONS: Look at your data. What have you learned about collecting solar radiation?
INTERMEDIATE ACTIVITY: Solar Cooking

GOAL: To build a solar hot dog cooker and test its ability to function.

MATERIALS PER STUDENT:

- 1 Pringles Potato Chip Can
- 1 Piece of Transparency Film (8” x 4”)
- 1 Scissors or Exacto Knife
- 1 Hot Dog
- 1 Wooden Skewer (14”)
- Tape

PREPARATION:
1. Prepare a set of materials listed above for each student.
2. Make a copy of these instructions for each student.

STUDENT PROCEDURE:

1. Radiant energy from the sun can be reflected and concentrated on an object. Much of the radiant energy absorbed by an object is converted into thermal energy (heat). Radiant energy can pass through clear materials much more easily than thermal energy.

2. Cut the Pringles can as shown in Diagram 1. Bend back the flaps but do not remove from the can. They will be used to reflect radiant energy onto the hot dog.

3. Cover the opening on the inside of the can with the transparency film and tape the film into place.

4. Make small holes in the metal end of the can and in the plastic lid. Remove the plastic lid from the can.

5. Put a hot dog onto the skewer, slide the skewer into the can, and place the end of the skewer through the hole in the metal end. Put the plastic lid back on the can, fitting the other end of the skewer through the hole. The hot dog should be suspended in the can as shown in Diagram 2.

6. Place the Solar Hot Dog Cooker into direct sunlight, positioning the flaps so that they will reflect radiant energy onto the hot dog. Remember that the angle of incidence of light equals the angle of reflection.

7. Time how long it takes for your hot dog to cook. If it is a very cold day, consider how you might insulate your cooker to improve energy efficiency.

8. Will your cooker work in artificial light? Experiment with a powerful artificial light such as an overhead projector.
Aftermath: The Economic and Energy Impact of September 11
Summarized from an October 4, 2001, report by Cambridge Energy Research Associates

The tragic events of September 11 have the potential to change the world’s geopolitical framework, the ways that people live and conduct business, and the assumptions on which we operate.

As the economy reacts and the United States wrestles with how to respond to the attacks and protect its citizens, the possibility exists for a significant shift from globalization and economic integration toward an emphasis on domestic security and, in practical terms, a slowing or even reversal of trade liberalization.

IMPACT ON THE U.S. ECONOMY
The following indicators will determine the path the U.S. economy will take over the next year:

**Continuing Function of Markets and Systems:** The financial markets and transportation systems must recover and continue to function to ensure economic stability.

**Demand for Goods and Services:** Even a small decrease in consumer spending and residential construction would indicate a recession for the U.S. economy because they have been the main sources of support in the economy.

**Economic Forecast for the United States:** The disruption and lost output in the second half of September—losses in trading in financial markets, tourism, transportation and consumer buying—will be enough to move the third quarter economy into a downturn. The contagion of these factors is likely to turn the fourth quarter of 2001 into a negative quarter of about minus one percent. In the longer term, the increase in military spending and the rebuilding in New York City could have an upward effect on economic growth. But an economic upturn will depend critically on a marked change in public and consumer confidence.

EFFECT ON ENERGY MARKETS

**Crude Oil:** Downward revisions in the outlook for oil demand based on the effect of September 11 on economic performance and jet fuel demand point to the potential for oversupply in 2002 unless OPEC acts to curtail production.

**Refined Products (gasoline, jet fuel, heating oil):** The weak demand picture points to lower refined product figures, although one mitigating factor is that global inventories are low.

**Natural Gas:** Price weakness, growth in domestic and imported gas supply, and a strong storage position, combined with the potential weakness in the U.S. economy, are likely to dampen U.S. natural gas demand.

**Exploration & Production:** Changes likely to be experienced by E&P companies are related to security and economic concerns:

- **Programs in existence:** Ongoing programs in areas perceived as politically stable will continue. However, a slowing global economy, exacerbated by economic repercussions from the September 11 attacks, will make production growth targets difficult to reach.

- **Development programs:** Shifting perceptions of risk increase the potential for non-OPEC and non-Middle East OPEC countries to play a greater role in contributing to global growth. West African petroleum and extra-heavy oil in the Americas will benefit from any shift in investments, potentially increasing the pace of development in these areas.

**Electric Power:** The outlook for the North American electric power industry faces decreasing demand, lower prices and increased operating costs into 2002. Key issues facing the North American power industry include:

- **A new focus on energy security:** A shift is likely from thinking of energy security in terms of U.S. reliance on foreign oil to include a focus on U.S. domestic infrastructure. This will alter, and potentially even forestall, the debate over electric industry deregulation and restructuring.

- **Infrastructure security:** Heightened security around key generation, transmission and distribution facilities will translate into higher electricity costs.

- **Electric transmission:** System planners will want to ensure the security of electric transmission systems—both physical assets and information systems used by grid operators—by putting double and even triple contingencies in place.

Cambridge Energy Research Associates is a leading advisor to major international companies, financial institutions and organizations, delivering strategic knowledge and independent analysis on energy markets, geopolitics, industry trends and strategy. For more information, go to [www.CERA.com/news/crisis](http://www.CERA.com/news/crisis).
Fuel Prices for Winter

The Energy Information Administration is forecasting lower heating bills this winter assuming normal weather conditions. By 75 percent over the life of the bulb, compact fluorescent saves at least $26 and reduces energy consumption. At home, replacing just one incandescent bulb with a comparable compact fluorescent saves at least $26 and reduces energy consumption.

Lighting the Way to Energy Efficiency

An entire city block along Telegraph Avenue in Berkeley, California, has switched to energy-efficient fluorescent lighting, cutting their electricity usage by nearly half. The upgrades were part of the "Phillips Lighting Formula: An Education Blueprint for the Nation" from Phillips Lighting Company. The educational program is intended as a model for energy conservation. Illuminating how small changes can result in dramatic savings, Phillips and American Lighting first conducted a lighting audit of each building to determine the most efficient lighting options. Then donors donated the products and installation services for the retrofit.

If the buildings in New York City’s Times Square took the same steps, it would save $5.8 million a year. The Strip in Las Vegas would save $8.4 million a year. And the Inner Harbor in Baltimore would save $268 million a year. Lighting the Way to Energy Efficiency Proven.

At home, replacing just one incandescent bulb with a comparable compact fluorescent saves at least $26 and reduces energy consumption.

Special thanks to Berkeley, California, for their commitment to energy efficiency!