

ENERGY EXCHANGE

A publication of the National Energy Education Development Project

May 2006

Spaces Available at NEED's Summer Energy Conferences

NEED Energy Conferences for Educators are designed to energize participants by providing training and materials to implement hands-on energy units in their classrooms. The conferences are scheduled for Denver, Colorado (July 9-13); Cambridge, Massachusetts (July 16-20); and Seattle, Washington (July 26-30). Great field trips are part of an exciting agenda. Spaces are still available! Visit www.need.org for more information or a copy of the conference brochure.

Passport to Energy Careers



The 2nd Annual Passport to Energy Careers Fair will be held on June 23, 2006 at the Hyatt Regency Crystal City. In 2005, Dominion, the National Ocean Industries Association, the U.S. Department of Energy, the U.S. Energy Information Administration, American Electric Power, the American Public Power Association, Cape Light Compact, and the Texas Independent Producers and Royalty Owners Association participated. Join us! Companies, agencies, and organizations interested in hosting a booth or table should contact NEED for more information at 800-875-5029 or info@need.org. The \$200 exhibitor fee funds the NEED Youth Energy Leadership Award Scholarship.

Renew for 2006-2007

Would you like to receive your 2006-2007 materials as soon as they are ready in August 2006? Email NEED at info@need.org to confirm your address and request your curriculum materials.

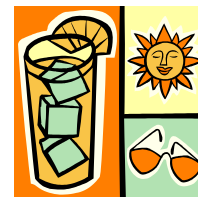


NEED thanks its teachers, partners and sponsors for another great school year! We wish everyone a safe, happy and relaxing summer.

26th Annual Youth Awards for Energy Achievement

The 26th Annual Youth Awards for Energy Achievement will host over 600 students, teachers and parents in Washington, DC from June 23-26, 2006. This four-day celebration of energy, student leadership, and educational excellence recognizes student and teacher efforts and allows energy groups around the country to come together to network and share ideas.

Want to Stay Energized this Summer?



Even though school is not in session, work on the EIA Kid's Page (www.eia.doe.gov/kids) is always happening. New materials and activities are added for students and teachers almost every week.

Coming soon to www.need.org is a webquest on EIA's Oil Market Basics to help students (plus teachers and parents) understand the issues related to world oil markets.

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The NEED Project is a 501(c)(3) nonprofit education association providing professional development, innovative materials correlated to the National Science Education Content Standards, ongoing support and recognition to educators nationwide.

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A list of NEED sponsors is available on our website and in our Annual Report.

Energy Exchange is published five times a year by NEED for educators and students, and is available at www.need.org.

NEED welcomes questions, comments, and suggestions. Please contact info@need.org.

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Educators may reproduce articles and activities for classroom use.

Calendar of Events

For more information, email info@need.org or call 800-875-5029.

May

- 6 NEED/Kidwind Workshop – Raleigh, NC
- 9 4-H/NASULGC Light and Lighting Module Training – Washington, DC
- 9 Kentucky NEED Youth Awards Luncheon – Frankfort, KY
- 11 NEED Workshop – Mitchell, IN
- 12 Tennessee NEED Youth Awards Luncheon – TN
- 13 Energy Smart Students Workshop – Brooklyn, NY
- 15 School Energy Management Conference – Delta Township, MI
- 15-16 BP's A+ for Energy Grant Final Review – CA
- 16 Mississippi NEED Youth Awards Luncheon – MS
- 16 Ohio Energy Project Youth Energy Celebration – Columbus, OH
- 16-19 U.S. Department of Energy's Hydrogen Project Review – Arlington, VA
- 17 Biodiesel Workshop – Oswego, NY

June

- 12 BP's A+ for Energy Celebration – Space Center Houston, TX
- 15 San Joaquin County Office of Education Workshop – San Joaquin County, CA
- 12-16 Kentucky Energy Tour – Eastern KY
- 23 2nd Annual NEED Passport to Energy Careers Fair – Washington, DC
- 23-26 NEED Youth Awards Program for Energy Achievement – Washington, DC
- 26 NEED Board of Directors Meeting – Washington, DC

July

- 7 American Solar Energy Society Legacy School Workshop/NEED Schools Going Solar Workshop – Del Pueblo Elementary School – Denver, CO
- 9-12 BP's A+ for Energy Conference – Galveston, TX
- 9-13 NEED National Energy Conference for Educators – Denver, CO
- 9-14 NEED sessions at American Solar Energy Society Annual Conference – Denver, CO
- 10 BP's A+ for Energy Celebration – Universal City, CA
- 16-19 BP's A+ for Energy Conference – Austin, TX
- 16-20 NEED National Energy Conference for Educators – Cambridge, MA
- 23-26 BP's A+ for Energy Conference – Pasadena, CA
- 23-26 BP's A+ for Energy Conference – San Antonio, TX
- 26-30 NEED National Energy Conference for Educators – Seattle, WA
- 27-28 NEED sessions at the Energy Management for Schools Conference – Ft. Collins, CO
- 30-Aug 2 BP's A+ for Energy Conference – Sacramento, CA

August

- 6-9 BP's A+ for Energy Conference – Long Beach, CA
- 17 PG&E Solar Schools Workshop – Bakersfield, CA
- 29-30 Commuter Transport Association Meeting – Boston, MA

September

- 8-9 Family Resource Center Museum and Community Education Expo – Salem, MA

NEED Welcomes Dino

Dino Ford has joined the NEED staff at national headquarters. Dino, a Panamanian native and University of Central Florida graduate, will be handling the accounting operations of NEED. Having lived in both Florida and New York, Dino now calls northern Virginia his home. When not crunching numbers, Dino enjoys spending time with family and friends as well as playing many sports. Welcome, Dino!



NEED 2005-2006 School Year Evaluation

Name _____ State _____ T-shirt Size S M L XL XXL

School Name _____ Phone Number _____

Fax Number _____ Email _____

Does your NEED group have a website? If so, what is the address? _____

Number of students taught this year _____ Subject _____ Grade Taught _____

When/How did you find out about NEED? _____

What NEED training have you attended? _____

How did the NEED training contribute to the success of your program? _____

How long was your energy unit (days/weeks)? _____

Did you use NEED materials during the 2005-2006 school year? If no, why not? _____

If yes, which materials did you use? Please circle each item.

Blueprint for Success	Energy Flows	Energy Source Expo	Infobooks & Activities	Science of Energy
Conservation Contract	Energy House	EnergyWorks	Marine Energy	Solar Kits & Activities
Current Energy Affair	Energy in the Balance	Exploring Energy	Mission Possible	Talking Trash/Museum
ElectroWorks	Energy Jeopardy	Exploring Magnets	Mystery World Tour	ThermoDynamics
Energy Analysis	Energy Management Kits	Games & Icebreakers	NEED Songbook	This Mine of Mine
Energy Around the World	Energy Math Challenge	Global Trading Game	Ocean Energy	Transparent Energy
Energy Carnival	Energy on Public Lands	Great Energy Debate	Primary Science of	Transportation Activities
Energy Enigma	Energy on Stage	Game	Energy	Today in Energy
Energy Expo	Energy Rock	Greek Mythology	Primary Stories & More	U.S. Energy Geography
Energy Fair	Performances	H ₂ Educate	Projects & Activities	Yesterday in Energy

Is the Blueprint for Success a helpful guide in planning your energy unit? _____

Do you use the activities in the Energy Exchange Newsletter? _____

Do you use the Career Currents Newsletter? _____

Are there activities you would like to see developed or changed? Please specify. _____

Are there other resources you would like to see on the NEED website, www.need.org? _____

Thank you for your response!

Please return to NEED:

Fax: 800-847-1820

Email: info@need.org

Mail: 8408 Kao Circle * Manassas, VA * 20110

NEED News

California, New Mexico and Colorado

Plan ahead for fall workshops sponsored by the U.S. Bureau of Land Management. The workshops will provide teachers with a great background in NEED materials, the new BLM created Get Energized CD and activity guide, and the NEED-BLM developed Energy on Public Lands curriculum guide. If you wish to be notified of workshops in your area, email NEED at info@need.org.

Indiana

Indiana teachers enjoyed four NEED workshops thanks to the support of Citizens Gas, Vectren, Indianapolis Power and Light, and Duke Energy Indiana. The sponsorship provided NEED Energy Management for Schools Kits to participating teachers, the NEED Home Energy Conservation Kit for students, Science of Energy Kits and training. Sponsorships are available for Indiana teachers to attend 2006 NEED Energy Conferences for Educators in Boston, Denver and Seattle.

Michigan Energy Management for Schools Conference

Thanks to the support of the Michigan Energy Office, NEED is pleased to present the Michigan Energy Management for Schools Conference May 14, 2006 in Delta Township, Michigan. This conference is packed with valuable energy management sessions for practitioners and those interested in launching school energy management programs. For more information, or to register, visit www.need.org or email Keith Etheridge at ketheridge@need.org.

Michigan

The Great Lakes Renewable Energy Association (GLREA), the Michigan Energy Office, Manistee County, along with area businesses and schools, and the 2006 Michigan Energy Fair Organizing Committee will present the first ever 2006 Michigan Energy Fair on Friday, June 16 through Sunday, June 18, 2006 at the Manistee County Fairgrounds in Onkama, MI. There will be several exhibitors offering information or services related to sustainable energy and energy sessions presented by the John F. Kennedy Elementary School NEED Team under the direction of Connie Josvai, NEED Lead Teacher. The students will be demonstrating the Science of Energy Kit and providing other NEED materials to the general public at their exhibit booth.

North Carolina and Maryland

Forty teachers from northeastern North Carolina were treated to a NEED workshop at the Roanoke Canal and Trail Museum and Dominion's Roanoke Rapids Power Station. The schools received comprehensive sets of NEED curriculum and a full day of fun energy training with NC Coordinator Amy Constant. Maryland teachers were treated to a day at Dominion's Cove Point LNG (liquefied natural gas) facility. Teachers received NEED training, curriculum materials and Science of Energy Kits. Dominion sponsors workshops in Texas, Oklahoma, Louisiana, Connecticut, Maryland and North Carolina.

Puerto Rico

Sixty teachers participated in the first Puerto Rico Energy Conference sponsored by the Puerto Rico Energy Affairs Administration. The workshop—provided in English and Spanish—allowed teachers to learn more about energy while training to use NEED materials in the classroom. Many NEED activities have been translated into Spanish and will be available on www.need.org this summer.

NEED Energy Polls

As the school year wraps up, survey your students' knowledge and assist NEED in evaluating its energy education curriculum and programming by having your students take the Energy Poll online at www.need.org/poll. The online poll will assess student knowledge of energy and provide teachers with a good assessment of the success of classroom energy programs.

Welcome John Weiner





























For more than 20 years, John Weiner directed the National Energy Information Center, the publishing, public information and website management arm of the Energy Information Administration. Widely known as the "Father of Energy Ant," Mr. Weiner can now add another title to his long list of accolades, Board of Directors Member for NEED. Mr. Weiner has always been a strong advocate for broad-based energy education and will continue his dedication to increasing public access to energy information. Welcome, John!



Energy Source Sudoku

Sudoku is a logic-based placement puzzle consisting of a 9x9 grid of cells. Typically using numbers, this puzzle uses energy source symbols for biomass, coal, geothermal, hydropower, natural gas, petroleum, solar, uranium and wind.

To solve the puzzle, each 3x3 region of the grid must contain only one source symbol. Each row and each column of the puzzle must contain only one energy source symbol. There is only one solution. Good luck!

Energizing Mississippi

Mississippi has an active energy education program, but Hurricane Katrina added challenges this year. Lisa Campbell, Mississippi NEED Coordinator, says, "Hurricane Katrina knocked us down but not out. The need for energy education in our state became even more apparent after Hurricane Katrina. It seemed that students statewide could relate more to our various programs and energy education activities." Thanks, Mississippi, for an energetic year!



SUMMER 2005

- Attended Annual NEED Youth Awards in Washington, DC. Twenty-eight students, teachers and staff attended from Mississippi. Noxubee County High School received Secondary School of the Year.
- Three Energy Smart Lead teachers were trained at a NEED Energy Conference for Educators in New Orleans, LA.
- Conducted energy activities and demonstrations for summer campers participating in Jackson Public School District's environmental camps.

FALL 2005

- Developed and disseminated the fall issue of *Energy Rocks*, welcoming NEED Energy Smart Lead Teachers and others interested in the program. Planned activities were outlined for the school year.
- Using Building Buddies and the Facts of Light, the Energy Patrol Initiative with Jackson Public Schools, the state's largest school district with 58 schools, was launched in collaboration with Siemens Consulting, the district's energy performance contractor. This initiative is projected to save one million dollars in energy cost avoidance.
- Thirty new schools and two school districts signed on to use the Energy Patrol Program at a statewide Round-Up activity for Energy Patrol. NEED's Facts of Light was a training and introductory tool.
- Assisted teachers affected by Hurricane Katrina on the Gulf Coast with supplies and materials on the science of energy, including NEED Infobooks.
- Participated in Renewable Energy Day. Over 400 students and teachers participated in renewable energy activities at the Mississippi Agricultural and Forestry Museum. Students participated in solar cooking demonstrations, visited exhibits on solar hot water heaters, windmills using wind power, solar panels and solar electricity, biofuel vehicles and award winning solar car teams from Houston and Choctaw School Districts.
- Participated in Energy Awareness Exhibits. To promote October Energy Awareness Month, a traveling consumer exhibit with materials on energy efficiency was sponsored at several area libraries and a mall.
- Over 29,000 middle school students statewide receive an eight-page magazine, the *Wonders in Energy Tabloid*, with information on the fossil fuels, renewable sources of energy, NEED activities and other feature stories relevant to energy education in Mississippi.
- Over 100 students were recognized for their participation in the annual Energy Poster Competition. A special luncheon event was held for five winning students from the Mississippi Gulf Coast.
- During the 2005 calendar year, presented 71 classroom presentations statewide.

SPRING 2006

- Conducted exhibits on energy education and recruited teachers for the MS NEED Project at the Mississippi Educators Association.
- Five Energy Smart Science Fair awards were presented to students statewide. The Energy Division judges and awards special recognition to elementary students who present science fair projects demonstrating energy efficiency, renewable energy or the science of energy.
- The Energy Division hosted a special event for teachers attending the Region II Mississippi Science and Engineering Fair in Jackson. Teachers were able to visit exhibits and receive information on the Mississippi NEED project.
- Working in collaboration with other agencies and non-profit organizations, exhibits and demonstrations on renewable energy and the importance of energy efficiency were presented to students and consumers on Earth Day.
- One secondary school is awarded a field trip opportunity for their hard work and commitment to the MS NEED Project. This year's school was Noxubee High School. Students visited the Red Hills Lignite Mine and Power Plant in Ackerman, MS. They also participated in a presentation on energy careers.
- Nine state agencies and organizations compiled and produced information on energy and environmental science in an Earth Day Tabloid for 38,000 sixth graders statewide.
- The Energy Division sponsored a Children's Tent with energy games and activities for children attending Clinton Nature Day.

UPCOMING ACTIVITIES

- State Youth Awards Luncheon for NEED students and educators on May 16, 2006.
- Develop and launch a public service campaign for school-age children with 30, 60, and 90-second public service spots, and a video for classroom presentations.
- Conduct a NEED teachers workshop in northeast Mississippi.
- Conduct presentations for students and teachers attending various summer camps statewide.

A NEED Year in New York

The New York Energy Smart Students program continued to grow rapidly in 2005, thanks to the hard work of Todd Rogers, Laurie Attridge, and Kindle Perry.



January – 2005 was the first full year of the Energy Smart Students (ESS) program, which launched in the summer of 2004. A busy schedule of one-day workshops rolled out, assisted by many of the 34 Key Leaders trained the previous summer. The Program Advisory Group for ESS convened and reviewed curriculum for the new hydrogen education program in New York state.

February – NEED Illinois helped NEED New York by loaning them their Energy Bike, which was used at a Green Power event in New York City, sponsored by ConEd Solutions and the NYC Economic Development Authority – a great example of interstate collaboration in the NEED family!

March – A middle school hydrogen education program was launched. 120 teachers received the new hydrogen curriculum at five workshops around the state. In all, over 19,000 students were impacted by this program. New York State Energy Research and Development Authority (NYSERDA), as a major sponsor of Tour de Sol, America's Green Car Show & Competition, also promoted workshops for teachers and offered transportation stipends to teachers to bring their classes to see a public display of solar vehicles at the Capitol in Albany. NYSERDA also sponsored the Central New York Intel Science Fair at the Museum of Science and Technology in Syracuse, and offered two workshops on energy efficiency.

April – A workshop for pre-service teachers was added to the schedule of workshops. Fifteen future teachers from Oswego State attended. NYSERDA also sponsored the New York State Technology Students Association competition at Oswego State.

May – A Biodiesel Workshop for 20 teachers was held on Long Island, with funding from the National Biodiesel Board.

June – Twenty camp and environmental educators attended a workshop to learn more about energy and how to integrate it into their environmental curriculum. To promote future careers in energy, a new brochure was developed. An Energy Careers column was added to each edition of *Energy Smarts*, the ESS newsletter. Shenendehowa High School and Wilson Magnet School were both given New York awards in NEED's Youth Awards program.

July – By the end of the 2004-05 school year, 607 teachers were trained, impacting 69,275 students! Momentum continued as 40 teachers were trained at a week-long Key Leader Conference in Syracuse.

August – NYSERDA was appointed to the Advisory Council for the statewide organization of Technology Teachers.

September – Two mini-grant programs were launched: \$400 awards for Community Connections – to teach energy efficiency to K-12 students, and \$1,000 awards for H₂ Educate, to teach middle school students about hydrogen. Both mini-grants had a public outreach and education requirement. The H₂ Educate awards were co-funded by the Long Island Power Authority and the New York Power Authority. The first of two Energy Bike workshops were held to train teachers on the use of the bike and the curriculum. An Energy Bike is available on loan to any teacher attending one of these workshops. NYSERDA also sponsored the two New York Solar Decathlon teams: Cornell University and New York Institute of Technology.

October – The second year of the Home Performance with ENERGY STAR[®] pilot program launched this month. At five workshops this school year, 114 building science vocational high school students and 15 teachers participated in this new curriculum. Key Leaders assisted at the New York State Technology Teachers Conference, where NYSERDA sponsored a display and several energy workshops for technology teachers.

November – Three Key Leaders delivered four workshops and helped to staff the booth at the Science Teachers Association of New York State Annual conference in Ellenville. Seven teachers received Community Connections Awards and three teachers were awarded H₂ Educate grants. Four Public Forums on hydrogen were delivered to 130 attendees.

December – NYSERDA announced their Awards Sponsorship for the NYS Technology Students Association competition. \$250 mini-grants were also made available for teachers to use for transportation to the event or for student technology projects. *Energy Smarts* continues to grow in circulation and moves toward being an all electronic newsletter.

Plans for 2006 – Eighteen one-day workshops are planned for 2006; twenty-four half-day workshops are also planned for the New York City area. A summer conference for July is planned to train 15-20 Key Leaders to deliver over 60 workshops in the 2006-07 school year. ESS will also reach educators from the National Park Service-Gateway National Recreation Area, the New York State Department of Environmental Conservation, and Cornell University-Cooperative Extension to help expand energy education into the community. NYSERDA will continue to sponsor the New York State Technology Students Association competition and encourage entries into NEED's Youth Awards.

Short Circuits

A New Way to Biodegrade Plastic

Polystyrene, the non-biodegradable plastic that makes up packing peanuts, food packaging and Styrofoam® cups, is mainly thrown away in the United States rather than recycled. Why? Because, according to researchers at the University College Dublin, recycled polystyrene is a lower quality material than new plastic made from petroleum.

Last year, these researchers discovered a bacteria that can feed off styrene, the building block for polystyrene. The bacteria can change the styrene into a biodegradable polymer that can be used to make higher quality plastic. While the researchers acknowledge it would be better to make plastic from biodegradable materials initially, this styrene eating bacteria may help alleviate landfill space and petroleum supply problems in the future.

Summarized from the February 25, 2006 issue of Science News.

Staying Cool in the City this Summer

According to Green Roofs for Healthy Cities, the area of U.S. roofs covered by vegetation has increased more than 80 percent in the past year. Green roofs are rooftop gardens that reduce storm water runoff, insulate against heat and sound, increase energy savings and improve air quality. They also reduce the urban heat island effect, which is caused by dark urban roofs, pavement, and other infrastructure absorbing the sun's radiant energy. The cities with the most green roofs are Chicago, Illinois; Washington, DC; and Suitland, Maryland.

For more information on green roofs and ways to combat urban heat islands, visit www.epa.gov/heatisland/index.html.



Chicago City Hall was retrofitted in 2001 with a 22,000 square-foot rooftop garden.

Credit: Katrin Scholz-Barth

Be one of the first 50 people to return the year-end evaluation on page three and receive a FREE 2006-2007 NEED t-shirt!

