

Energy EXCHANGE

A publication of the National Energy Education Development Project

September 2006

Youth Awards—June 2006

NEED's 26th Annual Youth Awards for Energy Achievement gathered students and teachers from all over the country to learn more about careers in energy, to share the best of the best in energy activities and to celebrate their energy education successes. Congratulations to all of our winners!

Distinguished Service Award

Constance Beatty—Illinois

Students of the Year

Michelle Lamb—Illinois

Roxie Brown—California

State of the Year

New York—NY Energy Smart Students

Special Category—District of the Year

Westerville City School District—Ohio

Project Advisor—Chris Doolittle

Primary School of the Year

Huntingdon Primary School—Tennessee

Project Advisor—Connie Bond

Elementary School of the Year

Cherrington Elementary School—Ohio

Project Advisor—Katie Winters

Junior School of the Year

Cleveland Middle School—New Mexico

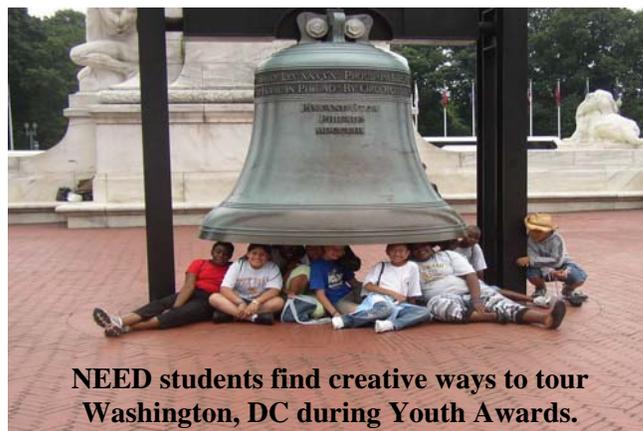
Project Advisors—Barbara and Robert Lazar

Senior School of the Year

Robert A. Millikan High School—California

Project Advisor—Woody Williams

For information about how you can participate in the Youth Awards Program or to see pictures of the weekend's activities, visit www.need.org.



NEED students find creative ways to tour Washington, DC during Youth Awards.

Renew Your NEED Membership for 2006-2007

It's time to renew your NEED membership to receive updated materials. As a part of your membership, you will receive the *Energy Exchange* newsletter five times this year and the *Career Currents* newsletter four times. To receive your new materials, email NEED at info@need.org, call toll-free to 800-875-5029 or go to www.need.org to download the 2006-2007 NEED Resource Catalog.

October Is Energy Awareness Month

Make plans to celebrate Energy Awareness Month in your school and community. Plan parent night activities, announce energy saving tips at school or participate in the Change a Light Campaign. Make your community more energy aware!

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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.

September

- 8-9 Family Resource Center Museum & Community Education Expo – Salem, MA
- 11 Indiana NEED Workshop – New Albany, IN
- 19 PG&E Solar Schools Workshop – Woodland, CA
- 19 Energy Industry Study Program Begins – 10 weeks of programming – Washington, DC
- 19-20 NEED Sessions at the Virginia Naturally Conference – Wirtz, VA
- 26 PG&E Solar Schools Workshop – Santa Rosa/Petaluma, CA
- 29 Indiana NEED Workshop – Indianapolis, IN
- 29-30 NEED Sessions at MI Assoc. of School Administrators Conference – Traverse City, MI

October—Energy Awareness Month

- TBA NEED Workshop – Fairbanks, AK
- 4 Change a Light Campaign Kick-Off – Nationwide
- 6 KidWind Workshop – Gainesville, NY
- 11-12 NEED Board Retreat – Columbus, OH
- 14-15 NEED Wind Committee – Minneapolis, MN
- 16-19 PG&E Solar Schools Sessions at Solar Power 2006 – San Jose, CA
- 16 PG&E Solar Schools Workshop – Livermore/Pleasanton, CA
- 18 PG&E Solar Schools Workshop and Awards Banquet – San Jose, CA
- 18 Virginia Energy Conference – Lexington, VA
- 19-21 NEED Session at California Agriculture in the Classroom Conference – Burbank, CA
- 19-21 NEED Sessions at CA Science Teachers Association Conference – San Francisco, CA
- 19-21 NEED Sessions at WV Science Teachers Association Conference – Snowshoe, WV
- 24 PG&E Solar Schools Workshop – Oakland, CA
- 25 NEED Workshop – Columbia, MS
- 25 PG&E Solar Schools Workshop – San Francisco, CA
- 26 PG&E Solar Schools Workshop – Stockton, CA
- 26 Chesapeake Public Schools NEED Workshop – Chesapeake, VA
- 27 NEED Session at Georgia Outdoor Classroom Symposium – Mansfield, GA

November

- 1 PG&E Solar Schools Workshop – Paradise, CA
- 2-4 NEED at the National Ocean Industries Association Conference – Palm Beach, FL
- 2-4 NEED Sessions at East National Science Teachers Association Conference – Baltimore, MD
- 2-4 NEED Sessions at KY Science Teachers Association Conference – Lexington, KY
- 5-7 NEED/NY Energy Smart Students Sessions at Energy in Schools Conference – Rochester, NY
- 7 PG&E Solar Schools Workshop – Fort Bragg/Mendocino, CA
- 7 Michigan NEED Workshop – Sault St. Marie, MI
- 8 Michigan NEED Workshop – Indian River, MI
- 8-10 Renewable Energy & Energy Efficiency – Workforce Development Conference – Troy, NY
- 8-11 NEED Sessions at Science Teachers Association of Texas – Wichita Falls, TX
- 9-11 NEED Sessions at the Michigan Association of School Boards – Detroit, MI
- 14 Michigan NEED Workshop – Three Rivers, MI
- 14 PG&E Solar Schools Workshop – Arcata/Eureka, CA
- 16 PG&E Solar Schools Workshop – Santa Maria, CA

December

- 7-9 NEED Sessions at West National Science Teachers Association Conference – Salt Lake City, UT

For Ohio Energy Project workshops, visit www.ohioenergy.org.

For New York workshops, visit www.getenergysmart.org/schools/schools.asp.

Kentucky NEED workshops are being scheduled; visit www.need.org.

NEED News

New York

NYSERDA and NEED hosted the New York Energy Smart Students Energy Educator Conference in July to train twenty Energy Educators to facilitate workshops in New York for the 2006-2007 school year. Teachers were selected based on their expertise, superior training skills and long-time interest in energy education. Welcome aboard to the newest New York Energy Educators!



North Carolina and South Carolina

Duke Energy, in partnership with NEED, is supporting the Change a Light Campaign in their service areas. Duke Energy is providing NEED Change a Light Teacher Guides to fourth and fifth grade teachers. Teachers interested in the Duke Energy/NEED Change a Light Teacher Guide should request one by calling 800-875-5029.



A Busy Summer!

Thanks to the support of many great sponsors and the dedication of over 800 teachers, the NEED summer was filled with learning, energy and excitement. Teachers from across the country spent time learning about energy and finding new ways to energize their classrooms. The three NEED Energy Conferences for Educators hosted in Denver, Boston, and Seattle allowed participants five days of learning about energy and field trips to local energy facilities. NEED's partnership with BP's A+ for Energy Program in California and Texas, provided six training conferences for A+ for Energy grant winners. Plans are underway for NEED's Energy Conferences for Educators for July 2007. A brochure and online application will be available in November. Two national conferences are planned.



ASES Legacy School

In partnership with the American Solar Energy Society (ASES), Bonneville Environmental Foundation, and the Environmental Protection Agency, NEED is proud to be part of the ASES Legacy School Program. In each ASES Conference City, a school is selected to receive a solar installation and NEED training, as well as EPA Benchmarking for energy conservation and efficiency. The 2006 Legacy School—Del Pueblo Elementary in Denver, Colorado—received their solar panels in July as part of the ASES Solar Conference.

Carla Callahan, NEED lead teacher at the school, spent the 2005-2006 school year preparing students to learn more about energy and making energy a key theme at Del Pueblo. Carla, 2005 Legacy School teacher Cathy Linder from Orlo Vista Elementary School in Ocoee, FL, and Mohana Aravamudham, the 2007 Legacy School teacher from Cleveland, OH all participated in the NEED Energy Conferences for Educators in Denver. This growing network of teachers committed to teaching about energy is just one aspect of NEED's partnership with ASES.

SPE Speakers

NEED teachers in Denver and Seattle were treated to the expertise of Dr. Deann Craig of the Colorado School of Mines and Dr. Bill Pike, editor of Hart's E&P thanks to NEED's growing relationship with the Society of Petroleum Engineers (SPE). Teachers were given an overview of the basics of oil and natural gas, the global energy market, and insight into oil and gas careers. The Q&A sessions helped many teachers learn more about the oil and gas industry from a practitioner's perspective. Thanks to SPE's Public Affairs Director Margaret Watson and NEED Board Member Linda Silinsky for their support of NEED. For more information, visit www.spe.org.



NEED Facilitator Training

With so many new activities and exciting curriculum offerings, NEED will host a Facilitator Training conference July 9-11, 2007 in Washington, DC. Schools and organizations who wish to send teachers and staff to the training should contact Keith Etheridge at ketheridge@need.org. Up to 25 participants will be accepted.

NEED News

NEED Welcomes Zarin

Zarin Sidiqi joined the national NEED staff during the summer. Zarin, a Troisdorf, West Germany native, is taking on office responsibilities. A versatile worker, she has lived in California, New Jersey, and New York. When not at work, Zarin can often be found watching a movie or enjoying music. She has a great philosophy for life, one from her father: everyone in life has obstacles, it's how we handle them that really counts. Welcome, Zarin!



Welcome Back, Bekki

Bekki Lamb has rejoined the national staff after taking some time off to complete her master's degree in Scotland. Bekki has taken on an array of responsibilities, including program development and planning. Next time you see her at a program or a meeting, be sure to welcome her back.

PG&E Solar Schools Coordinator

Through NEED's partnership with PG&E, Barry Scott has been hired to coordinate the PG&E Solar Schools program in California. Barry is an enthusiastic addition to the NEED staff. Welcome, Barry!

Change a Light, Change the World with ENERGY STAR®

The ENERGY STAR® Change a Light, Change the World Campaign is a national call-to-action from the U.S. Environmental Protection Agency (EPA) and U.S. Department of Energy (DOE) to encourage every individual to help change the world, one light — one energy-saving step — at a time.

Going into its 7th year, the campaign builds national momentum throughout the summer and early fall with a central rallying point on ENERGY STAR® Change a Light Day, **Wednesday, October 4th, 2006**. Partners across the nation will help celebrate this day with activities, events, government proclamations, and store promotions around energy-efficient lighting.



Key supporters of the campaign include a community of leading manufacturers, utilities, retailers, non-profit organizations, state governments, schools and community groups who join together to run energy-efficient lighting promotions and events each fall in support of the nationwide effort.

The NEED Project and our teachers, students, parents, and sponsors do our part to help protect our environment and educate others about energy. As part of our NEED team, sign up and make a Pledge to choose a compact fluorescent light bulb the next time you change a bulb in your home, office, or school. Choose a bulb with the ENERGY STAR® label for excellence in energy efficiency. The Pledge is a simple, but vital method of getting more people like you to commit to saving energy resources, one light at a time.

As a campaign Pledge Driver, our goal is to have **1,000 individuals**, schools, families and friends take the Pledge. So far we have reached almost 30 percent of our goal. By reaching this goal, we will make a significant impact on our environment, **saving 282,000 kWh of energy** and preventing 446,000 pounds of greenhouse gas emissions.

Take the ENERGY STAR® Change a Light Pledge today and help us reach our goal! It's a small step that's already making a big difference. Visit www.NEED.org to sign the Pledge.

A NEED Teacher Guide with curriculum and activity suggestions for implementing the Change a Light, Change the World program is available at www.NEED.org. For additional educational ideas and resources, visit www.energystar.gov/joinCAL and click on "Educate Students."



Celebrate Energy Awareness Month-Start an Energy Club

October is Energy Awareness Month. While there are many ways to celebrate, one is to start an Energy Club at your school. Two club experts and one club participant share their experiences and thoughts:

Amy Constant—North Carolina (Teacher)

Energy Clubs can be any size you are comfortable with, ranging from five to 50 children with one to two adults to supervise. Students can do activities during club time or can extend them into the school day with your class or other classes, they can work at school functions such as PTA meetings, and they can even work in the community. It is often a good idea to start small and then expand, rather than start big and have to pull activities away from the students.

The two easiest things you can set up quickly and easily for a science night are both downloadable from www.need.org. The first is the Energy Conservation Contract, in which students and parents agree to save energy at home. They can sign up to be Energy Savers at a table during science night. Energy clubbers can man the booth and explain why saving energy is important and how families can save energy. I've also used the Facts of Light activities (lesson plan and two worksheets) for math/science nights. This shows how much money families will save in the long run if they switch to compact fluorescent bulbs from the traditional light bulbs. It makes a huge impact in thinking. Plus, this is a great tie-in to the Change a Light Campaign for October.

Recycling is a great project for an Energy Club to take on, too. Some school districts have programs you can tap into as do some waste companies. The kids can make posters to advertise the program, teach younger students what recycling is and why it is important, and actually collect the recycled materials from individual classrooms.

Through these activities, students become more excited about science and become leaders. It's amazing to watch a child who is shy in the classroom give a demonstration to a group of adults or to a group of first graders. Don't forget to take pictures as you go, so your club can participate in Youth Awards!

Daisy Lemke—Fox Road Elementary—Raleigh, North Carolina (Student)

In Energy Club we did tons of exciting and fun things. My favorite things were the solar activities. We baked s'mores in a solar oven and made huge solar balloons that floated by the heat of the sun. We also created little houses with solar panels on them that, when in the sun, powered a working fan with a working light in it. In another group we worked on solar cars that we had to build from kits and, in the right sunlight, they worked perfectly. We taught the after school daycare kids about solar energy in different stations. When they were finished participating in our groups, we gave them solar beads on a pipe cleaner bracelet.

The best part was that all of the hard (but very fun) work paid off with a trip to Washington, DC. Everything in Washington was fun—from the tours to the cruise, and staying at a beautiful hotel. Energy Club has been a blast this year and I recommend you do the hard work so you can do the fun stuff in the future!

Larry Richards—Indiana (Teacher)

I start by telling my fifth graders about NEED and what being in the Energy Club entails. I tell them the amount of work I expect, and an idea of the number of hours they will spend at it while having to keep up with their regular schoolwork. They then write me a letter of application telling me why they want to be in the club and how they can be of value. I will sometimes hold a short interview with them. I review their school records and talk to previous teachers to find out if they can keep up with their work while working on club activities.

When we first meet, the students begin learning more about NEED and the many things they will be learning and doing throughout the year. The members pick their student leadership and we begin planning activities such as Science of Energy, EnergyWorks, ElectroWorks, Museum of Solid Waste and Energy, Energy Carnival, or Primary Energy with one or more primary classes. The club students plan and conduct these kit activities with the other students in the classes as hands-on lessons with some demonstration style class work. We also brainstorm and conduct various other activities teaching about energy. We do morning announcements with energy-related facts and information, record info-mercials the students write and film for closed circuit and cable TV, design posters and bulletin boards, and many other activities.

I like the club format because it develops student responsibility, fosters student thinking and planning skills, initiates research skills, and is the best leadership developing tool I have available. It also develops self-confidence in the students involved, as well as giving them a taste of teaching and lesson-planning that usually results in them becoming better students themselves.

Grant Opportunities for Teachers

American Honda Foundation Grant projects focus on math, science, the environment, and technology. The foundation also supports youth job-training programs. Deadlines: February 1, May 1, August 1, and November 1. Contact information: American Honda Foundation, P.O. Box 2205, Torrance, CA 90509-2205. Telephone: (310) 781-4090. Fax: (310) 781-4270. Web: www.honda.com.

Elementary/Middle In-Service Training Grants for Mathematics Teachers is provided by the National Council of Teachers of Mathematics. School In-Service Training Grants for grades K-5 teachers and grades 6-8 teachers provide financial assistance to schools for in-service education in mathematics. Maximum Award: \$4,000. Eligibility: schools with a current NCTM school membership. Deadline: November 3, 2006. Contact information: Web: K-5 www.nctm.org/about/met/olander3.htm, 6-8 www.nctm.org/about/met/olander.htm.

Toshiba Large Grants are available to teachers of grades 7-12 and focus on mathematics and science. Deadlines: February 1 and October 1. Contact information: Program Office, Toshiba America Foundation, 1251 Avenue of the Americas, 41st Fl., New York, NY 10020. Web: www.toshiba.com/about/taf.html.

Westinghouse Education Grants support elementary, secondary, and high school programs that emphasize math and science. Deadlines: Awards are made quarterly. Contact information: Lynnann S. Reid, Westinghouse Charitable Giving Program, P.O. Box 355, Pittsburgh, PA 15230-0355. Web: www.westinghousenuclear.com/E8.asp.

IBM supports education through **IBM Grants**. Although most grant proposals are initiated by IBM, unsolicited proposals are also considered. IBM's primary focus is education and technology. Contact information: Local projects contact: www.ibm.com/ibm/ibmgives/grant/. For all other projects contact: Vice President, Corporate Community Relations, IBM Corporation, New Orchard Road Armonk, New York 10504.

Intel Community Grants fund programs located in Intel communities that improve teaching in math and science, increase classroom technology use, improve access to technology in classrooms, and encourage students to consider careers in technology related fields, particularly women and minorities. Contact information: Intel Foundation, AG6-601, 5200 NE Elam Young Parkway, Hillsboro, OR 97124-6497. Web: www.intel.com/community/grant.htm.

Pew Charitable Trusts accepts letter of inquiry for grants to K-12 programs that focus on school reform and increased student achievement. Contact information: Pew Charitable Trusts, 2005 Market Street, Suite 1700, Philadelphia, PA 19103-7077. Telephone: (215) 575-9050. Web: <http://pewtrusts.com>.

The **Pfizer Foundation** considers unsolicited grant proposals that focus on science education for students and/or teachers in communities where Pfizer is located. Contact information: Contact the community relations or public affairs representative at a Pfizer facility for additional information. Web: www.pfizer.com/pfizer/subsites/philanthropy/caring/science.education.index.jsp.

Innovation and Learning & Leadership Grants sponsored by the NEA Foundation for the Improvement of Education funds are now available year-round. Visit the site for updated guidelines. Contact information: NEA Foundation, 1201 Sixteenth St., NW Suite 416, Washington, D.C. 20036-3207. Web: www.neafoundation.org/grants.htm.

Toyota USA Foundation Grants focus on programs that improve the quality of K-12 education particularly in the areas of math and science. Contact information: Foundation Administrator, Toyota USA Foundation, A404 19001 S. Western Ave. Torrance, CA 90509. Telephone: (310) 618-6766. Web: www.toyota.com/about/community/education/index.html.

BP A+ for Energy Grants focus on programs in California and Texas. The grants are offered to K-12 teachers for innovation and excellence in teaching energy and/or energy conservation in the classroom. Contact information: CA: Irene A. Brown, Director, California Community Relations, BP America Inc., 6 Centerpointe Drive, 7th Floor, La Palma, CA 90623-2503. TX: A+ for Energy, BP America Inc., 3401 Palmer Highway, Room 445D, Texas City, TX 77590. Email: InfoTexas@aplusforenergy.com. Web: www.aplusforenergy.com.

Energy Activity: Energy Picture



Primary

Divide the students in groups. Give each group a copy of the energy picture above. Have the students find all the ways that energy is being used. Discuss as a class. Have students collect pictures showing energy consumption from magazines and create a collage.

Elementary

After finding all the ways energy is being used in the picture above, have the students write plays, songs, commercials or skits about the energy sources used. Allow time for each group to present to the class. Discuss as a class the differences between rural and urban energy use.

Short Circuits

Hybrid Buses for Schools

By now, most people have heard of hybrid vehicles. And when they think of them, commuter cars like the Toyota Prius or Honda Civic come to mind. Hybrid technologies, however, are finding their way into large, heavy-duty vehicles, including school buses. IC Corporation, North America's largest school bus manufacturer, recently unveiled its hybrid electric bus, that it claims will achieve up to a 40 percent increase in fuel efficiency. IC Corporation also announced that it will provide buses to school districts in 11 states including Arkansas, California, Florida, Iowa, New York, North Carolina, Pennsylvania, South Carolina, Texas, Virginia and Washington. For more information, visit www.ic-corp.com/site_layout/news/newsdetail.asp?id=772.

Solar Works for Oil and Gas

For some time, solar power has been used for the control of oil and gas wells and pipelines. Now, the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) and the Rocky Mountain Oilfield Testing Center (RMOTC) are testing the use of a photovoltaic (PV) array for the production and delivery of oil. The PV array provides electricity to shipping pumps that move the oil to a central collection point. According to NREL, in one month the PV array provided the energy to ship 286 barrels of oil. For more information, visit www.nrel.gov/solar.



Solar powered oil shipping pump station in Wyoming.
Photo Credit: DOE

Texas Uses the Most Wind

According to the American Wind Energy Association (AWEA), Texas is now the nation's largest producer of wind power, beating out California, the leader for the past 25 years, by 47 megawatts of installed capacity. For more information, visit www.awea.org/newsroom/releases/AWEA_Quarterly_Market_Report_072506.html.

