

energy EXCHANGE

A publication of the National Energy Education Development Project

September 2007

Energize the Year with NEED



Jumpstart your year with an exciting energy program! It is never too early to get started on your classroom and extracurricular energy projects and it is always easy with NEED materials.

Want a speedy, but fresh, way to kick off the year? Check out the new play about energy efficient lighting on pages 9-13. Mark your calendars now for Youth Awards 2008—projects due April 15, 2008.

Energy Awareness Month

Make plans now to celebrate Energy Awareness Month in October. Make your community more energy aware with projects such as parent night activities, sharing energy saving tips over morning announcements or participating in the Change a Light campaign. Have a success story to share? Email it to info@need.org to include in future newsletters. Need activities to celebrate? Visit the Energy Awareness Month section of the NEED website at www.need.org/energyawarenessmonth.

Renew Your NEED Membership

It's time to renew your NEED membership to receive updated materials and the *Energy Exchange* and *Career Currents* newsletters. To receive your new materials, email info@need.org, call 800-875-5029 or visit www.need.org to download the 2007-2008 NEED Resource Catalog.

Change a Light, Change the World

Participate in the National ENERGY STAR® Change a Light Day on **October 3, 2007**. The Change a Light, Change the World campaign focuses on many people making small changes to make a big impact. Visit www.need.org for a free expanded NEED Teacher's Guide with curriculum and activity suggestions for implementing a Change a Light program in your area. For more information see page 5.

2007 Energy Conferences for Educators

The 2007 NEED National Energy Conferences for Educators were held during July to train teachers to incorporate energy programs into their classroom and extracurricular activities. Over 180 educators participated thanks to the sponsorship of many local, state and national sponsors. Two four-day programs were held in Alexandria, VA and Santa Fe, NM covering all aspects of energy education.

Also in July, NEED sponsored its first Facilitator Training in Alexandria, VA. Twenty-five participants attended the training designed to prepare teachers and staff to conduct NEED workshops in their local areas.



Energetic participants at NEED's master trainer workshop in July.

Inside This Issue

NEED Calendar	2
NEED News	3-4
Change a Light, Change the World	5
Wind Logic Puzzles	6-8
Energy Play	9-13
Youth Awards 2007	back

The NEED Project

National Energy Education
Development
P.O. Box 10101
Manassas, VA 20108
TEL: 1-800-875-5029
FAX: 1-800-847-1820
EMAIL: info@need.org
WEB: www.need.org

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.

National Staff

Mary Spruill—Executive Director
Martha Callan—Curriculum Director
Keith Etheridge—Training Director
Karen Reagor—Training Director
Bekki Lamb—Program Director
Todd Rogers—Program Associate
Barry Scott—Program Associate
Bob Thompson—Program Associate
Annie Rasor—Curriculum Associate
Cindy Welchko—Curriculum Associate
Zarin Sidiqi—Office Administrator



A list of NEED sponsors is available at www.need.org 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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Calendar of Events

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

September 2007

- 7 PG&E Solar Schools Celebration – Santa Maria, CA
- 8 PG&E Solar Schools Celebration – Stockton, CA
- 15 PG&E Solar Schools Workshop – Oakland, CA
- 15 Sacramento Municipal Utility District Exploring Solar Energy Workshop – Sacramento, CA
- 19 Sacramento Municipal Utility District Energize Minds for Solar Designs Celebration – Sacramento, CA
- 20 PG&E Bright Ideas Grant deadline
- 22 PG&E Solar Schools Workshop – Richmond, CA
- 24-27 Solar 2007 Conference – Long Beach, CA
- 25-26 Get Energized Workshop in partnership with Bureau of Land Management – AK
- 29 PG&E Solar Schools Workshop – San Francisco, CA
- TBA NEED Workshops sponsored by American Electric Power – AR, LA, OK, TX, VA and WV
- TBA Rhode Island NEED Workshops – RI

October 2007 – Energy Awareness Month

- 3 ENERGY STAR® Change a Light Day
- 3 Cooperative Extension Training with National Association of State Universities and Land Grant Colleges – Washington, DC
- 4 H₂ Educate Workshop – Norfolk, VA
- 10 Chesapeake Public Schools Energy Education Workshop – Chesapeake, VA
- 16 Solar Schools Workshop – Rockford, IL
- 17 Solar Schools Workshop – Oak Brook, IL
- 17 H₂ Educate Workshop – Buffalo, NY
- 18-19 NEED sessions at Regional NSTA Conference – Detroit, MI
- 18-20 National Ocean Industries Association Meeting – Scottsdale, AZ
- 20 PG&E Solar Schools Workshop – Sonora, CA
- 24 H₂ Educate Workshop – Syracuse, NY
- 24-28 NEED sessions at California Science Teachers Association Conference – Long Beach, CA
- 28-29 NEED Board Meeting – Cape Cod, MA
- TBA Get Energized Workshops with Bureau of Land Management – CO
- TBA Connecticut Energy Workshop – Mystic, CT
- TBA Illinois Energy Workshops sponsored by ComEd – IL
- TBA Virginia Energy Workshops – southwestern VA
- TBA H₂ Educate Workshop sponsored by the US Department of Energy

November 2007

- 1-3 NEED sessions at Kentucky Science Teachers Association Conference – Lexington, KY
- 8-10 NEED sessions at Regional NSTA Conference – Denver, CO
- 8-10 NEED sessions at Virginia Association of Science Teachers Conference – Williamsburg, VA
- 9-10 NEED sessions at Illinois Science Teachers Conference – Peoria, IL
- 10 PG&E Solar Schools Workshop – Modesto/Salida, CA
- 13-14 Society of Petroleum Engineers Teacher Workshop – Anaheim, CA
- 13-14 Texas Renewable '07 Conference – Abilene, TX
- 14-17 North American Association for Environmental Education Conference – Virginia Beach, VA
- 15-17 NEED sessions at WV Association of Science Teachers Conference – Roanoke, WV
- 29 Energy Efficiency Conference with KY Office of Energy and KY utilities – KY

December 2007

- 6-8 NEED sessions at Regional NSTA Conference – Birmingham, AL

Kentucky NEED fall workshops are being scheduled. Visit www.need.org or contact Karen Reagor at kreagor@need.org for details.

NEED News

Sacramento Municipal Utility District (SMUD)

SMUD and NEED are working together to promote and expand the SMUD Energize Minds for Solar Designs Grant Program available to schools and colleges in the SMUD service area. This year's recipients include: Bella Vista High School (Fair Oaks, CA), Cordova High School (Rancho Cordova, CA), and Laguna Creek High School (Elk Grove, CA). These schools will undertake solar energy technology and education projects throughout the year. SMUD is also sponsoring an Exploring Solar Energy Workshop presented by NEED on September 15, 2007 in Sacramento. For more information, email info@need.org.

Illinois

ComEd and NEED are working together to provide Illinois teachers with opportunities for teacher training and classroom materials starting this fall! ComEd's support provides *Science of Energy Kits*, *Energy Management for Schools Kits*, and *Home Energy Efficiency Kits* to participating schools. Workshops and curriculum materials also include lessons about real-time electricity pricing and the consumer's role in increasing energy efficiency. Workshops will be held beginning in October and are available to K-12 teachers in the ComEd service area. To register, visit www.need.org.

Solar Schools in Illinois

With the support of the Illinois Clean Energy Community Foundation and ComEd, NEED will conduct Solar Schools workshops for schools with installed photovoltaics and those interested in incorporating solar into their classrooms. Workshops will be held October 16 at Rock Valley College in Rockford and October 17 in Oak Brook. For registration information, visit www.need.org.

North Carolina

NEED workshops and Solar Schools programs continue in North Carolina. A large group of teachers from Wake County Public Schools participated in the summer Energy Conferences for Educators along with several teachers from across the state. These teachers will provide additional support for NEED workshops planned for fall and spring. The North Carolina Solar Schools Program continues to grow with Solarbrations planned for fall and with a new section of the NEED website dedicated to chronicle the solar installation process.

American Electric Power

Ready to have some fun? Teachers in AEP's service areas in Virginia, West Virginia, Texas, Louisiana, Oklahoma, and Arkansas have the opportunity to participate in NEED workshops this fall and spring. Participants will receive NEED hands-on kits and curriculum materials. Workshops include substitute reimbursement, breakfast, lunch and materials. Want to host a workshop in your region? Email NEED at info@need.org. Watch www.need.org for upcoming workshop dates.

BP's A+ for Energy® Program

BP sponsored seven conferences in July and August hosting over 780 award winners in its A+ for Energy® program. The grant program was developed by BP in 2005 to recognize teachers for innovation and excellence in teaching energy. In 2007, the program was implemented in California, Texas, New Mexico, Illinois, Ohio, Indiana, Alabama, and Alberta, Canada. The A+ for Energy® Program partnership provides hands-on NEED *Science of Energy Kits*, classroom curriculum materials, and support to grant winners. Classroom teachers are eligible to apply for \$5,000 and \$10,000 grants to support energy education efforts in their classrooms.

U.S. Bureau of Land Management

The BLM *Get Energized* materials and programming are available in New Mexico, Alaska, Colorado, and California. BLM sponsored NEED workshops will be hosted in New Mexico (TBA), Alaska (September 25-26), Colorado (TBA) and California (TBA). Want more information? Visit www.need.org or email info@need.org.

NEED News

ConocoPhillips – A ConversationOnEnergy

ConocoPhillips has asked NEED to encourage our teachers, partners, and friends to participate in their 35-city *ConversationOnEnergy* tour. These town-hall meetings bring together those interested in energy to learn and discuss energy from local and global perspectives with representatives from ConocoPhillips, local universities, experts in renewable energy, energy efficiency, conservation, and the environment, in addition to state agencies. NEED teacher Gina Spencer (Virginia Beach Public Schools) and Chesapeake Public Schools Energy Manager Gene Whitley joined NEED Executive Director Mary Spruill for the Richmond, VA event on August 1, 2007. The lively discussion provided participants the opportunity to learn more about the energy industry, advancing technologies and their local energy picture. To learn more about the events and to register for upcoming meetings visit www.conocophillips.com/energy/index.htm.



Testing for hydrogen using hands-on H₂ Educate kits.

Hydrogen

More **H₂ Educate** workshops are coming soon! With the support of the Virginia General Assembly, two additional hydrogen workshops will be hosted in the Commonwealth – one on October 4, 2007 in Norfolk, VA at Nauticus. A second will be hosted later in the fall. The U.S. Department of Energy Hydrogen, Fuel Cells, and Infrastructure Technologies Office provided additional funding for workshops in Texas, Florida, South Carolina, Connecticut, Washington, DC, and New Mexico. Watch www.need.org for upcoming workshops.

Lessons about Petroleum and Natural Gas

The **Fossil Fuels to Products** curriculum guide was created in partnership with the College of the Mainland-Center for the Advancement of Process Technology and Shell. The guide provides backgrounders and activities on the exploration and production of oil and natural gas and the many uses we have for petroleum products. The guide is available at www.need.org.

Need Good Web Resources?

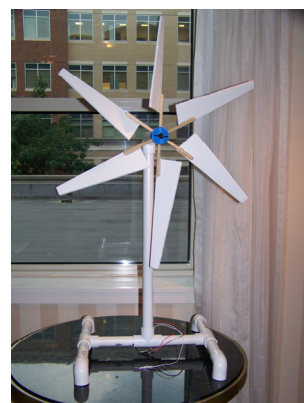
NEED is pleased to have the Energy Information Administration (EIA) as a long-term partner in energy education. The success of the EIA Kid's Page shows that students and teachers need fun and informative online resources. The EIA Kid's Page is regularly updated with new features, facts and curriculum materials. Visit www.eia.doe.gov/kids for the best in energy education resources.

Pacific Gas and Electric Company – Solar Schools Program and Bright Ideas Grants

The Pacific Gas and Electric (PG&E) Company Solar Schools Program continues for its fourth year offering Bright Ideas Grants (\$2,500-\$10,000) to local schools, teacher training and \$1,000 of classroom kits and curriculum materials for schools in the PG&E service area. The deadline for the fall Bright Ideas Grants is September 20, 2007. Apply today for grants and workshops! To apply or for more information, visit www.pge.com/solarschools or www.need.org/pgesolarschools.

Wind

Thanks to the support of the American Wind Energy Association (AWEA) and KidWind, NEED is pleased to present the new **Wind Energy Curriculum** with hands-on kits. The new curriculum is available at four levels—primary, elementary, intermediate and secondary. The first wind workshop was sponsored by AWEA in June at the Windpower 2007 Conference in Los Angeles, CA. Seventy fourth-twelfth grade teachers participated. Interested in sponsoring a workshop in your area? Contact NEED at info@need.org or 800-875-5029. The new curriculum will be available online.



KidWind turbine in Wind Energy hands-on kits.

Change a Light, Change the World

Celebrate National ENERGY STAR® Change a Light Day on Wednesday, October 3, 2007.

The ENERGY STAR® Change a Light, Change the World Campaign is a national call-to-action from the U.S. Environmental Protection Agency and U.S. Department of Energy, encouraging every individual to help change the world, one light—one energy-saving step—at a time. This year, more than 530,000 people Pledged to change more than 1.1 million lights to ENERGY STAR® qualified lights. This could save our country \$30 million in energy costs, while preventing greenhouse gases equivalent to the emissions of more than 40,000 cars.

NEED's participation in the 2006-2007 campaign was a great success. Both NEED and the Kentucky NEED Project were ranked within the top 35 organizations, with each collecting over 1,000 Pledges. NEED's total was 1,266 Pledges and 2,059 bulbs. These Pledges have the potential to save 580,638 kWh of energy, \$58,064 in energy costs, and prevent 916,255 pounds of greenhouse gas emissions.

Thanks to the hard work of NEED teachers and students, NEED was recognized on March 21, 2007 as a **2007 ENERGY STAR® Partner of the Year for ENERGY STAR® Promotion**. NEED Program Director Rebecca Lamb and NEED Board Member Kevin Galligan accepted the award on behalf of NEED teachers and students. This fall, NEED wants to share the award with the schools and energy clubs who were our most successful partners in the Change a Light program. If you had a successful Pledge Drive or campaign activity, let us know so that the award can come to you! Please contact NEED at info@need.org with your contact information and a short description of your successful program.



Our thanks to everyone who took the Pledge and to the classrooms and energy clubs that spread the word in their communities about this great program. Now we need your help to make this year's campaign an even bigger success. As a campaign Pledge Driver, NEED's goal is to get 1,000 individuals to take the Pledge. By reaching this goal we will make a significant impact on our environment, saving 282,000 kWh of energy and preventing 409,000 pounds of greenhouse gas emissions.

Participating in the campaign is a great energy club or classroom activity. New this year, if you plan to collect at least 100 Pledges, sign up your school as a second tier Pledge Driver under "The National Energy Education Development Project (NEED)". You will be able to track the number of Pledges you collect and receive recognition for meeting your goal while NEED receives credit for your efforts. Registration begins September 3, 2007 at www.energystar.gov/joinCAL.

A free expanded **Change a Light, Change the World NEED Teacher's Guide** with curriculum and activity suggestions for implementing the Change a Light campaign is available to download at www.need.org. For additional educational ideas and resources, visit www.energystar.gov/joinCAL.

Take the ENERGY STAR® Change a Light Pledge at www.need.org today and help us reach our goal! Then choose an ENERGY STAR® qualified compact fluorescent light bulb and replace the most often used bulb in your home, office, or school. It's a small step that's already making a big difference.

Wind Logic Puzzles

Introduction

Logic puzzles may be used to reinforce information previously learned. They promote creative thinking and hone problem solving skills.

Grade Levels

Elementary and Intermediate/Secondary

Time

15-30 minutes, or assigned as homework

Procedure—Elementary

1. Introduce wind energy to the students. Use the following resources:
Wind Energy curriculum
Elementary Infobook
Primary Stories and More (*A Trip to the Farm* or *The Tale of Windy Wizard*)
Harry Spotter and the Chamber of Windy Myths play (www.need.org/newsletter.php, use the Feb 2007 link)
2. Group students into sets of two and distribute a copy of the puzzle to each group.
3. If students are unfamiliar with logic puzzles, explain how to complete the puzzles as follows:
Use the clues to determine which combination is correct. Place an X in every box that cannot have the correct combination. Place Os in the boxes that have the correct combination. Each row and column match only once.
For example, in the wind electricity puzzle, the first clue is that Duck River gets its electricity from falling water. Which energy source listed in the columns is falling water (*Hydropower*)? We can match Duck River and Hydropower by putting an O in the hydropower column in the row for Duck River. Fill the rest of the row and column with Xs.

Answers

Wind Electricity

Amesville—Wind

Barkley—Nuclear

Cooper—Coal

Duck River—Hydropower

Wind Toys

Roberto—Frisbee

Mariam—Pinwheel

Meng-Wei—Kite

Jeremy—Bubbles

Procedure—Intermediate/Secondary

1. Introduce wind energy using the *Harry Spotter and the Chamber of Windy Myths* play (www.need.org/newsletter.php, use the Feb 2007 link).
2. Distribute a copy of the wind logic puzzle to each student.
3. If students are unfamiliar with logic puzzles, explain how to complete the puzzles as follows:
Use the clues to determine which combination is correct. Place an X in every box that cannot have the correct combination. Place Os in the boxes that have the correct combination.
4. Extension—Have students create their own logic puzzles after reading *Harry Spotter and the Quest for the Right Light* (pages 10-13).

Answers

Karem—perfect site—23 mph

Keith—too many trees—13 mph

Maria—too windy—64 mph

Marta—bird sanctuary—18 mph

Becca—not enough wind—8 mph

*Special thanks to NEED Lead Teacher Amy Constant (NC)
for creating the Harry Spotter Windy Myths logic puzzle.*

Wind Electricity Logic Puzzle

Figure out which town uses wind for electricity using the following clues:

Duck River gets its electricity from falling water.

Amesville does not use nuclear power.

Cooper uses a fossil fuel to make electricity.

Barkley does not use a renewable energy source for its electricity.

TOWN	NUCLEAR	HYDROPOWER	WIND	COAL
Amesville				
Barkley				
Cooper				
Duck River				

Wind Toys Logic Puzzle

Figure out each student's favorite toy using the following clues:

Roberto does not like bubbles.

Meng-Wei likes the sky.

Mariam does not like to throw.

Jeremy does not like spinning things.

Roberto likes to throw and catch.

NAME	KITE	BUBBLES	PINWHEEL	FRISBEE
Roberto				
Mariam				
Meng-Wei				
Jeremy				

Harry Spotter Windy Myths Logic Puzzle

Professor Huggdatreaz asked Nevi to take the researchers' reports to Professor Dieseldore. Unfortunately, a gust of wind came up and blew the reports out of Nevi's hands into the lake. Nevi remembered a few details from the reports, such as different wind speeds at the sites tested. The five researchers had rejected four sites for different reasons (too windy, not enough wind, too many trees, and bird sanctuary) before picking the perfect site.

Use the notes that Nevi remembered to match the researchers with their sites, why each was accepted or rejected and what the average wind speed was.

1. Becca's and Maria's wind speeds were rejected because the wind was either too fast or too slow to make the turbine run efficiently.
2. Marta and Keith both had good wind speeds at their sites.
3. The perfect site had winds that were 5 mph faster than the site with the bird sanctuary. The site with the bird sanctuary was not rejected because of its wind speed.
4. The five sites included the one Maria researched, the one with wind speeds of 8 mph, the perfect site, Marta's site, and the one with too many trees.
5. Keith did not pick the perfect site or have average wind speeds of 18 mph.
6. Karem's site had 23 mph winds.
7. Marta did not pick the perfect site.

		RESEARCHERS					AVERAGE WIND SPEED - MPH				
		Karem	Keith	Maria	Marta	Becca	8	13	18	23	64
DESCRIPTION OF SITE	Too Windy										
	Not Enough Wind										
	Too Many Trees										
	Bird Sanctuary										
	Perfect Site										
AVERAGE WIND SPEED	8 mph										
	13 mph										
	18 mph										
	23 mph										
	64 mph										

Energy Play

Harry Spotter and the Quest for the Right Light

Key Concepts

1. Compact fluorescent bulbs are more energy efficient than incandescent bulbs.
2. ENERGY STAR® qualified light bulbs and appliances are the most energy efficient you can purchase.
3. Spending more to purchase an efficient product now will save money in the long run on utility costs.

Enriched Vocabulary

appliance	humanitarian
antiques	incandescent
CFL (compact fluorescent light)	initially
efficient	lumens
emissions	pledge
flummoxed	qualified
fluorescent	quarrelling
halogen	unique

Teacher Tip: Stop your class after Scene 2. Have students predict what kind of deal Roni is planning.

Assessment

1. Draw a blueprint of your house, indicating the light bulbs in each room. Compute how much your parents could save on their electric utility bill by switching to CFLs. What impact would changing this many bulbs have on the environment? Go to www.energystar.gov and follow the link to "Lighting" for helpful information and resources.
2. Name three ways to save energy mentioned in this play.
3. Write a letter to your parents giving them suggestions on how they could reduce their electric and/or utility bills.
4. Do a picture cause/effect chart showing what happens in Professor Dieseldore's office.

Enrichment

1. Do a survey of your school. Are there ways you could save energy? Write a proposal to your principal with your suggestions.
2. If your class or energy club is participating in the ENERGY STAR® Change a Light Pledge campaign, discuss how you will get your message out to your parents and the community. Set a class goal for the number of Pledges you want to collect. Write out a script that you will use when you approach someone (relative, neighbor) about signing the Pledge. Practice the script in teams until you feel comfortable sharing what you have learned about energy efficient lighting.
3. Continue the story. What else do you think should be done with additional money saved?

Special thanks to NEED Teacher Advisory Board Language Arts Committee members Amy Constant (NC), Barb Lazar (NM), and Gina Spencer (VA) for creating this play.

Harry Spotter and the Quest for the Right Light

Characters

FLUORENZO: a prankster, loves to stir up trouble
RONI: extremely intelligent, passionate about causes
FRIENDS: the rest of the class
HERMAN: easily frustrated, passionate about saving energy
HARRY: a calming influence on his friends
NEVI: a curious friend
PROFESSOR DIESELDORE: headmaster of Hogwatts

Scene 1: Hanging Out in the Potion Room

(Roni is sitting at a table with newspaper ads spread around her, reading and occasionally circling items with a quill. Herman sits nearby with his head in his hands. Fluorengo, Nevi and friends are mixing potions.)

FLUORENZO: Hey Roni, are you wishing on the stars all over that newspaper ad that your potion will mix itself?

RONI: It's the ENERGY STAR®. This mark indicates which household **appliances** are most energy **efficient**. And BTW, I mixed my potion yesterday!

FRIENDS: ENERGY STAR® light, ENERGY STAR® bright,
Energy efficiency is always right.
I wish I may, I wish I might,
Save energy and money with the STAR tonight!

(Harry enters the room. Herman's head pops up.)

HERMAN: Harry! About time! Maybe you can talk some sense into her.

HARRY: What has she done now?

RONI: SHE is right here. And SHE is just doing the **humanitarian** thing. Of course, it takes a HUMAN to understand that.

HERMAN: Did...did...did she just say I wasn't HUMAN?

HARRY: What are you doing, Roni... *(he shuffles through newspapers)* looking at kitchen stuff?

NEVI: Hogwatts just received a big grant and Professor Dieseldore is asking students to submit proposals on how to spend the money. Roni and Herman are **quarrelling** over how to spend it.

FLUORENZO: Let's propose a new headmaster – *(chanting)* Dieseldore is a bore, Dieseldore is a bore.

FRIENDS: *(giggle quietly in the background)*

HERMAN: Harry, you know we need brighter lights on the sports field. During the last match, the crowd didn't realize the game was over for fifteen minutes!

RONI: Although sports are entertaining, they aren't as important as the House Elves' working conditions.

NEVI: Here we go again...

RONI: During my chore time in the kitchens, I saw the **appliances** the House Elves use. They're **antiques**!

HERMAN: So let them sell the **antiques** for money to buy new ones!

RONI: (*giving Herman a dirty look*) As I was saying, they have to run the dishes through the dishwasher twice after every meal, because the old dishwasher doesn't work. Do you know how many dirty plates there are after all the students eat? The washing machines only hold one robe at a time, and the refrigerators are ancient!

NEVI: But they can still do their jobs using the old **appliances**. We NEED those lights—our athletes can't perform in the dark!

RONI: You are all impossible! (*exits the room*)

HARRY: I'm **flummoxed**; they both sound like important causes.

HERMAN: Give me those advertisements, I need to look up how much new lighting will cost.

Scene 2: Lunch Time in the Dining Room

(*Nevi, Herman, Fluorenzo, Roni and Harry are sitting at a table. Other friends are eating nearby.*)

NEVI: Hey, Herman, what did you find out about the new lights for the athletic field?

HERMAN: Did you know there are different kinds of light bulbs?

FLUORENZO: Like red and blue?

RONI: I think he means **incandescent**, compact **fluorescent**, **halogen**...

HARRY: Or maybe he's talking about the ENERGY STAR® **qualified** lighting from the newspaper ads.

FRIENDS: ENERGY STAR® light, ENERGY STAR® bright,
Energy efficiency is always right.
I wish I may, I wish I might,
Save energy and money with the STAR tonight!

HERMAN: The **incandescent** bulb, Thomas Edison's light bulb from 1879, was really inefficient. In an **incandescent** bulb, 90 percent of electric power is converted into heat, not light.

FLUORENZO: We don't want those for our sports field, it's too hot down there already!

HARRY: I'll bet you found a better option.

HERMAN: Compact **fluorescent** bulbs are much more energy **efficient**, not making as much wasteful heat. ENERGY STAR® **qualified** bulbs use about 75 percent less energy than standard **incandescent** bulbs and last up to ten times longer. They produce about 75 percent less heat, too, so they're safer to operate and can cut energy costs associated with home cooling.

NEVI: Are those the funky looking spiral bulbs?

RONI: They're usually called **CFLs** for short. And there is nothing wrong with looking a little **unique**.

FLUORENZO: (*quietly to the friends*) Roni knows all about looking **unique**.

FRIENDS: (*Giggle quietly in the background.*)

HERMAN: Actually, ENERGY STAR® **qualified CFLs** come in many shapes, sizes and shades.

NEVI: Why isn't everyone using them if they save money?

HERMAN: You see an **incandescent** bulb is **initially** pretty cheap to buy, while a **CFL** is more expensive. But, if you consider that ENERGY STAR® lights last longer and use less electricity to operate, over the life of an average bulb, you save about 30 dollars!

HARRY: You can SAVE money by SPENDING money?

NEVI: If you multiply 30 dollars by all the bulbs we have now...why that's A LOT OF MONEY saved!

HERMAN: I did some research online too. ENERGY STAR® has a website with information about energy **efficient** lighting. I even signed the Change a Light **Pledge**.

HARRY: What's a **pledge**?

RONI: It's like a promise.

NEVI: What did you **pledge** to do?

HERMAN: Just what it says—Change a Light. I promised to change one light bulb in my house from an **incandescent** to an ENERGY STAR® **qualified** compact **fluorescent**.

FLUORENZO: What kind of difference would that make?

HERMAN: Let me break it down for you guys. *(Turn on overhead projector with these facts already written out. Herman points a wand at the wall as if he is magically projecting the image as he talks.)*

Incandescent

1600 **Lumens** = 100-Watt bulb

Lifetime cost = \$60.48

ENERGY STAR® qualified **CFL**

1600 **Lumens** = 25-Watt bulb

Lifetime cost = \$15.12

Lifetime Energy Cost Savings

\$60.48 - \$15.12 = \$45.36

691 pounds of carbon dioxide **emissions**

HERMAN: I took out the 100-watt **incandescent** bulb from my dorm room, and replaced it with an ENERGY STAR® **qualified** 25-watt **CFL**. They both give off the same amount of light, or **lumens**, so I can't tell the difference when I'm doing my homework. This one change will save Hogwatts 45 dollars in energy costs over the life of the bulb. And, it saves 691 pounds of carbon dioxide **emissions**.

HARRY: You save money and you help the environment. Very cool.

RONI: Is there information on ENERGY STAR® **qualified appliances** on that website too?

HERMAN: There sure is. Go to www.energystar.gov. There's information on clothes washers, dishwashers, refrigerators, freezers, dehumidifiers, room air conditioners and lots of other suggestions on how to save energy.

RONI: You know, Herman, I'm thinking we can work out a deal on this proposal.

Scene 3: The Meeting in Professor Dieseldore's Office

(Herman and Roni are sitting at his desk, the rest of the friends gather around the office.)

PROFESSOR DIESELDORE: I understand the two of you are submitting a joint proposal for the grant money.

HERMAN: We want to use the money to buy ENERGY STAR® **qualified fluorescent** lights for the playing fields, classrooms and dorms.

PROFESSOR DIESELDORE: Those are pretty expensive lights, Herman.

HERMAN: We learned that they may cost more **initially** but, in the long run, Hogwatts will save on its electric bill.

FLUORENZO: We also want to share what we've learned with the community during Friday's half time show. There will be flying tricks and a band...

HARRY: We'll just give a short presentation about energy **efficient** lighting and **appliances**, and we'll have a booth where we can answer questions and collect Change a Light **Pledges**.

NEVI: If every family at Hogwatts would change their five most used 60-watt light bulbs to ENERGY STAR® **qualified compact fluorescents**, they would save 35 dollars in energy costs every year.

PROFESSOR DIESELDORE: Saving money sounds like an excellent idea. But Roni, what about new **appliances** for the House Elves?

RONI: Our proposal is actually a two-part plan.

HARRY: With the new **efficient** lighting, Hogwatts will save lots of money on its utility bill.

PROFESSOR DIESELDORE: I'm guessing you have plans for that money?

RONI: We want to use our savings to buy ENERGY STAR® **qualified appliances** for the House Elves. While doing our research on ENERGY STAR®'s website, we learned that when buying an **appliance**, it has two price tags: what you pay to take it home and what you pay for the energy and water it uses. ENERGY STAR® **qualified appliances** incorporate advanced technologies that use 10–50 percent less energy and water than standard models. The money Hogwatts will save on our utility bills will more than make up for the cost of more expensive, but more **efficient**, ENERGY STAR® models.

PROFESSOR DIESELDORE: Sounds like a great proposal!

HARRY: But wait—there's more!

HERMAN: With the money we save using the energy **efficient appliances**, we want to buy everyone new winter robes. Then we can turn down the thermostat next winter.

RONI: And that will save Hogwatts even more money.

PROFESSOR DIESELDORE: OK, I'm convinced. You get your new lights, and your new **appliances**. This is the first time I've given away money and saved at the same time!

FRIENDS: ENERGY STAR® light, ENERGY STAR® bright,
Energy efficiency is always right.
I wish I may, I wish I might,
Save energy and money with the STAR tonight!

Youth Awards 2007

Youth Awards for Energy Achievement — June 2007

Nearly 600 participants gathered from all over the country this June for the 27th Annual National Youth Awards Program for Energy Achievement. The NEED Project is proud to recognize outstanding schools and students who are dedicated to sharing their energy knowledge with their schools and community. Congratulations to all our winners!

Distinguished Service Awards

Gerald Harrington – New Mexico
Joanne Spaziano – Rhode Island

Students of the Year

Whitney Newman – North Carolina
Jake Kesner – New Mexico

State of the Year

Mississippi

Special Category – District of the Year

Wake County Public School System – North Carolina

Primary Schools of the Year

Huntingdon Primary School – Tennessee
Stuart R. Paddock Elementary School – Illinois

Elementary School of the Year

Three Rivers Middle School – Ohio

Junior School of the Year

St. Isidore School – Nebraska

Secondary School of the Year

Millikan High School – California

Youth Energy Leadership Awards

NEED works to recognize the value of student involvement in energy issues and student interest in careers in the energy industry and education. The 2007 NEED Youth Energy Leadership Awards were given to Roxie Brown, who will attend University of California-Davis, Jake Kesner, who will attend the University of New Mexico, and Whitney Newman, who will attend the College of William and Mary. Roxie, Jake and Whitney are longtime NEED students and assistants for the Youth Awards Program and local workshops. They are assets to NEED and will be assets to their future employers as well.

