ENERGY SMART STUDENTS PROGRAM
TRILOGY
Grades 7-12

Workshop Objectives

- Develop a basic understanding of what energy is, how it is transformed and used to make our lives easier, and the environmental impacts of our energy consumption.
- Learn about energy efficiency and conservation at home, empowering students to bring this information home to their families.
- Illustrate methods to integrate energy education into lesson plans, using the NEF materials.
- Become familiar with the services offered by NYSERDA.

Agenda (6 Hours)

Welcome
This agenda includes a number of lessons we have selected to share with you today. We will discuss all of them and spend as much time as possible completing the hands-on activities. Should you have questions on any activities we were unable to complete during the workshop, please contact the National Education Foundation at 1-800-616-8326 from 10:00 am to 7:00 pm EST. NEF's curriculum specialists can answer any questions you have. We also encourage you to explore the materials on your own and determine which lessons may be appropriate for your students. At the end of the day, we will discuss ways you can integrate these materials into your existing curriculum.

Introduction
Energy Literacy PowerPoint. Note that the entire presentation is on our website to download or review at your convenience. Go to www.GetEnergySmart.org and click on 'Energy Education.' Select 'Workshops,' and then select 'Workshop Presentations.'

Framing the Day - The workshop is divided into four major areas:

- Group 1:**Energy Efficiency & Conservation**
  - Why is it important to save? How can we conserve at home and at school?
- Group 2:**Energy Basics – Uses & Applications**
  - What is energy? What do we use it for? What is electricity? Kinetic vs. potential
- Group 3:**Energy Sources**
  - Renewable vs. non-renewable, energy limits, energy transformation
- Group 4:**Energy and Our Environment**
  - Environmental advantages/disadvantages of each energy source
  - Climate change, Recycling, Anti-idling

Introducing the Materials

- This is not a whole curriculum.
- These energy lessons are learning activities that can be used to teach not only Science, but Technology, English/Language Arts, Math, Global Studies, Art, Music, Health – every discipline.
- Curriculum Map – some activities are better suited for certain grades but can be modified for use with all grades. If a district wants to teach energy at all grade levels, this is the 'road map.' It is posted on our website with the correlations.
- Every lesson relates to one or more of the NYS Learning Standards in these subject areas: Math, Science, Technology, English/Language Arts, Global Studies, and Family & Consumer Science.

Group 1 -- Energy Efficiency & Conservation

- Saving energy is part technology and part behavioral change, and that is why we teach both.
  - ☑ "Energy Awareness Quiz" – pg. 85
  - ☑ "Hitting the Road" – pg. 384
  - ☑ "The Futures Wheel" – pg. 349
  - ☑ Energy Action Challenge
- Form of Energy – distinguish between kinetic and potential. Reference Energy Information Administration website: http://www.eia.doe.gov/kids/index.html

Group 2 -- Energy Basics – Uses & Applications

- Why it is important for everyone (in the world) to know the basics of energy and how we use (or misuse) energy?
  - ☑ "Get Your Motor Running" – pg. 20
  - ☑ "Energy for Electricity" – pg. 24
  - ☑ "Roller Coaster Energy" – pg. 36
- Forms of Energy – distinguish between kinetic and potential. Reference Energy Information Administration website: http://www.eia.doe.gov/kids/energyfacts/science/formsofenergy.html

Group 3 -- Energy Sources

- What are the differences between renewable and non-renewable energy, kinetic vs. potential energy, energy limits and energy transformations? Why do people need to know about this energy information?
  - ☑ "Discovering Sources for Electricity" – pg. 50; tied with *Electrical Generation* and *Renewable Energy Sources* posters
  - ☑ "Pass the Sack" – pg. 53
  - ☑ "The Search for Energy" – pg. 55; tied with *Electrical Generation*, *Renewable Energy Sources, Oil*, *Coal*, *Natural Gas* and *Nuclear* posters and *Energists* newspaper

Group 4 -- Energy and Our Environment

- What are the advantages and disadvantages of each energy source? What are the environmental impacts of climate change, recycling, vehicle idling?
  - ☑ "Series and Parallel Circuits with Solar Cells" – pg. 176 **OR** "What are photovoltaics?" pg. 161
  - ☑ "Building Solar Water Heaters" – pg. 150 **OR** "Building Wind Turbines" pg. 266 **OR** "Electrolysis" pg. 315
- Great websites:
  - Environmental, Monitoring, Evaluation, and Protection (EMEP) – NYSERDA R & D: http://www.nyserda.org/Programs/Environment/EMEP/teachers_&_students.asp
  - Clean School Bus Program – US EPA: http://www.epa.gov/cleanschoolbus/
  - Extension activities can be done and teachers can order free supplies: http://www.epa.gov/cleanschoolbus/antiidling.htm#irk

Pulling It All Together

- How can you integrate some or all of these activities into your classroom?
- What ideas do you have to collaborate with another teacher/department in your school to teach energy education?
- How can you inspire your students to make behavioral changes at home and at school?

We Offer Incentive and Competition Opportunities

- Igniting Creative Energy (ICE) – national K-12 student competition, sponsored by NEF
- $500 mini-grants for teachers (Visit our website www.GetEnergySmart.org for details and deadlines.)

Final Housekeeping Issues

- Survey, sign out, professional development certificate, explain sub stipend process (if necessary)
- Order copies of Take Home piece

Please become an Energy Ambassador! Tell others about what you learned here today. Recommend to others that they attend Energy Smart Students workshops.

www.GetEnergySmart.org info@nyess.org 1-877-NY-SMART – Option 6