

# Online Energy Resources for Educators

An Annotated Guide to  
World Wide Web Resources  
for Teaching About Energy  
and the Environment



Distributed by Pacific Gas and Electric Company

# Welcome

Pacific Gas and Electric Company (PG&E) has assembled this guide to help you locate materials on the World Wide Web that can help your students learn about energy and the environment.

PG&E has created curricula based programs specifically for schools which correlate to the California Department of Education Content Standards. These programs are featured in the first section of this booklet. The second section contains many relevant Web sites published by governmental, public and private organizations.

Use this guide to find lesson plans you can print out or download to your computer, order free and low-cost resources like handouts and posters, learn about upcoming workshops, and link to additional tools and information.



Sites marked with this Web surfer icon include special content for students to use on their own.

## **Remember:**

Web sites are continually updated and redesigned. Some addresses listed here may have changed. If you find that an address no longer works, try this: Go to the site's home page. You may find a link there to the resource you are looking for, or the page may include a search box. You can also search for the material you want by entering its name into a search engine such as Google ([www.google.com](http://www.google.com)) or Yahoo ([www.yahoo.com](http://www.yahoo.com)).

We welcome your recommendations for additional Web sites to include in a future version of this guide. Please send your suggestions to: [energenius@pge.com](mailto:energenius@pge.com).

# Educational Programs for PG&E's School Customers

PG&E's Energenius®, Safe Kids, and Solar Schools programs and the Energy Coalition's PEAK program help educators teach California's K-12 students to use energy wisely and safely. The free instructional materials equip teachers with accurate information and effective tools that address state content standards in math and science. All of the materials are available in English and some in Spanish.

## ENERGENIUS

The Energenius Educational Series provides engaging, interactive programs to teach elementary and middle school students about energy conservation. These curricula help students understand how they can make a positive difference for the environment. Make learning fun with:

- Clear, detailed lesson plans and activities
- Colorful posters, handouts and calendars
- Lively videos and learning games for groups
- Entertaining animated characters who illustrate examples of waste and motivate students to be mindful about their own energy use

The program is divided into these grade levels:

- Kindergarten Program
- Energenius Habits and Primary Safety (grades, 1-3)
- E Program (grades, 4-5)
- Intermediate Safety (grades, 4-6)
- Bill Buster Program (grades, 6-8)
- Light Right Program (grades, 6 and up)

Order materials at [www.pge.com/energenius](http://www.pge.com/energenius).

## SAFEKIDS

The Safe Kids Program helps students learn how to stay safe around natural gas and electricity. The program includes:

- Individual and group learning activities, facilitated discussion, experiments, quizzes and interactive online games
- Comprehensive teachers' guides
- Lesson plans (including pre- and post-tests) that help teachers create an energy education plan tailored to students' needs

Safe Kids is divided into two parts—an elementary section suitable for classroom or home use with students in grades K-5 and a science section for grades 6-10, including:

- Aunt Sarah and the Amazing Power, Electricity and Natural Gas (grades, K-2)

## PG&E's Educational Programs

- Stay Safe Around Electricity and Natural Gas (grades, 3-4)
- Experiments to Explore Electricity (grades, 3-6)
- Electrical & Natural Gas Safety World (grades, 4-6)
- The Shocking Truth about Electricity and Natural Gas (grades, 5-6)
- Science and Safety of Electricity and Natural Gas (grades, 6-8)

Order materials at [www.pge.com/safekids](http://www.pge.com/safekids).

### SOLAR SCHOOLS PROGRAM

The Solar Schools Program enables public school students in underserved PG&E communities to learn about solar energy through hands-on projects.

- **Solar Installation:** Adding a solar panel demonstrates a school's commitment to energy conservation and may save several hundred dollars in energy costs each year. The installation package includes an online monitoring tool that provides real-time data on the system's activity and allows students to compare their solar panel's output with that of other solar schools across the state.
- **Bright Ideas grants:** Grant awards ranging from \$1,000 to \$10,000 are available to fund local green or sustainable solar energy-related school projects such as solar ovens and school gardens.
- **Teacher Training:** All K-12 public school teachers in PG&E's service area are invited to attend our free one-day workshops taught by instructors from the National Energy Education Development Project. The workshops help teachers learn to use the curriculum to make math, science and English fun for students by implementing innovative energy units in their classrooms.

To learn more, visit [www.pge.com/solarschools](http://www.pge.com/solarschools).

### PEAK

The Energy Coalition offers PEAK, a standards-based education program. PEAK teaches the science of energy while empowering California students in grades 3-7 to become Smart Energy Managers in their homes, schools and communities.

PEAK provides at no cost:

- A Web site containing fun, interactive games and quizzes for students
- Tips for saving energy at home and at school
- Professional development for educators
- An easy to follow, standards-based guidebook with supplies for hands-on activities
- Assemblies, contests and fundraisers for your school

To find out if there is a PEAK program near you, or to learn how to participate, visit [www.peakstudents.org](http://www.peakstudents.org).

# Online Energy Resources

## AIRNow

**[www.airnow.gov](http://www.airnow.gov)**

The AIRNow site provides quick access to national air quality information. A full-color map gives an overview of air quality in the USA and is updated daily.

**[www.airnow.gov/index.cfm?action=static.resource](http://www.airnow.gov/index.cfm?action=static.resource)**

The Teachers' page provides links to air quality and environmental curriculum resources, as well as state and local air quality Web sites designed specifically for teachers and students.



**[www.airnow.gov/index.cfm?action=aqikids\\_new.main](http://www.airnow.gov/index.cfm?action=aqikids_new.main)**

An air quality map and Webcams are available for children ages 7-10. Buster Butterfly helps explain air quality days to kindergarten and 1st grade students.

## Alliance to Save Energy

**[www.ase.org/section/\\_audience/educators](http://www.ase.org/section/_audience/educators)**

The Alliance's Educator's page features links to detailed multidisciplinary lesson plans that bring energy efficiency into the classroom for K-12 students.

**[www.ase.org/section/program/greenschl](http://www.ase.org/section/program/greenschl)**

This site provides newsletters on recent developments in energy efficiency, Green School case studies and resources for students and teachers.

## Bonneville Power Administration (BPA)

**[www.bpa.gov/Energy/N/education](http://www.bpa.gov/Energy/N/education)**

BPA provides links to energy resources for elementary and secondary students. Teacher resources, including a fuel cell curriculum, are also included.

**[www.bpa.gov/Corporate/KR/ed/energyaudit/homepage.shtml](http://www.bpa.gov/Corporate/KR/ed/energyaudit/homepage.shtml)**

The Energy Audit Workbook and Training Manual is an eight-chapter course of study that a student team can use to conduct an energy audit of their high school.

**[www.bpa.gov/Energy/N/education/Classroom](http://www.bpa.gov/Energy/N/education/Classroom)**

This site provides energy conservation lesson plans and classroom materials for grades 4-5. An energy conservation poster puzzle, coloring pages, and a chart depicting energy use and waste in a child's bedroom are also included.

## Online Energy Resources

### [www.bpa.gov/corporate/KR/ed/6-curricula.htm](http://www.bpa.gov/corporate/KR/ed/6-curricula.htm)

The Resources for Teachers' page describes and links to energy conservation lesson plans for grades K-8. BPA's Energy Smarts Team Training Manual is a teacher's guide to energy conservation activities for elementary and middle school students.

### California Air Resources Board



#### [www.arb.ca.gov/knowzone/knowzone.htm](http://www.arb.ca.gov/knowzone/knowzone.htm)

The Air Resources Board introduces students to issues of air quality and air pollution in California. The Know Zone's Kids' Stuff site has a coloring book that can be printed out (in English and Spanish) and interactive games.

### California Climate Change & Energy Education Resources Catalog

#### [www.energy-education.net/k12.htm](http://www.energy-education.net/k12.htm)

This site provides a K-12 catalog of resources for teaching students about climate change, conservation, energy alternatives, and basic principles on energy, electricity, and electrical power. It links to lesson plans, curriculum units, teacher training workshops, hands-on projects and field trips.

### California Department of Education — Office of Environmental Education

#### [www.cde.ca.gov/pd/ca/sc/oeaintrod.asp](http://www.cde.ca.gov/pd/ca/sc/oeaintrod.asp)

This site provides a source of information on environmental educational curriculum resources for California schools. Links include the Child's Place in the Environment curriculum guides for elementary school teachers, resource guides, and the Environmental Education Grant Program (EEGP). California Energy Commission (CEC)



#### [www.energy.ca.gov](http://www.energy.ca.gov)

The CEC portal provides access to a number of energy resources on climate change, solar, green house gases, energy savings tips and much more.

### California Energy Commission — Energy Quest



#### [www.energyquest.ca.gov](http://www.energyquest.ca.gov)

Energy Quest is a comprehensive, energy education site where students can research energy-related issues and play a series of interactive games that teach energy and conservation.

## Online Energy Resources

[www.energyquest.ca.gov/teachers\\_resources/index.html](http://www.energyquest.ca.gov/teachers_resources/index.html)

The site's teacher resources section includes background material, recommended books, and extensive links to K-12 energy education lesson plans on other sites.

### **California Environmental Education Interagency Network (CEEIN)**

[www.calepa.ca.gov/education/CEEIN/Resources](http://www.calepa.ca.gov/education/CEEIN/Resources)

CEEIN provides resources for teachers to help them integrate environmental issues into their lesson plans.

### **California Environmental Protection Agency**

[www.calepa.ca.gov/Education](http://www.calepa.ca.gov/Education)

A portal to the agency's K-12 educational programs, including those from the Air Resources Board, California Integrated Waste Management Board, Office of Environmental Health Hazard Assessment and the State Water Resources Control Board.

### **California Integrated Waste Management Board (CIWMB)**

[www.ciwmb.ca.gov/Schools](http://www.ciwmb.ca.gov/Schools)

The CIWMB site features environmental educational publications (elementary and secondary), including waste prevention curricula. Teachers will also find information on developing school waste prevention and recycling programs and funding sources for environmental, recycling, or science literacy projects.

### **California Regional Environmental Education Community (CREEC Network)**

[www.creec.org](http://www.creec.org)

The CREEC Network links to environmental educational resources and libraries in California. CREEC's searchable Resource Directory includes over 1,000 environmental education providers and over 2,000 programs/resources available to educators in California.

### **Charles Edison Fund**

[www.charlesedisonfund.org](http://www.charlesedisonfund.org)

This site offers easy-to-perform, science-teaching experiments for grades 4-12. These projects focus on conservation, alternative energy sources, static electricity, energy for the future and environmental experiments. There is also information on the Edison Awards Program for student participation in scientific projects.

# Online Energy Resources

## ClassroomEarth

[www.classroomearth.org](http://www.classroomearth.org)

The National Environmental Education Foundation's (NEEF) ClassroomEarth site lists and describes in detail what it has determined to be the ten "most popular and widely used environmental education programs for K-12 classrooms."

## Climate Change Education.org

[www.climatechangeeducation.org](http://www.climatechangeeducation.org)

Climate Change Education.org is a portal that provides links to a wide variety of educational and scientific resources on climate change, including K-12 lesson plans and ideas for student projects.



[www.globalwarmingkids.net](http://www.globalwarmingkids.net)

Climate Change Education.org's portal to global warming for students links to interactive games and other web resources and lists DVDs, videos, books, magazines, and science centers relevant to climate change.

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## Earth 911 (Making Every Day Earth Day)

[www.earth911.org](http://www.earth911.org)

This site links to state and local government programs addressing issues such as recycling, waste management, and environmental policy.



[www.earth911.org/for-students](http://www.earth911.org/for-students)

The student section (grades, K-12) contains games, activities, and information on recycling and reuse, including electronic waste.

## EarthDay.gov

[www.earthday.gov](http://www.earthday.gov)

The federal government's portal to Earth Day events and information provides connections to various state government sites. Teachers can find ideas for classroom lessons and activities, as well as a history of Earth Day and related legislation from 1970 to the present.

## Earth Team

[www.earthteam.net](http://www.earthteam.net)

This site disseminates information on environmental education and "action projects" suitable for classrooms. Project descriptions include objectives and extensive links to other resources. Earth Team's Green News is an online newsletter by and for teens [www.thegreennews.net](http://www.thegreennews.net).

## Online Energy Resources

### Electrical Safety World

[www.sce.com/kids](http://www.sce.com/kids)

Southern California Edison's Electrical Safety World features several lively interactive pages on electrical safety for kids. The site includes a safety certificate that can be printed out for classroom use and a teachers' guide.

### ENC Learning Inc.

[www.goenc.com](http://www.goenc.com)

The goENC site offers resource information for teaching K-12 science and math classes, including energy-related topics. The site features a searchable database and a descriptive catalog of resources from hundreds of organizations and publishers. Links to workshop materials, education periodicals, online teacher courses, and teacher talk sites.

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### Energy Hog



[www.energyhog.org](http://www.energyhog.org)

The Energy Hog Challenge educates students in grades 3-6 on how to be responsible energy users. "The Challenge" helps develop student skills in science, math, technology, language arts, critical thinking and social studies. A student guide and a teacher guide are available.

### EnergyNet

[www.energynet.net](http://www.energynet.net)

The EnergyNet learning program for K-12 students integrates technology, standards-based learning, and work-place skills. Titles include: Energy Detectives (elementary level) and Home Energy Makeover, Energy Auditing, Energy Engineers Community, and Energy Consultants (middle and high school level). Users must buy the program.

### EnergySmart Schools

[www.eere.energy.gov/buildings/energysmartschools](http://www.eere.energy.gov/buildings/energysmartschools)

EnergySmart Schools is a Department of Energy program that seeks major improvements in the energy efficiency of American school buildings.

[www.eere.energy.gov/education/lessonplans](http://www.eere.energy.gov/education/lessonplans)

This program offers links to more than 350 lesson plans and activities on energy efficiency and renewable energy for grades K-12. Each listing includes a detailed summary identifying curriculum integration, time, materials, and national standards. The lesson plans are downloadable from the EnergySmart site.

## Online Energy Resources

### ENERGY STAR Kids



[www.energystar.gov/index.cfm?c=kids.kids\\_index](http://www.energystar.gov/index.cfm?c=kids.kids_index)

Students learn how to protect the environment on this interactive site, by making changes in their homes. They can watch a slide show on global warming and learn about "superhero energy stars" and energy sources, uses, and consequences.

### Exploratorium Museum



[www.exploratorium.edu](http://www.exploratorium.edu)

The San Francisco Exploratorium museum site provides a variety of interactive, online educational exhibits on science-related subjects. The Exploratorium produces its own Webcasts and has its own Webcam. Its digital library is searchable online.

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### [www.exploratorium.edu/climate](http://www.exploratorium.edu/climate)

The Exploratorium's Global Climate Change Research Explorer pages display climate models and scientific data relating to the atmosphere, oceans, and polar caps.

### Flex Your Power

[www.fypower.org](http://www.fypower.org)

This site provides a variety of energy efficiency and conservation information covering incentives/rebates, technical assistance, retailers, product guides, and case studies.

[www.fypower.org/inst/edu.html](http://www.fypower.org/inst/edu.html)

The site's education solutions section details how schools may reduce their energy bills by using energy more efficiently and by installing energy-efficient equipment.

[www.fypower.org/inst/tools/resources.html](http://www.fypower.org/inst/tools/resources.html)

Flex Your Power also provides an online search engine for locating information related to energy and water efficiency.

### Florida Solar Energy Center

[www.fsec.ucf.edu/en/education/k-12/curricula](http://www.fsec.ucf.edu/en/education/k-12/curricula)

The K-12 program gives teachers online access to curriculum units focusing on alternative energy technologies and the understanding of natural systems. Topics include Solar Energy, Alternative Fuel, High Energy Hydrogen and Building Performance.

# Online Energy Resources

## Folsom Powerhouse SHP, Electricity Unit

**Group tours of the Folsom Powerhouse are available throughout the week by special arrangement. Call 1-916-985-4843 for more information.**

[www.parks.ca.gov/pages/501/files/unit.pdf](http://www.parks.ca.gov/pages/501/files/unit.pdf)

Folsom Powerhouse State Historic Park offers a downloadable curriculum guide on electricity in PDF format. The curriculum guide contains 14 individual lesson plans using the powerhouse and its history as a focus. It includes quizzes, scientific investigations and handouts. ([www.parks.ca.gov/pages/501/files/guide.pdf](http://www.parks.ca.gov/pages/501/files/guide.pdf))

## Foundation for Environmental Education (FEE)



[www.the-environment.org](http://www.the-environment.org)

The Energy Education section of this site provides an overview of forms of energy and features learning modules on zero emission technologies, an interactive primer on how a power plant works, and an FAQ section on the greenhouse effect.

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## Foundation for Water and Energy Education (FWEE)

[www.fwee.org/education.html](http://www.fwee.org/education.html)

FWEE offers a six-unit, hands-on curriculum entitled The Nature of Water Power for grades 4-8. The focus is on the Northwest states, where a large percentage of the electricity is generated by hydro power.

## Franklin Institute Science Museum — Community Science Action Guides

[www.fi.edu/guide/energy.html](http://www.fi.edu/guide/energy.html)

The Franklin Institute has produced a series of detailed energy resource guides for both upper primary and upper secondary students, addressing energy efficiency, the oil supply, and global warming.

## How Stuff Works

[www.howstuffworks.com](http://www.howstuffworks.com)

A searchable database that can be used by students and teachers to find answers to questions about the workings of science and technology. The company promises to provide a "source of credible, unbiased, and easy-to-understand explanations of how the world actually works."

## IEEE Virtual Museum



[www.ieee-virtual-museum.org](http://www.ieee-virtual-museum.org)

This Institute of Electrical and Electronic Engineers' Virtual Museum is designed for students ages 10-18, teachers and the general public. The aim of the museum is to create a better understanding of the principles of electrical and information sciences within a historical context.

## Online Energy Resources

### The Learning Team

[www.learningteam.org](http://www.learningteam.org)

This site offers for sale two CD-ROM programs on energy conservation for grades 8-12: The Sun's Joules (about renewable energy and the environment) and The Green Home ("A new 'green' way of building and operating your home"). Both programs include real-world, interactive exercises.

### Marian Koshland Science Museum

[www.koshland-science-museum.org/teachers/index.jsp](http://www.koshland-science-museum.org/teachers/index.jsp)

The Teachers & Learning section of the Marian Koshland Science Museum site offers inquiry-based student activities that adhere to National Science Education Standards.

[www.koshland-science-museum.org/exhibitgcc/index.jsp](http://www.koshland-science-museum.org/exhibitgcc/index.jsp)

Global Warming Facts and Our Future is a "virtual field trip" exploring the causes and impact of climate change. Includes pre-visit and follow-up teaching activities. Take a virtual field trip to learn about the causes and impacts of climate change.

**Take a virtual field trip to learn about the causes and impacts of climate change.**

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### National Energy Education Development (NEED) Project

[www.need.org](http://www.need.org)

The NEED Project provides a variety of online student and teacher energy education guides for grades K-12. Curriculum topics include wind and solar energy, and solar schools. Hands-on energy kits can be ordered from the project. The site provides information on teacher/student training opportunities, as well as curriculum guides, and student activities.

### National Energy Foundation (NEF)



[www.nef1.org](http://www.nef1.org)

The NEF site provides curriculum, training, and materials devoted to energy and natural resources issues. The Educators page has activities for students related to fossil fuels and the conservation of energy.

## Online Energy Resources

### **North American Association for Environmental Education (NAAEE)**

**[www.naaee.org](http://www.naaee.org)**

The NAAEE is a network of professionals, students, and volunteers working in the field of environmental education. It offers publications for purchase that focus on guidelines for development of environmental education programs. Its EE-Link is a searchable database of environmental education resources on the Internet (requires membership).

### **Northeast Sustainable Energy Association (NESEA)**

**[www.nesea.org/education/edmaterials](http://www.nesea.org/education/edmaterials)**

The NESEA offers lesson plans and interdisciplinary units (some in PDF format) for students in grades 3-12 on topics such as renewable energy, alternative fuels and personal energy choices.

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### **The Northern California Solar Energy Association (NCSEA)**

**[www.noricalsolar.org/Resources](http://www.noricalsolar.org/Resources)**

NCSEA's Resources section contains pictures and information on solar technology, photovoltaic basics, and best practices for "solar friendly" cities.

### **PG&E Energenius Program**

**[www.pge.com/energenius](http://www.pge.com/energenius)**

The PG&E Energenius Educational program focuses on energy efficiency and gas and electric safety education for grades K-8. Curriculum materials are provided at no cost to schools within the PG&E service area. The Energenius Educational Series comes complete with teacher curriculum guides and sets of student activities.

### **PG&E Home Energy Analyzer**

**[www.pge.com/energysurvey](http://www.pge.com/energysurvey)**

An audit of home energy use is available on this interactive, Web-based survey that produces a report with tailored recommendations for saving energy and reducing utility bills. From answers to simple multiple-choice questions about home and household appliances, the Home Energy Analyzer generates a list of ways to save energy and compares energy use to that of other similar homes.

## Online Energy Resources

### PG&E Safe Kids

[www.pge.com/safekids](http://www.pge.com/safekids)

Teachers in the PG&E service area can order free booklets on safety around electricity and natural gas. Safe Kids materials are designed for students in grades K-8. Some of the materials are also available in Spanish.

### PG&E Solar Schools Program

[www.pge.com/solarschools](http://www.pge.com/solarschools)

This site provides K-12 educators information, eligibility requirements and application forms for three solar school programs offered by PG&E. One program includes a solar installation at schools of a one kilowatt photovoltaic system that converts sunlight into electricity. Another solar program, Bright Ideas Grants, is available to schools to support innovative classroom and extracurricular solar science programs. The third program, a one-day, solar energy training course, is offered to educators throughout northern and central California. Participants receive curriculum materials to support hands-on energy units in their classrooms.

### PEAK students.net

[www.peakstudents.org](http://www.peakstudents.org)

PEAK is an educational program designed to teach students and their families about energy conservation practices. Students learn the importance of shifting energy usage off of peak-demand times and about renewable energy sources and cutting-edge energy-efficient technologies.



[www.peakstudents.org/game](http://www.peakstudents.org/game)

Energy Challenge is an interactive simulation game for kids, hosted by the action hero Bulbman and his nemesis Energy Sucker.

[www.peakstudents.org/teachers\\_corner](http://www.peakstudents.org/teachers_corner)

The Teacher's Corner (password required) provides access to a teacher's guide and teacher and student pages in English and Spanish.

### Planet Polluto



[www.planetpolluto.com/about.html](http://www.planetpolluto.com/about.html)

Save Planet Polluto is an interactive simulation game for kids about the effects of air pollution. It is available on CD-ROM free of charge throughout the Sacramento region or may be ordered in bulk at low cost.

# Online Energy Resources

## Project Learning Tree

[www.plt.org](http://www.plt.org)

An award-winning, interdisciplinary environmental education program for grades K-12 is administered by the American Forest Foundation. This site offers for purchase a multimedia Energy & Society learning kit that integrates music and dance to enhance the study of energy issues. The kit includes an activity guide, a music CD, a dance DVD, posters, and background material for teachers.

## The Rahun Institute

[www.rahus.org](http://www.rahus.org)

The Rahun Institute's Solar School program for grades K-12 offers a five-day summer institute and various six-hour workshops where educators learn about solar power and build solar powered projects to prepare for teaching about solar energy. The Rahun' site also includes news updates on solar energy events and legislation in California. An assortment of solar educational kits and guidebooks for projects may be purchased on the site.

## Rocky Mountain Institute (RMI)

[www.rmi.org](http://www.rmi.org)

This nonprofit organization works to foster efficient and restorative use of resources to create a more sustainable world. Web page fact sheets offer students and teachers information about energy and how it is used. Includes a library of Rocky Mountain Institute publications available online.



[www.rmi.org/sitepages/pid300.php](http://www.rmi.org/sitepages/pid300.php)

The RMI for Kids' page offers links to information about energy and water for students in grades 4-6.

## Science Buddies



[www.sciencebuddies.org](http://www.sciencebuddies.org)

This nonprofit organization has developed science project ideas with step-by-step guidelines and an online mentoring program for K-12 students. A team of volunteer scientists monitors the "Ask an Expert" forum, and teacher resources are provided for planning science fairs.

## Online Energy Resources

### Science NetLinks

[www.sciencenetlinks.com](http://www.sciencenetlinks.com)

This site provides K-12 teachers with Internet-based learning activities and lesson plans for the classroom. All site content is organized by grade around benchmarks for science literacy. Energy-related lessons include home energy conservation, energy sources and use, renewable energy, urban ecosystems (ecology), and more.

### Solar Energy International (SEI)

[www.solarenergy.org](http://www.solarenergy.org)

SEI promotes renewable energy resources of solar, wind, and water throughout the world. On the site are energy facts about renewables, articles on renewable energy, and links to related sites. Teachers seeking information on college courses in solar education can go to:

[www.solarenergy.org/resources/education\\_table.pdf](http://www.solarenergy.org/resources/education_table.pdf).



[www.solarenergy.org/resources/kids.html](http://www.solarenergy.org/resources/kids.html)

SEI's Kids Info page provides answers to questions about the sun and solar energy and links to online video tutorials.

### Union of Concerned Scientists (UCS)

[www.ucsusa.org/clean\\_energy](http://www.ucsusa.org/clean_energy)

The UCS Clean Energy page features fact sheets on sustainable energy solutions and policies, including Energy 101, Coal vs. Windpower: You Judge, and Just the Facts, a searchable database of scientific insight into the risks of fossil fuels and the benefits of renewable energy.

[www.ucsusa.org/clean\\_california](http://www.ucsusa.org/clean_california)

The UCS Clean California page accesses resources on air pollution, climate change, and "clean" motor vehicles.

This site also links to fact sheets and reports covering the following topics: global warming and California, California vehicles and diesel engines, California clean energy, and clearing the air in the San Joaquin Valley.

[www.ucsusa.org/assets/documents/global\\_warming/CA\\_Curriculum\\_guide\\_FINAL.pdf](http://www.ucsusa.org/assets/documents/global_warming/CA_Curriculum_guide_FINAL.pdf)

Confronting Climate Change in California: Ecological Impacts on the Golden State, an eight-lesson curriculum guide for grades 9-12, is also available from the UCS.

## Online Energy Resources

### The Urban Forest Ecosystems Institute

[www.selecttree.calpoly.edu](http://www.selecttree.calpoly.edu)

Planting trees can reduce energy costs by providing shade and protection from the elements. The Urban Forest Ecosystems Institute's tree selection guide provides an easy way to select a tree based on climate zone. Information is also provided on utility precautions, fire safety, root damage potential, invasive plants, hazardous trees, and tree maintenance.

### U.S. Department of Energy (DOE): Students and Kids



[www.energy.gov/forstudentsandkids.htm](http://www.energy.gov/forstudentsandkids.htm)

The Students and Kids' page contains material for conducting both a home energy audit and a home energy checkup. The site also has a glossary, a fun facts section and links to kids' pages at a number of the DOE national laboratories.

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### DOE: Energy Information Administration (EIA)

[www.eia.doe.gov/bookshelf/eer/kiddietoc.html](http://www.eia.doe.gov/bookshelf/eer/kiddietoc.html)

Energy Education Resources: K-12 is a list of free or low-cost, energy-related educational materials published by the Energy Information Administration. It is updated annually and available in print and online.



[www.eia.doe.gov/kids](http://www.eia.doe.gov/kids)

The EIA's extensive and colorful Energy Kid's page offers a history of energy; a fun and games page with quiz, puzzles, and virtual field trips; and energy facts pages where the sources, uses, science, and saving of energy can be researched. The page also reports on energy news and provides help on science fair projects with NEED Project materials.

### DOE: National Renewable Energy Laboratory

[www.nrel.gov/education](http://www.nrel.gov/education)

This site offers information to educators on research internships and fellowships, mentoring, tutoring, seminars, competitions, awards, special events, and after-school programs. In addition to instructional development opportunities, teachers are provided with renewable energy and energy efficiency curricula for grades K-12.

### DOE: Office of Energy Efficiency and Renewable Energy

[www.eere.energy.gov](http://www.eere.energy.gov)

This government Web site provides a gateway to many online documents on energy efficiency and renewable energy.

## Online Energy Resources

### [www.eere.energy.gov/education/lessonplans](http://www.eere.energy.gov/education/lessonplans)

This site provide more than 350 lesson plans and activities on energy efficiency and renewable energy for grades K-12. The lesson plans are searchable by subject and grade level.



### [www.eere.energy.gov/kids](http://www.eere.energy.gov/kids)

The kids' site includes a variety of interactive games and activities, including Roofus' Solar and Efficient Home, Energy Quest, games where kids fight the "energy monkeys," and the Energy Kid's Page with riddles, virtual field trips, energy slang, puzzles, scavenger hunt, activity book, and a quiz. The site also includes resources for science fair projects.

## U.S. Environmental Protection Agency (EPA): Educational Resources

### [www.epa.gov/epahome/educational.htm](http://www.epa.gov/epahome/educational.htm)

The EPA has a number of educational resource sites for K-12 students and their teachers, which may be accessed through this page.

### [www.epa.gov/kids](http://www.epa.gov/kids)



The colorfully illustrated Environmental Kids Club offers interactive projects, games, art, and helpful tips for students in grades pre-K-4.

### [www.epa.gov/students](http://www.epa.gov/students)



The EPA Student Center has tips and activities for students in grades 5-8 with links to environmental club projects, environmental youth awards, and basic information about human health, waste and recycling, and air and water conservation.

### [www.epa.gov/highschool](http://www.epa.gov/highschool)

This site offers links for grades 9-12 on conservation, ecosystems, waste and recycling, and other EPA resources. Student internships and careers are also discussed at this site.

### [www.epa.gov/climatechange/kids](http://www.epa.gov/climatechange/kids)



This site contains interactive games, links and animations that address climate change, the greenhouse effect, and how to make a difference for the planet.

### [www.epa.gov/teachers](http://www.epa.gov/teachers)

This site contains background information for teaching about the environment. The site offers a collection of fact sheets, brochures, information on grants and workshops, and links to downloadable curricula from the EPA and other sites.

## Online Energy Resources

### **EPA: Global Warming Visitor Center**

**[www.yosemite.epa.gov/oar/globalwarming.nsf/content/VisitorCenterEducators.html](http://www.yosemite.epa.gov/oar/globalwarming.nsf/content/VisitorCenterEducators.html)**

This EPA site contains a number of materials for teachers, including links to the Climate Change Kids Site, flash animations of Global Warming and Earth Processes (grades, 5-9); Online Greenhouse Gas Calculators; and a Global Warming Wheel Card Classroom Activity Kit.

### **EPA: Office of Environmental Education (OEE)**

**[www.epa.gov/enviroed/resources.html](http://www.epa.gov/enviroed/resources.html)**

This site links to free online, EPA educational resources compiled by environmental topic. A comprehensive list of K-12, EPA environmental education materials and resources is on this site.

### **EPA: Pollution Prevention Toolbox**

**[www.epa.gov/RCRISRegion5/wptdiv/p2pages/toolbox.htm](http://www.epa.gov/RCRISRegion5/wptdiv/p2pages/toolbox.htm)**

The "Toolbox" contains a series of four-page fact sheets/lesson plans on pollution prevention and energy conservation concepts. Also included are sample content standards with correlations to the lesson plans. Other pollution prevention education resources are included in the Toolbox.

### **Watt Watchers of Texas**

**[www.wattwatchers.utep.edu/pages/Projects.htm](http://www.wattwatchers.utep.edu/pages/Projects.htm)**

This program provides all the information and materials necessary for forming and implementing a school energy patrol, with hands-on, online energy-related activities for students K-12. An 80-page Watt Watchers of Texas manual, as well as Knowledge Is Power, a K-12, energy efficiency curriculum supplement, can be downloaded at **<http://wattwatchers.org/pages/publications.htm>**.

### **Wisconsin K-12 Energy Education Program (KEEP)**

**[www.uwsp.edu/cnr/wcee/keep/Resources](http://www.uwsp.edu/cnr/wcee/keep/Resources)**

KEEP initiates and facilitates the development, dissemination, implementation, and evaluation of energy education programs. The site provides teacher-developed, hands-on, interdisciplinary lessons on energy and links to other resources.

**[www.uwsp.edu/cnr/wcee/keep/HSSupplement/index.htm](http://www.uwsp.edu/cnr/wcee/keep/HSSupplement/index.htm)**

Energy Matters is a Web-based exploration of energy issues for high school students and teachers.

# Energy Saving Tips for Teachers



Turn off all lights when leaving a room.



Set computers and printers on their energy savings feature and turn them off when not in use.



Encourage your school and district to always purchase energy-efficient, ENERGY STAR® labeled equipment and appliances. **[www.energystar.gov](http://www.energystar.gov)**.



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Watch for leaking faucets – both water and energy are wasted.



Provide lessons and classroom activities on energy, energy efficiency, and conservation.



Organize a classroom or school recycling program.



Select student energy monitors who will make sure that energy is used wisely and efficiently in your classroom.



Start an energy patrol for the school.  
For information about PG&E's Energy Patrol Workshop, email [energenius@pge.com](mailto:energenius@pge.com).





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