

Teacher and Student Resources

Energy Literacy: Essential Principles and Fundamental Concepts for Energy Education

(http://www1.eere.energy.gov/education/energy_literacy.html) identifies seven Essential Principles and a set of Fundamental Concepts that, if understood and applied, will help individuals and communities make informed energy decisions. The intended audience is anyone involved in energy education from K-Gray and is meant to inform the improvement and development of energy curriculum to more broadly cover the Fundamental Concepts. The Energy Literacy Framework is free to download from the website and up to five hard copies can be ordered.

The **Energy Literate Citizenry from K-to-Gray: A Webcast on the Department of Energy's Energy Literacy Initiative** is available online, including a PDF of the presentation. Please see the web page below for the presentation and available resources.

http://www1.eere.energy.gov/education/webcast_energyliteracy.html

The Department of Energy's Energy 101 Initiative

(http://www1.eere.energy.gov/education/energy_101.html) provides a peer reviewed course framework for an interdisciplinary fundamentals of energy course using a systems-based approach that can be individualized by the nation's universities and community colleges. The model course will teach energy from an interdisciplinary perspective in an effort to capture the dynamic role energy plays in our lives -- including relevant scientific, technological and societal aspects. Through this effort, DOE aims to increase the pathways to energy-related degrees and energy careers offered at the nation's universities and community colleges. Such an interdisciplinary course can lead to broadly increasing the energy literacy of students, as well as providing fundamentals which can be used in further energy-related academic or career pathways.

Energy 101 Course Framework Webinar is available online, including a pdf of the presentation. See the web page below for the presentation and available resources.

http://www1.eere.energy.gov/education/energy101_framework_webcast.html

The Department of Energy Office of Energy Efficiency and Renewable Energy has a searchable library of K-12 Lesson Plans & Activities (<http://www1.eere.energy.gov/education/lessonplans/default.aspx>).

You will also find the Energy Literacy framework highlighted on this page. The Energy Literacy framework is a standards-like document for educators which identifies the concepts from both the natural and social sciences that someone would know and understand if they were energy literate. There are links to ScienceEducation.gov and to an Energy Basics site that are very useful as well. See EERE's Kids Saving Energy site which was last updated in 2008 but still has a lot of relevant games and information. <http://www1.eere.energy.gov/kids/>

EERE Wind Office: Energy Basics/how wind turbines works with a really great widget/animation http://www1.eere.energy.gov/wind/wind_animation.html. They also have a great set of other wind energy basics multimedia <http://www1.eere.energy.gov/wind/multimedia.html>, and a wind 101 video <http://www.youtube.com/watch?v=tsZITSeQFR0&feature=youtu.be>.

EERE Solar Office: Great resources for teaching about solar including videos, graphics and animations. <https://www.eeremultimedia.energy.gov/solar/>

American's Home Energy Education Challenge (AHEEC) (www.homeenergychallenge.org) from the Department of Energy and the National Science Teachers Association. This challenge is a fun way for students in grades 3-8 to learn about energy conservation. The challenge runs during the 2013-2014

school year and registration closes November 15, 2013. Teams of students will win over \$60,000 competing in the Home Energy Challenge and Energy Poster Competition.

Energy 101 videos from the U.S. Department of Energy. Short videos on a variety of energy related topics. <http://www.youtube.com/playlist?list=PLACD8E92715335CB2&feature=plcp> The DOE also has a general video site that can be searched for other topics and energy related talks. <http://energy.gov/videos/>

Department of Energy hosts Energy All Stars: On January 19, 2013 as part of Inauguration Weekend, the Department of Energy hosted Energy All Stars featuring prominent energy leaders doing TED-style talks outlining what our energy future can and should look like, and steps that can be taken to achieve that vision. Speakers included Secretary of Energy - Steven Chu, former governor of Michigan - Jennifer Granholm, Los Angeles Mayor - Antonio Villaraigosa, CEO of Bloomberg New Energy Finance - Michael Liebreich, President and CEO of CPS Energy - Doyle Beneby, managing principal of the Analysis Group and former Assistant Secretary of Energy - Susan Tierney, and Bill Nye the Science Guy. Watch these incredible presentations at: <http://www.youtube.com/playlist?list=PLgU0cHea5t3qPNsUzG9rcNsVG3eVv57qa>

The Department of Energy's Energy Saver site includes energy saving content as well as how-to articles and videos, calculators, and a blog. Beyond providing information about low-cost ways to lower household energy bills, the site also provides information about local tax credits, rebates and energy efficiency financing that may be available in different communities. <http://energy.gov/energysaver/energy-saver>

The Department of Energy's America's Home Energy Education Challenge (<http://www.homeenergychallenge.org/>) is designed to help students and their families save energy while earning awards for their schools. Is being reworked but will be online starting in April 2013.

Women @ Energy (<http://energy.gov/diversity/listings/women-energy>) is a DOE project to showcase a few of the talented, dedicated employees who are helping to change the world and ensure America's security and prosperity through transformative science and technology solutions. View profiles of women across the country, sharing what inspired them to work in STEM, what excites them about their work at the Energy Department, sharing ideas for getting more underrepresented groups engaged in STEM, offering tips, and more.

The Department of Energy - Office of Fossil Energy's Hydraulic Fracturing Poster diagrams the process of hydraulic fracturing to extract shale gas from deep beneath the earth. Teachers can request hard copies and there is a pdf version on the website. <http://energy.gov/fe/downloads/hydraulic-fracturing-poster>

PBS NOVA Labs: The Energy Lab (<http://www.pbs.org/wgbh/nova/labs/lab/energy/>) is the second lab in this new digital platform where "citizen scientists" can actively participate in the scientific process. For something we use every day, energy is a pretty mysterious concept. This Lab investigates what energy is, how it can be converted into useful forms, and why some sources are running low. In the Research Challenge, you'll use scientific data to design renewable energy systems for cities across the U.S.—and compete with others to see whose designs can produce the most power.

Energy Education Websites compiled by DaNel Hogan (hogand@einsteinfellows.org)

The U.S. Energy Information Administration (EIA) has an **Energy Kids** site (<http://www.eia.gov/kids/>) where you can find a wide range of activities for students and information about how teachers can put this site to use. They also have a lot of very useful data and analysis concerning energy on their main site (<http://www.eia.gov/>).

The U.S. Energy Information Administration (EIA) Energy Explained site (www.eia.gov/energyexplained) is a great nonpartisan source for up-to-date energy facts and data on the entire range of energy topics. Do you understand where your gasoline comes from, what determines the price of electricity, or how much renewable energy we use? If not, you're not alone. But now you can learn all about energy at Energy Explained, a nonpartisan guide to the entire range of energy topics from biodiesel to uranium.

The U.S. Energy Information Administration (EIA) State Energy Portal (<http://www.eia.gov/state/>) includes interactive mapping, instant state comparisons, interactive state rankings, and an advanced state data finder to key statistics and analysis. To learn more, watch the video at: http://www.youtube.com/watch?v=JverGty_ckQ

BITES (Building, Industry, Transportation, and Electricity Scenarios) tool is an interactive framework that lets users explore the energy and carbon implications of altering the current U.S. energy profile. Using 'what-if' scenarios, users are able to adjust inputs to the electricity generation, buildings, industry and transportation sectors in order to compare outcomes to baseline reference cases. <https://bites.nrel.gov/>

The State and Local Energy Efficiency Action Network (SEE Action) (www.seeaction.energy.gov) is a state- and local-led effort facilitated by the U.S. Department of Energy and the U.S. Environmental Protection Agency to take energy efficiency to scale and achieve all cost-effective energy efficiency by 2020. SEE Action offers publications, events, and technical assistance to state and local decision makers as they provide low-cost, reliable energy to their communities through energy efficiency. SEE Action has a listserv with announcements about upcoming events and new publications. Registration for newsletter can be found on their homepage.

The NEED (National Energy Education Development) Project (www.need.org) has a large library of energy curriculum on a wide range of energy topics and is differentiated between primary, elementary, intermediate and secondary levels. Specific curriculum you will find useful can be found at the following site which sorts the curriculum according to subject. (<http://www.need.org/Curriculum-Guides-by-Subject>).

The National Academies' What You Need To Know About Energy (<http://needtoknow.nas.edu/energy/>) interactive website breaks energy up into Uses, Sources, Costs and Efficiency. This site is a reliable source for unbiased information and science related to energy. Links are provided for an Energy Quiz, Short Video, Glossary and the original reports from the National Academies about energy on which the website is based. The National Academies – YouTube channel is a great resource for energy and climate change short videos: <http://www.youtube.com/user/nationalacademies>.

The National Council for Science and the Environment-Council for Energy Research and Education Leaders (NCSE-CEREL) (<http://www.ncseonline.org/program/Council-of-Energy-Research-%2526-Education-Leaders>) is a multidisciplinary membership organization made up of heads of academic energy research and education centers, institutes, and programs. It provides the means for leaders in

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energy research, education, and communication to collaboratively use knowledge about energy to improve education, decision-making, and, more generally, the well-being of society.

The Energy Library is a web-based information resource about energy in all of its multifaceted aspects. The Energy Library is neutral in regards to energy systems. It does not favor one type of energy source or energy policy over another, one country over another, or one political ideology over another. The Energy Library provides objective and up-to-date information that is written and reviewed by experts. <http://theenergylibrary.com/>

The Switch Energy Project is a film, web and education program to build energy awareness and efficiency, and help us move forward to a smarter energy future. They have a lot of short video clips on a wide range of energy topics that teachers may find useful and students may find interesting. <http://www.switchenergyproject.com/index.php>

Science360 Knowledge Network immerses visitors in the latest wonders of science, engineering, technology and math. They gather the latest science videos provided by scientists, colleges and universities, science and engineering centers, the National Science Foundation and more. A search of “energy” on the site yields some great short and long videos on a wide range of topics. <http://science360.gov/>

The Center for Green Schools at the U.S. Green Building Council was established to drive the transformation of all schools into sustainable and healthy places to live, learn, work and play. They believe everyone, from the kindergartner entering the classroom to the Ph.D. student performing research in a lab, should have the ability to learn in green buildings. The Center works directly with teachers, students, administrators, elected officials and communities to create programs, resources and partnerships that transform all schools into healthy learning environments. They provide lots of resources for students and teachers about how to make your school green. <http://www.centerforgreenschools.org/>

Green Apple Day is an initiative of the Center for Green schools at USGBC to put all children in schools where they have clean and healthy air to breathe, where energy and resources are conserved, and where they can be inspired to dream of a brighter future. On Sept. 29, 2012, more than 1,250 service projects took place in 49 countries on every continent around the world to make our schools healthier, more sustainable places to learn. Check out what events took place near you, read highlights from the day, and mark your calendar for next year's Day of Service on Sept. 28, 2013. <http://www.mygreenapple.org/>

Green Revolution has 10 videos on a wide range of energy topics: discover, wind, green roofs, smart grid, city car, solar, hydrogen, biomass, microbes and electric vehicles. These short videos are a great intro to any of these topics and show some of the great research happening in different parts of the energy space. http://www.nsf.gov/news/special_reports/greenrevolution/index.jsp

Climate Literacy & Energy Awareness Network (CLEAN) houses a reviewed collection of grades 6-16 educational resources meant to help students’ understand the core ideas in climate and energy science. These resources have been linked to the essential climate and energy literacy principles and are searchable in a variety of ways. <http://cleanet.org/>

Climate Literacy and Energy Awareness Network community is an informal group of scientists, educators, policy makers, community leaders, students, and citizens engaged in fostering Climate and

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Energy Literacy in the US and abroad. It provides a forum for organizations, agencies, and individuals to collaborate for climate and energy education. Members share ideas, coordinate efforts, promote policy reform, develop learning resources, and support integration of climate and energy literacy into formal and informal education venues. Initiatives of CLEAN feature accurate scientific information, engaging learning experiences, and multiple pathways to reach broad and diverse audiences, in both formal and informal venues. Join the Climate and Energy Literacy Network and its email list, by contacting Dr. Tamara Ledley of TERC, Cambridge, Mass. (tamara_ledley@terc.edu).

The Green Schools National Network (GSNN) which is a non-profit organization advances the national Green & Healthy Schools Movement by connecting like-minded and passionate education, non-profit, corporate and public sector individuals and programs. GSNN is the national umbrella organization that works collaboratively with others to improve education in the United States. Education for sustainability helps young people gain the knowledge, skills, motivation and hands-on experiences to make the world a better place for everyone and everything. <http://www.greenschoolsnationalnetwork.org/>

The Green Schools Alliance is meant to connect and empower K-12 schools to lead the transformation to global environmental sustainability. They have resources and programs to support schools trying to green. They also host the Student Climate & Conservation Congress (SC3) (<http://www.greenschoolsalliance.org/students/student-climate-conservation-congress-sc3>) to empower outstanding student environmental leaders with the skills, knowledge, and tools necessary to address natural resource conservation challenges and better serve their schools and communities. <http://www.greenschoolsalliance.org/>

Energy4me is another organization that has resources and activities for students and also has free kits teachers can order to teach about energy topics. <http://www.energy4me.org/>

Science NetLinks from the **American Association for the Advancement of Science (AAAS)** (<http://sciencenetlinks.com/>) provides K-12 teachers, students, and families with quality resources for teaching and learning science. All of the resources are Internet based and free to everyone. They have a collection of resources called The Science of Energy (<http://sciencenetlinks.com/collections/science-energy/>) which shines a light on the types of lessons, tools, and interactives available to help students understand energy. One energy related game they have is called Power Up! (<http://sciencenetlinks.com/interactives/powerup.html>) It is aimed at younger students (Grades 3-8). They also have Power Play (<http://sciencenetlinks.com/media/filer/2011/10/07/powerplay.swf>) which is for grades 6-8. Energy Time Machine (<http://sciencenetlinks.com/tools/energy-time-machine/>) presents the history of energy from 500,000 BCE up to 2006. The Oil Refining interactive is also very good (http://sciencenetlinks.com/interactives/energy/interactive/api_treat_012810.swf).

AAAS Cutting Edge: Energy Lecture Series is a lecture series where AAAS members make brief, easy to understand presentations about the latest advancements in their field. The newest installment, Cutting Edge: Energy draws on the expertise of Paul Alivisatos, Henry Shiu, Belinda Batten, and Kim Magrini, as they share their insights on the newest developments in solar energy, wind energy, wave energy, and biofuels. Available as videos and audio podcasts, these lectures offer a fascinating look at the future of renewable energy resources. <http://membercentral.aaas.org/cutting-edge>

THINK! ENERGY is an initiative from National Energy Foundation that invites all people to practice three main principles: Think! – Discover energy and learn about resources, uses and supply as it relates to you personally, in schools or businesses, at home, and in your community. Talk! – Discuss the energy and

environmental topics that encourage debate and formulate ideas. Take Action! – Decide to take action and make a difference in energy through conservation and energy efficiency practices that impact the environment in positive and healthy ways.

<http://thinkenergy.org/>

Earth: The Operators' Manual ("ETOM" for short) is a rigorously researched, beautifully filmed and ultimately uplifting antidote to the widespread "doom and gloom" approach to climate change. The program opens with a thorough grounding in Earth's climate history and an overview of the current dilemmas, but its main thrust is an upbeat assessment of our many viable sustainable energy options. Links to the three episodes of ETOM at this site – each about an hour long and worth viewing!

<http://earththeoperatorsmanual.com/>

Museum of the Earth: Marcellus Shale provides information on the geology of the Marcellus Shale and related Earth system issues. The geology is important because it dictates where natural gas will be found and why it is present, why new technology is needed to extract the natural gas, and what the impacts may be of extracting natural gas in these ways. <http://www.museumoftheearth.org/MarcellusShale/>
<http://thesciencebeneaththesurface.wordpress.com/2012/11/02/resources-for-teaching-and-learning-about-the-marcellus-shale-and-the-broader-energy-system/>

WattzOn is a consumer energy engagement software platform that provides free tools and expert advice to help people understand their energy use and how they can make smart decisions about saving energy and making their homes more green. <http://www.wattzon.com/etom>

PBS America Revealed – Episode 1: Food Machine. Over the past century, an American industrial revolution has given rise to the biggest, most productive food machine the world has ever known. Host Yul Kwon explores how this machine feeds nearly 300 million Americans every day. He discovers engineering marvels we've created by putting nature to work and takes a look at the cost of our insatiable appetite on our health and environment. <http://www.pbs.org/america-revealed/episode/1/>

PBS America Revealed – Episode 2: Nation on the Move. America is a nation of vast distances and dense urban clusters, woven together by 200,000 miles of railroads, 5,000 airports, and 4 million miles of roads. These massive, complex transportation systems combine to make Americans the most mobile people on earth. <http://www.pbs.org/america-revealed/episode/2/>

PBS America Revealed – Episode 3: Electric Nation. Our modern electric power grid has been called the biggest and most complex machine in the world – delivering electricity over 200,000 miles of high tension transmission lines. But even though the grid touches almost every aspect of our lives, it's a system we know very little about. <http://www.pbs.org/america-revealed/episode/3/>

PBS America Revealed – Episode 4: Made in the USA. American manufacturing has undergone a massive revolution over the past 20 years. Despite all the gloom and doom, America is actually the number one manufacturing nation on earth. Yul Kwon crosses the nation looking at traditional and not-so traditional types of manufacturing. <http://www.pbs.org/america-revealed/episode/4/>

Our Children's Trust has videos of youth from around the country talking about how climate change is affecting them and their families. It also details the actions they are taking to make a difference.

<http://ourchildrenstrust.org/trust-films> They are partnered with iMatterMarch at www.imattermarch.org

Alliance for Climate Education (ACE) provides FREE high school assemblies with a conservation message that challenges students to DOT – do one thing and to join student action teams. Visit their website to learn how to schedule an assembly at your high school today! ACE is the national leader in high school climate science education. They are dedicated to educating America's high school students about the science behind climate change and inspiring them to do something about it – while having fun along the way. ACE delivers two core offerings: the ACE Assembly and the Student Action Program.
<http://www.acespace.org/>

The **Alliance to Save Energy** is a nonprofit organization that promotes energy efficiency worldwide through research, education and advocacy. They encourage business, government, environmental and consumer leaders to use energy efficiency as a means to achieve a healthier economy, a cleaner environment and greater energy security. <http://ase.org/>

Mr. Parr's Cool Science Songs are set to recent hit songs but with the nerdiest lyrics. He made them for his 6th grade classes but they could be used at a ton of different levels. Lots of great topics in physical science, weather, catastrophic events, life science, light and color, astronomy, and earth science.
<http://www.youtube.com/parrmr>

Some energy related songs include:

Conservation of Energy Song:

<http://www.youtube.com/watch?v=k60jGJfV8oU&list=PL538B87C890F6F3A1&index=15>

The Heating Song: <http://www.youtube.com/watch?v=SYnP4TGOGRY&list=PL538B87C890F6F3A1>

Power and Work Song: http://www.youtube.com/watch?v=q-a9asXZ_gE

Radioactivity Song: <http://www.youtube.com/watch?v=ljZe6xSTWhM&list=PLA686464F296A15D6>

Renewed Energy: <http://www.youtube.com/watch?v=ljZe6xSTWhM&list=PLA686464F296A15D6>

Energy Roles: <http://www.youtube.com/watch?v=Cf3inHpNXIM&list=ECDB484413202B3E2A>

Mr. Edmonds also has some great songs about physical science topics.

<http://www.youtube.com/user/dsecms/videos?view=0>

Some energy-related songs include:

Heat and Temperature Song: <http://www.youtube.com/watch?v=ZYuhMXmJeh4>

The Photosynthesis Song: <http://www.youtube.com/watch?v=aupr9qT2qgc>

The Simple Voltaic Cell Circuit Song: <http://www.youtube.com/watch?v=gNnJ9t3HDQs>

The Work and Power Song: <http://www.youtube.com/watch?v=5EsMmdaYCIQ>

The Energy Song: http://www.youtube.com/watch?v=_uLSFigtLKg

Vsauce is a cool YouTube Channel that answers interesting questions through the lens of science.

<http://www.youtube.com/vsauce>

There aren't any energy related videos yet but there is a ton of science in each. One favorite is **What Color is a Mirror?** <http://www.youtube.com/watch?v=-yrZpTHBEss>

MinutePhysics is a YouTube channel that presents short explanations on cool physics and other sweet science: <http://www.youtube.com/minutephysics>

And in Spanish – **MinutoDeFisica**: <http://www.youtube.com/user/minutodefisica>

MinuteEarth is a YouTube channel that presents short explanations on science and stories about our awesome planet: <http://www.youtube.com/minuteearth>

And in Spanish – **MinutoDeLaTierra**: <http://www.youtube.com/user/MinutoDeLaTierra>

The **Cooperative Extension System** provides featured articles and activities related to Home Energy. The extension website also has Farm Energy and Wood Energy resources.

http://www.extension.org/home_energy

WxTV is a national weatherization training show that uses a blend of expert advice, how-to techniques, innovation, and reality TV to create entertainment-based learning. Episodes range 12-15 minutes in length and are filmed around the country by WxTV film crews and often by weatherization crews themselves, in the field, showcasing their know-how. WxTV brings together differing techniques from hot, cold, humid, and arid environments, opening a dialogue for crews to debate the best way to accomplish weatherization tasks under varying conditions. But it's not just weatherization on WxTV's radar; the show has expanded to cover all aspects of energy-efficient living. In just a year and a half, the show has gained a sizable following within the weatherization, renovation, and energy-efficiency industries. <http://wxtvonline.org/episodes/>

Exploring Energy Efficiency & Alternatives (E3A): E3A was developed as a partnership with Montana and Wyoming Cooperative Extension systems as a foundation for non-biased, research-based information on home and agricultural energy efficiency and conservation strategies and small renewable energy technologies. E3A provides ready-to-use downloadable fact sheets, links to resources, and resources to help farm and home consumers explore small renewable energy systems For educators, E3A is a self-guided, self-contained grab-and-go-toolkit of resources for a wide range of audience applications - K-12, volunteer, train-the trainer and higher education energy education. , The E3A toolkit includes lesson plans, evaluation tools, teaching demonstration kits, fact sheets, presentation materials and other resources.. The E3A program is being adopted by a number of other states as a foundation for their statewide energy curriculum and a national training was offered to facilitate this adoption of the program . <http://e3a4u.info/>

We Day is fuelled by the desire for change, and the hope that the world can be a better place. We Day is the movement of our time, inspiring a generation to act. It is a free full-day educational event inclusive of many great causes in our local, national and global community + a stadium full of elementary and secondary students who have committed to a minimum of one local and one global action + a stage with the greatest heroes of our time along with young change-makers + the launch of the year long We Act program providing campaigns, coordinator support, educational resources, and everything to turn inspiration into activation. www.weday.org

Envirolution is dedicated to developing and scaling dynamic K-12 education, job training, leadership academy, and community outreach programs centered around green industries and green energy. With a focus on service learning, our programs not only provide career development for students, but also enable our participants to give back to their communities. Envirolution™ seeks to promote global change by championing local efforts that empower citizens to do positive, meaningful work and to make a good living while giving back to their own social and environmental communities. <http://envirolution.org/>

Tennessee Energy Hog: Learning about energy is fun when you include Energy Hogs! The Energy Hog Challenge is a set of classroom activities that guide children through lessons about different sources of energy, how we use energy at home, and how to bust energy hogs to save energy.

Students will:

- Learn good energy-saving habits
- Bring their lessons home to help their families save money by reducing home energy bills

- Protect natural resources for future generations.

<http://energyhog.org/>

New Science: Sustainable Energy from UL is helping to advance new sustainable sources and technologies, making energy cleaner, more reliable and more efficient. This site provides information about energy generation, distribution, management and usage as relates to sustainable energy. It includes a journal with articles on measuring offshore wind power, advancing the smart grid and the safety of smart appliances. It also includes links to other multimedia like an infographic, video, photo gallery, and other documents. UL is a global independent safety science company offering expertise across five key strategic businesses: Product Safety, Environment, Life & Health, Verification Services and Knowledge Services. <http://www.ul.com/global/eng/pages/newscience/sustainableenergy/>

Connect! Transform the Future from National Geographic: The Center For Science (a national network of leading science centers) has teamed with GE, National Geographic, and local energy companies to produce CONNECT! Transform the Future. The program launches with Plan It Green, a cool online game that allows players to design and create their own energy-efficient city of the future. Plus, there will be a short 3D film, teacher workshops, interactive educational materials and exhibits, and programs at local science centers. http://education.nationalgeographic.com/education/collections/connect-energy/?ar_a=1

The Great Energy Challenge from National Geographic (funded by Shell): Like food, air, and water, energy is essential to human existence. The hopes of billions for a better life depend on plentiful and accessible sources of energy. But with the world's population fast approaching seven billion, how do we meet the growing demand for energy in a responsible, equitable, and sustainable way? It's a question we must ask ourselves as a society and as individuals.

<http://environment.nationalgeographic.com/environment/energy/great-energy-challenge/>

The Daily Energy News is a great archive of recent energy news articles.

<http://news.nationalgeographic.com/news/archives/energy/>

Energy Quest is the energy education website for the California Energy Commission. Energy is an integral part of our daily lives. Teaching an "energy ethic" to conserve finite resources is essential to our energy future, which is currently dependent on fossil fuels. We also must rely on our youth to help us create new ways to harness the elemental forces of our planet and the universe. They are tomorrow's scientists and inventors. They will discover new means of energy production and innovative ways to use less energy. We hope Energy Quest will answer their questions and spur creativity and imagination.

<http://energyquest.ca.gov/>

Con Edison energetically invites teachers and students to use their electrifying new website, ConEd Kids, designed especially for grades 5-8. ConEd Kids motivates kids to explore the world of energy all around them with Con Edison's research on energy, games, links, biographies, factoids, dictionary, energy's history, news, and the latest facts on the environment.

<http://www.coned.com/kids/>

The Green Education Foundation is a non-profit organization that provides curriculum and resources to K-12 students and teachers worldwide with the goal of challenging youth to think holistically and critically about global environmental, social, and economic concerns and solutions. They have K-12 Lesson Clearinghouse as well as a variety of challenges which students can participate in related to environmental education. <http://www.greeneducationfoundation.org/>

Discovery Education's TurfMutt: Foster an appreciation of the environment and an interest in the green space in your community with these classroom resources designed for students in grades K-5, recently updated with NEW lesson plans and activities for K-2! With TurfMutt as your guide, your class will get outside, investigate the benefits of landscaping and recycling, plus understand the importance of the lawns, flowers, bushes and trees that surround us every day.

<http://turfmutt.discoveryeducation.com/educators.cfm>

The Foundation for Water & Energy Education is committed to providing balanced information regarding the use of water as a renewable energy resource in the Northwest.

<http://fwee.org/>

The National Science Teachers Association has Science Objects which are energy focused. Science Objects are two hour on-line interactive inquiry-based content modules that help teachers better understand the science content they teach. These Science Objects are currently available for free!

Energy: Different Kinds of Energy

http://learningcenter.nsta.org/product_detail.aspx?id=10.2505/7/SCB-EN.1.1

Energy: Energy Transformations

http://learningcenter.nsta.org/product_detail.aspx?id=10.2505/7/SCB-EN.2.1

Energy: Thermal Energy, Heat, and Temperature

http://learningcenter.nsta.org/product_detail.aspx?id=10.2505/7/SCB-EN.3.1

Energy: Useful and Not So Useful Energy

http://learningcenter.nsta.org/product_detail.aspx?id=10.2505/7/SCB-EN.3.1

Straight Up Science is an ongoing conversation with the men and women who shape our understanding of the world. Their pursuit of evidence and knowledge is the foundation of innovation and the source of countless discoveries that have changed our lives. We've always thought their work was fascinating and we're excited to give them a place to share it with the world. <http://www.straightupscience.tv/>

Specific to energy

Carbon Reduction: <http://www.straightupscience.tv/category/carbon-reduction/>

Clean Energy: <http://www.straightupscience.tv/category/technology/clean-energy/>

RenewableEnergyWorld.com provides the latest news and information related to renewable energy. From blogs to videos and webcasts, this site has lots of resources though they do not have any specific lesson plans or education links. <http://www.renewableenergyworld.com/rea/home>

GOOD is a collaboration of individuals, businesses, and nonprofits pushing the world forward. They publish a magazine and GOOD Issue 022: The Energy Issue covers a variety of energy related topics.

<http://www.good.is/the-energy-issue/>

PhET site with lots of great simulations for physics, chemistry, biology, earth science and more.

<http://phet.colorado.edu/> Some of the energy related simulations listed below.

Energy Skate Park – Learn about conservation of energy with a skater dude! Build tracks, ramps and jumps for the skater and view the kinetic energy, potential energy and friction as he moves. You can also take the skater to different planets or even space! <http://phet.colorado.edu/en/simulation/energy-skate-park>

The Ramp – Explore forces, energy and work as you push household objects up and down a ramp. Lower and raise the ramp to see how the angle of inclination affects the parallel forces acting on the file cabinet. Graphs show forces, energy and work. <http://phet.colorado.edu/en/simulation/the-ramp>

Masses & Springs - A realistic mass and spring laboratory. Hang masses from springs and adjust the spring stiffness and damping. You can even slow time. Transport the lab to different planets. A chart shows the kinetic, potential, and thermal energy for each spring.

<http://phet.colorado.edu/en/simulation/mass-spring-lab>

Band Structure - Explore the origin of energy bands in crystals of atoms. The structure of these bands determines how materials conduct electricity. <http://phet.colorado.edu/en/simulation/band-structure>

John Travoltage - Make sparks fly with John Travoltage. Wiggle Johnnie's foot and he picks up charges from the carpet. Bring his hand close to the door knob and get rid of the excess charge.

<http://phet.colorado.edu/en/simulation/travoltage>

Faraday's Electromagnetic Lab - Play with a bar magnet and coils to learn about Faraday's law. Move a bar magnet near one or two coils to make a light bulb glow. View the magnetic field lines. A meter shows the direction and magnitude of the current. View the magnetic field lines or use a meter to show the direction and magnitude of the current. You can also play with electromagnets, generators and transformers! <http://phet.colorado.edu/en/simulation/faraday>

Photoelectric Effect – See how light knocks electrons off a metal target, and recreate the experiment that spawned the field of quantum mechanics. (This is the principle for which Einstein won the Nobel Prize in Physics!) <http://phet.colorado.edu/en/simulation/photoelectric>

Energy Forms and Changes - Explore how heating and cooling iron, brick, and water adds or removes energy. See how energy is transferred between objects. Build your own system, with energy sources, changers, and users. Track and visualize how energy flows and changes through your system.

<http://phet.colorado.edu/en/simulation/energy-forms-and-changes>

Reversible Reactions - Watch a reaction proceed over time. How does total energy affect a reaction rate? Vary temperature, barrier height, and potential energies. Record concentrations and time in order to extract rate coefficients. Do temperature dependent studies to extract Arrhenius parameters. This simulation is best used with teacher guidance because it presents an analogy of chemical reactions.

<http://phet.colorado.edu/en/simulation/reversible-reactions>

Conductivity - Experiment with conductivity in metals, plastics and photoconductors. See why metals conduct and plastics don't, and why some materials conduct only when you shine a flashlight on them.

<http://phet.colorado.edu/en/simulation/conductivity>

Eating & Exercise - How many calories are in your favorite foods? How much exercise would you have to do to burn off these calories? What is the relationship between calories and weight? Explore these issues by choosing diet and exercise and keeping an eye on your weight.

<http://phet.colorado.edu/en/simulation/eating-and-exercise>

Semiconductors - Dope the semiconductor to create a diode. Watch the electrons change position and energy. <http://phet.colorado.edu/en/simulation/semiconductor>

Collision Lab - Use an air hockey table to investigate simple collisions in 1D and more complex collisions in 2D. Experiment with the number of discs, masses, and initial conditions. Vary the elasticity and see how the total momentum and kinetic energy changes during collisions.

<http://phet.colorado.edu/en/simulation/collision-lab>

The Concord Consortium is a nonprofit educational research and development organization bringing the promise of technology into a reality for education in science, math and engineering. Energy related work listed below. <http://concord.org/>

Activity Finder to search for high-quality, free activities: <http://concord.org/activities>

Build and Test a Model Solar House – virtually construct and test the energy efficiency and solar heat gain of a cardboard model house. Also allows students to print out pattern to build a real physical model of what they have designed. <http://concord.org/activities/model-solar-house>

Electric Current – explore the relationships between voltage, current, and resistance that make up Ohm's Law using molecular models of circuits. <http://concord.org/activities/electric-current>

Greenhouse Gases – use a computer model to explore how the earth's atmosphere affects the energy balance between incoming and outgoing radiation. <http://concord.org/activities/greenhouse-gases>

Radiant Energy Flow – How does energy flow in and out of our atmosphere? Explore how solar and infrared radiation enters and exits the atmosphere with an interactive model. Control the amounts of carbon dioxide and clouds present in the model and learn how these factors can influence global temperature. Record results using snapshots of the model in the virtual lab notebook where you can annotate your observations. <http://concord.org/activities/radiant-energy-flow>

Heat and Light from Electricity – Discover how electricity can be converted into other forms of energy such as light and heat. Connect resistors and holiday light bulbs to simple circuits and monitor the temperature over time. Investigate the differences in temperature between the circuit with the resistor and the circuit using the bulb. <http://concord.org/activities/heat-and-light-electricity>

Atoms and Conservation of Energy – In this activity, students will explore how the Law of Conservation of Energy (the First Law of Thermodynamics) applies to atoms, as well as the implications of heating or cooling a system. This activity focuses on potential energy and kinetic energy as well as energy conservation. The goal is to apply what is learned to both our human scale world and the world of atoms and molecules. <http://concord.org/activities/atoms-and-conservation-energy>

High-Adventure Science investigations on **Modeling Earth's Climate** (Activities include: Climates of the Past, Present and Future; Interactions Within the Earth's Atmosphere; Sources, Sinks, and Feedback; Feedbacks of Ice and Clouds; Using Models to Make Predictions) and **Will there be enough fresh water?** (Activities include: How Much Water?; How Does Groundwater Move?; Can We Keep Water Flowing?; How Can We Use Water Sustainably?) <http://concord.org/projects/high-adventure-science#participants>

The Habitable Planet: Energy Lab Simulator in this lab, the challenge is to try to meet the world's projected energy demand by choosing from the available energy sources, while keeping atmospheric CO₂ under control and avoiding the particular limits and pitfalls associated with each energy source. Lessons on Managing Resources and Energy Efficiency are detailed. <http://www.learner.org/courses/envsci/interactives/energy/index.php>

My Energy Gateway is a site focused on planning an education and career in energy. Find information on degrees and certifications in energy. Get tuition and information on scholarships, internships, college rankings, career options and industry resources. <http://www.myenergygateway.org/>

Whales to Windmills: Inventions Inspired by the Sea is a Tedx talk that details inventions connected to creatures from the sea. It has an energy and carbon emission connection. <http://www.youtube.com/watch?v=OpLzI27febM>

Florida Solar Energy Center (FSEC) has an education page with resources for K-12, EnergyWhiz website (<http://www.energywhiz.com/>) for students that provides activities and access to data from PV-powered schools, continuing education courses and much more. <http://www.fsec.ucf.edu/en/education/>

The United States Energy Association (USEA) (<http://www.usea.org/>) is the U.S. Member Committee of the World Energy Council (WEC). USEA is an association of public and private energy-related organizations, corporations, and government agencies. USEA represents the broad interests of the U.S. energy sector by increasing the understanding of energy issues, both domestically and internationally. USEA supports the mission of the World Energy Council, "to promote the sustainable supply and use of energy for the greatest benefit of all."

Environmental and Energy Studies Institute (EESI) (<http://www.eesi.org/>) advances innovative policy solutions that set us on a cleaner, more secure and sustainable energy path. EESI is governed by a diverse Board of Directors made up of environmental, business, academic, and former political leaders. EESI maintains its strong relationship with Congress and serves as a trusted source of credible, non-partisan information on energy and environment solutions via three main strategies: policymaker education, coalition building and policy development.

Focus the Nation (<http://www.focusthenation.org/>) is the country's leading clean energy youth empowerment organization. They work with college students through their programs to help them embrace the challenges, excitement and realities of moving their communities toward clean energy solutions.

U.S. Department of Education Green Ribbon Schools (<http://www2.ed.gov/programs/green-ribbon-schools/index.html>) recognition award honors schools that are exemplary in reducing environmental impact and costs; improving the health and wellness of students and staff; and providing effective environmental and sustainability education, which incorporates STEM, civic skills and green career pathways. They have a Green Strides webinar series through which they highlight resources and information.

STEMconnector (<http://www.stemconnector.org/>) has more than 5000 STEM stakeholders' profiles. Its purpose is to map the STEM Education activity of organizations and all states. Organizational profiles are under major categories: business, government, associations, diversity and women and education.

STEMdaily's aim is to provide hot relevant news to a broad audience of stakeholders involved in STEM education. The electronic daily news provides summaries of 20 stories from across 14 different categories with links to the original content in an easy-to-read format. Sign up at www.STEMconnector.org/STEMdaily and submit a story to STEMdaily@STEMconnector.org

The Center for Green Schools (<http://www.centerforgreenschools.org/>) at the U.S. Green Building Council was established to drive the transformation of all schools into sustainable and healthy places to live, learn, work and play. They believe everyone, from the kindergartner entering the classroom to the Ph.D. student performing research in a lab, should have the ability to learn in green buildings. The Center works directly with teachers, students, administrators, elected officials and communities to create programs, resources and partnerships that transform all schools into healthy learning environments. They provide lots of resources for students and teachers about how to make your school green.

Frack You! (<http://frackyoufilm.com/>) is a one-hour film that's a comedy – yes a comedy - about fracking. Our nation is currently struggling with one of the most compelling issues we've ever faced. Important decisions need to be made about how to handle issues related to the natural gas shale deposits located in the United States. A huge barrier to decision-making is that the natural gas is extracted by fracking, a controversial method that has so highly polarized our community that

meaningful debate has broken down – although there are lots of signs in lawns. FRACK YOU! acts as an icebreaker, presenting both sides of the issues in a way that generates laughter and provides a common ground for people to start a dialogue about fracking. It frames a controversial issue around personal narratives, humanizing an abstract debate, without taking sides. (Seriously, it doesn't.) They have been engaging stakeholders through screenings of the film followed by targeted conversations.

Marcellus Center for Outreach and Research at Penn State (<http://marcellus.psu.edu/>) is an education and research initiative on unconventional gas plays. They serve state agencies, elected and appointed officials, communities, landowners, industry, environmental groups and other stakeholders. They have a live theater program to engage the public through live performances focused on Marcellus Shale issues. They also have a Community Science Volunteers program and some short courses. Program focuses on need to engage participants in understanding the development of scientific knowledge and build understanding and awareness of peer review – how it works, what it means – and scientific consensus.

Database of State Incentives for Renewables & Efficiency (DSIRE) is a comprehensive source of information on state, federal, local, and utility incentives and policies that support renewable energy and energy efficiency. Established in 1995 and funded by the U.S. Department of Energy, DSIRE is an ongoing project of the North Carolina Solar Center and the Interstate Renewable Energy Council, Inc. <http://www.dsireusa.org/>

California PEAK (Promoting Energy Action & Knowledge): PEAK is an environmental education program designed to empower students with the knowledge to manage energy use in their homes, schools and communities. Through hands-on learning, students are inspired to take action to create a more sustainable world. Explore our website to learn more about PEAK, program resources and our award winning, **standards-based** curriculum! <http://www.peakstudents.org/default.asp>

Wisconsin K-12 Energy Education Program (KEEP) was created to promote energy education in Wisconsin. KEEP is the product of an innovative public private partnership between educators and energy professionals. The Wisconsin Center for Environmental Education (WCEE) launched this effort in 1995. <http://www4.uwsp.edu/cnr/wcee/keep/index.htm>

Rocky Mountain Institute YouTube videos:
<http://www.youtube.com/playlist?list=UUtMVIFDBDTHbJK8A0HPdNgA>

Science in Focus: Energy a video workshop for K-6 science teachers to provide a solid foundation, enabling you to distinguish between the way "energy" is commonly understood and its meaning in science. Examine energy's role in motion, machines, food, the human body, and the universe as a whole. Learn how energy can be converted from one form to another and transferred over space and time. And explore the notion of "conservation of energy" – the idea that energy can neither be created nor destroyed. Course can be taken online for free – eight 1 hour videos. <http://www.learner.org/resources/series160.html>

MJ Murdock Charitable Trust Partners in Science Program is designed to help high school science teachers work with a mentor doing cutting-edge research over the course of two summers. The purpose of this grant is to bring the knowledge from the research lab back into the high school science classroom, promoting hands-on science education. Eligibility: High school teachers in Oregon, Washington, Idaho, Montana or Alaska <http://www.murdock-trust.org/grants/partners-science.php>

Online Lesson Sites

Khan Academy <http://www.khanacademy.org/>

Sophia <http://www.sophia.org/>

TED-Ed <http://ed.ted.com/>

- **Do the green thing** – Andy Hobsbawm (<http://ed.ted.com/lessons/do-the-green-thing-andy-hobsbawm>): Andy Hobsbawm shares a fresh ad campaign about going green -- and some of the fringe benefits.
- **The secret life of plankton** – Tierney Thys (<http://ed.ted.com/lessons/the-secret-life-of-plankton>): New videography techniques have opened up the oceans' microscopic ecosystem, revealing it to be both mesmerizingly beautiful and astoundingly complex. Marine biologist Tierney Thys teamed with Christian Sardet (CNRS/Tara Oceans), Noé Sardet and Sharif Mirshak to use footage from the Plankton Chronicles project to create a film designed to ignite wonder and curiosity about this hidden world that underpins our own food chain.
- **How Many Lightbulbs?** – Neil Payne (<http://ed.ted.com/on/MVwtmMV5>): A look at sustainable energy and what we use our energy for.
- **How does work...work?** – Peter Bohacek (<http://ed.ted.com/lessons/how-does-work-work-peter-bohacek>): The concepts of work and power help us unlock and understand many of the physical laws that govern our universe. In this Lesson, Peter Bohacek explores the interplay of each concept when applied to two common objects---a light bulb and a grandfather clock.
- **The simple story of photosynthesis and food** – Amanda Ooten (<http://ed.ted.com/lessons/the-simple-but-fascinating-story-of-photosynthesis-and-food-amanda-ooten>): Photosynthesis is an essential part of the exchange between humans and plants. Amanda Ooten walks us through the process of photosynthesis, also discussing the relationship between photosynthesis and carbohydrates, starch, and fiber -- and how the air we breathe is related to the food we ingest.
- **The science behind a climate headline** – Rachel Pike (<http://ed.ted.com/lessons/rachel-pike-the-science-behind-a-climate-headline>): In 4 minutes, atmospheric chemist Rachel Pike provides a glimpse of the massive scientific effort behind the bold headlines on climate change, with her team - one of thousands who contributed -- taking a risky flight over the rainforest in pursuit of data on a key molecule.
- **The Secret to Rising Sea Levels – Thermal Expansion** – ASAP Science (<http://ed.ted.com/on/3KsJMLba>): Of the many environmental impacts imposed by climate change, rising sea levels are often discussed. The cause of this may not be as obvious as it seems. While a portion of the increase comes from the likes of melting glaciers, another more surprising phenomenon helps to explain the increase in water volume: Thermal Expansion. Check out AsapSCIENCE's video explaining this natural phenomenon.
- **The carbon cycle** – Nathaniel Manning (<http://ed.ted.com/lessons/the-carbon-cycle-nathaniel-manning>): What exactly is the carbon cycle? Nathaniel Manning provides a basic look into the cyclical relationship of carbon, humans and the environment.
- **A new ecosystem for electric cars** – Shai Agassi (<http://ed.ted.com/lessons/a-new-ecosystem-for-electric-cars-shai-agassi>): Forget about the hybrid auto -- Shai Agassi says it's electric cars or bust if we want to impact emissions. His company, Better Place, has a radical plan to take entire countries oil-free by 2020.

Competitions and Awards Programs:

The **Toshiba/NSTA ExploraVision** science competition encourages K – 12 students to imagine what technology might be like in the future. ExploraVision helps teacher sponsors meet many of the National Science Education Standards while letting students experience scientific process and discovery in an engaging, hands-on way. Let's empower the next generation of inventors, scientists and leaders.

<http://www.exploravision.org>

The **Discovery Education 3M Young Scientist Challenge** is the nation's premier science competition for students in grades 5-8. Students have the opportunity to win amazing cash prizes and once-in-a-lifetime trips. <http://www.youngscientistchallenge.com/>

Rube Goldberg Machine Contest challenges students to design and build a comically involved, complicated invention, laboriously contrived to perform a simple operation. The 2014 Challenge is to zip a zipper. The International Online RGMC is for ages 11-14. There is also a College and High School RGMC. <http://www.rubegoldberg.com/>

The **Siemens We Can Change the World Challenge** is the premier national environmental sustainability competition for grades K-12. Through project-based learning, students learn about science and conservation while creating solutions that impact their planet. Opens in August. Deadline is mid-March. <http://www.wecanchange.com/>

The **President's Environmental Youth Awards (PEYA)** are projects developed by young individuals, school classes (K-12), summer camps, and youth organizations to promote environmental stewardship. Winning projects in the past have covered a wide range of subject areas, including:

- environmental science projects
- recycling programs in schools and communities
- construction of nature preserves
- major tree planting programs
- videos, skits, and newsletters that focused on environmental issues

Evaluation results consistently demonstrate that the experience is frequently a life-changing event for many of the young people and sponsors who attend. **Deadline is December 31 of each year.**

<http://www.epa.gov/peya/>

The **NEED (National Energy Education Development) Project's Youth Awards for Energy Achievement** recognizes outstanding achievement and rewards student leadership for excellence in energy education in student's schools and communities. This is a K-12 program with scrapbooks detailing projects and applications due to state coordinators in April each school year. For more information about this program see the following website: <http://www.need.org/Youth-Awards>.

National Environmental Education Foundation (NEEF) Sustainable Energy Award is a \$10,000 award presented to each of the top three high schools that can demonstrate how they have engaged students and teachers in school-wide energy savings through the creative and innovative use of technology. Deadline is early February. <http://www.neefusa.org/energyaward>

The **Ten80 Student Racing Challenge**: NASCAR STEM initiative is a project-based learning system and optional competition league created by educators, engineers and industry partners over the last decade. Its mission is to help youth, especially underrepresented minorities and women, to develop confidence and interest in STEM areas that will give them skills in these subjects and as critical thinkers, ultimately helping prepare them for higher education, careers and citizenship. The curriculum is aligned with

national standards and Ten80's team of engineer-educators provides professional development and training for teachers and coaches who support students. <http://www.studentracingchallenge.com/>

The **Green Cup Challenge™** starts with dedicated green teachers and students. The GCC invites all schools -- public and private, day and boarding schools -- to measure and reduce campus electricity use and GHG emissions, and supports campus greening efforts including recycling and water conservation. <http://www.greencupchallenge.net/>

The **DuPont Challenge**, North America's premier science essay competition, encourages students to delve deep into their interests in science, technology, engineering, and math (STEM) and express themselves with creativity and purpose. Ours is a growing world that faces new challenges each day, and we want STUDENTS to share their ideas for how science can help keep our global population supplied with food, safety, and clean energy. Deadline is February 10, 2013. Senior Division for grades 10, 11, 12 and Junior Division for grades 7, 8, 9. <http://www.thechallenge.dupont.com/>

The **Spark! Lab Invent It Challenge** sponsored by the Smithsonian on ePals engages K-12 students to invent something to meet one of three challenges. Split into four categories by age. Challenge 1: Think about a problem in your school and come up with an invention to solve it. Challenge 2: Find an invention that is used in your school and tell us how you would improve upon it. Challenge 3: Find a real-world problem and come up with an invention to solve it. Deadline is January 4, 2013 at midnight EST. http://en.community.epals.com/smithsonian_on_epals/p/inventionchallenge2012.aspx

DOE Sponsored Competitions and Programs

The **Better Buildings Challenge** supports commercial and industrial building owners by providing technical assistance and proven solutions to energy efficiency. The program also provides a forum for matching Partners and Allies to enhance collaboration and problem solving in energy efficiency. Both Partners and Allies are publically recognized for their leadership and innovation in energy efficiency. <http://www4.eere.energy.gov/challenge/home>

The **Better Buildings Alliance** is transforming the way commercial buildings use energy. BBA invites building owners, managers, and operators to work with the Building Technologies Program (BTP) and with each other to identify and implement best practices, key decision-making tools, and advanced technologies for significant energy savings in their portfolios. <http://www1.eere.energy.gov/buildings/betterbuildings/bba/bba-index.html>

The **Solar Decathlon** challenges collegiate teams to design, build, and operate solar-powered houses that are cost-effective, energy-efficient, and attractive. The winner of the competition is the team that best blends affordability, consumer appeal, and design excellence with optimal energy production and maximum efficiency. <http://www.solardecathlon.gov>

EcoCAR 2: Plugging In to the Future is a three-year collegiate engineering competition and the only program of its kind. The competition's mission is a vital one: offer an unparalleled hands-on, real-world experience to educate the next generation of automotive engineers. The competition challenges 15 universities across North America to reduce the environmental impact of a Chevrolet Malibu without compromising performance, safety and consumer acceptability. <http://www.ecocar2.org/>

The **National Collegiate Wind Competition** is a forum for undergraduate college students of multiple disciplines to investigate innovative wind energy concepts; gain experience designing, building, and testing a wind turbine to perform according to a customized market data-derived business plan; and increase their knowledge of wind industry barriers. Successful teams will gain and then demonstrate knowledge of technology, finance, accounting, management, and marketing, providing lifelong technical and business skills. http://www1.eere.energy.gov/wind/news_detail.html?news_id=18984 Deadline for application: February 19, 2013

The **National Clean Energy Business Plan Competition** is designed to build regional networks of student-focused business creation contests across the country. Launched in 2011, the NCEBPC is part of the Obama Administration's Startup America Initiative, the White House campaign to inspire and promote entrepreneurship. Six regional organizations were funded under the competition to hold clean energy business plan competitions. In addition to the regional competitions, each June at the National Competition Event, the six finalists from the regional business plan competitions will pitch their business plans to a panel of expert judges– competing for the National Grand Prize of \$100,000. <http://techportal.eere.energy.gov/commercialization/natlbizplan.html>

The **Challenge Home Student Design Competition** will provide the next generation of architects, engineers, construction managers, and entrepreneurs with skills and experience to start careers in the field of clean energy and generate creative solutions to real-world problems. Through the Challenge Home, DOE seeks to apply proven innovations for high-performance homes that can be implemented by the home building industry, thereby serving as “models for success.” The core of the competition’s judging criteria is based on demonstrated competency applying Building America’s research findings, best practice solutions, and principles of building science. <http://www.homeinnovation.com/DOEChallengeHomeStudentDesignCompetition>

District/School Wide Programs:

ENERGY STAR for K-12 School Districts

Partnering with ENERGY STAR is a commitment to your students as well as to the environment.

http://www.energystar.gov/index.cfm?c=k12_schools.bus_schoolsk12

Wind For Schools Program – details about how to apply for this grant program.

http://www.windpoweringamerica.gov/schools_wfs_project.asp

Fuels for Schools program – will help assess if biomass can be used to heat schools and other buildings within the school district. Your facility may be eligible for a program-sponsored Pre-Feasibility Assessment if located in Nevada, Idaho, Utah, Montana, Wyoming, or North Dakota.

<http://www.fuelsforschools.info/aboutFFS.html>

TerraCycle's purpose is to eliminate the idea of waste. We do this by creating national recycling systems for previously non-recyclable or hard-to-recycle waste. Anyone can sign up for these programs, called the Brigades, and start sending us waste. <http://www.terracycle.net/en-US/>

Green Ribbon Schools is a national program recognizing schools making concerted energy efficiency, conservation and sustainability efforts. See if your state is involved and learn about what it takes to become a Green Ribbon School. <http://greenribbonschools.org/>

Energy Education Websites compiled by DaNel Hogan (hogand@einsteinfellows.org)

The Trash Redux initiative focuses on reducing the amount of trash produced by schools. It promotes conservation practices, awareness efforts and thoughtful decision making in order to obtain a “zero waste” platform in schools. <http://www.gradesofgreen.org/initiatives/trash-redux>

Growing public concern over greenhouse effects, concerns over safe disposal of e-waste, and local K-12 school district needs to conserve funding are forcing schools to address green IT issues as a matter of conscience, budget and political value. The Consortium for School Networking (CoSN) Green Computing Leadership Initiative provides tools, tips, and resources for school technology leaders to help reduce their school district carbon footprint. <http://www.cosn.org/Default.aspx?TabId=4110>

Recycle Bowl - Keep America Beautiful's recycling competition is back. Compete against other schools in your state and nationwide to see who recycles the most. There are lots of ways to get involved, tools and resources to get you started, and GREAT PRIZES for top performers! <http://recycle-bowl.org/>

Teacher Awards:

The **National Environmental Education Foundation (NEEF) Richard C. Bartlett Environmental Education Award** is given annually to an outstanding middle or high school teacher who successfully integrates environmental education into their curriculum and engages students in interdisciplinary solutions to environmental challenges. The award alternates between middle and high school teachers each year (2012 is for high school teachers) and recognizes an educator who can serve as an inspiration and model for others. Winner will receive \$5,000 and two merit winners will receive \$750 each. Nominations due June 8. <http://www.neefusa.org/bartlettaward.htm>

The **Presidential Innovation Award for Environmental Educators** recognizes outstanding K-12 teachers who employ innovative approaches to environmental education and use the environment as a context for learning for their students. Up to two teachers from each of EPA's 10 regions, from different states, will be selected to receive this award. The White House Council on Environmental Quality (CEQ), in partnership with the U.S. Environmental Protection Agency (EPA) administers this award to nationally honor, support and encourage educators who incorporate environmental education in their classrooms & teaching methods. Teacher awardees will receive a commemorative plaque and an award of \$2000 to be used to further the recipient's professional development in environmental education. An additional award of \$2000 will go to the teacher's local education agency to fund the environmental education activities and programs of the teacher. Deadline is January 31, 2013. <http://www.epa.gov/education/teacheraward/index.html>

Books on Energy:

Energy for Future Presidents by Richard Muller

The Boy Who Harnessed the Wind by William Kamkwamba (adult book and children's book versions)

Cultures of Energy: Power, Practices, Technologies edited by Sarah Strauss, Stephanie Rupp, and Thomas Love

Earth: The Operators' Manual by Richard B. Alley

Energy Games:

Energy Education Websites compiled by DaNel Hogan (hogand@einsteinfellows.org)

Plan it Green: The Big Switch! allows players to create their own virtual cities and attempt to transform them into the most energy-efficient cities possible, earning points for energy production, eco-friendliness, and the happiness of the citizens of these digital domains. The free game aims to help young people better understand the energy systems available to us and what it takes to build a successful and sustainable community. Plan It Green, the Big Switch is part of CONNECT! Transform the Future, a new collaboration between the Center for Science (a network of leading science centers), National Geographic, General Electric and local energy companies across the country.
<http://www.planitgreenlive.com/>

Energyville! allows players to control the energy mix of a virtual city and to discover the economic, environmental, and security impacts of their decisions. Developed by The Economist Group, funded by Chevron. <http://www.energyville.com/>