

# Energy Teachers Community News

All the ideas we have the energy to print

Newton, MA Summer 2007

A free service of EnergyTeachers.org Inc., the network for curriculum development in energy production and use.  
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## Dear Readers

### From the Editor.

This edition features the links we added to the site since the last newsletter. The diversity of the links reflects a diversity of opportunities for education and inspiration. Some of the organizations listed have recently contacted us to let us know about their services and activities. Some we found by looking for data about renewable energy.

This is a period of transition for EnergyTeachers.org: (1) I'm moving to New York State, (2) we finally published our Field Trip Guide for MA educators, (3) the public interest in energy use is exploding, so educators are contacting us much more than ever for ideas, (4) we are moving to depend more on private donations and sales than grants. What this means for you, kind reader, is that the network will depend more on you for sharing your best ideas and questions with the network; also,

you have an ever-widening pool of resources to help you plan trips, labs, lessons, posters, term papers, etc.

More about transition #1: I remain committed to helping teachers in multiple states, but you may see me less often in Massachusetts and more in New York.

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Blackstone Valley Regional Vocational Technical High School, Upton, MA, held a fair this morning to explore renewable energy. Vendors and organizations display energy efficient vehicles, renewable energy systems, financial incentives, and innovative ideas for saving energy.

Each period, dozens of students entered the gymnasium, sitting in hybrid cars, talking to Whole Foods, meeting renewable-systems installers, and trying activities like a competition to see who could make the most efficient wind turbine.

Tom Belland, HVAC teacher at the school, wrote

*For many of these students this is their introduction to energy alternatives. Kids of all ages need to under-*

## MA voc-tech school hosts energy fair

Upton, MA. June 7, 2007

*stand that the world energy situation is changing and that it will affect their lives.*

*The teachers were just as interested as the students and were kicking the tires on some hybrid vehicles. Our goal with this expo was to raise awareness--I think we succeeded in doing that.*

*It is impressive to see all the companies and organizations donate their time and resources to our school. Next year we hope to open this event to the public and have students running the show.*

EnergyTeachers.org brought a bicycle generator that showed how little power is used to light a compact fluorescent, as well as how to charge a car-battery with a bike. The network of teachers also brought solar cookers and cooked rice outside the gymnasium door. Stephen Masse, BVT Junior wrote

*I thought it was great to see all the new technology for alternative resources. I especially liked the bicycle generator at the EnergyTeachers display. I didn't have a lot of time to look at the cars but all my friends were talking about them.*

New England Biodiesel brought a biodiesel-powered Jeep, and Westborough Toyota brought a Toyota Camry Hybrid. Blackstone Valley students showed an electric pickup truck.

The school maintains two solar arrays on its roof and demonstrates several energy efficient and sustainable features. Exhibitors enjoyed lunch at a student-run restaurant on site.

Article about a recent grant for green curriculum at the high school:  
<http://www.valleytech.k12.ma.us/community.html#RE%20grant>



## Recently Noted Books and Periodicals

For more details on each resource, visit the Bibliography at [EnergyTeachers.org](http://EnergyTeachers.org)

- Gould, Kira and Lance Hosey. *Women in Green: Voices of Sustainable Design*. Seattle, WA: EcoTone Publishing, 2007. ISBN: 978-0-9749033-7-8
- Strong, Steven J.. *The solar electric house : a design manual for home-scale photovoltaic power systems*. Emmaus, PA: Rodale Pres, 1987. Call Number: TH7414 .S77 1987 697.78 19
- Hafemeister, David W.. *Physics of societal issues : calculations on national security, environment, and energy*. New York: Springer Verlag, 2003. Notes: New edition coming out in 2007: ISBN 978-0-387-95560-5; 488 pages, 111 illustrations, hardcover. Series: Undergraduate texts in contemporary physics. Call Number: QC28 .H25 2003 338.973/06 21 ISBN: 0387955607
- Page, Deborah S.. Nemzer, Marilyn L. ed. *Energy for keeps : electricity from renewable energy : an illustrated guide for everyone who uses electricity*. Tiburon, CA: Energy Education Group, 2005. Call Number: TJ808 .P326 2005 333.793/2 22 ISBN: 0974476528

## Recent Links

Just a few new urls from the Links page at [EnergyTeachers.org](http://EnergyTeachers.org)

- Antartic Scientific Drilling project:** The Antarctic (Scientific) Drilling project web site. Relevant, since tremendous supplies of petroleum might exist under Antarctica.  
<http://andrift.org/education/>
- US DOE Office of Fossil Energy:** Oversees fossil energy research and information.  
<http://www.fossil.energy.gov/>
- Million Solar Roofs:** Nationwide (USA) initiative to install photovoltaic panels, with state-by-state goals.  
<http://www.millionsolarroofs.com/>
- Apollo Alliance :** Good Jobs, Clean Energy: The Apollo appellation refers to the Apollo Project of the 1960s/70s, in which the US travelled to the Moon, requiring great resources to solve a (manufactured?) crisis in the space-race/arms race between the superpowers of the time. Now the crisis is the energy crisis, in which fossil energy may become scarce and emissions may cause world-wide harm.  
<http://www.apolloalliance.org/>
- Solar Connection - BP Solar Schools:** Overview and data from schools with photovoltaic systems. You can download data in CSV format.  
<http://www.solarconnection-bp.com/index.php>
- Science House at Science Museum of Minnesota:** 1500 sq ft. house in the back yard of the Science Museum of Minnesota, with net-zero emissions, solar power integrated into the roof, a geothermal heat-pump, efficient windows, and spray-in insulation.  
<http://www.smm.org/sciencehouse/>
- SUNY-Farmingdale Solar Energy Center:** This institution educates practitioners about photovoltaic installation. Uses a few 20kW fixed and tracking arrays to teach about solar power.  
<http://info.lu.farmingdale.edu/depts/met/solar/>
- Solmetric:** Solar test and measuring equipment: Solmetric makes a digital camera with a special lens that takes a photo of a site and shows precisely how much solar exposure the point of reference will receive during the year.  
<http://www.solmetric.com/>
- US EPA's EnviroMapper:** Use this site to make maps of any area in the US, showing EPA-related features like toxic releases and air-monitoring sites along with important features like rivers and schools.  
<http://www.epa.gov/enviro/html/em/>
- Energy Education Inc.:** Energy Education Inc. works with schools to improve energy efficiency. They start by reviewing energy bills, quickly identifying unnecessary losses. Nashua Schools has been saving millions of dollars with this program.  
<http://www.energyeducation.com/>
- Energy Net (Illinois):** Energy auditing curriculum with online data-sharing. Some projects focus on community partnerships.  
<http://www.energynet.net/>
- Hull Wind:** Show your students one of New England's great firsts: a municipally owned wind power plant near Boston Harbor. A Vestas 660 kW turbine sits next to the High School, a 1.5 MW turbine on the landfill. The organizers have a sincere interest in education.  
<http://hullwind.org/>
- Chewonki Foundation:** Click on the Environmental Education link to see the efforts of this multifaceted

organization. Chewonki hosts workshops for educators, such as KidWind, and for consumers.

<http://www.chewonki.org/>

**Madison (WI) Gas And Electric:** Madison Gas and Electric put solar panels on all high schools in their service area. You can read raw data from the past few years about each site's power output and sunlight; graphs are available for every day and every month of service.

<http://www.mge.com/about/community/schools/>

**The Rahus Institute:** Sells educational materials for solar energy. Runs Schoolhouse Institute, a workshop for educators, exploring solar resources and tools. HQ: Martinez, CA.

<http://www.rahus.org/>

**New England Coalition:** Advocates safe energy in New England and has provided education and resources for alternatives to nuclear power.

<http://www.necnp.org/main.php>

**Energy and Environmental Research Center at UND:** The University of North Dakota hosts this research center. Program areas include Advanced Power and Energy Systems; Energy Conversion System Optimization; Fossil Energy Resources (oil, gas, and coal); Hydrogen Production, Distribution, and Fuel Cell Technology; Renewable Energy; and more

<http://www.eerc.und.nodak.edu/>

**Structured Insulated Panel Association:** Structured Insulated Panels allow a building to be built quicker and insulated better than traditional stud-framed buildings. Also, when panels are made-to-order, on-site waste is reduced.

<http://www.sips.org/>

**BuildingScience.com:** Aggregates articles about the science relevant to architecture, generally promoting sustainable buildings.

<http://www.buildingscience.com/>

**Greenhouse Gases Mathematics Activities:**

Students are introduced to the different heat-trapping abilities of the major greenhouse gases. The students are challenged to build three-dimensional models illustrating this differing heat-trapping ability...[Go to EnergyTeachers.org to read more notes]

[http://www.earth.uni.edu/EECP/mid/mod5\\_ma.html](http://www.earth.uni.edu/EECP/mid/mod5_ma.html)

**HealthLink:** Essex (northeastern MA) organization that supports clean energy, sponsors educational events. Has books and films to lend.

<http://www.healthlink.org>

**BC Hydro Wind Monitoring:** Data: 10-minute average wind speed and direction, the standard deviation for both wind speed and direction, the 10-minute maximum wind speed, and air temperature, all for several locations in each of several regions of British Columbia.

<http://www.bchydro.com/environment/greenpower/greenpower1764.html>

**Watt Watchers of Texas:** Watt Watchers of Texas is a free, state sponsored program to help schools save energy and money by getting students involved. Students patrol their school looking for empty classrooms with the lights on. They turn out the lights and leave a ticket for the teacher.

<http://wattwatchers.org/>

**Project Laundry List - The Clothesline Plan:**

Through student work on campuses, the Clothesline Plan advocates saving energy by washing and drying smarter. A PowerPoint presentation about clothes-washing and energy is available.

<http://www.laundrylist.org/education/clotheslineplan.htm>

**Renewable Resource Data Center:** The National Renewable Energy Laboratory maintains sets of data on renewable resources, e.g. sunlight falling on the US in a 10km-resolution grid.

<http://rredc.nrel.gov/>

**Fibrowatt US:** Fibrowatt is building electric plants that burn poultry waste mixed with other agricultural wastes. The first plant, in Benson, Minnesota, is called Fibrominn, and is designed to generate 55MW.

<http://www.fibrowattusa.com/>

**Energy Citations Index:** The US Department of Energy, Office of Scientific and Technical Information, hosts a database of tens of thousands of articles about science and technology, many with PDF documents available freely.

<http://www.osti.gov/energycitations/>

**Solar Pathfinder:** Tool for measuring solar angles at a site, checking for portion of day shaded.

<http://www.solarpathfinder.com>

**JR.TECH Workshops + Mentoring:** Offers workshops to students in the Cape Cod area of Massachusetts. 2007 workshops include KidWind and Renewable Energy workshops.

<http://www.juniortech.org>

**New England Biodiesel:** Biodiesel equipment and supplies, experience with schools and safe installations. Offers workshops.

<http://newenglandbiodiesel.net>

**Earthways Center, Missouri Botanical Garden:**

The Earthways Center is a demonstration site for sustainable projects in science and technology. The Center hosts tours, workshops, and summer day-camps for students about sustainable topics. The Center also offers courses for St. Louis area students about energy and recycling.

<http://www.earthwayscenter.org/>

**New York Electrathon:** New York's competition for one-passenger electric vehicles.

<http://www.nyelectrathon.com/>

# Recent Forum Topics

New items from the FORUM at EnergyTeachers.org

**Energy Science:** help me help my freezer?...When to replace inefficient appliances

**Equipment:** Shoebox size PV solar tracker...Comment on SustainabilitySystems

**Junior Solar Sprint (Miniature Solar Cars):** JSS Workshops for teachers...JSS Exhibit at Altwheels

**Open Forum:** What do regular folks know about clean energy?

Use the Forum to ask questions and to share ideas with other educators in the network.

## News and Events

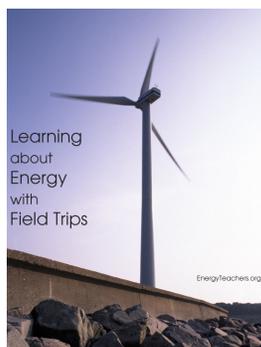
Headlines from the Calendar and Community News at EnergyTeachers.org

### Energy Field Trip Guide for MA

#### Teachers published:

EnergyTeachers.org has published, in print and online, *Learning about Energy with Field Trips*, a guide to sites around Massachusetts that can host students interested in renewable energy, sustainability, and efficiency.

The printed guide, 32 pages with color photos, is being sent to 1397 school-libraries in Massachusetts, for use by educators when planning trips, or even virtual tours, that help students learn about energy. The guide features showcases of wind, solar, geothermal, and biomass, all renewable resources, used



to heat, cool, and power buildings and towns.

The online guide includes more than 100 sites, many from across the nation. There is a feature that allows educators to sort sites by distance or by feature, allowing them to pinpoint feasible trips. Both guides describe each site, listing contact information, location, specific features,

appropriate ages, schedules, and costs, wherever that information is pertinent.

As with all resources at EnergyTeachers.org, the information is intended to be dynamic;

educators are encouraged to send comments on existing or

new sites, photos, and lesson ideas. There is an on line forum to discuss field trips:

<http://energyteachers.org/ETOForum/viewforum.php?f=7>

Anyone may download and use the printed guide for free:

<http://energyteachers.org/ETODocuments/fieldtripguide-ma.pdf>

Teachers in MA schools should ask their librarian whether their school has received the book by mid-August. If they haven't received it by September 21, they may use the email address above to contact EnergyTeachers.org and request a copy.

Educators may wish to start exploring the online guide:

<http://energyteachers.org/fieldtripguide.php>

This summer, photos of sites will be integrated with the online guide.

Please check the calendar and news page on our web site for details and updates