

K-12 Online Resources: Renewable and Alternative Energy and Energy Efficiency MPLA/KLA Joint Conference 2009

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~This handout is intended for information professionals and educators who work with K-12 students~

Definitions

***Renewable Energy:** Energy derived from resources that are regenerative or for all practical purposes can not be depleted. Types of renewable energy resources include moving water (hydro, tidal and wave power), thermal gradients in ocean water, biomass, geothermal energy, solar energy, and wind energy. Municipal solid waste (MSW) is also considered to be a renewable energy resource.

****Alternative Fuel:** a popular term for "non-conventional" transportation fuels made from natural gas (propane, compressed natural gas, methanol, etc.) or biomass materials (ethanol, methanol).

****Energy Efficiency:** refers to activities that are aimed at reducing the energy used by substituting technically more advanced equipment, typically without affecting the services provided. Examples include high-efficiency appliances, efficient lighting programs, high-efficiency heating, ventilating and air conditioning (HVAC) systems or control modifications, efficient building design, advanced electric motor drives, and heat recovery systems.

*****Energy conservation** includes any behavior that results in the use of less energy.

*EERE Glossary of Energy-Related Terms. Retrieved 10/20/08 from http://www1.eere.energy.gov/site_administration/glossary.html

** Kids Page Glossary, Energy Information Administration. Retrieved 10/15/08 from <http://www.eia.doe.gov/kids/glossary/index.html>

*** Kids Energy Efficiency web page, Energy Information Administration. Retrieved 10/15/08 from http://www.eia.doe.gov/kids/energyfacts/saving/efficiency/savingenergy_secondary.html#EfficiencyConservation

Energy Information Administration (EIA):

- Energy Kid's Page Index <http://www.eia.doe.gov/kids/index.html>
 - Energy Facts (elementary – high school) <http://www.eia.doe.gov/kids/energyfacts/index.html>
- Saving Energy <http://www.eia.doe.gov/kids/energyfacts/saving/index.html>
- Energy Info Card – United States (most recent energy statistics) <http://www.eia.doe.gov/kids/infocardnew.html>
- Kid's Nuclear Energy Page <http://www.eia.doe.gov/kids/energyfacts/sources/non-renewable/nuclear.html>
- Classroom Activities Home page (K-12): <http://www.eia.doe.gov/kids/classactivities/index.html>
 - Energy Activities for Teachers and Students (K-12) <http://www.eia.doe.gov/kids/classactivities/teachers&students.html>
 - Links to Energy Education Materials (K-12) <http://www.eia.doe.gov/kids/classactivities/relatedmaterials.html>
- Energy Education Resources: Kindergarten through 12th Grade (students & educators) <http://www.eia.doe.gov/bookshelf/eer/kiddietoc.html>

U.S. Dept. of Energy, Office of Energy Efficiency and Renewable Energy (EERE)

<http://www.eere.energy.gov/>

- K-12 Energy Lesson Plans and Activities (educators)
<http://apps1.eere.energy.gov/education/lessonplans/>
- Student Energy competitions and contests (elementary – college)
<http://www1.eere.energy.gov/education/competitions.html>
- Kids Saving Energy (younger students) <http://www.eere.energy.gov/kids/>
- Energy Science Projects and Activities (K-12)
http://www1.eere.energy.gov/education/science_projects.html
- Student Resources for Reports on Energy (K-12)
http://www1.eere.energy.gov/education/report_resources.html
- Alternative Fuels and Advanced Vehicles Data Center (high school)
<http://www.afdc.energy.gov/afdc/>
- Glossary of Energy-related Terms
http://www1.eere.energy.gov/site_administration/glossary.html
- Wind and Hydropower Technologies Program (older students)
<http://www1.eere.energy.gov/windandhydro/>
- Biomass Program, Resources for Students (middle/high school)
http://www1.eere.energy.gov/biomass/for_students.html
- Hydrogen Fuel Cells and Infrastructure Program for Students and Educators
<http://www1.eere.energy.gov/hydrogenandfuelcells/education/educators.html>
- Solar Energy Technologies Program <http://www1.eere.energy.gov/solar/>
- Geothermal Technologies Program <http://www1.eere.energy.gov/geothermal/>

U.S. Nuclear Regulatory Commission <http://www.nrc.gov/>

- Students' Corner (K-12) <http://www.nrc.gov/reading-rm/basic-ref/students.html>
- Basic References (high school) <http://www.nrc.gov/reading-rm/basic-ref.html>
- Teachers' Lesson Plans <http://www.nrc.gov/reading-rm/basic-ref/teachers.html>

National Renewable Energy Laboratory <http://www.nrel.gov/>

- Learning about Renewable Energy (middle school - college) <http://www.nrel.gov/learning/>
 - Renewable Energy Basics http://www.nrel.gov/learning/re_basics.html
 - Student Resources on Renewable Energy (high school students & educators)
http://www.nrel.gov/learning/student_resources.html

U.S. Environmental Protection Agency (EPA) <http://www.epa.gov/>

- Pollution Prevention (high school) <http://www.epa.gov/eftpages/pollenergy.html>
 - Clean Energy (high school) <http://www.epa.gov/cleanenergy/index.html>
- Energy Conservation for High School Students (part of High School Environmental Center):
<http://www.epa.gov/highschool/conservation.htm#two>
- Middle School (and high school) Climate Change (contains some energy info):
<http://www.epa.gov/epawaste/education/teens/climate.htm>

U.S. Department of Energy (DOE) <http://www.energy.gov/>

- Renewables (older students) <http://www.energy.gov/energysources/renewables.htm>
- For Students and Kids : Smart Energy Use (K-12) <http://www.energy.gov/forstudentsandkids.htm>
 - More Kids Pages <http://www.energy.gov/morekidspages.htm>
- Office of Nuclear Energy (possibly high school students) <http://www.ne.doe.gov/>

Xcel Energy

- Energy Classroom (grades 3-5) <http://www.energyclassroom.com/>

California Energy Commission:

- Energy Quest (K-12) <http://www.energyquest.ca.gov/>

American Wind Energy Association <http://awea.org/>

- Resources: Wind Web Tutorial (middle to high school) <http://awea.org/faq/>
- Publications: Wind Energy Fact Sheets (middle to high school) <http://awea.org/pubs/factsheets.html>

Alliance to Save Energy <http://www.ase.org/>

- Educators http://www.ase.org/section_audience/educators
- Kids http://ase.org/section_audience/consumers/kids/
 - EnergyHog.org (grades 2-6) <http://www.energyhog.org/>

University of Michigan Documents Center: Alternative Energy (High School National Debate Topic 2008/2009) <http://www.lib.umich.edu/govdocs/debate08.html>**Northeast Sustainable Energy Association** (educators)

K-12 Educators <http://www.nesea.org/k-12/>

Wisconsin K-12 Renewable Energy Education (educators)

http://www.uwsp.edu/cnr/wcee/keep/Renewable_Energy_Education/index.htm

United Nations Development Program: Sustainable Energy (educators & high school)

<http://www.undp.org/energy/>

Colorado Renewable Energy Collaboratory <http://www.coloradocollaboratory.org/>

(Site to watch as it develops and adds content -- advanced)

Colorado Climate Action Plan: A Strategy to Address Global Climate Change by Governor Bill Ritter, Jr.

http://www.colorado.gov/energy/in/uploaded_pdf/ColoradoClimateActionPlan_001.pdf

State of Colorado, Governor's Energy Office, Renewable Energy

<http://www.colorado.gov/energy/renewables/index.asp>

Notes: Please consult individual web site Terms of Use and Privacy Policies. Grade/Age levels provided as guidelines (educators know their students best☺).

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