

Plants and Energy

Looking for a bright side to climbing gas prices? One benefit is a renewed interest in conservation and the development of alternative and renewable energy sources. This month, we'll delve into the important roles plants are playing in energy conservation and emerging energy technology. Ultimately, wise use of plants will contribute to a healthier environment for future generations.

Background and Lessons

[Plants and Energy](#) – Learn about the history of plants as a fuel source, and how they're connected to almost every energy-oriented topic in the news.

[Lesson: Plant-based Biofuels](#) – This lesson introduces students to the history, benefits, and challenges of plant-based fuels.

[Lesson: Energy Efficient Landscaping](#) – Students are challenged to develop a landscape plan that will boost energy conservation.



Switchgrass is touted as an efficient biofuel source. Photo: USDA Ag. Research Service

From - <http://www.kidsgardening.com/teachers.asp#les>

The National Energy Education and Development Project - NEED

Energy Efficiency and Conservation

NEED has a large portfolio of lessons to teach students about energy efficiency and conservation. The [Energy House](#) and [Energy Conservation Contract](#) help students and their families learn simple ways to reduce energy consumption at home and to reduce energy costs. Used with NEED's Energy Management for Schools lessons and kits - Building Buddies, Monitoring and Mentoring, and Learning and Conserving, students gain knowledge that is applied to energy usage at school and at home. NEED is also a partner of the Energy Star Program. [Take the Pledge](#) to Change a Light.

NEED's [The Future is Today](#) helps upper level students research and debate our nation's transportation fuel options. [What Car Will You Drive?](#) helps elementary and intermediate students research the choices and challenges in transportation fuels.

Due to great demand from teachers wishing to expand their energy and transportation opportunities, NEED created the [Transportation Fuels Debate Game](#), the [Transportation Fuels Expo](#), the [Transportation Enigma](#) and the [Transportation Fuels Rock Performances](#) - all borrowing from other NEED teacher favorites that focus on energy sources.

With the support of the U.S. Department of Agriculture Biodiesel Education Program and the National Biodiesel Board, NEED produced a [Teacher Guide for Biodiesel](#). The Illinois Department of Commerce and Economic Opportunity and the Governors' Ethanol Coalition collaborated with NEED to create a [Teacher Guide for Ethanol](#).

The H₂ Educate [Teacher](#) and [Student](#) Guides and accompanying hands-on kit were created with the support of the U.S. Department of Energy's Hydrogen Program and the New York State Energy Research and Development Authority (NYSERDA). (Both Guides are PDF files (7mb each) may take a while to download on slower connections.)

New Wind Energy Curriculum

NEED's new wind energy curriculum, sponsored by the [American Wind Energy Association](#), is now available on four levels with background information and hands-on activities to explore motion, weather, the history of wind, and modern wind technology.

The primary **Wind Is Energy Kit (Grades K–1)** has a [Teacher Guide](#), student information in a storybook format, and suggested hands-on activities, with pinwheels, bubbles, a mini wind turbine, and a fan.

The elementary **Wonders Of Wind Kit (Grades 2–3)** comes with [Teacher Guide](#), class set of [Student Guides](#), and equipment to conduct hands-on experiments, including pinwheels, bubbles, materials to construct pinwheels and wind indicators, a mini wind turbine, and fan.

The intermediate **Energy From The Wind Kit (Grades 4–6)** comes with [Teacher Guide](#), class set of [Student Guides](#), and equipment to conduct hands-on experiments, including a KidWind Turbine, a Genecon, a wind gauge, materials to construct anemometers and wind indicators, materials to explore convection, a fan, and more.

The secondary **Exploring Wind Energy Kit (Grades 7–12)** comes with [Teacher Guide](#), class set of [Student Guides](#), and equipment to conduct hands-on experiments, including KidWind Turbines, a Genecon, a wind gauge, a fan, multimeters, materials to construct anemometers, and more.

The KidWind Project is partnering with NEED on the wind curriculum and KidWind Turbines are included in the Energy From The Wind and Exploring Wind Energy Kits. For more information on these turbines and other wind resources visit the [KidWind website](#).

From - <http://www.need.org/curriculum.php>

Wind Power

This wind power curriculum is a joint project of the Office for Mathematics, Science and Technology Education ([MSTE](#)), the [College of Engineering](#), and [University Extension](#) at the University of Illinois. "The Power of the Wind" includes several small projects that are designed to teach about the wind and its uses while introducing engineering design and engaging learners in doing, testing, reflecting and revising. These instructional resources are appropriate for learners ages 8-adult. They are designed to reflect the goals of the 4-H Youth Development Program, which promotes learning by-doing and focuses on developing skills for a lifetime and are aligned to National Standards in Mathematics and Science. The materials were developed by Jana Sebestik in consultation with Sue Larson, Bill Million, and [George Reese](#).

If you are a teacher/leader and do any of these activities with young people, please complete our online [evaluation survey](#).

Upcoming Events...

- *Information coming soon...*

This site is still in its infancy. Please check back as it continues to grow.

Wind Power Activity Booklet - <http://www.mste.uiuc.edu/projects/wind/UsingWindPower.pdf>

Iowa Energy Center

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About the Iowa Energy Center

Advancing Iowa's energy efficiency and renewable energy use through research, education and demonstration.

The Iowa Energy Center invests its resources to create a stable energy future for the state of Iowa. Through consistency of vision and the dissemination of research-based and balanced energy information, the Energy Center continues to support Iowa communities, businesses and individuals. The people and projects in which the Energy Center invests are making a difference in the state's present and future. The Energy Center supports projects that help Iowans understand how to make homes more comfortable and affordable to own. It invests in initiatives that help Iowa industries and businesses run efficiently so they can be more productive and profitable.

The Energy Center's main office is located in Ames, Iowa near Iowa State University, the administrator for the Energy Center. The Energy Center also maintains the Energy Resource Station at the Des Moines Area Community College in Ankeny, Iowa, and the BECON (Biomass Energy Conversion) Facility in Nevada, Iowa.

The Iowa Energy Center receives its funding from an annual assessment on the gross intrastate revenues of all gas and electric utilities in Iowa.

From – <http://www.energy.iastate.edu/>

Energy Lesson Plans, Curriculum, and Educational Materials

Here you'll find resources for lesson plans, curriculum, and educational materials for teaching students and children about energy, particularly energy efficiency and renewable energy.

(Here are a few of the many resources on the web site.)

[Alliance to Save Energy: Multidisciplinary Lesson Plans](#)

Free, hands-on, multidisciplinary lesson plans for K-12 in the area of energy.

[Alternative Fuels Data Center: Education Resources](#)

Includes links to teaching materials, competitions, and activities for students in K-12 grades.

[Energy Education Resources: Kindergarten through 12th Grade](#)

A list of generally available free or low-cost energy-related educational materials. (Developed by the Energy Information Administration)

[KidWind Project](#)

Features hands-on science projects and lesson plans to help kids learn about wind.

[Renewable Energy Lesson Plans](#)

Features an index of renewable energy lesson plans created by a team of professional educators and renewable energy experts. (Developed by the Texas State Energy Conservation Office)

[Energy Busters: Home Energy Conservation](#)

Students in grades 3-5 complete a home energy survey and develop an energy conservation plan for their home. (From Science NetLinks)

[Energy Detectives](#)

Designed to give students in grades 3-6 an edge on energy-related technology by performing energy audits and suggesting energy-saving tips. (Developed by EnergyNet)

[Energy Education Curriculum Project](#)

Features modules for teaching students in 5th grade through middle school about energy. (Developed by the University of Northern Iowa)

[Renewable Energy Sources](#)

A lesson plan that has students in grades 6-8 investigate a variety of renewable energy resources, as well as the benefits and drawbacks of each. (From Science NetLinks)

[Running on Renewables](#)

Students use HOMER modeling software to find the costs and benefits of using renewable energy in their schools. (Developed by Penn State Public Broadcasting for the Energy Education for the 21st Century curriculum.)

[Ethanol-As a Fuel](#)

Curriculum that teaches high school students about ethanol and its effect on vehicle performance, the environment, and the economy. (Developed by Northwest Iowa Community College)

From – http://www1.eere.energy.gov/education/lesson_plans.html#elementary

Energy Education Curriculum Project

Alternative Energy Sources in Iowa 5th - 6th Grade Module 3 An Interdisciplinary Module for Energy Education

Science, Math, Social Studies and Language Arts lessons.

From that other college in eastern Iowa - <http://www.earth.uni.edu/EECP/elem/mod3.html>

Top Ten Tips for Saving Gas

1. **Tire Inflation**. Keeping your tires properly inflated is a great way to save on gas, since under-inflated tires are harder for the engine to push. Check tire pressure once a week.
2. **Heavy Hauling**. Many people keep unnecessary things in their vehicles, such as golf clubs, sand or kitty litter for the winter, or just things they have accumulated and forgotten about in the trunk. An extra 50 pounds of “stuff” is the equivalent of carrying around a small child, and using all the fuel it takes to move the extra weight. Clean out the car—and keep it clean—to maximize your fuel efficiency.
3. **Improve Aerodynamics**. An open window at highway speeds can sap up to 10% of your fuel efficiency. Close the window. Also, if you’re not using that roof rack, take it down. It also makes it tougher for your car to move through the wind.
4. **Simple Maintenance**. Inexpensive things like air filters can add an extra 10% efficiency to your engine, reducing your fuel consumption, and saving you money at the pump.

5. No more "jack-rabbit" starts. Quick starts from a stop sign or a green light are not only dangerous and put a lot of wear and tear on your car, they're horrible for fuel efficiency. Slowly accelerate from a stop and you'll save on gas.
6. Cold Gas vs. Hot Gas. Cold gas is denser than hot gas, and since the pumps at the gas station measure volume, you'll actually get more gas in your tank for the same price when it's cold. So, gas up in the morning, not in the middle of the day.
7. Steady Speeds. When you're driving in traffic or on the highway, slowing down and speeding up to hang onto the bumper of the car in front of you wastes a lot of gas. Drive steadily and let the cars in front of you get some distance. The rule of thumb is: for every 10 miles per hour, allow one car length. So, if you're driving 50 miles per hour, allow five car lengths between you and the car in front of you.
8. Hills Kill Gas Mileage. If you're going to be going up hills, plan your acceleration. If you accelerate to get over the hill before you start driving up the hill, you'll save much more gas than you would if you accelerate while on the hill. Why? Gravity. It pulls your car down and therefore when going up a hill you need more energy to accelerate than if you are on a flat surface.
9. Planning and Combining Trips. Don't keep running out for each individual errand. Combine errands (which means you'll have to plan them out) and you'll save all that extra driving and all that extra gas.
10. Slow Down! This is the best thing you can do to save gas. If you must drive, driving at slower speeds will reduce your gas costs more than anything else. Slow down to the speed limit and not only will you save on gas, you'll never worry about speeding tickets either.

From – Email from Congressman Tom Latham