



FIVE TECHNOLOGIES THAT COULD CHANGE EVERYTHING

The task is huge. The need is great. The impacts will be worldwide. The advancement of new technology to resolve environmental problems—specifically energy and global climate change—is critical and the research for change is underway.

The Wall Street Journal recently outlined five new technologies that “could radically change the world energy picture.” Below is a brief overview of new technologies scientists are researching.

Advanced Car Batteries: Lithium-air is being tested in hopes of replacing the lithium-ion battery that electric cars are now using. Lithium-air promises to have 10 times the performance of lithium-ion batteries and could deliver nearly the same amount of energy, pound for pound, as gasoline. The lithium-air battery pulls oxygen from the air for its charge, making the device smaller and not nearly as heavy as the lithium-ion battery. But unless there's breakthrough in the research, it could be another decade before the lithium-air battery is marketed in electric cars.

Carbon Capture & Storage: Capturing carbon dioxide (CO₂) from coal-fired power plants could greatly reduce greenhouse gas emissions. One new technology being investigated burns coal and purified oxygen in the form of a metal oxide, rather than air. This produces a concentrated stream of CO₂ that is easier to capture while not significantly impacting the plant's efficiency.

Next-generation Biofuels: When fuel prices were nearing \$5/gallon a few years ago, the rush was on for finding alternative fuels. Soybeans and corn were at the top of the biofuel list, but then it became a food vs. fuel battle. Today, algae is at the top of the biofuel list. Algae consume carbon dioxide and can generate more than 5,000 gallons a year per acre of biofuel, compared with 350 gallons a year for corn-based ethanol. Although the research is still in its early stages, algae has the potential to produce enough fuel to meet all of the nation's transportation needs.

Space-based Solar Power: As we know, solar panels are only as good as long as the sun is shining. What kind of place has no clouds, no trees, and no tall buildings to block the sun? Outer space, of course! Getting the solar panels in outer space is the biggest obstacle—and most costly. So it's necessary to design light-weight panel system which would require only a few launches. As the panels orbit with the sun, solar energy could be generated 24-7 and would beam energy in the form of microwaves back to any place on Earth. A ground-receiving station one mile in diameter could deliver approximately 1,000 megawatts—enough to power 1,000 U.S. homes, on average.

Utility Storage: Although wind and solar energy are clean, alternative renewable energy sources, they are only as good as when the wind blows and the sun shines. And the energy they generate must be used when generated. Finding a way to store the energy is what scientists are now researching. Lithium-ion technology is also being considered as a means of energy storage for wind and solar, not just for electric cars. Placing powerful lithium-ion batteries around the edge of the energy grid, closer to customers, will make the grid more efficient and reduce the need for backup fossil-fuel plants.

So keep your eye on energy technology. There will be big changes in the next 10 years which we all hope will make a world a of difference—as well as a different world!

Michael Totty—Wall Street Journal—Energy— Oct 19, 2009

PA HUNTERS ENCOURAGED TO SHARE THE HARVEST

In the spirit of the holiday season, the Pennsylvania Department of Agriculture and Game Commission have teamed up with Pennsylvanians for the Responsible Use of Animals to again urge hunters to give a portion or their entire take to help feed Pennsylvania families.

The Hunters Sharing the Harvest (HSH) program allows hunters to donate a portion of their deer to families in need. To date, hundreds of Pennsylvania deer hunters have donated tens of thousands of pounds of venison to local food banks and soup kitchens through the Hunters Sharing the Harvest program.

The HSH program calls upon hunters to donate anything from a few pounds of venison to an entire deer to help Pennsylvanians in need. On average, the meat from one deer can provide 200 meals for hungry Pennsylvanians.



Did You Know?

- On average, hunters have managed to donate more than 80,000 pounds of venison a year to needy individuals and families through food banks and soup kitchens.
- Last year, HSH coordinated the delivery of nearly 200,000 meals of venison to hungry Pennsylvanians.
- One of the group's largest costs is the result of processor reimbursements, which is why HSH continually accepts monetary contributions year-round for its services. Hunters donating their harvest voluntarily pay a \$15 tax-deductible fee toward each processed deer. The remainder of the processing fee is covered through HSH sponsors and generous donations of people across the state.

Anyone interested in contributing venison to the HSH program should call 1-866-474-2141. Information can also be found by visiting Representative Mauree Gingrich's website: RepGingrich.com

Duplicated from Gingrich's website

TEACHING IN P.L.A.C.E Workshop **Connecting Students to People, Land & Community Education (PLACE)** **ACT 48 CREDIT HOURS AVAILABLE**

When you heard another Wal-Mart was moving into Lebanon on Cornwall Road, the third store within the county, were you opposed or for the construction of the store? Are you concerned about Tenaska, Inc. moving into North Lebanon Township and building a natural gas-fueled electric generating plant on a farm? Did you attend any county public meetings when Lebanon was in the midst of developing a County Comprehensive Plan? Did you provide input on how and where the county has potential for growth and change or areas in need of protection? Do you know—do your students know—they have a voice in these decisions?

This is what **PA Land Choices** is all about. **PA Land Choices** is a collection of sequential activities developed for use by educators and community leaders that guides the learner in understanding the forces and choices that shape a community and region. It challenges participants to become involved in their community and to conserve their natural resources. It provides an opportunity for teachers to connect students to the wonderful educational and service opportunities available in our communities. It informs students how they can be involved in learning local land use issues—from shopping malls to greenways, housing developments to public parks.

PA Land Choices is a comprehensive educational program designed to engage and enlighten citizens and stakeholders regarding the importance of civic responsibility and the power of citizens in planning the future of a community.

PA Land Choices promotes civic responsibility through place-based education and service-learning. Through its interactive and thoughtful activities, it challenges the learner to become involved in creating the communities of the future.

The program and education guide is a model for place-based education, focusing student learning on communities and familiar places, addressing standards in civics and geography. All activities have been aligned to the state academic standards in Social Studies and Environment and Ecology for application in public school programs in grades 6-12. Place-base education is key in developing future generations who care about communities, public lands, wildlife and healthy outdoor opportunities. The course will provide teachers an overview of environmental resources and community planning in Lebanon County.

A **PA Land Choices** teacher workshop is scheduled for Saturday, March 27, 2010, at the Lebanon Valley Ag Center from 8:00-4:00, providing 7 credit hours. The workshop will be led by DCNR, Bureau of State Parks staff, Estelle Rupert. All participants will receive a free PA Land Choices educational guide.

If you are interested in attending the workshop, please register with the Lebanon County Conservation District at 272-3908 x 4. There is no cost for the workshop other than your own lunch. We hope you'll join us!

SCHOLARSHIPS AVAILABLE

Do you recycle, conserve water and energy, and/or promote conservation practices with others? Do you enjoy a walk in the woods or swimming or fishing in your local waters? Are you passionate enough about the environment to create a unique project that protects, enhances, or conserves something in nature (like your favorite woods, wildlife, trail or stream)? Here's a way to earn prize money for a club, student, or student group! The Lebanon Valley Conservancy is looking for an innovative project that preserves our natural resources. Any student, student group, or club who designs, builds and implements a project which would have a significant contribution to the conservation of Lebanon County's natural resources are eligible to apply for the award. Cash awards range from \$100-300 and can be used in whatever way the winner chooses.

All conservation/environmental projects must be completed by Spring 2010 and must be supported by a teacher or project supervisor (scout leader, 4-H leader, township official, etc.). The deadline for applications is Friday, April 16, 2010. A brief form and outline of the project must be submitted. The application, along with additional details about the award and its requirements, can be found on the Conservancy's website: www.lebanonvalleyconservancy.org

4 TIPS FOR CHRISTMAS TREES

- Choose a tree known for its needle retention. Best trees include any Fir (Douglas, Fraser, Concolor & Balsam fir), then pines, then spruces.
- Since species doesn't always relate to shape and style, sometimes a pine or spruce is chosen—pines for their soft, long needles & delicate appearance, spruces for their stiff branches for heavier ornaments. Nearly all trees (except Norway spruce) will do well retaining needles **with adequate water.**
- Just before you're ready to bring the tree indoors & put it in a stand, make a fresh cut at base, removing at least 1". Get water in the stand ASAP. Check water level daily & add as needed.
- Place tree away from heat sources—windows, vents, radiators to prevent drying out. Decorate & enjoy!



Wishing you all a very
Merry Christmas &
A Happy New Year



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