

EERE Program News

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October, 2008

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From California to New York, green roofs are springing up to save energy, capture rain water and give a more natural feel to urban buildings. [Video](#)

Photo courtesy of: [ApartmentWiz.com](#)

After months of starts and stops, Congress has extended [tax credits for a broad range of renewable energy and energy efficiency investments](#).

In other [News](#), a national biofuels action plan has been released, the 2008 Green Power Awards have been made, and DOE's Energy Savers Web site offers good tips on how to stay warm this winter and cut home energy expenses in the process.

[Features](#) explores geothermal energy development noting that, around the world, geothermal energy is becoming a popular source of power. The Philippines, one of the global leaders in this field, now gets about 30 percent of its electricity from geothermal energy. [Video](#)

DOE recently ramped up U.S. geothermal efforts by [announcing](#) \$43 million in funding for 21 new enhanced geothermal systems (EGS) projects. Features also offers articles on what EGS really is, the potential for U.S. geothermal energy and, closer to our personal lives, [how ground source heat pumps can save home and business energy dollars](#).

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News

\$18 billion tax break for renewables and energy efficiency



Small wind power applications get a boost in new investment tax credits under the financial rescue package recently signed by President Bush.

Photo courtesy of: NREL

The financial rescue plan signed by President Bush on Oct. 3 includes approximately \$18 billion in energy tax credits and incentives for commercialization of renewable energy and energy efficiency. This includes the much sought-after renewal of production tax credits for solar and wind energy.

The bill extends the 30-percent investment tax credit for developing solar energy and qualified fuel cell properties, as well as a 10-percent investment tax credit for micro turbines, through 2016. It also extends the production tax credit for utility-scale wind turbines and creates an eight-year investment tax credit for small wind turbines.

Those interested can find the legislative language beginning on page 115 of the 451-page bill, under [Title One: Energy Production Incentives, Subtitle A — Renewable Energy Incentives](#)

Much easier to digest, the Energy Star Web Site has an [excellent roundup of the available tax credits](#) for

homeowners, home builders and consumers.

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Home appliance engineers seek new ways to save energy

Microwave clothes dryers? Heat pump technology to provide hot water? Improved induction stovetops?

Home appliance engineers around the world are scrambling to make in-home tools more energy efficient. Today's new refrigerator, for instance, uses only half the energy of one built in 1990, and a new clothes dryer requires only 30 percent of the electricity per load of its earlier counterpart.

Improving household energy efficiency has great potential to further reduce U.S. energy loads. When hundreds of millions of hair dryers, television sets, computers or stovetops are switched on every morning or evening, the total energy load is enormous. A recent Wall Street Journal article gives [an excellent roundup](#) of the situation.

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Stay warm, save money



The jetstream will soon be dipping south and bringing winter along with it. DOE's "Stay Warm, Save Money" has tips on cutting heating bills.

Photo courtesy of: NREL

EERE recently launched its new Energy Savers Web Site, [Stay Warm, Save Money](#). It is loaded with practical tips on how to save on your winter heating bills and stay cozy in the process.

- [No-Cost and Low-Cost Tips](#)
- [Energy Audits](#)
- [Long-term Investments](#)
- [Financial Assistance](#)
- [Partner Materials](#)

The site also contains a [Media Kit](#) for communicators wishing to report on the topic.

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2008 Green Power Awards celebrate energy innovation

Twenty-five companies, organizations and individuals were recognized with national achievement awards at the [2008 National Renewable Energy Marketing Conference](#).

The Green Power Leadership Awards recognize actions that are significantly advancing the development of renewable electricity sources through renewable energy markets. The awards are presented by the U.S. Department of Energy, U.S. Environmental Protection Agency, and the Center for Resource Solutions.

Among green power purchasers, the highest honors went to the [Community of Bellingham, Washington](#), [Cisco Systems](#), [Intel Corporation](#), [University of Pennsylvania](#), and [WhiteWave Foods Company](#), who were named Partner of the Year. The City of [Palo Alto Utilities](#), [3Degrees Inc.](#), and [Sterling Planet](#) were Suppliers of the Year and [AmerenUE](#) won for New Green Power Program. Dr. Jan Hamrin, founder of the Center for Resource Solutions, received the Green Power Pioneer Award.

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New National Biofuels Action Plan released

A recently released [National Biofuels Action Plan](#) explores the sustainability, fuel blending, and production of biomass-based transportation fuels.

The U.S. currently drives one-third of the world's automobiles (230 million) and burns 25 percent of the world's oil. Congress has dictated by law that 35 billion gallons of biofuels be used to offset a portion of this petroleum dependence by 2022.



Hybrid willows are grown for biomass at the State University of New York research station near Tully, N.Y.

Photo courtesy of: NREL

The National Biofuels Action Plan was prepared by the [Biomass Research and Development Board](#), an interagency group formed to investigate the broad implications of biofuels development.

On a related note, U.S. Department of Agriculture (USDA) tracking shows that world grain stocks continue to increase from a carry-over of 340 million metric tons (MMT) at the end of the 2006/7 crop year, to 347 MMT (Est.) at the end of this crop year, to 372 MMT (projected) for 2008/9.

Corn prices have dropped approximately 40 percent from the speculative peaks reached earlier this year, even though ethanol corn use has reached record levels.

USDA also projects that in 2008/9, U.S. corn used for ethanol will drop by 100 million bushels as reduced gasoline consumption slows fuel-blending requirements over the coming months.

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Saving energy with green roofs

Using green roofs — growing plants on top of urban apartment buildings, office buildings and homes — to save energy and reduce rainwater runoff is gaining credence among more big-city builders and building owners.

According to [Green Roofs for Healthy Cities](#),



A green roof on the Waterfront Hotel in Vancouver, British Columbia, Canada, grows herbs used in the Hotel's kitchen, reducing food costs by an estimated \$30,000 each year while also insulating the building and reducing rain water runoff.

Photo courtesy of: greenroofs.org

The roof membrane is protected from the elements, resulting in a longer material life span (it is estimated that green roofs will last up to twice as long as conventional roofs), resulting in decreased maintenance and savings in replacement costs;

Building owners and residents save on energy heating and cooling costs, depending on the size of the building, climate and type of green roof. [Environment Canada](#) found that a typical one story building with a grass roof and 10 cm (3.9 inches) of growing medium would result in a 25-percent reduction in summer cooling needs. Field experiments by Karen Liu in Ottawa Canada, found that a six-inch extensive green roof reduced heat gains by 95 percent and heat losses by 26 percent compared to a reference roof.

Noise insulation, soil, plants and the trapped layer of air can be used to insulate for sound. Sound waves that are produced by machinery, traffic or airplanes can be absorbed, reflected or deflected. The substrate tends to block lower sound frequencies and the plants block higher frequencies.

A green roof with a 12 cm (4.7 inches) substrate layer can reduce sound by 40 decibels; a 20 cm (7.9 inches) substrate layer can reduce sound by 46-50 decibels.

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NREL announces CRADA opportunity for blade testing

The National Renewable Energy Laboratory (NREL) is seeking one or more Cooperative Research and Development Agreement (CRADA) partners to develop testing technologies and hardware for static and fatigue testing of wind turbine blades up to 100 meters in length.

The goal in developing the CRADAs is to identify industry partners interested in and qualified to develop testing technologies and equipment, including scaling up, value engineering, and proving existing NREL testing equipment.

[Application details](#)

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A new light shines in Mystic

[The Mystic Seaport Museum](#) in Mystic, Connecticut is cutting energy costs with solar energy.



Mystic, Connecticut, with historical ties to the sea, is turning to the sun to help power its seaport museums.

Photo courtesy of: [Groton and Mystic Seaport Museums](#)

A 2008 recipient of DOE's [Solar America Showcases award](#), the museum has already demonstrated significant cost savings through a combination of solar PV installations and other energy efficient measures, including upgrades to their lighting system and energy conservation measures to HVAC systems.

Since making these changes in 2004, the museum has saved an average of \$250,000 per year on energy bills and prevented more than 500 tons of carbon dioxide per year from being released into the atmosphere.

As part of the Solar America Showcases award, the museum will receive DOE technical assistance regarding future installations of solar and other energy efficiency upgrades to the campus.

To kick off the award process, a team from DOE, including Tom Kimbis, director of market transformation for the Solar Energy Technologies Program, visited the museum in September to discuss ways in which the museum can continue to improve its energy efficiency and keep reducing energy costs throughout the year.

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Features



Many nations are taking a closer look at the possibilities of producing clean energy from geothermal heat sources. DOE is funding 21 new projects in enhanced geothermal systems.

Photo courtesy of: National Park Service Old Faithful Web Cam, Oct. 26, 2008

Tapping the earth's core

[Geothermal energy production](#) has an inherent advantage over wind and solar energy; it is available 24-7 and an excellent resource for base-load electricity generation.

While still in the early development stage, U.S. geothermal energy is already a \$1.5 billion per year industry. Interest in geothermal energy also runs strong in other countries. Approximately 20 nations now use or are developing significant geothermal energy projects.

Capturing heat energy from the earth's core is not a new idea. Anyone who has visited Yellowstone National Park ([Old Faithful Web Cam](#)) has seen the energy potential of geothermal resources. Water, superheated in rock fissures above the earth's magma, escapes to the surface as boiling water or steam. Capture this hot water or steam and you have an instant power source.

Not surprisingly, this is not as simple as it first sounds. ([geothermal slide show](#))

Naturally occurring geysers, hot springs or steam beds are rarely found where needed for efficient electricity production. And while the geology of geothermal fields is becoming better understood, there are still plenty of questions about how best to capture and sustain this power source in any given field over decades.

As with any process that relies on geologic exploration and drilling, not all wells produce usable power. A sizable up-front capital investment, similar to hydroelectric power generation, is needed to develop any potential geothermal energy field.



Plans for using the Nesjavellir area for geothermal power and water heating first began in 1947. Today, Iceland gets 17 percent of its electricity and 87 percent of its residential heat from geothermal resources.

Photo courtesy of: Wikipedia

These disadvantages are more than offset, however, by the fact that geothermal energy is, first and foremost, **clean energy**. Geothermal power can be extracted without burning any fossil fuels. It produces only about one-sixth of the carbon dioxide that a relatively clean natural-gas-fueled power plant produces, and very little if any, nitrous oxide or sulfur-bearing gases. Binary plants, which are closed cycle operations, release essentially no emissions whatsoever. Also, as a primary energy source, the heat of the earth's core is, for practical purposes, unlimited.

One of the first recorded attempts to produce geothermal electricity took place in Italy in 1904 at the [Larderello](#) dry steam field. A small generator was built that lit four light bulbs. Later, in 1911, the Italians built the world's first geothermal power plant at the site.

In 1958, [New Zealand](#) built a geothermal electricity generating plant. The [Philippines](#), [Iceland](#), [Mexico](#), [Turkey](#), [Australia](#) and other countries have since led or joined the U.S. in geothermal energy development.

In 1960, Pacific Gas and Electric began developing and operating the first successful geothermal power plant in the U.S. at [The Geysers](#) steam field in Sonoma County, California.

Today, The Geysers produces over 750 megawatts of power and is the largest geothermal electricity generator in the world. It is also the site of on-going geothermal research and development, including contributions by DOE. The current generating plants at The Geysers are operated by [Calpine Corporation](#), [Northern California Power Agency](#), and [Western GeoPower Corporation](#).

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\$43 million boost for advanced geothermal energy projects

DOE is making \$43 million available for Enhanced Geothermal Systems (EGS) research and development and for exploring next-generation geothermal energy technologies.

Subject to annual appropriations, DOE will provide up to [\\$43.1 million over four years to 21 awardees](#), including a record 13 awards to first-time recipients. With cost-share provided by the recipients, the public-private investments will total up to \$78 million.

The geographic diversity of the selected projects will help expand the perception of EGS as a technology that can be used over a wide area. A number of new site locations are included; additionally, partnerships with universities and private sector firms will encourage innovation.

Seventeen of the awards will address engineered reservoir creation, steam capture management and utilization at high temperatures up to 300 degrees celcius and in wells as deep as 10,000 meters. The awards include 12 first-time recipients, opening up the field to more players.

Four awards were made for actual in-the-field systems demonstrations, including one award to a first-time recipient. The selected projects will test and demonstrate well stimulation techniques for improving well

productivity as well as increasing inter-well connectivity at existing geothermal fields.

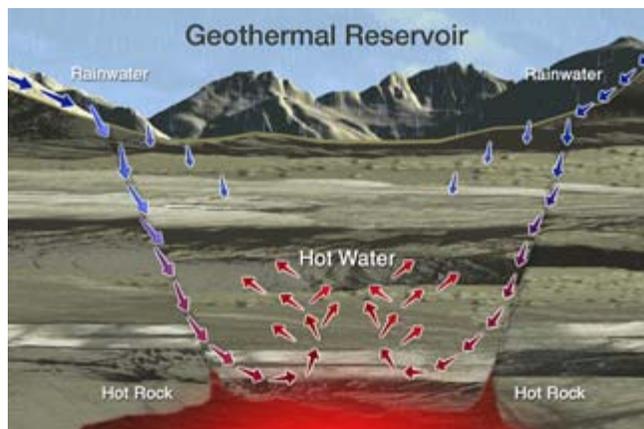
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Why Enhanced Geothermal Systems matter

To date, geothermal energy generation has depended upon developing a identified geothermal reservoir, that is, finding a source of hot water and steam close to the surface or actually already escaping from beneath the earth's crust. Opportunities, then, have been mainly limited to geologically active spots in the western U.S.

Enhanced Geothermal Systems (EGS), or engineered geothermal systems, offer the "next step" in dramatically expanding the use of geothermal energy.



Enhanced Geothermal Systems research being funded by DOE holds the potential to greatly expand the practical application of geothermal energy.

Illustration courtesy of: [Geothermal Education Office](#)

EGS offers the possibility of extending geothermal energy development to larger areas of the western U.S., as well as into other areas of the country not currently considered "geothermal country."

Researchers estimate that EGS may unleash a 40-fold increase over present geothermal power generating capacity in the U.S. This is equivalent to about 10 percent of the overall U.S. electric capacity today.

EGS uses the very high temperatures (approximately 200 degrees Celsius) that can be found in rocks a few kilometers below ground. Electricity is generated by pumping water down an injection well into the heat zone. The water travels through fractures in the rock, capturing the heat of the rock until it is forced out of a second, nearby well as very hot water. This water is then converted into electricity by directly using a steam turbine or through a binary power plant system. The water, after the heat has been removed, is injected back into the ground to be reheated.

This means that geothermal plants can, in theory, be located over any fractured, hard rock subsurface. The economics of drilling deep enough to penetrate into that hot rock, ascertaining or developing the system of rock fissures that hold and heat the water, and then recapturing it back at the surface as steam can, of course, represent significant obstacles.

Better understanding these potential obstacles, and developing the technologies and methods to overcome them, are the essence of EGS.

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How competitive are ground source heat pumps?

Traditionally, combustion-based systems have been the preferred heating systems for homes and businesses due to moderate installation and operating costs, and wide availability in the market place. Today, a consumer can choose between combustion furnaces combined with central air cooling, air source heat pumps and, more recently, ground source heat pumps.



Energy efficient geothermal heat pumps installed at South Carolina's Beaufort Marine Corps Base provide space heating, cooling and domestic hot water for 1,235 family housing units, replacing 2,500 tons capacity of existing HVAC systems and hot water heaters.

Photo courtesy of: NREL

[How do these heating and cooling options compare?](#)

Beginning in the 1970s, air-source heat pumps came into common use. They have the advantage of no combustion, and thus produce no indoor pollutants such as carbon monoxide. Heat pumps also provide central air conditioning as well as heating. They are installation-cost competitive with a central combustion furnace/central air conditioner combination.

Air source heat pumps transfer heat from the air, rather than creating it. During the summer, a heat pump captures heat from inside a home or business and transfers it to the outdoor air through a condensing unit. During the winter, the process is reversed. Heat is captured from outdoor air, compressed and released inside the building.

This works until temperatures approach freezing, when traditional electric-resistance heating is needed as a booster to adequately warm the air being moved by the heat pump. Depending on cost of electricity, this can get expensive in a hurry in cold climates.

One increasingly popular alternative to overcome these shortcomings is to use a ground source heat pump, or geo-exchange unit as they are sometimes called.

A ground source heat pump takes advantage of the fact that in-ground temperature is more stable than air temperature: warmer in the winter and cooler in the summer.

Using the Earth as a heat source/sink, a series of pipes, commonly called a "loop," is buried in the ground near the building to be conditioned. The loop can be buried either vertically or horizontally. It circulates a fluid (water, or a mixture of water and antifreeze) that absorbs heat from, or relinquishes heat to, the surrounding soil, depending on whether the ambient air is colder or warmer than the soil.

Nearly all ground source heat pumps can also provide low-cost, domestic hot water, further increasing their operating efficiency.

For more on geothermal heat pump systems, including types, benefits and selection and installation, visit these pages on the DOE Consumer's Guide Web site:

- [Types of Geothermal Heat Pump Systems](#)
- [Benefits of Geothermal Heat Pump Systems](#)
- [Selecting and Installing a Geothermal Heat Pump System](#)

To learn more about geothermal heat pumps, visit the [International Ground Source Heat Pump Association](#), where you can search for local IGSHPA Accredited Installers, Trainers, and Certified Designers using their [Business Directory](#). Information is also available from the Geothermal Heat Pump Consortium, which can help you can find a knowledgeable contractor in your area by using their [GeoExchange Industry Directory](#).

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EERE News Releases

October 22, 2008

[DOE Announces 2008 Federal Energy and Water Management Awards](#)

October 17, 2008

[ENERGY STAR® Operation Change Out Initial Results Save Nearly \\$11 Million in Energy Costs at 84 U.S. Military Bases](#)

October 7, 2008

[DOE Announces Additional Steps in Developing Sustainable Biofuels Industry](#)

October 06, 2008

[DOE Funds 21 Research, Development and Demonstration Projects for up to \\$78 Million to Promote Enhanced Geothermal Systems](#)

October 1, 2008

[DOE's Energy Savers Web Site Helps Consumers "Stay Warm, Save Money"](#)

September 30, 2008

[DOE's Clean Cities Celebrates Success of Alternative Fuels](#)

September 29, 2008

[DOE to Provide Up to \\$17.6 Million for Solar Photovoltaic Technology Development](#)

September 26, 2008

[DOE Awards \\$15 Million in Technical Assistance to Support Major Retailers, Financial Institutions and Real Estate Firms to Adopt Energy-Efficient Technologies](#)

September 19, 2008

[DOE Funds 15 New Projects to Develop Solar Power Storage and Heat Transfer Projects For Up to \\$67.6 Million](#)

September 18, 2008

[DOE Selects Projects for Up to \\$7.3 Million for R&D Clean Technology Water Power Projects](#)

September 12, 2008

[DOE and Ad Council Launch Energy Efficiency Campaign for Youth](#)

September 10, 2008

[DOE to Invest up to \\$4.4 Million in Six Innovative Biofuels Projects at U.S. Universities](#)

September 9, 2008

[U.S. Energy Department Turns on Headquarters' Solar Energy System](#)

September 8, 2008

[DOE Announces \\$6.6 Million in Competitive Grant Selections For Innovative State Efficiency, Renewables Initiatives](#)

August 29, 2008

[DOE Announces Up to \\$7 Million for Technology Commercialization Acceleration](#)

August 28, 2008

[Australia, Iceland and the U.S. Launch International Partnership to Promote Advanced Geothermal Technologies](#)

August 25, 2008

[DOE Kicks Off Old Refrigerator Recycling Effort](#)

August 22, 2008

[DOE Announces \\$26 Million to Develop Energy Efficient Processes for U.S. Industry](#)

August 14, 2008

[DOE Announces up to \\$15.3 Million for Long-term Hydrogen Vehicle Development](#)

August 12, 2008

[DOE to Invest up to \\$24 Million for Breakthrough Solar Energy Products](#)

August 5, 2008

[DOE to Pursue Zero-net Energy Commercial Buildings](#)

August 4, 2008

[DOE Announces Contracts to Achieve \\$140 Million in Energy Efficiency Improvements to DOE Facilities](#)

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Reader Comments

September issue — U of Oklahoma joins the renewable brigade:

Bravo, for Oklahoma University I do hope that they allow Service-Disabled Veteran-Owned Small Businesses participate in this development. Please consider Anaerobic Digestion as a source for your natural gas source and continue with renewables articles — **W.C.**

September issue — What's happening with the Chevy Volt:

Chevy Volt - You drive it to work, it will be parked for 8 or more hours. Why not add PV technology on the sunroof and other flat areas? That would reduce recharging time and cost. Also, they have to add cost of electricity to the equation: the owner's and other people's as hosts... i.e. employer's additional benefits: you can recharge your car while at work, etc. And maybe that electricity to recharge electric cars can be produced by PV panels... Just ideas.—

Story ideas: PV technologies: to increase efficiency to at least 50% within next 5 years - anyone on the case? Alternative materials?

The Sea: What can we learn and apply from the Sea, besides tides and waves?

Algae fuel? other pointers?

NASA: Do they have stock of unreleased technologies that will enhance this green movement?

E.G.

Thanks, W.C. and E.G. for the story suggestions. Check the August issue for Algae-based energy stories — Editor

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Speeches, Op-Eds and Testimony

July 27, 2008 (as printed in the New York Times)

[Breaking oil addiction: the Energy Secretary's views](#)

I agree with Mr. Friedman's assertion that we must break "our addiction to oil." But it is ridiculous and unfounded to claim that the president's response to this challenge consists only of an effort to expand offshore drilling. ...On the demand side, the president signed into law increases in fuel efficiency standards and financed critical research into gas-saving technologies like advanced batteries and hydrogen fuel cells. ...On the supply side, we've spent more than \$12 billion to advance alternative energy sources.... ...[and announced] the availability of more than \$30 billion in clean-energy project loan guarantees.

July 23, 2008

[Statement of Steven G. Chalk, Deputy Assistant Secretary for Renewable Energy, before the Committee on Energy and Natural Resources, United States Senate](#)

Topic: Reducing gasoline demand and transportation greenhouse gases.

July 17, 2008

[Statement of David Rodgers, Deputy Assistant Secretary for Energy Efficiency, before the Committee on Energy and Commerce Subcommittee on Energy and Air Quality, United States House of Representatives](#)

Topic: Buildings, energy efficiency and greenhouse gases.

July 15, 2008

[Statement of Alexander Karsner, Assistant Secretary for Energy Efficiency and Renewable Energy, before the Committee on Energy and Natural Resources, United States Senate](#)

Topic: The challenges and opportunities of clean energy investment.

July 10, 2008

[Testimony of Steven G. Chalk, Deputy Assistant Secretary for Renewable Energy, before the Subcommittee on Clean Air and Nuclear Safety Committee on Environment and Public Works, United States Senate](#)

Topic: DOE's research and development of the next generation of biofuels.

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Events

If you have an event scheduled in the next year of regional or national interest to the energy efficiency and renewable energy communities, please contact us with pertinent information and a web link and we will include it in EERE Program News. — [Jack Jenkins](#), [John Horst](#), [Mariel Sala](#)

[Wind Expo Latin American Wind Energy Association 2008](#) — Nov. 5-7, Guadalajara, Mexico

First Latin American Wind Energy Association (LAWEA) Wind and Renewable Energy Conference and Exhibition, organized by the Latin American Wind Energy Association.

[7th Annual Symposium on Solar Power](#) — Nov. 6, Charlotte, N.C.

Event will focus on harvesting light, and the global trends and funding opportunities in this field. Emphasis on related companies and R&D initiatives in the Carolinas.

[2008 Congress of Cities & Exposition](#) — Nov. 11-15, Orlando, Fla.

The National League of Cities' Annual Congress of Cities and Exposition is the municipal government marketplace for administrators, city managers, council members, department directors and mayors.

[Cellulosic Ethanol Summit](#) — Nov. 17-21, Washington, D.C.

Agricultural, industrial biotech, biorefinery and financial community leaders will share perspectives on what is needed to form an efficient and effective value chain to commercialize cellulosic ethanol production.

[Utility Energy Services Contracts Meeting](#) — Nov. 18-19, Williamsburg, Va.

Meeting will provide attendees with essential information about using utility energy services contracts (UESC) to implement comprehensive energy and water conservation measures.

[EcoBuild Fall 2008](#) — Dec. 8-11, Washington, D.C.

An annual conference covering sustainable design, green buildings, renewable energy, environmental planning processes, and information collaboration strategies for commercial, industrial, institutional, and residential construction.

[2009 Wind Energy Institute](#) — Jan. 21-22, Austin, Texas

Forum will provide the latest technological, business, and legal information regarding wind development. Topics include emerging issues, market conditions, CREZ developments, dispatch priority and citing issues.

[34th Stanford Geothermal Workshop](#) — Feb. 9-11, Stanford, Calif.

The 34th annual Stanford workshop brings together engineers, scientists, and managers involved in geothermal reservoir studies and developments in a forum for the exchange of ideas on the exploration, development, and use of geothermal resources.

[14th Annual National Ethanol Conference](#) — Feb. 23-25, San Antonio, Texas

The Renewable Fuels Association will hold its annual ethanol conference with industry leaders discussing state of the industry.

[Renewable Energy World Conference & Expo North America](#) — March 10-12, Las Vegas, Nev.

The 6th annual conference will offer papers, panel discussions and presentations related to technology, markets, business strategies and policy covering the wind, solar, biomass, hydro, geothermal, ocean/tidal/wave, bio-

power, bio-fuels, hydrogen and energy sectors.

[GovEnergy 2009](#) — Aug. 9-12, Providence, Rhode Island

A forum to educate, inspire, and motivate people and organizations to be more energy efficient in their facilities and to raise awareness and knowledge of latest energy-saving strategies and products.

[2009 Solar Decathlon](#) — Oct. 9-18, Washington, D.C.

Next edition of this popular DOE sponsored showcase for energy efficient homes designed and constructed by university teams from North America and Europe.

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Content Last Updated: 10/28/2008