

Arkansas Renewable Energy News



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"We're now in a transitional period in which biofuels and fuel economy is just a first step. The stage is set now for plug-in hybrid vehicles with biofuels as a primary fuel. In that scenario, petroleum plays only a very small part."—
Reid Detchon,
executive director of the Energy Future Coalition, a nonprofit bipartisan public policy initiative.

President Bush Signs Energy Bill

After passing both the House and Senate by wide margins, President Bush signed the Energy Independence and Security Act of 2007 in late December.

The act includes a number of important provisions, including the production of at least 36 billion gallons of biofuels annually, fifteen billion gallons of conventional ethanol by 2015, and 21 billion gallons of advanced biofuels and cellulosic-derived fuels by 2022.

The act also establishes an innovative higher-blend ethanol retail infrastructure program with many elements of the governor's recommended City-to-Region approach.

In addition, the act establishes higher fuel economy standards for cars and light trucks, and strengthens efficiency requirements for appliances and for government buildings. Some specific highlights of the act:

Fuel Efficiency

The bill mandates a 40% increase in fuel economy by 2020. The Department of Transportation is required to set tougher fuel economy standards, starting with model year 2011, until the standards achieve a combined average fuel economy for model year 2020 of at least 35 miles per gallon.

Renewable Fuels Standards

The bill requires "advanced biofuels"—defined as fuels that

cut greenhouse gas emissions by at least 50%—to provide 21 billion gallons of fuel by 2022, or about 60% of the total requirement. Such advanced biofuels could include ethanol derived from cellulosic biomass—such as wood waste, grasses, and agricultural wastes—as well as biodiesel, butanol, and other fuels.

Energy Efficiency

The Act phases out the use of inefficient incandescent lights and imposes improved energy efficiency standards on a wide variety of products, including external power supplies, dishwashers, dehumidifiers, residential boilers, electric motors, and walk-in coolers and freezers.

For federal buildings, the energy act sets a goal to cut their energy use by 30% by

2015, and requires new and renovated federal buildings to significantly reduce their reliance on energy from fossil fuels.

Unfortunately, incentives for renewables such as wind and solar were removed from the bill. Specifically, a renewable energy standard that would have required 15 percent of the nation's electricity to come from renewable sources and extensions for the production tax credit (PTC) for wind power and credits for solar power and small wind were cut.

Still, the act is substantial in advancing renewable fuels and energy efficiency, and will make significant strides in energy savings, environmental protection, energy security, and energy independence.

Excerpted from DOE's *EERE Network News*.



President Bush signs the Energy Independence and Security Act of 2007. Photo credit: DOE.



Solar homes provide a reliable source of electric power, decreased dependence on outside energy sources, and increased energy security. Photo credit: NREL.

Home in Conway Goes Solar

Jim and Pamela Mosley's home in Conway boasts a new photovoltaic system, just one more step in the couple's quest to live as energy efficiently as possible.

According to this report on NWAnews.com, the Mosley's PV system was added in December to their 1926 home that uses a mere 400 kilowatt-hours of electricity each month, compared to an aver-

age of 1,080 kWh used by other Conway homes.

That low consumption is thanks to the energy efficiency improvements the couple has taken over the past four years.

The couple expects the PV system to generate enough electricity by summer that their meter will begin spinning backward and excess electricity will be fed into the utility grid.

The number of solar homes

in Arkansas will soon be increasing, thanks to a new subdivision in Little Rock being planned by Bill Ball, owner of Natural Environments Inc. and Stellar Sun.

The subdivision will include 35 homes that will generate at least half their electricity from solar energy. Construction is expected to begin in early 2008.

UA Researchers Working to Convert Chicken Fat and Tall Oil into Biodiesel

Chemical engineering researchers at the University of Arkansas have investigated supercritical methanol as a method of converting chicken fat into biodiesel fuel.

The new study also successfully converted tall oil fatty acid, a major by-product of the wood-pulping process, into biodiesel at a yield of greater than 90 percent, significantly advancing efforts to develop commercially viable fuel out of plentiful, accessible, and low-cost feedstocks and other agricultural by-products.



A jar shows the type of tall oil fatty acids that graduate student Brent Schulte worked with to create biodiesel. Photo credit: University of Arkansas.

"Major oil companies are already examining biodiesel as an alternative to petroleum," said R.E. "Buddy" Babcock, professor of chemical engineering. "With the current price of petroleum diesel and the results of this project and others, I think energy producers will think even more seriously about combining petroleum-based diesel with a biodiesel product made out of crude and inexpensive feedstocks."

Under Babcock's guidance, Brent Schulte, a chemical-engineering graduate student in the university's College of Engineering, subjected low-grade chicken fat and tall oil fatty acids to a chemical process known as supercritical methanol treatment. Supercritical methanol treatment dissolves and causes a reaction between components of a product - in this case, chicken fat and tall oil - by subjecting the product to high temperature and pressure.

Substances become "supercritical" when they are heated and pressurized to a critical point, the highest temperature and pressure at which the substance can exist in equilibrium as a vapor and liquid.

The simple, one-step process

does not require a catalyst.

Most biodiesel is produced from refined vegetable oils, such as soybean and rapeseed oil, which are expensive; they generally account for 60 to 80 percent of the total cost of biodiesel. Due to these high feedstock prices, biodiesel production struggles to be economically feasible. Currently, as Babcock alluded, biodiesel cannot compete with petroleum diesel unless the per-gallon price of diesel remains higher than \$3. For these reasons, researchers recently have focused efforts on less refined and less-expensive feedstocks as a more viable competitor to conventional diesel.

Biodiesel has many benefits. In addition to reducing U.S. dependence on foreign oil, it is better for the environment than purely petroleum-based products. As a renewable, biodegradable, and thus carbon-neutral material, biodiesel does not contribute to greenhouse gases. In fact, it decreases sulfur and particulate-matter emissions. It also provides lubrication for better-functioning mechanical parts and has excellent detergent properties.

“Major oil companies are already examining biodiesel as an alternative to petroleum,” said R.E. “Buddy” Babcock, professor of chemical engineering at the University of Arkansas.

New Alliance Develops Turnkey System for Dispensing Biofuels

Two North Little Rock companies have joined forces to improve biodiesel distribution and sales in the state, reports Northwest Arkansas' News Source.

Hall Tank Co. and The Southern Co. of NLR Inc. have designed a turnkey system for dispensing biodiesel blends. The system could be used by oil jobbers, farm cooperatives, and other groups, according to Jeff

Marvin, vice president of sales for The Southern Co.

The system, called "Easy Tank," is a skid-mounted, double-wall, above-ground system costing about \$50,000.

It is hoped that Easy Tank will facilitate the distribution and sale of biodiesel both in Arkansas and nationwide. Currently, Arkansas has two soybean-based biodiesel plants, and 60 service stations that sell biodiesel and/or ethanol.

Easy Tank could be eligible for the Arkansas Agriculture Department's incentive program for alternative-fuel distribution, which provides grants of up to \$50,000 to produce or distribute alternative fuels.

The deadline to apply for grants for fiscal year 07/08 is February 28, 2008.

For more information, visit <http://aad.arkansas.gov/Topics.htm>, or call 501-683-4851.



DOE's Clean Cities supports local decisions to adopt practices that contribute to the reduction of petroleum consumption. Clean Cities has a network of approximately 90 volunteer coalitions, which develop public-private partnerships to promote alternative fuels and advanced vehicles, fuel blends, fuel economy, hybrid vehicles, and idle reduction. You'll find a host of useful resources on the website, including a Coordinator Toolbox, newsletter, and more.
www1.eere.energy.gov/cleancities/

EPA Announces 2008 Renewable Fuels Standard

EPA is setting a new renewable fuels standard (RFS) of 4.66 percent to meet a federal mandate that at least 5.4 billion gallons of renewable fuels be blended into transportation gasoline in 2008. Based on the standard, each party determines the minimum volume of renewable fuel that it must ensure is used in its motor vehicle fuel. The standard for 2007 was 4.02 percent, equating to roughly 4.7 billion gallons.

The overall volume target increases every year, reaching 7.5 billion gallons in 2012. The Energy Policy Act requires EPA to annually determine the standard – which applies to refiners, importers and non-oxygenate blenders of gasoline – by Nov. 30 for the following year.

The RFS program, which formally began last September, creates new markets for farm products, increases energy security, and promotes the development of advanced technologies

that would greatly expand renewable and alternative fuels. It also serves as one of the many pieces to help inform the greenhouse gas regulation that EPA and federal partners are developing under an Executive Order issued by President Bush in May.

More information on the RFS Notice of 2008 Requirement is available at www.epa.gov/otaq/renewablefuels.

Funding Opportunities

Alternative Transportation in Parks and Public Lands Program

The Federal Transit Administration, in partnership with the U.S. Departments of Interior and Agriculture, request proposals for the Alternative Transportation in Parks and Public Lands Program.

The program funds capital and planning expenses for alternative transportation systems in parks and public lands.

Alternative transportation is "transportation by bus,

rail, or any other publicly or privately owned conveyance that provides to the public general or special service on a regular basis, including sight-seeing service. Such terms also include a non-motorized transportation system (including the provision of facilities for pedestrians, bicycles, and non-motorized watercraft)."

Federal land management agencies and State, tribal and local governments acting with the consent of a Federal land

management agency are eligible to apply.

Some \$23.78 million is expected to be available, with up to 50 awards anticipated. Responses are due February 29, 2008.

For more information, contact Scott Faulk at scott.faulk@dot.gov or go to: <http://www07.grants.gov/search/search.do?mode=VIEW&opId=40224>.

This newsletter is a bi-monthly feature of the Arkansas Renewable Energy website, which features solar, wind, biomass, and other renewable energy sources.

We're on the web:
arkansasrenewableenergy.org

You have received this e-mail because you visited the Arkansas Renewable Energy website or expressed an interest in receiving information about renewable energy in Arkansas. Please forward the newsletter to others who may be interested in renewable energy issues in Arkansas.

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 **ARKANSAS**
Energy Office

Mark Your Calendars

Here's a sample of the many upcoming events focusing on energy issues. For a more complete list, see our [Events Calendar](#).

[Wind Energy Institute](#)

February 19-20, 2008
Austin, TX

A nationally-recognized faculty—drawn from attorneys, developers, engineers, and key Texas policymakers—will provide you with the latest technological, business, and legal information regarding wind development. Topics include: power markets and nodal pricing; Certified Renewable Energy Zones (CREZ); siting, environmental, and leasing issues; and more.

[Photovoltaics Design & Installation](#)

February 19-23, 2008
Tucson, AZ

The photovoltaic market world-wide has experienced an enormous 35% growth rate over the last five years. This course was developed for those seeking employment in the booming solar industry or for homeowners looking to install their own systems or hire a contractor. This curriculum provides a strong foundation of grid-tied and battery-based systems where participants will gain technical skills of how to design and safely install solar electric systems.

[Washington International Renewable Energy Conference 2008 and Trade Show \(WIREC\)](#)

March 3-7, 2007
Washington, DC

WIREC 2008 provides a global platform for government officials from the largest to the most local level to discuss with leaders from the private sector, and civil society to advance the integration of renewable energy everywhere. The conference will include interactive sessions focused on creating the necessary enabling policy environment, financing, research & development and deployments.

Tip of the Month: Use Renewable Energy for Livestock Watering

Remote or off-grid power sources—including solar panels, mechanical windmills, and portable generators—can pump water for livestock in locations where electricity from power lines is unavailable. By encouraging animals to move away from lakes and streams, these systems give livestock greater access to forage. They also reduce livestock pressure on stream banks—preventing nutrient loading, damage to streamside vegetation, erosion, and pollution.

Solar pumping works anywhere the sun shines, so most parts of the United States have plenty of sunlight to run these systems.

Solar pumping is a natural match for summer grazing applications, since it produces the greatest volumes of water in sunny weather and during



Solar livestock watering. Photo credit: NCAT

long summer days—exactly when animals need water the most. With proper precautions, solar pumping systems can be used through the winter months too, even though shorter daylight hours will cause reduced water output.

Why should you consider installing a solar-powered livestock watering system on your farm or ranch? These factors may affect your decision:

- Distance from power lines and the cost of a line extension
- Operation and maintenance cost of a solar system compared to the alternatives, such as a mechanical windmill or a gasoline, propane, or diesel-powered generator
- Rising costs of propane, gasoline, and diesel fuel
- Season of use—summer versus winter

For more information about solar water pumping, including cost, solar water pumping technology, and designing and installing a system, see the National Sustainable Agriculture Information Service publication *Solar-Powered Livestock Watering Systems* at <http://attra.ncat.org/attra-pub/solarwater.html>