

Wisconsin Renewable Quarterly



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Misplaced Security Concerns Still Wind Projects

by Michael Vickerman
RENEW Wisconsin

A hastily drafted amendment to a national defense bill passed in January has triggered a chain of events that has now brought windpower development in Wisconsin to a standstill.

The amendment directed the Department of Defense (DoD) to prepare a study on the impacts of wind turbines on radar installations around the country. According to the American Wind Energy Association, this last-minute provision was aimed at one wind proposal: the Cape Wind project proposed for construction in Nantucket Sound, between Cape Cod and Martha's Vineyard.

It just so happens that Sen. John Warner of Virginia, who authored the amendment, and Sen. Ted Kennedy, who opposes the Cape Wind project, are good pals. Certainly one can be excused for concluding that Warner used his position as Senate Armed Services Committee Chair to help out a friend and colleague who does not want to look at a wind farm while relaxing at his family's seaside retreat in Martha's Vineyard.

More Mischief

But there's more to the story than just Congressional mischief, because Warner's amendment, in the end, was silent on the issue of stopping windpower development while the study is being prepared. The architects of that fresh example of agency overkill are the DoD and the Department of Homeland Security. Two months after the defense bill took effect, both agencies decided to contest any domestic wind farm presumed to interfere with radar operations until the study has been completed.

And they meant it. More than a dozen proposed projects, all in the Upper Midwest, have since received "Notices of Presumed Hazard" from the Federal Aviation Administration. One of the projects that received the FAA notice, the 133-turbine Forward Wind Center south of Fond du Lac, was

Of all the states affected by this de facto moratorium, Wisconsin has the most to lose because more than half of the renewable energy that utilities must provide by 2015 will come from Midwestern windpower.

set to break ground this spring. Five other Wisconsin projects have been sidelined indefinitely as well, including a five-turbine community-style installation proposed for northwest Dane County.

Why have so many projects been put on hold in the Midwest? The reason is that there are many radars in the area, and the regional FAA office believes that any turbine that could be within radar line-of-sight represents an unacceptable security risk, at least for now.

Deadline slippage is exacerbating the problem. The DoD's study was due last month, yet all indications suggest the report won't be complete until this fall. Unless the situation changes dramatically, the stalled wind projects won't be able to proceed until next year. The recurring shortage of wind turbines worldwide could easily push construction start dates even further out.

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In this issue . . .

Doyle Embraces Energy Independence ...	3
Profiles in Leadership: Niels Wolter	4
Wisconsin Tops in Cow Power	6
Calendar	8

most to lose, because it enacted in March a landmark law (Act 141) requiring electric utilities to more than double the amount of renewable energy in their system mix between now and 2015. With that in mind, state political leaders have energetically interceded on behalf of the wind industry as well as utilities that are counting on new supplies of wind energy to serve their growing loads.

Drawing attention to the close linkage between energy security and national defense, Wisconsin Senators Russ Feingold and Herb Kohl teamed up with their colleagues from Illinois and North Dakota to criticize FAA and DoD for placing wholesale restrictions on windpower development in the Upper Midwest. Not to be outdone, Governor Jim Doyle

Continued on page 2

New RENEW Members

RENEW welcomes the following new businesses and individuals who joined since the last newsletter:

12 Acre Farm • Valerie & Ken Bauer
Peter Camilli • Mike DeRubis
EcoEnergy LLC • Evergreen Energy Solutions
Georgette Frazer
Hacklander Farm • Guy & Carole Hansen
Todd Hudzinski • Richard Knisbeck
Tron Melzl • Next Step Energy Systems
Organic Valley Solar Mining Company • Brad Sinjen
Richard Steinfeldt • Mike Tetzlaff
Velson Construction • Dave Wallace

To join RENEW, complete and return the membership form on page 2.

Misplaced concerns

Continued from page 1

urged the DoD to complete the study expeditiously, noting that there are many examples in the U.S. and Europe of wind turbines co-existing with nearby radar installations.

U.S. Reps Step Up

In the House of Representatives, Reps. Tammy Baldwin and Ron Kind took the lead in drafting letters signed by 20 other Members of Congress. In their letters, they noted that the two agencies have historically worked closely with project developers to identify and apply appropriate mitigation measures to reduce radar interference. This bipartisan group of lawmakers underscored the need to “ensure that efforts to increase our nation’s use of clean, renewable sources of energy are not delayed.”

Wisconsin stands to reap substantial economic and environmental benefits from its new law. That forward-looking energy law was adopted with only one dissenting vote. The state is indeed fortunate to have political leaders who will aggressively defend the state’s interest in charting a sustainable energy path for its present and future citizens.

Postscript

In response to RENEW’s campaign to overturn the cease-and-desist orders

on Midwest windpower projects, the Bush Administration is scrambling to resolve this impasse before windpower developers find it impossible to complete their projects by December 31, 2007, when the current federal production tax credit expires.

“Fundamentally, it is a technical problem and there are technical fixes,” said Andy Karsner, the Department of Energy’s assistant secretary of energy efficiency and renewable energy. “We [the Bush Administration] are proactively advocating on those mitigating measures.”

Karsner, a former windpower developer who was appointed to his post this spring, predicted that the de facto moratorium will be lifted within weeks. “I would say this administration is engaged on the highest level of making

sure those types of roadblocks are cleared.”

Sierra Club Wades into the Fray

Meanwhile, the pressure on federal agencies keeps building. The Sierra Club filed a lawsuit in June against the DoD for its failure to complete the Congressionally mandated study within the 120 days specified in the amendment. The lawsuit seeks to “compel agency action unlawfully withheld or unreasonably delayed.”

“While the DoD drags its feet studying if wind farms are a threat to national security, Americans are missing out on cleaner, cheaper energy,” said Kristin Henry, staff attorney for Sierra Club. “If the military can have windmills and effective radar at Guantanamo Bay, why can’t we have both in the Midwest.”✧

Wisconsin Legislators Demand Relief

RENEW thanks the following Members of Congress from Wisconsin for signing on to letters addressed to the Department of Defense and FAA that urged the agencies to lift the current restrictions on wind energy development over much of southern Wisconsin: Senators Russ Feingold and Herb Kohl and Representatives Tammy Baldwin, Mark Green, Ron Kind, and Gwen Moore. So far, six senators and

a bipartisan group of 23 representatives from the Midwest have signed letters.

Please urge your Member of the House to write a letter similar to the ones sent by the other 23 Midwest representatives. (Their letters are posted on www.renew-energy-blog.org. Search “Feingold” to find the letters.)

You can find the representatives and their addresses on the Web at www.house.gov.✧

Yes! I want to help RENEW promote the use of clean, renewable energy resources to diversify Wisconsin’s energy resource mix.

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Organization _____

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WISCONSIN RENEWABLE QUARTERLY

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RENEW Wisconsin is a nonprofit organization advocating the adoption of clean energy strategies to power Wisconsin businesses and households in an environmentally responsible manner. Through a combination of public policy and private sector initiatives, RENEW aims to increase the use of clean, self-renewing energy resources to generate electricity or displace fossil-generated electricity.

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RENEW also moderates a blog at www.renew-energy-blog.org.

Doyle Sets Goals on Energy Independence

Governor Jim Doyle, joined by RENEW Executive Director Michael Vickerman and other leaders from industry, environmental groups, and the University of Wisconsin (UW), signed Wisconsin's "Declaration of Energy Independence" – setting broad, ambitious goals for the state to become the nation's leader in the drive toward energy independence.

Doyle also announced a comprehensive effort to achieve those goals, including grant funding, incentives for research, support for ethanol and other biofuels, and a new initiative to make several UW campuses 100 percent energy independent within five years.

The Declaration calls for a joint public-private effort by the State of Wisconsin, including the UW, to achieve the following goals:

- ✓ Generate 25 percent of our electricity and 25 percent of our transportation fuel from renewable sources by 2025;

- ✓ Capture 10 percent of the market share for the production of renewable energy sources by 2030, helping America kick its addiction to foreign fossil fuels and bringing tens of thousands of new jobs to our citizens. Achieving this goal would bring \$13.5 billion annually to Wisconsin's economy by 2030;

- ✓ Lead the nation in research to make alternative energies more affordable and available to all – and to turn those discoveries into new, high paying jobs in Wisconsin.

Directions to State Agencies

Doyle will direct state agencies to work toward achieving the goals, including the following: identify at least three UW campuses that will be moved "off the grid" within five years; provide \$1 million in grant funding to Wisconsin businesses and entrepreneurs who are developing and commercializing new technologies in the fields of bioenergy,

bioproducts, and biofuels; aggressively promote new incentives, including as part of the budget process, to encourage the production and use of renewable fuels.

The state will seek federal and state grants for the installation of E-85 pumps throughout Wisconsin, lead an effort to create a biodiesel association in the state to foster the growth of this sector, and collaborate with Midwestern states to seek changes in the next Farm Bill to encourage the growth of alternative fuels and the feedstocks used for biomass production; encourage additional research efforts at the UW system to make Wisconsin the nation's leader in renewable energy development; implement the recommendations of the Governor's Biobased Industry Consortium, including creation of a Wisconsin Biobased Industry partnership, building research and development capacity at the UW system and technical colleges, developing specialized business support programs, and building markets and demand for bioproducts.

Doyle ordered the formation of a Wisconsin Energy Independence Project – an interagency effort to coordinate and focus the activities of state government toward achieving the goals of the Declaration. The state will also launch an effort to make Wisconsin the first state in the nation to have a cellulosic ethanol plant – producing ethanol from wood products.

Doyle indicated that these were only the first steps and that he would announce additional measures over the next several months and make this effort a priority of his second term. He also urged university, industry and other leaders signing the Declaration to join him in this state-wide effort.

Last month, the legislature delayed action on a plan to encourage gas station owners to install more E-85 pumps. Doyle called on the Legislature to reconsider and approve his plan that would double the availability of E-85 in Wisconsin.✱

Renewable Energy Leadership Profiles

Niels Wolter: A broad view of solar and renewable uses

Niels Wolter serves as the solar energy consultant for Focus on Energy, so he's usually known as the "solar guy". However, Niels reveals deeper and wider passions.

Growing up in Ann Arbor, Michigan, Niels attended the University of Michigan where he received a BS in geology. He moved on to Louisiana State University in Baton Rouge and earned a Master's in geology.

Right out of school, he landed a job searching for oil in the western Gulf of Mexico. "It's hard to find," he admitted. "I don't think we found any oil at all."

After realizing he was not the corporate oilman type, Niels entered the Master's program in Environmental Studies at the University of Wisconsin-Madison and additionally earned a certificate from the Energy Analysis and Policy Program.

He joined MSB Energy Associates in 1997, where he still works specializing in energy efficiency and renewables. There he oversees the solar electric incentive program and serves as the solar electric technical leader for Focus on Energy, Wisconsin's public-private partnership that provides grants and technical assistance for energy efficiency and renewable energy projects.

Niels walks the renewable life with a dual-tracker solar PV array in his back yard and a solar water heating and space heating system on his home on Madison's near west side.

Niels can be contacted by calling Focus on Energy at 1.800.762.7077.



Niels Wolter stands above a 1.264 kw, dual axis, grid-connection solar array in the backyard of his Madison home. A second solar installation on the house's front roof provides hot water.

Q. *How did you become a solar guy?*

I'm not really. I don't think that I could install and wire a solar panel. I initially began my energy efficiency and renewable energy career working in international energy efficiency. I traveled and worked in India, Russia, Ukraine, and several other countries.

So many countries are so behind where we are. India, for instance, looks optimistically at coal as their energy future. I was in the formerly Soviet republic of Georgia during an early period of collapse and helped identify energy sectors that needed to get through the coming winter. It was just a horror story. We were looking at how

to find fuel just so ambulances could run.

I began to feel that the world is my pearl, and I have the power, unlike most people, to make things happen. So it's got to be people like me. Then I began asking myself how I can repay the world.

Q. *So you moved into solar energy as your payment?*

I guess so. I just grabbed the opportunity when it went by.

The initial solar opportunity was provided by David Blecker, of Seventh Generation Energy Systems, who was working at MSB at the time. He had a small state grant to analyze solar electric systems, but didn't have the time to do the work. He mentioned that he'd have to return

the grant unless someone else agreed to pick it up.

Q. *What things are you trying to make happen at the moment?*

Today, fossil fuels, especially natural gas, heat our homes, but how are we going to heat them in the future? I'd like to combine solar electric and solar thermal (for heating water) with efficient ground source heat pumps. We could have zero energy homes, particularly multi-family homes.

Mark Daugherty [who serves on RENEW's board of directors] and I formed a new company, Wisconsin EcoDevelopment, LLC, to bring the concept into reality. We want to roll many sustainable choices into the vision of sustainable villages. Sustainable villages incorporate energy efficiency, renewable energy, working from home, on-site food production, shared work, and mostly a real sense of community.

Q. *You can accomplish all of those laudable goals all at once?*

Co-housing serves as the nucleus for the community. Legally, co-housing is a condominium association. Each condo will have all the usual amenities. Co-housing includes a larger building with a kitchen where people can eat together if they want to. It could have guest rooms, workshop, and kid's play rooms for instance. The building would be public space, almost like a town square in older communities.

Q. *At what cost?*

From an individual's financial point of view, a "village condo" unit might cost more than a standard condo because the individual would also be contributing toward the community building and owning part of a good-sized parcel

of land. So with sustainable co-housing you get much more than a typical condo. You get a sustainable lifestyle, an amazing community, and all the support that the community provides. A critical goal is to use cars less. You can work at home. Grow some of your food at home. Have shared cars. And have fun at home rather than having to always drive somewhere.

For large commercial projects, like a co-housing project, significant federal tax credits and Focus on Energy incentives are available. The federal government is scared about fossil energy – that is why they are offering the solar tax credits. To maximize the finances on a multi-family residential project, however, we could look to a third party, an outside investor who would own the equipment to generate the space heat, air conditioning, and hot water needs. The investors would capture all the tax credits and incentives.

Condo owners would pay utility bills, but to the third-party owners of the heating and cooling utility. At some point when the tax credits end for the investors, ownership of the generation systems would revert to the condo association. From that point onward, the condo owners would pay only the operation and maintenance cost for their heating and cooling system. This arrangement would take the HVAC costs out of the condo's price. This could serve as a model for any condo development.

And when times get tough after the end of cheap oil, you won't be able to put a high enough value on a tight community with cheap renewable heating and cooling.

Q. *Are you optimistic for a solar future?*

I'm optimistic. We can see the future as doom and gloom or fun challenges that will get people working on solutions at good-paying jobs and supporting their families.

Solar will go from fringe to mainstream this decade. Worldwide it will be growing as fast as it can for decades to come.

I don't envision large solar generation farms, like wind farms, though a few exist in Europe. Instead I see all the unused roof space where solar just makes sense.

The customer's cost for a solar installation will be valued at the cost of purchasing the same amount of electricity. As electricity prices rise, a solar installation becomes less costly, so, yes, I'm optimistic for solar's future.

Q. *Do current policies and financial incentives like tax credits and grants from Focus on Energy help stimulate installations?*

Of course, but the incentives need to be long term. However, as energy costs continue to climb, as I just said, the relative cost of a renewable installation declines. Consequently, the incentives could be ramped down slowly over many years and still provide the reassurance to stimulate more installations.

We can do much more as individuals to conserve or produce electricity. Most importantly, we need to believe in renewables and energy efficiency and integrate them into our lives, our jobs and our investments. We can take simple steps, like inflating the tires on our cars. If I were a kid, I'd set up a stand, like a lemonade stand, to inflate your tires to the proper pressure for a buck.

We also need to stop blaming big oil and their profits. Blame should have been placed 25 years ago — on Reagan and everyone who didn't take energy conservation seriously. Now is time for personal action, not scapegoating.

Q. *You sound a bit passionate about all of this.*

I am. And I am so lucky to be practicing my passion.✧

U.S. Farm Digesters Enjoy Growth Spurt

Adapted from *AgStar Digest*
Spring 2006

Over the past two years, the number of digesters has more than doubled due to a diverse array of national, state, and local activities to market, cost share, and reliably develop operational systems.

Digester Technology Profiles

The success rate of installed systems has been extremely high and is currently led by a growing number of engineering and equipment supply companies. European-style systems are also emerging in the U.S. market. The majority of commercially operating systems are conventional plug flow, vertically mixed plug flow, and complete mix reactors (including covered lagoons) operating at mesophilic temperatures, and covered lagoons operating at ambient temperature. Although the majority of systems are still farm owned and operated using only livestock manure, innovative approaches are also emerging. These include commingling of high-strength organic wastes to increase gas production per unit volume of reactor, third-party owned/operated centralized or regional plants, and direct gas sales to utilities that then produce

power for their service territory. The majority of these systems are found in the dairy industry in the Midwest, West, and Northeast. Pig industry digester clusters are found in Texas and Utah. These systems are estimated to produce 248 million kilowatt-hours annually.

Incentives for Growth

A number of elements have emerged to increase the deployment rate of these digester systems. For example, grants awarded under Section 9006, Renewable Energy and Energy Efficiency, of the 2002 Farm Bill have been the primary method for farms to partially fund installation of commercially proven livestock waste digestion technologies. Since 2003, a total of about \$25 million has been awarded for anaerobic digestion of livestock manures.

State programs have also provided funding opportunities such as the California Energy Commission, the Pennsylvania Harvest Program, the Wisconsin Focus on Energy Renewable Energy Program, and the New York State Energy Research and Development Authority.

Some of these programs are still active and some have now shifted to evaluating energy, economic, and environmental performance of operational systems.

The AgSTAR program has coordinated with these agencies in a number of areas in developing these programs and providing technical assistance.

Additionally, the AgSTAR program and the Association of State Energy Research and Technology Transfer Institutions are jointly developing a protocol to provide a standardized method for conducting digester performance assessments. The U.S. Department of Agriculture, U.S. Environmental Protection Agency (EPA), a number of university biological engineering departments, and digester system designers are involved in the development of this protocol.

State Energy Agencies

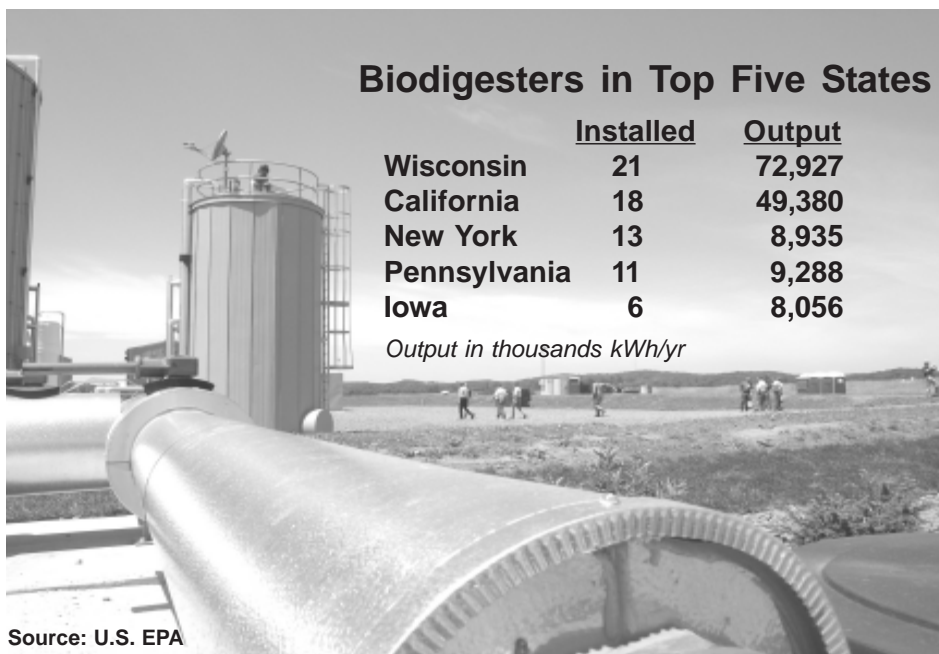
State energy legislation has played a significant role in restructuring methods by which farms are paid for the renewable energy they produce from digester systems. This legislation has focused on net metering as a way of providing a fair market for biogas-generated electricity. Net metering has reduced a key market barrier imposed by conventional utility rate structures on grid-interconnected, independent power producers that has impeded the financial performance of distributed generation from digester technology. This has resulted in the lack of private financing for these systems. Currently, net metering legislation has been enacted in New York and Pennsylvania and is under development in California and Maryland.

Various electric utilities have also created green power programs that are favorable for renewable base load generation technologies such as anaerobic digesters. For example, We Energies, Wisconsin's largest utility, received authorization from the Public Service Commission of Wisconsin (PSCW) to significantly expand its renewable energy pro-

Biodigesters in Top Five States

	<u>Installed</u>	<u>Output</u>
Wisconsin	21	72,927
California	18	49,380
New York	13	8,935
Pennsylvania	11	9,288
Iowa	6	8,056

Output in thousands kWh/yr



Source: U.S. EPA



Dairyman Lee Jensen (left) talks to a radio reporter at the dedication ceremony for the Five Star Dairy near Elk Mound, Wisconsin, outside of Eau Claire.

grams. Among these programs, the PSCW approved a new biogas buyback rate, which pays 8.0¢/kWh for on-peak energy and 4.9¢/kWh for off-peak energy to customers who generate electricity from anaerobic digester technology using waste from animal feeding operations, industrial food processing, or municipal wastewater treatment facilities.

Central Vermont Public Service also offers the CVPS Cow Power™ program for customers who want to support renewable energy and Vermont dairy farms. By enrolling in the program customers will help support Vermont dairy farms that develop anaerobic digesters by paying a small premium on their electric service for renewable energy. In turn for every kWh requested by customers and provided by a Vermont farm, CVPS will pay the farm-based generator the market price for energy plus the Cow Power™ charge of 4¢ for the energy.

Carbon credits have also emerged, and the first U.S. dairy greenhouse gas reduction contract has been signed where the dairy is paid about \$2/ton of CO₂ reduced annually.

Indeed, these are exciting times for anaerobic digesters and farm-based

power production, as well as for other renewable energy resources. Rising energy costs, reliance on imported fossil fuels, and energy security suggest that expanded efforts are needed to realize the full potential of domestic renewable energy resources. A recently completed AgSTAR analysis and upcoming report—Market Opportunities for Biogas Recovery Systems at Animal Feeding Operations—evaluates the anaerobic digestion market, its energy production potential, greenhouse gas reduction opportunities, and other environmental benefits that are available from domestic livestock manure resources. About 7,000 farms could use anaerobic digestion cost-effectively and provide about 700 megawatts (MW) of distributed energy to rural areas while reducing greenhouse gas by about 1.3 million metric tons (MMT) of methane (CH₄), the equivalent of 30 MMT of carbon dioxide (CO₂). This would be equivalent to removing 4.7 million cars from our highways.

Digester Costs

The cost of anaerobic digestion for biogas production and utilization will

vary with system type and size, type of livestock operation, and site-specific conditions. To provide some preliminary guidance with respect to expected cost, the AgSTAR program has performed a series of analyses to determine the relationships between capital cost and size for different types of operating digesters for dairy and swine manures with internal combustion engine-generator sets. Results of these analyses in combination with other information are displayed through a link at www.epa.gov/agstar.

Wisconsin Leads Nation

Wisconsin leads the nation in the number of installations -- 21 biodigester installations funded through grants from the USDA, the Focus on Energy program (www.focusonenergy.com), or a combination of both -- producing 72,927,000 kWh annually.

Focus on Energy provided nearly \$500,000 in financial assistance, as well as technical assistance, to nine Wisconsin projects: Clover Hill Dairy (Fond du Lac County), Dairy Dreams (Kewaunee County), Green Valley Dairy (Shawano County), Holsum Dairy (Calumet County), Lake Breeze Dairy (Fond du Lac County), Redtail Ridge (Fond du Lac County), Quantum Dairy (Waupaca County), Suring Community Dairy (Oconto County), and Vir-Clar Dairy (Fond du Lac County).✪

About AgSTAR

The AgSTAR Program is a voluntary effort jointly sponsored by the U.S. EPA, the U.S. Department of Agriculture, and the U.S. Department of Energy. The program encourages the use of methane recovery (biogas) technologies at confined animal feeding operations (CAFOs) that manage manure as liquids or slurries. These technologies reduce greenhouse gas (methane) concentrations while achieving other environmental benefits. For additional information about the AgSTAR program, visit the program's Web site at www.epa.gov/agstar.✪

Renewable and Energy Efficiency Events

Aug. 12-13, 2006	Illinois Renewable Energy and Sustainable Lifestyle Fair. Oregon, IL. Workshops and displays will demonstrate electricity production and storage, heating, transportation, yards and gardens, environmentally friendly personal and household care items, foods, lifestyles, and more. Sponsored by Illinois Re-newable Energy Association and Illinois Solar Energy Association. More information at www.illinoisrenew.org .
Sept. 9 -10, 2006	The Energy Expo 2006. Salon, IA. Workshops on renewable energy, energy efficiency, sustainable living, green building, utility issues and perspectives; exhibitors from businesses, non-profits & state agencies, alternative fuel vehicles, electric car displays and demonstrations of solar and wind power and other energy technologies. Sponsored by Iowa Renewable Energy Association. More information at www.irenew.org .
Sept. 12, 2006	Energy and Environmental Forum: Energy Transition 2050. Monona Terrace, Madison, WI. The forum will be the venue for sharing ideas on technologies, policies and practices to reduce CO2 emissions. The event will include presentations on the role of coal in a low carbon economy, regional roadmaps for the energy transition, and the next phase in the region's booming bio-economy. Sponsored by Energy Center of Wisconsin, Midwest Governor's Association, and Wisconsin Public Power, Inc. More information at www.ecw.org .
Oct. 3, 2006	Customers First! Coalition Fourth Annual Energy Conference. Madison, WI. More information at www.customersfirst.org .
Oct. 18, 2006	2006 Sustainability and Energy Efficiency Leadership Conference. Monona Terrace, Madison, WI. Sponsored by Wisconsin Green Building Alliance. More information at www.wgba.org .
June 15-17, 2007	Renewable Energy and Sustainable Living Fair. Custer, WI. The world's oldest and largest fair of its kind. Sponsored by the Midwest Renewable Energy Association. More information at www.the-mrea.org .

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