

Section 10: Wind Power for Farms

1. **Introduction**
2. **"Wind Energy for Your Farm or Rural Land."** AWEA fact sheet. <http://www.awea.org/pubs/factsheets/WindyLandownersFS.pdf> .
3. **"Harvesting the Wind: What landowners need to know about attracting wind energy developers to their land in North Dakota."** The Energy and Environmental Resource Center, University of North Dakota, Grand Forks, ND.
4. **"Rural Benefits of Wind Power."** Windustry Project, last updated August 2002. <http://www.windustry.com/opportunities/rural.htm>
5. **"Wind Energy: A Landowner's Perspective."** Henning Hansen. Windustry Project, last updated May 2002.
6. **"Wind Farming: A New Cash Crop in Iowa."** AWEA fact sheet, www.AWEA.org.
7. **"Kas Brothers Plant 25-Year Cash Crop This Season: Wind Power."** Windustry Newsletter, Spring 2001.
8. **"MinWind 1 & 2: Innovative farmer-owned wind projects."** Windustry Newsletter, Fall 2002.
9. **"Wind Energy Easements: Legal Issues."** Robert R. Nardi and John H. Daniels, Jr. www.windustry.org/opportunities/easements.htm
10. **"Farm Bill Section 9005."** Environmental Law and Policy Center of the Midwest. Fact Sheet, August 2002.
11. **Memorandum** from Howard Learner from the Environmental Law and Policy Center of the Midwest regarding the 2002 Farm Bill.

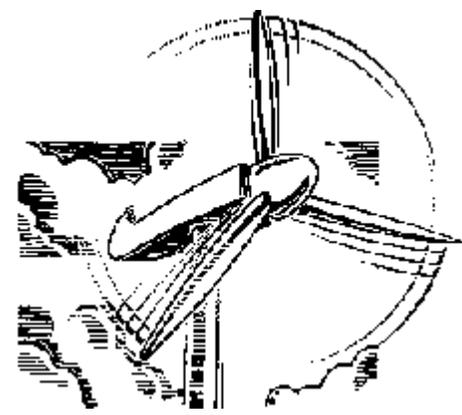
Wind Power for Farms

For people with a relatively small amount of land and an interest in wind power, a small-scale turbine is appropriate to offset the property's power usage or generate slightly more than is used on the property to sell back to the utility with a net metering agreement. For landowners with a lot of land, say hundreds or thousands of acres, however, leasing land for utility-scale wind turbines might look more attractive.

What follows are several fact sheets with information about wind farms from the landowner's perspective. Case studies are presented which demonstrate different ways that wind power can be developed (co-op versus wind developer, farmer-owned, etc.). A document describes the basic process of creating easements on ones land for wind power development. Summary information about the 2002 Farm Bill and its effects on renewable energy projects is also presented.

While there is much more information available, what is presented here should answer your basic questions about what it means to lease your land for wind power development and what steps you should take to learn more.

While the wind potential in Ohio does not rival North Dakota, Texas or other high-wind states, it is likely that Ohio will soon become home to wind farms as Michigan, New York, Pennsylvania, West Virginia and Illinois have. The technology has developed such that installing utility-scale wind turbines is economical even in marginal wind regimes. A savvy landowner will begin researching the options now, before the turbines start sprouting!



Wind Energy for Your Farm or Rural Land

Introduction to Wind Energy

Although they are still not common compared with the farm water-pumping windmills of yesteryear, modern wind electric turbines are slowly becoming a more familiar sight around the rural United States today. These space-age machines, which resemble giant airplane propellers, convert part of the energy contained in the wind into utility-grade electricity that can be delivered to, and used by, homes and businesses.

Wind electric turbines vary widely in size, from machines a few feet across that produce only enough electricity to light a few bulbs and are used to charge batteries, to structures bigger than a Boeing 747 that can generate the equivalent of the needs of hundreds of homes. A typical 1.5-megawatt (MW) machine will produce perhaps 3.5 million kilowatt-hours (kWh) annually, or about as much electricity as 350 average American households use.

Wind energy has been the world's fastest-growing energy technology (on a percentage basis) for a decade. In 2000, about 3,800 MW of new wind energy capacity was installed worldwide, at an investment cost of roughly \$4 billion. In the U.S. alone this year (2001), some 1,500 MW of new wind capacity will be built. Even so, the long-term potential of wind energy—hundreds of thousands of megawatts in the U.S.—is barely being scratched.

Why Wind Energy?

There are many compelling reasons why wind energy development on your farm or rural land, and that of your neighbors, can make sense:

Income Diversification for You: Wind energy is a new kind of "crop," that thrives under different weather conditions than agricultural crops. As with other crops, you devote a portion of your land to it and it provides income, but since it depends on different weather, it can help reduce the variation of your overall income stream.

Dollars in Your Pocket: Leasing the wind rights on your land to a company that develops utility-scale wind projects can be quite profitable. One way to look at this: your annual income from a single 1.5-MW wind turbine will be perhaps \$3,000 to \$4,000 per year (depending upon how much electricity is generated), and only about ½ acre will be used to site the turbine. Another way: since turbines cannot be installed right next to each other because they would "shadow" each other, a total of 50 to 75 acres must be dedicated to each 1.5-MW turbine. Your income from the wind rights on that land will amount to \$50 to \$80 per acre—while 98% or more of it will remain available for farming or ranching!

Dollars for Your Local Community: Wind energy development in your area can bring a significant boost to the local economy, through:

- Property tax revenues (in southwestern Minnesota, wind plants provide about \$1 million in property taxes per 100 MW of installed equipment).
- Skilled jobs (on average, a wind farm needs one skilled operations and maintenance—O&M—worker for each 6 MW of installed capacity). Skilled workers provide a healthy economic base for local communities.
- Landowner royalties and leases, as previously mentioned.

Cleaner Air and Water: Wind energy is one of the cleanest energy options available today. It doesn't pollute the air and water, and it doesn't produce waste that must be stored or disposed of. We can use wind power on a large scale for centuries, without worrying about how it will damage our health or affect future generations.

Facts and Tips for Owners of Windy Land

Many landowners in windy parts of the country are becoming interested in the possibility of leasing or otherwise profitably making their land available for wind farm development. Here are answers to a few of their most frequently asked questions.

What is a wind power plant?

The most economical application of wind electric turbines is in groups of large machines (600 kilowatts, or kW, in generating capacity and higher), called "wind power plants" or "wind farms." For example, a 107-megawatt (MW) wind farm near the community of Lake Benton, Minn., consists of turbines sited far apart on farmland along windy Buffalo Ridge. The wind farm generates electricity while agricultural use continues undisturbed.

Wind plants can range in size from a few megawatts to hundreds of megawatts in capacity. Wind power plants are "modular," which means they consist of small individual modules (the turbines) and can easily be made larger or smaller as needed. Turbines can be added as electricity demand grows. Today, a 50-MW wind farm can be completed in 18 months (including resource assessment).

How much energy can wind realistically supply to the U.S.?

Wind energy could supply about 20% of the nation's electricity, or 600 billion kilowatt-hours (kWh) annually, according to Battelle Pacific Northwest Laboratory, a federal research lab. Wind energy resources useful for generating electricity can be found in nearly every state.

U.S. wind resources are even greater, however. North Dakota alone is theoretically capable (if there were enough transmission capacity, storage capability, etc.)

of producing enough wind-generated power to meet more than one-third of U.S. electricity demand.

Is my land windy enough for a wind farm?

Just because the wind blows strongly from time to time does not always mean that the land is suitable for a wind farm. Wind turbines do not operate efficiently in turbulent, swirling gusts of wind. They operate best in steady winds of an average speed of at least 6 meters per second, m/s (13 miles per hour, mph). Also, it's important to understand that the energy available in the wind is a function of the cube of its speed. A site with 16-mph average winds, all other things being equal, will generate nearly 50% more electricity than a site with 14-mph average winds, because the cube of 16 (4,096) is 49% more than the cube of 14 (2,744). Such a difference in available energy will, in turn, dramatically affect the cost of a wind project and its competitiveness with other energy sources.

Local weather data available from airports and meteorological stations may provide some insight as to averages. You can also look up the wind maps for your state on the National Renewable Energy Laboratory Web site, at <http://rredc.nrel.gov/wind/pubs/atlas/>. These maps are very general, however, and local variations in the terrain can substantially increase or decrease a site's wind potential. You may eventually want to install your own anemometer, or monitoring device, to record the site's wind characteristics.

What other factors would attract a developer?

A good wind resource alone is not enough to attract a developer to a site. Several other conditions must be present for a wind farm to be viable and profitable. These include:

- access to transmission lines. You may want to determine how close your land is to a substation and to high-voltage power lines.
- a market for the electricity produced. State legislation, customer demand for green power, and utility interest in getting electricity from wind as a hedge against volatility in prices and supply of natural gas, are among the factors that create a market for electricity produced from wind farms.

If your land is suitably windy, if your land is located next to transmission lines, and if there is a growing market for renewable energy in your state, it is likely that your land will be very attractive to developers. Some developers may be interested in securing access to land even though they may not proceed with the development of a wind farm until other issues (regulatory, economic, market access, transmission) are resolved.

What homework should I do before contacting a developer?

If you think you own land that would be attractive to a wind farm developer, you should carefully think through the various issues that you want discussed and resolved in any agreement you negotiate. These include the amount of land you are willing to see committed to wind energy and the length of time for which it would be committed, the

amount and type of the payment you would receive, provisions for withdrawing from the contract (either by the developer or yourself), and many other issues. For guidance on these points see "Wind Energy Easements Legal Issues," published by Windustry and posted on Windustry's Web site at <http://www.windustry.org/opportunities/easements.htm>.

You should also think about what type of business arrangement you want to pursue. As is usual in business, there are low-risk options that offer relatively low rewards, and higher-risk options that offer higher rewards. The lowest-risk and simplest arrangement is to sign a lease or other agreement with a developer, and let the developer handle all of the other responsibilities and risks. The highest-risk approach is to become a developer yourself, assessing the wind resource, selecting the turbines, arranging for construction, and providing or contracting for ongoing operations. In between, there are a number of other possible options, including partnerships and cooperatives. You can learn more about the alternatives from Windustry at <http://www.windustry.org>.

Are there other wind farms in my state?

A convenient way to see whether wind farms have been built in your area or state is to look at the clickable state-by-state map maintained by the American Wind Energy Association (AWEA) on its Web site at <http://www.awea.org/projects/index.html>. The map provides an estimate of the overall wind power potential in the state, a list of projects that are in operation, including the developer and the power purchaser, and a list of proposed projects. The information is updated on a regular basis.

Would my community welcome a wind farm?

Surveys and polls usually show strong public support for wind farms. Surveys have also found that this support tends to become even stronger once the wind turbines are installed and operating—modern wind turbines are very quiet and graceful in appearance, require no fuel shipments or pipelines, and produce no smog or other air pollution like most power plants. However, some members of your community may have questions and concerns about wind farms, especially if there are none in your area yet. An important factor in the successful development of a wind farm is early involvement of the community in the process. This can be in the form of town meetings with informational presentations by wind energy experts and by the developer.

How much land is taken up by a wind farm?

Wind turbines and access roads occupy about $\frac{1}{4}$ acre per turbine (for a 750 kW turbine), or less than 3% of the land area in a typical wind farm. The remaining land can continue to be used as before for farming or ranching. Wind turbines are spaced apart from each other in different configurations depending on the topography of the land and the size of the turbines (in flat land, turbines are spaced a number of rotor diameters apart so that they do not "shadow" each other—the larger the turbine, the larger the spacing). Cables

carrying the electricity run underground from the wind turbines to the substation and to the grid, and therefore do not interfere with the landscape or farming activities.

What are the requirements for installing wind turbines?

Most requirements will be local zoning requirements. Unless you are developing the wind farm yourself, the developer will secure the necessary permits. You may want to ask the company about the various permits likely to be involved regarding the wind farm on your land.

To ensure maximum safety and minimize the chances of a noise problem, many developers place wind turbines at least 500-1,000 feet from houses and 150-250 feet from non-participating landowner property lines.

An environmental impact assessment (EIA) is always recommended, even on private land. This will help determine whether wind turbines at a specific location pose any environmental concerns, whether during the construction phase or their operation. Environmental assessments can help clarify any concerns members of your community may harbor, for example about potential noise or impacts on wildlife (two concerns that are often voiced). An EIA will confirm that today's large wind turbines are very quiet (at a distance of 600 feet or more, a wind turbine is no noisier than a kitchen refrigerator) and can determine whether any local bird species might be at risk from the turbines (usually this is not the case).

Where can I find information about developers?

AWEA's Web site provides a listing of developers that are members of the association. The listing has contact information for each company and links to the Web sites of each developer. Go to <http://www.awea.org/directory/developers.html> to access the listing. This list can be a good starting point for your research.

I'm more interested in a small wind turbine to generate some of my own electricity. How can I find out more about that?

For information on small wind systems to power a home, ranch, farm, or business, see the Small Wind Turbine section of AWEA's Web site at <http://www.awea.org/smallwind.html>.

What can I do to help expand the market for wind energy?

To help ensure there is a growing market for electricity from wind, you can contact your elected representatives and ask them what steps they are taking to promote wind power in the nation and in your state. When you contact them, be sure to point out that you would stand to benefit from the development of wind farms in your area. To see whether your state has enacted legislation to promote renewable energy see AWEA's Inventory of State Incentives for Wind Energy at <http://www.awea.org/pubs/inventory.html>

You can also contact your local utility, and ask whether they have any plans to buy electricity from wind farms or to offer a "green power" option including wind energy to their customers.

Contact AWEA for more information on organizations that are promoting wind power in your state and nationwide:

American Wind Energy Association
122 C Street, Suite 380
Washington, D.C. 20001
(202) 383-2500; (202) 383-2505 (fax)
windmail@awea.org

10 Steps in Building a Wind Farm

This general information about the process of wind farm development may be useful both for owners of windy land and for new companies or individuals seeking to enter the wind farm development and operations business.

1. Understand Your Wind Resource The most important factor to consider in whether the land you own may be suitable for wind is its wind resource. A site must have a minimum annual average wind speed in the neighborhood of 11 mph to 13 mph to even be considered. Local weather data available from airports and meteorological stations may provide some insight as to averages. If your land seems promising, you will probably want to install your own monitoring devices to record the site's wind characteristics. A listing of consultants specializing in wind resource assessment can be found at the American Wind Energy Association Web site: see <http://www.awea.org/directory/consultcde.html> . More information on basic principles of wind resource evaluation can be found at <http://www.awea.org/faq/basicwr.html> .

2. Determine Proximity to Existing Transmission Lines A critical issue in developing a wind farm at a competitive cost is minimizing the amount of transmission infrastructure that has to be installed. High voltage lines can cost thousands of dollars per mile. Whenever possible, availability and access to existing lines should be considered in selecting a site.

3. Secure Access to Land Landowners, both private and public, will expect to be compensated for any wind energy development that occurs on their land. Royalty or lease agreements will need to be discussed with all parties involved. Roads, transmission equipment, maintenance infrastructure, turbines, and the like all need to be considered. Also, construction of a wind farm necessitates the use of heavy industrial equipment. Developers will need to invest in roads capable of accommodating significant weight. To do so will require the cooperation of landowners and, in some cases, the local community.

4. Establish Access To Capital Building a wind farm is not cheap. On average, wind power development costs around \$1 million per megawatt (MW) of generating capacity installed. To take advantage of economies of scale, wind power facilities should be in excess of 20 MW. Assuming the average wind turbine is rated at 750 kilowatts (kW) in capacity, this means the installation of at least 26 turbines and an initial investment of \$20 million dollars.

5. Identify Reliable Power Purchaser or Market To date, wind energy is the most cost competitive renewable energy option on the market. In fact, wind energy's cost has declined so much that it rivals many traditional power generation technologies. However, utilities will tend to purchase power from what they consider to be the cheapest and most reliable technology. In most cases today, that is natural gas. That does not mean there is not a market for wind, though. Demand for “green power” (electricity from clean sources like wind that is sold to customers at a premium price) and environmental requirements are creating buyers for wind energy and competitive rates. Before investing thousands of dollars into wind resource assessments, permitting, and pre-construction activities, a developer will secure tentative commitments from one or more buyers for the wind plant's output over 10 to 30 years of its operational lifetime.

6. Address Siting and Project Feasibility Considerations The fact that a site is windy does not mean it is suitable for wind power development. A developer needs to consider many factors in siting a project. Is there high raptor activity in the area? Are there endangered or protected species that could be jeopardized by the presence of the facility? Is the site's geology suitable and appropriate for industrial development? Will noise and aesthetics be issues for the local community? Will the turbines obstruct the flight path of local air traffic? There are quite a few environmental and social issues that will need to be addressed in the siting of a wind power facility. Wind farms can make great neighbors, but it is the obligation of the developer to work to ensure that a project proceeds in a fashion that is acceptable to regulators and the local community.

7. Understand Wind Energy's Economics There are many factors contributing to the cost and productivity of a wind plant. For instance, the power a wind turbine can generate is a function of the cube of the average wind speed at its site, which means that small differences in wind speed mean large differences in productivity and electricity cost. Additionally, the swept area of a turbine rotor is a function of the square of the blade length (the radius of the rotor's swept area). A modest increase in blade length boosts energy capture and cost-effectiveness. Financing methods can make a major difference in project economics as well. Securing significant investment capital or joint ownership of a project can cut costs significantly. Furthermore, there are federal and state incentives for which a project may qualify and which could reduce costs and encourage more favorable investment.

8. Obtain Zoning and Permitting Expertise Siting any power project can be a daunting task due to the dizzying array of social and environmental factors at play. A wind power developer would be well served to obtain the services of a professional

familiar with the regulatory environment surrounding wind power development. A listing of appropriate consultants can be found at <http://www.awea.org/directory/consultsflm.html> and <http://www.awea.org/directory/consultcde.html> . Additionally, legal counsel familiar with the local political climate may be able to help navigate the permitting process.

9. Establish a Dialogue With Turbine Manufacturers and Project Developers Every wind turbine is different despite seemingly similar power ratings. Some machines are designed to operate more efficiently at lower wind speeds, while others are intended for more robust wind regimes. A prospective wind power developer would be wise to investigate all the various considerations and compare the projected performance to that of existing machines. Anecdotal information and even the professional services of wind power developers may prove helpful. A listing of utility-scale wind turbine manufacturers can be found at <http://www.awea.org/directory/wtgmfr.html> and a listing of developers can be found at <http://www.awea.org/directory/developers.html> .

10. Secure Agreement to Meet O&M Needs Wind turbine technology has made great strides in the recent years. Today's machines are more efficient and cost-effective than ever. However, they are also more complex. Turbine availability (reliability) is a major factor in project success, and the services of professionals familiar with the operation and maintenance of wind turbines can be very valuable. Also, turbine manufacturers may offer more favorable product guarantees knowing that qualified project operators will be on site to maintain the equipment. A listing of project operators can be found at <http://www.awea.org/directory/developers.html> .

Additional sources:

Windustry:
2105 First Avenue South, Minneapolis, MN 55404
Tel: (800) 365-5441 or (612) 374-2261
Fax: (612) 374-2601
E-mail: info@windustry.org
Web site: <http://www.windustry.org>

"Wealth from the Wind"
A program of the American Corn Growers Association
P.O Box 18157
Washington D.C. 20036
Tel: (202) 835-0330
Web site: <http://www.acga.org>

"Power Harvests, The salvation of many U.S. farmers may be blowing in the wind,"
Science News, July 21, 2001; Vol. 160. No.3

"Harvesting the Wind: What Landowners Need to Know About Attracting Wind Energy Developers to Their Land in Oklahoma," EERC, University of North Dakota.

Harvesting the Wind

What Landowners Need to Know About Attracting
Wind Energy Developers to Their Land in North Dakota



University of North Dakota
Grand Forks, North Dakota



How do I attract wind energy developers to my land in North Dakota?

This question applies only to landowners interested in making their land available to wind energy developers for placement of wind turbines and to receive negotiated royalty payments. It does not apply to those interested in some form of self-generation, which involves putting excess power onto the electrical grid system.

Wind energy developers are interested in large-scale wind energy development involving large groups of wind turbines. Because of the economies of scale, most wind energy developers are not interested in participating in projects involving small-scale turbines or one or two utility-scale turbines.

What should I know before I speak to a wind energy developer?

If you contact a developer, make certain that you are well informed and knowledgeable regarding the process of wind energy development and the rights you possess as a landowner. This document is a good starting point. Several Web sites on the Internet contain educational information specific to landowners and wind energy developer negotiations. A partial list of these Web sites and wind energy developers has been included on the back page.

What are the steps leading to wind development?

Typically, wind developers need a power purchase agreement, a good wind resource, low-interest financing, and low transmission upgrade or construction costs. The steps leading to development involve prospecting for good wind sites, negotiating land lease agreements, and monitoring wind speeds.

How do I get wind turbines on my land?

The best thing that you can do is to work at the community level to get developers interested in working in your area. Economic development groups throughout the state are actively pursuing and participating in wind energy-related activities. Landowners are urged to contact economic groups in their area to learn of these activities. Getting turbines on your land is mostly a matter of the luck of the draw. When planning large wind farms, developers rely on meteorologists to decide the best locations for the turbines. The turbines are usually placed as closely together as possible to reduce the costs for wire and roads without sacrificing turbine performance by being too close to one another.

How do wind turbines work?

Wind turbines are sophisticated machines with computer controls. A typical operating sequence is as follows: On a calm day, the turbine is sitting idle, blades not spinning. As the wind picks up, it eventually reaches the cut-in speed of the turbine (usually around 10 mph). At this wind speed, the turbine blades will spin up to operating speed, usually around 14 to 29 rpm (varies by turbine model), and start generating electricity. As the wind speed increases, the generator output increases. When the wind speed increases to the rated wind speed (usually around 30 to 35 mph), the generator will be outputting its nameplate-rated capacity (i.e., a 750-kW turbine will be outputting 750 kW). As the wind speed continues to increase, the generator output will remain at the rated capacity (i.e., 750 kW) until such time as the wind speed reaches the cut-out speed (usually around 55 to 65 mph). At this wind speed, the turbine will actuate a disk brake, stopping the blades in a few revolutions, and then rotate itself 90 degrees out of the wind and park itself. If the wind speed drops to a level below the cut-out speed for a sufficient length of time, the turbine will point itself back into the wind, release the brake, and the blades will spin back up to operating speed, and the turbine will resume producing power.

How can wind be a resource to me, the landowner?

As a landowner in North Dakota, you have a resource associated with your land: the wind above it. The wind resource in North Dakota is considered the best in the country. The wind above your land can be considered a resource similar to the "mineral" resource below your land. To gain access to the wind resource, developers must first obtain permission from you, the landowner. This permission comes at a cost to the developer in the form of a lease agreement for access to and development of your land. This is similar to leasing arrangements for mineral rights when companies explore for coal or oil.

Would my land be a good wind site?

A small increase in wind speed results in a large increase in power output from the turbine, so developers want to find the windiest spots. The wind speed increases with altitude and is slowed down by surface roughness elements such as trees, rough hilly terrain, and buildings. For example, a high plateau surrounded by land with relatively low surface roughness out to a distance of 5 miles or more would be a good wind site in North Dakota. The site must also be accessible to large cranes and other construction equipment and be near the transmission grid.

What type of deal can I expect from a wind energy developer?

Land lease agreements between landowners and wind energy developers are negotiated. Specific details of binding contracts can vary from project to project. Current land lease agreements typically pay the landowner 2%–4% of the gross annual turbine revenue, resulting in a payment of \$2000 or more annually per turbine on your land. The exact amount will depend on the size of the turbine and the amount of electricity it produces each year. Several major wind energy developers are involved in wind energy development in North Dakota. You may choose to contact developers yourself. Most wind developers are more than willing to talk about wind energy with you. Most wind energy developers are also keenly aware of our wind resource and, in particular, where the wind resource is the best.

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What can I do?

Probably one of the most important things you can do, as a landowner in North Dakota regarding wind energy, is to educate yourself, be knowledgeable, and stay informed. Contact your state legislators and make them aware of your interest in and support for wind energy.

If you have questions or would like to discuss wind energy development further, please contact representatives of the organizations listed below.

Nonprofit Wind Energy Contacts (partial list)

Name	Phone Number	Web Site or E-Mail Address
EERC	701-777-5000	www.undeerc.org
Bradley Stevens, P.E.	701-777-5293	bstevens@undeerc.org
Bethany Bolles	701-777-5050	bbolles@undeerc.org
Daniel Stepan	701-777-5247	dstepan@undeerc.org
Edward Steadman	701-777-5157	esteadman@undeerc.org
ND Division of Community Services		www.state.nd.us/dcs/
Kim Christianson	701-328-4137	kchristi@state.nd.us
Joe Murphy	701-328-2697	jmurphy@state.nd.us
Darin Scherr, P.E.	701-328-1022	dscherr@state.nd.us
U.S. Department of Energy		www.eren.doe.gov/dro
Steve Palomo	303-257-4838	steve_palomo@nrel.gov
National Renewable Energy Laboratory		www.nrel.gov
Larry Flowers	303-384-6910	larry_flowers@nrel.gov
Brian Parsons	303-384-6958	parsonsb@tcplink.nrel.gov

Web Sites with Landowner Information (partial list)

Organization	Phone Number	Web Site Address
American Wind Energy Association	202-383-2500	www.awea.org
Windustry	800-365-5441	www.windustry.com

Wind Energy Developer Information (partial list)

Company	Phone Number	Web Site or E-Mail Address
Clipper Windpower, LLC	712-732-8344	www.clipperwind.com
Crownbutte Wind Power, LLC	701-663-8825	e-mail: crownbutte@uswest.net
EAPC Architects Engineers	701-775-5507	e-mail: jhaley@eapc.com
Energy Unlimited, Inc.	610-940-1994	e-mail: cwhitearg@aol.com
Enron Wind Corp.	661-823-6813	www.wind.enron.com
Enxco	760-329-1437	www.enxco.com
FPL Energy	561-691-7171	www.fplenergy.com
Greenlight Energy, Inc.	804-220-1418	www.glnrg.com
Northern Alternative Energy/Navitas	612-370-1061	www.windpower.com
Project Resources Corp.	612-331-1486	www.projectresources.net
Renewable Energy Systems, Inc.	512-708-1538	www.res-us.com
Seawest Windpower, Inc.	619-293-3340	www.seawestwindpower.com
Wind Associates	701-222-0733	e-mail: gking@midco.net

Rural Benefits of Wind Power

1. Economic Diversity - Revenue diversity for ag-based communities and Sustainable development of a new land-based industry

For Further Reference:

Economic Impact Analysis of Windpower Development in Southwest Minnesota, September 1996. Contact: Southwest Regional Development Commission, 2524 Broadway Avenue Slayton, MN 56172. Tel (507) 836-8547

[National Wind Coordinating Committee Distributed Wind Power Assessment: Draft Summary Report](http://www.nationalwind.org/subcommittees/distributed/)
<http://www.nationalwind.org/subcommittees/distributed/>

[Perspectives on an NWCC/NREL Assessment of Distributed Wind](http://www.nrel.gov/wind/library.htm#28421)
<http://www.nrel.gov/wind/library.htm#28421>

Renewable Energy in Indian Country: Options for Tribal Governments, Renewable Energy Policy Project - Issue Brief No. 10, June 1998. * How Tribal Governments can use renewable energy to meet the needs of rural electrification, economic development, environmental protection, and an expression of a commitment to balance the human and natural worlds. See <http://www.repp.org> - Search the Issue Briefs

2. Broadens the tax base

For Further Reference:

Taxing Wind Energy in Minnesota, John Bailey and David Morris, January 1995, Institute for Local Self-Reliance. See <http://www.me3.org/issues/wind/tax/>

3. Keeps energy dollars local

For Further Reference:

The Benefits of Wind Energy, NWCC Wind Energy Series No. 1, January 1997. * Wind serves as a clean, cost competitive energy source which provides economic benefits and allows consumers to reduce the risks that threaten energy markets. See <http://www.nationalwind.org/pubs/wes/wes01.htm>

The Effect of Wind Energy Development on State and Local Economies, NWCC Wind Energy Series No. 05, January 1997. * Describes the direct and indirect economic effects of wind power development through state and regional examples. See <http://www.nationalwind.org/pubs/wes/wes05.htm>

Wind Clusters: Expanding the Market Appeal of Wind Energy Systems, Renewable Energy Policy Project - Issue Brief No. 4, November 1996. * Wind clusters, one to five turbines, involve communities in their own energy development, boost local economies, and create relatively little strain on transmission and distribution systems. See <http://www.repp.org> -Search the Issue Briefs

Homepage of the Spirit Lake Community Schools and their wind energy project. Two turbines owned by the school power school buildings and generate enough revenue to build a new computer lab every year. See <http://www.spirit-lake.k12.ia.us/html/jbolluyt/WIND.htm>

Example of Benefits Seen in Minnesota

Minnesota has become a national and regional leader in wind energy, an emerging industry that has proven to be environmentally clean and technologically sound. Today, Minnesota ranks second in the nation in wind energy development. Wind energy is the fastest growing energy source in the world. Not only does wind energy provide valuable services people need and want, but also it creates economic development in the form of new jobs and new

industry and associated growth and spending in rural areas of the state. Currently there are 301 megawatts installed with approximately 50 MW planned to come online by the end of 2001.

Short Term Benefits (Construction)

- Construction and local sales dollars
- 150 jobs supported for approximately 1 year, 97-98 (Lake Benton I, 107 MW)
- 90 jobs supported for approximately 1 year, 98-99 (Lake Benton II, 104 MW)
- Engineering Contracts brought approximately \$1.5 million (1997 – 2000) to Minneapolis firms hired by utility and developers for siting applications, collection systems, transmission, roads, etc.

On-going Benefits (Operations)

- Rural Minnesota – 61 new (medium to high skilled) jobs in Operation & Maintenance, Administration and Sales
- Twin Cities – 10 jobs in Sales, Development and Industry
- Additional tourist interest and spending in Southwest Minnesota (Pipestone and Lincoln Counties)
- Multiplier effect of the money spent in a community

Landowner Revenue

- Payments for the wind easement can be one lump sum payment or annual payments – in Minnesota, most of the first contracts were lump sum, while now most are annual payments
- Typically, a landowners gets an annual payment of \$2000 per turbine if they are on the annual payment system[0]; based on typical turbine spacing, harvesting the wind can increase annual farm income by \$70 per acre
- Each 100 megawatts (MW) of new wind development in southwest Minnesota can be expected to generate about \$250,000 per year in direct lease payments to landowners

Tax Revenue

- Lincoln County 2000: \$721,324 from 155 MW (TOTAL county tax revenue was \$2,740,965)
- Pipestone County 2000: \$532,696 from 113 MW (TOTAL county tax revenue was \$3,574,752)
- This additional income to county and township revenues lightens the tax load on residents; so there are more dollars available for spending on goods and services in the community

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Last Updated: August 21, 2002

Wind Farmer Feedback

WIND ENERGY - A LANDOWNERS PERSPECTIVE

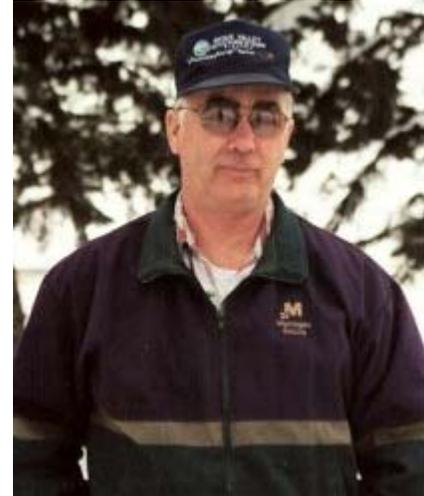
By Henning Hansen

I have put together some of the most frequently asked questions by landowners and farmers when wind generating companies come to an area.

I hope this information will answer some of the questions you may have about wind generation. As a landowner in NSP's 1107 mw Lake Benton wind farm we had a lot of these same questions.

Will wind towers ruin my farm?

As a farmer with tillable land you wonder how much these towers will cut up your fields. Will you be able to farm close to the towers or will there be a lot of idle land around the towers that will grow up to weeds? The land around the towers that is not farmed is actually a very small amount. The land used to access the towers is covered with gravel and is at the same level as the farmland around them.



Will the roads between the towers cut up my farm?

It is actually very easy to farm up to the road lift your equipment drive over the road and then lower your equipment. The roads pose a very small inconvenience to the farmer. With a little extra effort when the farmer sprays his fields he can spray each side of the road and around the towers and keep all the weeds down.

If I live on the farm will they make a lot of noise?

The towers are required to have a setback from residences of 1350 feet. This may vary from state to state or even county to county according to state law or county zoning ordinances. The turbines make a sound as they spin and from system cooling fans. Noise emissions have to meet a requirement of no more than 45 decibels at a residence, which is similar to street traffic or room conversations. The key to controlling noise emissions is by design, siting, and proper construction of the blades. In actuality at one-fourth mile from the turbines the noise they make is not very noticeable and is not an inconvenience to the resident.

Will it be safe to farm close to the towers?

There is no danger of farming up to the towers. All electric lines are underground, so there is no chance of hitting overhead lines or poles. There are no guy wires from the towers so there is no danger of hitting and damaging the towers. With the gravel road and right away around the towers you are not close enough to do any damage.

Will the towers raise my property taxes?

The answer to that is no. The opposite of that is probably true. There will probably be a tax on the towers, paid by the owners of the towers. It depends on state law on how they are taxed. The tax paid on the towers should actually lower the overall taxes paid on the real estate because of a larger tax base in the county.

How big will the towers be?

At the base each wind turbine foundation is a 37x37x3 foot slab of concrete which is buried underground with a 15.5 foot circumference by 6 foot pier which extends out of the ground 4 feet. The reason for the large part of the base being underground three feet is that it is in the contract that if a tower is abandoned by the company they have to clean up the land and put it back to its natural state and all concrete has to be removed to a depth of three feet. By building it that way they would not have near as much concrete. During construction the wind turbine towers are bolted to the concrete pier. Each wind turbine foundation uses 415 tons of concrete. It took 60,000 tons of concrete to complete the 143 foundations in the Lake Benton area, 3675 full concrete truck loads. Enough concrete to build another Washington Monument. They used 4 tons of steel rebar for each foundation or 572 tons for all 143 turbines.

Each wind turbine uses three blades. The blades are each 76 feet long and weigh 5,566 pounds. When the three blades are assembled on the tower the rotor diameter of the wind turbine is 157 feet tip to tip, about the size of the wing span of DC-10 aircraft. The tower is a 168 foot tube. It weighs approximately 125,000 pounds.

The Z-750 kw wind turbines are the largest wind turbines manufactured in the United States. Each wind turbine stands approximately 257 feet tall at its highest tip and weighs 196,600 pounds. One 750 kilowatt wind turbine can supply the annual electricity needs of approximately 250 average homes.

As technology advances the size and efficiency of wind turbines will change.

Will the wind turbines ruin the looks of the landscape?

I guess that is a personal view of what you think the landscape should look like. The landscape will change as time and technology moves forward. The landscape today certainly looks different than it did when our grandfathers homesteaded in the area.

Will the wind turbines be an asset to the community?

The taxes paid on the towers will definitely help the community financially. The construction and maintenance of the towers and the lines will create new jobs in the area. New business will spring up to supply the company that owns the towers. In the Lake Benton, Hendricks area the company that built 23 towers is now building a headquarters for office and maintenance personnel and also a small motel for those interested in coming to the area to look at the wind farm project and also for those that are interested in investing in the project. This will bring more tourists to the area which means more money spent in the community.

How much do they pay the landowner to place towers on his land?

This is probably the first and most important question the landowner has. The amount and type of lease will vary with the different companies that want to get the wind rights lease on the land. Probably the most important thing is to go with the company that is most likely to develop the area and build the wind turbines. There will most likely be 4 or 5 companies in an area that will try to get an easement on your land for the wind rights. If you sign with a company that does not get the bid to sell the electricity, they will probably not develop the land that they have easements on. It is probably wise not to be in a hurry to sign an easement. The company that got the easements on most of the land in the Lake Benton area paid 450 dollars per acre for the wind rights and in addition to that they paid \$1200.00 per acre for the easement on all of the land they needed for the roads and area the towers set on. They also paid \$5000.00 for each tower that they constructed on the farm. To begin with they paid \$10,000 per quarter section of land for an option for easement. When the final area for development was determined, then the company exercised its option on that land and payment at the rate previously mentioned was paid. The contract gave the landowner the

option of taking the payment in one lump sum or taking it over a ten-year period at 8% interest. This was a one-time payment.

Some of the options that other companies had were to pay so much per tower per year or to pay a certain rate for a percent of the energy the tower produced.

What option would be best?

The landowner would have to know for sure how many towers would be constructed on his land and he would also need to know the output of electricity of the turbines so he could figure the income from the towers. There can be a lot of variables going this way, so the landowner should have some kind of guarantee on the number of kilowatts he would be paid for.

Do they pay more in other parts of the U.S.?

That is a question that is hard to find the answer for. I feel that what they paid here was comparable to what was paid in other areas. This is a fairly new industry that is changing all the time so it was hard to come up with any figures.

Are the companies telling us all the pro and cons of having towers on our land?

After having towers on my land for about three years I think they were honest with us on telling us what they knew about the towers on the land.

What effect will the towers have on the environment?

Wind is a clean and renewable fuel. There are no air or water emissions. However, with all power generation there are some drawbacks. Wind turbines are visible, make noise and on occasion kill birds that fly into the blades. Scientists at South Dakota State University in Brookings performed an avian mortality study on the Buffalo Ridge Wind Farm. A California Department of Energy study showed that avian wind turbine collisions were not a frequent occurrence. Farming around the towers for the past three years I have never seen a dead bird lying by a tower.

Do the companies have to meet certain environmental guidelines for an area before they can build the towers?

This will probably vary from state to state and even county to county, In Minnesota they have a state law that sets up an environmental board. This board does a study of the area and sets guidelines that the company building the towers have to follow. A few of the guidelines pertain to site, clearance-top soil protection-compaction-livestock protection- fences-drainage tile-equipment storage-roads- soil erosion and sediment control plan-cleanup-tree removal- deer watering yards-restoration-hazardous waste-public safety- wildlife protection-and noise. These are just a few of the guidelines the companies have to follow on the environmental quality plan. The board will designate a field representative to see that all guidelines are followed and also answer any questions that the company may have.

Do we have enough wind to make the towers pay?

It has been said that there is enough wind in North Dakota to produce enough energy for the whole United States. The only problem is the wind does not blow all the time.

Is there more wind on Buffalo Ridge than a few miles off the ridge?

According to studies of the wind, on and off the ridge, the wind on the ridge is seven and a half miles per hour faster.

Will towers just be built on the ridge?

I think that the Buffalo Ridge will be the first place that will be looked at for development, but I also think towers can be built other places in the state.

How much wind does it take to make the wind turbines pay?

From information that I have the wind has to average 15 miles an hour for breakeven on the 143 wind turbines in the Lake Benton area. The Buffalo Ridge area has long been known to be an excellent wind resource site and very suitable for wind power generation.

Wind project developers have found that subtle topographic elements can affect the behavior of the wind. A slight obstruction, which reduces velocity, will be meaningful, since available energy in the wind varies with the third power of speed, for instance, if the wind speed is doubled. the wind energy potential grows by eight times.

It is also important that operating wind turbines do not interfere with the performance of another by deflecting or de-energizing winds before reaching neighboring turbines. Therefore, the distance between individual turbines at this project site is a minimum of 552 feet.

With the individual foot print of each turbine only 20 feet in diameter, the entire hardware required for this project including transmission lines, utilizes only 2% of the total 4700 acres of land area which will continue to be utilized for farming.

The Department of Energy has announced that the goal of its Wind Powering of America Initiative is to provide at least 5% of the nations electricity with wind by 2020. To meet that goal, more than 5000 MW need to be installed by 2005 and more than 10,000 by 2010. The goal includes increasing the federal governments use of wind energy by 5% by 2010.

The cost of electricity from wind energy has been steadily decreasing. In 1979 it was about 40 cents per KW. NSP announced that the current levelized cost for wind energy from its 107mw Lake Benton wind farm is 4 cents per KW

I think we can see that generating electricity by wind is a growing industry and will be with us for years to come. With improving technology I think wind energy will become very competitive with all other forms of generation.

WIND GENERATION

A LANDOWNERS PERSPECTIVE

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Wind Farming A New Cash Crop for Iowa

Farmers have long used the wind for energy. From the 1880s to the 1930s, farmers installed six million windmills across the Plains, using them to pump water and to power radios and lights. When the Rural Electrification Administration came along, the heyday of the farm wind mill came to an end.



Now wind power is coming back to farmers, in a very modern way. New high-tech wind turbines, each as tall as a 20 story building and providing enough power for 200 homes, are sprouting across the American landscape.

Farmers in windy areas are discovering a new source of income. By leasing out a small part of their land to wind developers, farmers can diversify their income and stabilize the ups and downs of crop prices, with minimal disruption to their operations.

As one farmer near Clear Lake, Iowa, put it, “Now we grow corn on the ground and generate power in the air – all on the same piece of property.”

At a time when commodity prices are at record lows, the extra income from wind turbines can be critical in keeping a family farm afloat. According to a recent report by the ISU Extension Service, the average Iowa farm had a net income of just under \$6000 in 1998. Combined with \$14,000 in off-farm income, the typical Iowa farm family was not able to meet their total living expenses of \$30,000. Hog farmers were hardest hit, with an average net income of *negative* \$29,514.

Farm Economic and Financial Data – Past and Present		
	1998	1995 – 97
Net Income – Accrual Accounting	\$5,973	\$42,243
Crop Inventory – Gain or Loss	\$-12,989	\$6,769
Avg. Corn Yield (bushels per acre)	150 bu.	129 bu.
Avg. Corn Sale Price	\$1.91	\$2.56
Return on Assets	- 2 %	7 %
Value of Farm Prod. per \$1 of Expense	\$1.08	\$1.41

Source: Don Hofstrand, and William Edwards, ISU Extension Service, *The Farm Economy Downturn – Looking at the Numbers*. online at www.exnet.iastate.edu.

“No one knows how long the current farm economic slump will last. ... A protracted slump has the potential to affect the economic and social landscape of rural Iowa.”

ISU Extension Service

Wind farm developers are currently paying farmers about \$2000 per wind turbine per year to site the machines on a farmer’s property. Each turbine, with access roads, takes up about a half-acre, while the rest of the farmer’s land is available for grazing and cropping.

In 1998, a typical family farm with only three wind turbines would have actually *made more money from wind power than from crops*.

These benefits aren't theoretical – they are happening today on farms across the Midwest, with more on the way. Iowa and Minnesota are home to over 600 large-scale wind turbines, with wind developers making payments to landowners totaling over a million dollars per year. If wind power continues to grow in the region, more farmers will be able to benefit from their “wind crops.”

"I think it's one of the greatest things that ever happened. It's good for my pocketbook. It's good for the environment. And wind is replenishable; we're not digging it out of a hole in the ground."

-- Chuck Goodman, retired farmer near Alta, Iowa, with three wind turbines on his farm, quoted in *Successful Farming*

"I didn't really expect them to come all the way out here in northern Iowa to start a wind farm. But this is really great. Now we grow corn on the ground and generate power in the air – all on the same piece of property."

-- Delbert Watson, farmer near Clear Lake, Iowa, quoted in *The Christian Science Monitor*

Farmers can also supply their own power by owning and operating a farm-scale wind turbine. A variety of dependable small turbines are available.

- Livestock operations can use wind turbines off the grid, to pump water and to electrify fences, often at less expense than extending power lines.
- Farmers can take advantage of “net metering” to get the greatest value out of their grid-connected turbines. With net metering, excess electricity produced by the wind turbine will spin a farm’s existing electricity meter backwards, effectively banking the electricity until it is needed by the customer. This provides the customer with full retail value for all the electricity produced. Without net metering the excess production is sold to the utility at a much lower price.

The Iowa Energy Center currently offers low-interest loans of up to \$250,000 to individuals and organizations building alternate energy production facilities in Iowa. Over \$1.5 million is available for wind turbine projects from the Alternative Energy Revolving Loan Program (AERLP).

For more information, contact AWEA at 122 C Street, NW, Washington, DC 20001, write us at info@iowawind.org, visit our web site at www.iowawind.org, or call us at 608-241-9351.

For farm economics information, contact Don Hofstrand, Extension Farm Management Specialist, Cerro Gordo county, 515-423-0844, x1hofstr@exnet.iastate.edu.

For complete details on AERLP, contact the Iowa Energy Center at (515) 294-8819.

Spring 2001 Windustry Newsletter

Kas Brothers Plant 25-Year Cash Crop This Season: Wind Power

From one perspective, Richard and Roger Kas of Woodstock, Minnesota are typical Midwestern farmers who have grown up farming the family land with their father, William Kas. But this family has something unmistakably unique taking place on their farm. They have seventeen modern wind turbines on their land, generating enough electricity to power 4300 households, and they're about to put up two more. What is even more unique is that the Kas brothers will own these two new commercial-scale wind turbines. This is the first project of its kind in Minnesota, and possibly in the whole Midwest.

The wind development came about pretty quick in Southwest Minnesota when the legislature mandated that Northern States Power, now called Xcel Energy, contract 425 MW of wind generated electricity by 2002 in exchange for allowing nuclear waste to be stored outside the Prairie Island Nuclear Plant. Landowners signed leases giving the utility and wind development companies rights to put wind turbines on a portion of their land. The Kas family was part of this group of landowners. But they chose their developer carefully.

Roger thought, "I didn't want my land tied up without a project going on it. Once you sign something you can't do what you want." He felt that, "if someone comes to me and is ready to put a wind project on my land then let's sit down and talk." Otherwise he just felt it was a waste of time to tie his land up for two or three or five years on the option agreements. "I don't know why someone would want to do that. If you have a good wind resource it's good to be sure that a project will actually go up."

The first 17 turbines on their land were developed by Dan Juhl of Danmar Associates, and have been up and running for two years. Roger said, "Dan Juhl was here the first. And we talked, but we had an agreement that if someone else came up with a project first and made us a good offer we would go with them. There were no exclusive agreements."

While Juhl was working to put his project together he kept the Kas family up to date on the different aspects. The process took a long time. It was 1993 when Juhl installed an anemometer tower to measure the wind on the Kas farm. And it was 1999 when the 17 machines were completely installed and producing power. The machines take six acres out of crop production, on the 320 acres or half section. The life of the machines is expected to be about 25 years and power purchase agreement is 25 years.

Roger stayed with it and paid attention to the how the project came together on his land. He may not have had an equity position in the Juhl project, but he certainly had an interest in its success since his wind easement annual payments are based on a percentage of the gross revenue from each machine. "Farming the wind is not right for everyone. We're here everyday feeding the cattle and taking care of the farm, and we see the wind turbines as just a few more machines for us to take care of." In that respect, you need to learn about the machines and take care of them just as you need to know how to take care of your crops and livestock. Roger has worked in construction on and off all his life. While Dan Juhl's project was being installed on the Kas farm, the turbine manufacturer, Vestas hired Roger, for six months to work on



If a Wind Developer knocks on your door, it's up to you to know the score...

- Consult an attorney on all contracts
- Consider all development options:
 - get together with individual landowners and collectively negotiate wind rights for the broad area
 - partner with a wind developer
 - own and operate a wind farm
 - form a value-added wind cooperative
 - partner with the electric cooperative or municipal in your region

construction and machine maintenance. Roger believes that, "If you want to farm the wind, you should have the knowledge of how it all works."

Over time their business relationship grew and now the Kas brothers and Juhl have completed the planning and financing for a project which the Kas family will own. Juhl led the way on the key pieces to the Kas project like permitting, power purchase agreement, turbine selection and financing. In part because he had done it before and knew the path. But also, to help forge the way for a different type of project - one that is farmer owned and farmer built. Juhl said "This is possible on a small individual scale, but this is a commercial venture, it's not a hobby." There is no project without the power purchase agreement (PPA). This is what the capital financing is based

on.

They had to give extra information and special attention to the local bankers to bring them along and get them interested in the wind project. It was all new to the lenders. They have put 20% down and 80% was financed with the PPA as the loan guarantee. The multiple years of wind data and Juhl's project performance were evidence of for the strength of the wind resource. "Every place is going to be different and you have to work it out." Says Kas. "Some land is better for raising corn and soybeans; some land is better for wheat and other places for rice. In the same way, some land is better for wind." The wind resource has to justify the capital investment.

Kas knows he is forging the way with his project and knows that some things will be much easier for the next guy to put up a wind project. He insists that "I am not giving anyone any advice now. I can't give any advice until mine is up and running."

Wind Farmers Network

The purpose for the Wind Farmer Network is to bring together a broad range of landowners, farmers and ranchers to exchange their experiences in wind development and to educate others who would like to begin farming the wind. If you would like to join the network, please send your contact information and a brief sentence describing your wind energy interests to Windustry. Your information may be shared with other wind farmers within the network only.

Wind Farmers Network Online

The Windustry website now hosts a section called "Wind Farmer Feedback" in which wind farmers and potential wind farmers from around the country can share their ideas, questions, concerns, and advice. Please post your thoughts at www.windustry.org/farmer.

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Minwind I & II: Innovative farmer-owned wind projects

TWO YEARS AGO, A GROUP of farmers in Luverne, Minnesota began to hatch a plan to build farmer-owned wind turbines in Rock County. Their goal was to find an investment that would generate new income for farmers and have economic benefits for the local community. The rapid growth of the wind industry around the country and the great success of wind farming on the nearby Buffalo Ridge made developing wind energy a natural choice. "We wanted a farmer-owned project that would bring economic development, get farmers a return on their investment, and could use local businesses and contractors to do the work," said Mark Willers, a project leader and farmer from Beaver Creek, Minnesota.

To develop their idea of farmer-owned commercial wind turbines, the group did extensive research and settled on forming two limited liability companies (LLCs), Minwind I and Minwind II. This format was the best option because it maximized the companies' ability to use tax credits and other incentives for wind energy while maintaining some principles of cooperatives such as voluntary and open membership, democratic member control and concern for the greater community.

Sixty-six investors from the region eagerly snapped up all the available shares in both companies in only 12 days. All of the members are from Minnesota and are also investors in Luverne's ethanol plant (Corn-er Stone Farmers Cooperative), although that was not a requirement for membership. The two companies are carefully structured to give farmers the best return on their investment in the most democratic way possible. Eighty-five percent of the shares must be owned by farmers, leaving the rest available for local townspeople and non-farmers who could someday inherit shares. Each share gives the owner one vote in the company and no single person can own more than 15 percent of the shares.

Two companies were formed to take advantage of a Minnesota renewable production incentive that provides 1.5¢ per kilowatt-hour payment for wind projects up to two MW for the first ten years of production. Although they coordinate closely, they are governed by separate boards of directors, have different groups of investors and maintain

separate financial books. Willers serves as president of Minwind I and Tom Arends, another local farmer based in Luverne, is president of Minwind II. Both groups have also relied heavily on expertise from consultants to develop the actual wind project negotiate the power purchase agreement, and a team of lawyers to determine the business structure.



"We are trying to get farmer ownership of wind projects to the forefront and it has been a challenge, but with dedicated people like Mark Willers [left] and Tom Arends [right] we're making great strides." – Dave Kolsrud, Corn-er Stone Farmers Cooperative

After the shares were sold, the companies had enough capital to begin developing two nearly identical 1.9 MW wind projects. Construction is underway on both Minwind projects, the foundations were poured in mid-July and the turbines will be fully installed by the end of October. Each project consists of two Micon 950 kW turbines and all four turbines will be located on the same farm seven miles southwest of Luverne. The site was chosen because the group wanted to use land owned by one of the project's investors, and this particular farm had the best combination of wind resource and access to transmission lines.

According to Willers, the most difficult step in these projects was not finding capital for the hardware, consultants and legal fees because farmers were enthusiastic about investing from the very beginning. He believes that it is a myth that farmers do not have the money to finance projects on this scale (Minwind I and II will cost about \$1.6 million dollars each and will be paid off

in ten years). The biggest obstacle, rather, was negotiating a power purchase agreement, a crucial step to moving any wind project forward. The group not only had to find a power company that believed they were serious about building these wind turbines, but one that was willing to buy the power they would generate. Discussions with the local rural electric cooperative were fruitless due to many issues including interconnection requirements, cost, and a long-term exclusive agreement with another power supplier. Eventually, after months of negotiation, they entered a 15-year contract with Alliant Energy, which will use the power to help satisfy renewable energy standards in Iowa or Wisconsin. As with any power generation project, establishing a market for the power and negotiating a contract was crucial to allowing these two projects to move forward.

Minwind I and Minwind II are as much about economics and promoting farmer-owned enterprises as they are about developing wind energy. The companies are consciously using local materials and contractors for everything possible, including purchasing concrete from a local business and contracting with a Lake Benton, Minn. company to service the machines. Thus, according to Willers, the whole region will see economic development, while farmers get a real return on their investment.

According to Dave Kolsrud, manager of Corn-er Stone Farmers Coop, there is great potential for this project to lead to many more farmer-owned wind

"We wanted a farmer-owned project that would bring economic development, get farmers a return on their investment, and could use local businesses and contractors to do the work."

– Mark Willers

enterprises. "Wind energy is changing the landscape of rural America and we're trying to make farmer ownership of wind energy become significant enough for wind to be considered another crop," he said. And, according to Tom Arends, "wind turbines are one of the best cash crops to come along for farmers looking for new sources of income."

After the current two 1.9 MW projects are installed, Willers says that there is so much interest from area farmers and other potential investors

Something for Everyone at Wind Conference *Wind Energy: New Economic Opportunities*

WINDUSTRY, THE INSTITUTE for Agriculture and Trade Policy and a diverse steering committee are organizing a large wind energy conference to be held November 21-22, 2002 at the Minneapolis Convention Center. The conference will have four tracks: Utility projects large and small, green pricing and credit trading will be addressed in *Advancing Minnesota's Renewable Energy Objective*. An overview of wind energy and a discussion on building a wind industry in the Midwest will be part of the *Economic Development* track. Many aspects of distributed wind generation will be highlighted in *Community-based Wind*, such as what makes a good wind

site, financing wind projects and how to build community support. The practical "how to's" of wind projects will be covered in the *Citizen and Landowner Workshops*.

The conference is intended for a wide audience of rural landowners, interested citizens, tribes, utilities, developers, regulators, elected officials, economic development professionals, state agencies and advocates. The full program for the conference was recently published and is available by contacting Windustry or visiting our website. Anyone with an interest in wind energy and economic development is welcome and encouraged to attend.

MINWIND I AND II *continued*

that they have already begun researching more potential sites and the possibility of doing much larger projects. Willers hopes expansion will allow many more farmers to participate in this innovative model for wind development. "This model is a way for farmers to take advantage of economies of scale in developing wind, just like the big companies do," said Willers.

Willers, Arends, and many others have invested countless hours in developing the Minwind projects, but they believe their efforts have been worthwhile. "We've spent an incredible amount of time on this, but we needed to do it for our community and our friends who are farmers," said Willers.

To learn more about Minwind I and II and other innovative wind projects, attend *Wind Energy: New Economic Opportunities* on November 21-22, 2002 in Minneapolis. Visit the web site www.windustry.org/conference or call 612-870-3461 to receive a brochure and registration form.

Wind Workshops/Events

November 14, 2002, Cleveland, Wisconsin: Wind Symposium on Small Scale Systems. One day event for rural homeowners, farmers, and small businesses at Lakeshore Technical College. Contact Ron Fromm, Focus on Energy, 800.598.4376.

November 18-19, 2002, Dublin, Ohio: Ohio Wind Power Conference and Trade Show. A forum to explore primarily small wind systems. Contact Green Energy Ohio at 1.866.GREENOH, www.greenenergyohio.org.

November 21-22, 2002, Minneapolis, Minnesota: Wind Energy: New Economic Opportunities. Visit the Windustry web site www.windustry.org/conference or call 612.870.3461 to receive a brochure and registration form.

February 10-11, 2003, Boise, Idaho: Harvesting Clean Energy Conference III. A conference for rural landowners, tribes, rural electric utility representatives, rural economic development leaders, elected officials, and local, state, and Federal agencies. Contact Diane Gasaway at diane@wreca.coop or 360.943.4241.

About Windustry

WINDUSTRY builds collaborations and provides technical support to create an understanding of wind energy opportunities for economic development. Windustry is affiliated with the Institute for Agriculture and Trade Policy, an organization that promotes resilient family farms, rural communities and ecosystems around the world through research and education, science and technology, and advocacy.

Wind Farmers Network

THE PURPOSE of the Wind Farmers Network is to bring together a broad range of landowners, farmers and ranchers to exchange their experiences in wind development and educate others who would like to begin farming the wind. If you would like to join the network, please send your contact information and a brief sentence describing your wind energy interests to Windustry or join online at www.windustry.org/about/join.htm. Your information may be shared with other wind farmers within the network only. The network is currently under development.



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From Windustry at [<http://www.windustry.org/opportunities/easements.htm>]:

Wind Energy Easements: Legal Issues

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The following outline raises issues related to various provisions that can be found in wind energy easement agreements. Its purpose is to give you a general idea of what types of provisions might be contained in proposed easement agreements or easement option agreements that wind energy developers may present to you in an effort to obtain wind energy easements over all or a portion of your land. It is not a comprehensive discussion of the topic and is meant only to be a guide.

A wind energy easement agreement, like any easement agreement, is a legally binding agreement that needs to be carefully reviewed and understood before executing it. A wind energy easement agreement will have a long-term effect on you and your land. It will affect not only you but also future generations. It is important that you not agree to or execute any easement agreement or easement option agreement until you have discussed it with your attorney and he or she has had an opportunity to review it. It is strongly advised that upon receiving a wind energy agreement or option agreement that you take it to your attorney along with the attached outline for his or her review. When approached by a wind energy developer with a wind energy agreement or when just considering the prospects of such an agreement, the following are the some of the questions that you should ask yourself and/or the developer:

1. How much of my land will be tied up and for how long?
2. How much will I be paid and how will I receive payments?
3. Are the proposed payments adequate now and will they be adequate in the future based on what I am giving away?
4. If a lump sum payment is being offered for long-term rights, am I really being adequately compensated?
5. Does the proposed method of payment or the easement itself present any adverse tax consequences to me?
6. Are there firm plans to develop my land, or is the developer just trying to tie it up?
7. Is the developer willing to guarantee that a specific number of wind energy turbines will be built on my land by a certain date or at least willing to guarantee me certain minimum payments?
8. If payments are to be based on revenues generated by the wind energy turbines, how much information is the developer willing to disclose concerning how the owner's revenue will be determined?

9. What easement rights is the developer able to later sell or transfer without my consent, and how might such transfer or sale affect me? Will the original developer still be liable to me if the new developer or owner of the easement rights does not pay me or otherwise defaults?
10. What are the developer's termination rights? Can the developer simply terminate the easement at any time, and if so how does that effect future payments?
11. What are my termination rights and are they easily exercised?
12. If the easement is terminated either voluntarily or involuntarily, what happens to the wind energy structures and related facilities located on my land? Is the developer required to remove everything, including underground cables and foundations, and if so how soon and at whose cost?

I. General Nature of a Wind Energy Easement

- A. Gives the Easement Holder the right to the use of all or a portion of the Landowner's land for the following:
 1. For the purpose of constructing and maintaining a wind energy conversion facility.
 2. For the transmission of the energy generated by the wind energy conversion facility.
- B. These easement rights are usually exclusive to the Easement Holder.

II. Form of Agreement Granting Easement

- A. Option Agreement
 1. Provides for the exclusive right to purchase easement rights.
 2. Right must be exercised within a specific period of time. Period of time can vary from months to years.
 3. Should contain details as to what easement rights can be purchased and all terms and conditions of such easement rights. In some cases a copy of the complete easement agreement that is to be executed by the parties upon the exercise of the option is attached to the option agreement as an exhibit.
 4. Should contain legal description of the real property subject to the option.
 5. Should set forth the amount and method of payment for the option.
- B. Easement Agreement
 1. Provides for an exclusive easement or easements.
 2. Should contain the specific rights and obligations of both the Landowner and the Easement Holder.

3. Details of what these types of easement agreements usually provide for and should provide for are discussed below.

III. Wind Energy Easement Provisions

A. Legal description of the land subject to the easement.

1. Legal description should be limited to only that portion of the land that is reasonably needed for the proper exercise of the easement rights be granted.
2. Avoid grants of easements over large blocks of land when only a portion is going to be used, unless payment for the easement rights are based on total number of acres and Landowner is comfortable tying up the land.
3. Party seeking the easement may want to tie up a much land as they can get even though only a small portion of it will be used.
4. Typically the party seeking the easement will want to make use of the property as follows:
 - a. Construct on certain portions of the land the wind turbines that will generate the energy and the related physical structures including those that will convert the energy into electricity.
 - b. Install power lines or cables over certain portions of the land that will carry the electricity to the power company.
 - c. Have access from public roads to and from the land where the wind turbines and other physical structures are located.

B. Term of Easement

1. Usually the easement will be a perpetual or permanent easement and will terminate only by voluntary termination on the part of the Easement Holder or involuntary termination as a result of a default on the part of the Easement Holder.
2. Landowner should consider negotiating an easement that automatically terminates after a specific number of years.
3. Landowner should avoid automatic renewal periods.
4. Landowner should check with tax advisor as to any possible adverse tax consequences that may result from granting a perpetual easement as opposed to an easement for a specified number of years. For example, a perpetual easement may constitute a sale of land for income tax purposes.

C. Payment for Easement Rights

1. Most difficult part of negotiating easement agreement.
2. Matters to consider:
 - a. If easement agreement calls for different phases, then it may be appropriate to have

different consideration for each phase.

(i) Preliminary phase when Easement Holder is determining whether to build wind facilities on the land, or where to build them on the land or how many to build.

(ii) Construction phase

(iii) Operational phase

b. Consider the length of time the land may be tied up without any construction of a wind energy facility.

c. Appropriate to consider smaller payment amounts for portion of the easement property that can be continuously used in the Landowner's farming operation.

d. Because most easement agreements do not require that a minimum number of wind turbines be built, consideration should be given to minimum payments regardless of how many are built.

e. Be careful of payments that are based on a percentage of gross operating proceeds even if gross operating proceeds are defined as "all gross receipts from the sale of electricity generated by the wind turbines located on the land."

(i) Need to have access to power agreement between Easement Holder and power company to be able to determine what Easement Holder is being paid for the power generated by the wind turbines over time.

(ii) Power agreement may provide for larger payments to the Easement Holder in early years and smaller payments in later years, making any payment schedule calling for an increase percentage of gross operating proceeds in later years misleading.

f. Lump sum payments for long-term easement rights may have disadvantages.

g. When any method of payment is to begin when construction commences, make sure the easement agreement describes what constitutes the "commencement of construction."

h. Provision should be made for the complete reimbursement of the Easement Holder if the Easement Holder incurs penalties or is subject to reimbursement obligations as a result of the land being taken out of conservation reserve programs. Prior to executing an easement agreement, Easement Holder should review any existing conservation program contracts to determine if there will be any adverse consequences as a result of the proposed easement.

i. Landowner should consult with a tax advisor to make sure the method of payment does not have any adverse tax consequences presently or in the future.

D. Typical rights that Easement Holder will want

1. Right to conduct certain activities on the land prior to constructing any wind energy facilities. These activities may include the following:
 - a. Erection of meteorological towers.
 - b. Taking soil samples.
 - c. Release of weather balloons.
2. Right to construct and install wind energy facilities and in connection with such activity construct and install the following:
 - a. Foundations, concrete pads and footings;
 - b. Wind turbine units;
 - c. Guy wires, support fixtures, anchors, and fences;

- d. Buildings needed for maintenance of wind turbine units and maintenance and storage of related equipment;
 - e. Electrical transformers and energy storage facilities;
 - f. Electric transformers, electric distribution and transmission towers and lines either above ground or underground;
 - g. Substations or switching facilities for the purpose of connecting to transmission system;
 - h. Private roads providing access from public roads to the wind energy facilities.
3. Most easement agreements will have a catch-all provision which will give the easement holder the right to engage in all other activities reasonably determined to be necessary or useful to accomplish the general purpose of the easement. Landowner should avoid such a catch-all provision.

E. Typical Rights Reserved by Landowner

1. Right to use land for grazing.
2. Right to harvest crops.
3. Right to conduct other farming or agricultural activities on the land.
4. Right to construct improvements on parts of the land if necessary and incident to farming or other agricultural activities.
5. All of the above rights are usually subject to such activities not interfering with or creating a risk of damage to or injury to the wind energy facility or the Landowner or Landowner's livestock.
6. Landowner should take great care in reserving any rights that are unique to the Landowner's farming operations.
7. Any of the above rights should be exercisable by Landowner without the consent of the Easement Holder or if consent is required, then such consent should not be unreasonable withheld.

F. Minimum Duties and Obligations of Easement Holder

1. Keep the land free from liens such as mechanic liens.
 - a. Usually require the immediate removal by Easement Holder of any such liens.
 - b. May allow the Easement Holder the option of contesting the validity of the lien.
 - (i) This right to contest should be at no cost to Landowner.
 - (ii) As a minimum Easement Holder should indemnify Landowner against any costs, expenses or damages Landowner incurs as a result of such lien.
 - (iii) Landowner may want to require Easement Holder to post bond or escrow sufficient proceeds to cover the cost of removing the lien if Easement Holder is going to contest the lien.
 - (iv) Landowner may be required to cooperate with Easement Holder if such cooperation is needed in order to remove lien.

2. Comply with all federal, state and local laws.
3. Obtain and comply with all permits.
 - a. Should be at no cost to Landowner.
 - b. Landowner may be required to cooperate with Easement Holder in seeking permits.
4. Not use, store, dispose or release hazardous substances on the land.
 - a. Easement Holder may be allowed to use hazardous substances in its normal business operations provided such use is not harmful to Landowner and is in full compliance with all applicable laws.
 - b. Easement Holder should indemnify Landowner with respect to any claims made against Landowner resulting from such hazardous substances.

G. Minimum Duties and Obligations of Landowner

1. To allow the Easement Holder the quiet use and enjoyment of the land without interference so long as the Easement Holder is not in default under the terms of the easement.
2. Landowner is not to engage in any activity that would impede or decrease the output or efficiency of the wind energy.
3. Landowner is not to interfere with the wind speed or direction.
4. Not use, store, dispose or release hazardous substances on the land.
 - a. Landowner should be allowed to use hazardous substances in its normal business operations provided such use is not harmful to Easement Holder and is in full compliance with all applicable laws.
 - b. Landowner should indemnify Easement Holder with respect to any claims made against Easement Holder resulting from such hazardous substances.
5. Landowner to cooperate with Easement Holder in obtaining any necessary subordination agreements or approvals from existing lien holders.
 - a. Existing mortgages on land may require approval of easement grant.
 - b. This should be done at no cost to Landowner.
 - c. Landowner should be careful of provisions that allow the Easement Holder to payoff any existing prior lien and deduct the payoff amount from amounts owed Landowner under the easement.
6. Landowner to assist and fully cooperate with Easement Holder in obtaining land use permits, building permits, environmental impact reviews or any other approvals required for the construction or financing of the wind energy facility. Such assistance and cooperation should be at no cost whatsoever to Landowner.

H. Taxes and Utilities

1. Easement Holder should be required to pay any increase in real estate taxes as a result of the installation of the wind facility.

2. Easement Holder should not be required to pay increase if due to improvements made by Landowner or result from an increase in the underlying value of the land.
3. Easement Holder should be required to pay and personal property taxes levied against any wind facility.
4. Easement Holder should be required to pay all water, electric, telecommunications and other utility service used by the wind facility.

I. Easement Holder's Assignment Rights

1. Easement Holder normally wants complete right to assign all or any portion of their easement rights to another without the need for consent or approval of the Landowner.
2. Such a right of assignment can include the following:
 - a. Right to finance wind power facilities by having a mortgage placed on the Easement Holder's interest.
 - b. Right to grant co-easements or subeasements.
 - c. Right to sell or otherwise transfer the easement to another party.
 - d. Right to grant to a utility company the right to construct, operate and maintain electric transmission, interconnection and switching facilities on the land.
3. These assignment provisions usually allow the original Easement Holder to be released from any further obligations or duties under the easement if the party receiving the assignment agrees to assume all responsibilities of the Easement Holder.
4. Landowner should consider requiring original Easement Holder to continue to be liable for the performance of all duties and obligations under the easement after any assignment.
5. Easement Holder should be required to give written notice to the Landowner of any assignment including the name, address and phone number of the party receiving the assignment.

J. Indemnification Provisions

1. Usually will be mutual
2. Usually provide for indemnification for damages arising out of:
 - a. Any operations or activity of the indemnifying party on the land;
 - b. Any negligent or intention act or omission on the part of the indemnifying party;
 - c. Any breach of the easement agreement;
 - d. In some provisions, indemnification by the Landowner may include actions of the Landowner's tenants.

K. Insurance Provisions

1. Easement agreement should require that the Easement Holder maintain appropriate liability insurance covering all of its activities on the Landowner's land and should name the Landowner as additional insured.
 - a. The policy should contain sufficient liability limits to protect Landowner.
 - b. The policy should also provide that it cannot be cancelled without at least 30 days written notice to Landowner.
2. Easement Holder should be required to provide Landowner with yearly certificates of insurance.
3. Some easement agreements require that the landowner also have appropriate liability insurance naming the Easement Holder as an additional insured.

L. Specific Rights that may be given to Easement Holder's Lender.

1. Lender is not liable for any of the Easement Holder's obligations under the easement until such time as the lender's mortgage is foreclosed.
2. Neither the Landowner or Easement Holder can modify the easement without the lender's approval.
3. Lender has the right at any time to cure any default of the Easement Holder.
4. Landowner is required to give lender notice of any default by the Easement Holder.
5. If Landowner is entitled to terminate the easement as a result of a default on the part of the Easement Holder, the Landowner must give notice to the lender and lender must be given an opportunity to cure.
6. If lender needs to foreclose its mortgage in order to cure the default, lender must be given reasonable period of time to foreclose. With such a provision, Landowner should consider a provision that requires that any monetary default be cured by lender pending such foreclosure.
7. Upon foreclosure and the agreement by the lender to assume all of the obligations under the easement, the Landowner must recognize the lender as the new Easement Holder.
8. Landowner may be required from time to time to execute on behalf of the Easement Holder and in favor of Easement Holder's lender certificates indicating whether any defaults currently exist under the easement (estoppel certificates). Landowner may want to limit the number of times such documents need to be provided to Easement Holder's lender.
9. Easement may contain a provision that requires the Landowner to cooperate and negotiate in good faith any amendments to the easement agreement that may be reasonably necessary for any lender to effectuate or preserve its lien. Landowner should be cautious about agreeing to such a provision.

M. Condemnation Provisions

1. The easement should provide for what happens to the easement and easement rights in the event the easement property is taken by condemnation.
2. Some easement agreements provide that the parties either amend the easement agreement to relocate the wind facilities or at the Easement Holder's option terminate the easement agreement. Landowner should also have the right to terminate the easement agreement.
3. The Landowner should be entitled to receive all condemnation payments except the Easement Holder should be entitled to any amount awarded to compensate for:
 - a. The removal or relocation of the wind facility;
 - b. Loss or damage to any wind facility which Easement Holder cannot remove or is required not to remove; or
 - c. Loss of use or value of the easement.
4. The Easement Holder will want the right to participate in any settlement discussions involving the Landowner and the condemning authority.

N. Default and Termination

1. Events that normally constitute default on the part of the Easement Holder and allow for the termination of the easement:
 - a. Failure to make payments to the Landowner after written notice of such overdue payment.
 - (i) Some easement agreements provide up to thirty days written notice to Easement Holder before Landowner can terminate easement.
 - (ii) Landowner should consider a shorter period of time for written notice such as ten days
 - b. A failure to perform any other material term of the easement agreement that continues for thirty days after written notice to Easement Holder.
 - (i) If it will reasonably take Easement Holder longer than thirty days to cure default, most easement agreements allow for such additional time.
 - (ii) Any additional time granted in easement agreement should be limited, for example, not to exceed 180 days.
 - c. Easement Holder files for protection or liquidation under Bankruptcy laws.
2. Some easement agreements provide that if the Easement Holder has assigned portions of the easement to others, such other easement holders have the right to cure their pro rata portion of the default. Such a provision is not advisable unless it results in the entire default being cured.
3. Some Easement Agreements give the Easement Holder the right to voluntarily terminate the easement by simply giving the Landowner written notice of such termination.
 - a. With this type of a provision, Landowner should be allowed, as a minimum, to keep all payments made to date.
 - b. Landowner may also want to require that a termination fee is due upon such termination or that a portion of the lost future payments be paid.

- c. Landowner should be careful of any termination provision that allows the Easement Holder the right to retain a portion of the easement.
4. Every easement agreement should provide that upon termination, the Easement Holder is required to execute a quit claim deed in favor of the Landowner releasing the easement.
 - a. Obtaining a quit claim deed in an involuntary termination situation may be difficult.
 - b. Landowner should consider a provision which would allow the Landowner to terminate the easement by simply filing an affidavit with the county recorder or registrar of titles attesting to the default, the notice given to Easement Holder of said default, and the failure of Easement Holder to cure the default within the cure period.
 - c. Another option would be to allow for the Landowner to recover costs and expenses, including attorneys' fees, if Landowner is forced to go to court to obtain a release of its easement.
5. The easement agreement should require that upon termination, the Easement Holder must remove all wind facilities from the land.
 - a. Easement Holder should be required to remove the wind facilities within a specific number of days such as 90 or 180 days.
 - b. The easement agreement should specify exactly what constitutes removal considering there may be materials under ground such as footings or cables. Some agreements specify that everything above ground and to a depth of four feet must be removed.

O. Miscellaneous Provisions

1. The manner in which notices are to be given to each party.
2. The easement agreement may only be amended by a written documents executed by all parties.
3. Easement agreement is to be interpreted under the laws of Minnesota.
4. Any waiver of a term or condition of the easement agreement must be in writing and executed by all parties in order to be binding.
5. Should have a provision that provides that attorneys' fees are recoverable by a party who is forced to bring an action to enforce the terms of the easement agreement.
6. A provision which suspends performance of an obligation when the party who is to perform such obligation is unable to do so due to unforeseen events such as strikes, floods, civil disturbance, etc. Landowner should be careful when reviewing what matters are to be considered unforeseen events.
7. Landowner should be careful about agreeing to the following types of provisions:
 - a. Confidentiality provisions which prohibit Landowner from disclosing information pertaining to the terms and conditions of the easement.
 - b. Provisions that require both parties to execute such additional documents and take such action as may be reasonably necessary to carry out the intent and purpose of the easement.

- c. Provisions that require that if consent of one party is required for the other party to do something, such consent cannot be unreasonably withheld.
- d. Provisions that require the parties to convert Easement Holder's interest to whatever will qualify for tax credits, benefit or incentive for alternative energy expenditures.

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Last Updated: May 09, 2002



Farm Bill Section 9005: Funding Needed to Implement Energy Efficiency and Renewable Energy Audit Program

In May, Congress passed and the President signed the 2002 Farm Bill into law, which for the first time includes an innovative new clean energy title and other important clean energy provisions. This legislative support for renewable energy development and energy efficiency improvements is a win-win-win for rural Americans, rural economic development, and the environment.

One of the key energy provisions is Section 9005, which establishes an important new energy efficiency and renewable energy audit program for farmers, ranchers, and rural small businesses. Unfortunately, although Congress funded several programs, including Section 9006's renewable energy and energy efficiency purchasing program, Congress deferred the decision to fund other provisions, including Section 9005, to the House and Senate Appropriations Committees. To date, these Committees have not appropriated funding for Section 9005.

How Does Section 9005 Help Farmers, Ranchers, and Rural Small Businesses?

- Section 9005 authorizes the USDA to issue merit-based grants to organizations (for example, state energy or agricultural offices) to conduct energy audits to help rural Americans identify ways to cut energy costs and waste, and use more renewable energy.
 - Energy Efficiency Improvements can include more efficient motors, pumps, lighting, other systems, and energy management. For example, Wisconsin's new energy audit program for dairy farms identified and achieved energy efficiency savings of 1 million kilowatt-hours in its first eight months.
 - Renewable Energy Investments include wind turbines, solar panels, biomass energy (such as anaerobic digesters) and other clean power technologies.
- The audit program also will help farmers, ranchers and rural small businesses identify financing opportunities, including those offered in Section 9006 of the Farm Bill, to implement the recommendations made in the audit (for example, to purchase new clean power systems).

Why Does Funding Section 9005 Make Sense?

- Appropriating \$10 million in 2003 funding for Section 9005 will leverage and maximize the \$23 million in current annual funding in Section 9006 for incentives to purchase renewable energy systems and make energy efficiency improvements;
- There are no existing and comparable federal energy audit programs;
- No existing USDA rural development programs can support the 9005 audit programs; and
- Section 9005 is cost-effective for both the government/taxpayers and rural Americans because it establishes a merit-based auditor selection process, and audit recipients must pay at least 25% of the audit cost.

Please call John N. Moore at (312) 795-3706 if you have any questions.



ENVIRONMENTAL LAW & POLICY CENTER
ILLINOIS INDIANA MICHIGAN MINNESOTA OHIO WISCONSIN

MEMORANDUM

TO: All Colleagues

FROM: Howard Learner, John Moore and Faith Bugel,
Environmental Law and Policy Center

RE: Summary of the New Energy Title IX and Other New
Clean Energy Development Provisions in the 2002 Farm Bill

DATE: May 9, 2002

Today, Congress approved the 2002 Farm Bill, which includes a new Energy Title and important new clean energy development provisions in the Conservation and Rural Development Titles. This legislative support for renewable energy development and energy efficiency improvements is a win-win-win for farmers, rural economic development and the environment. The new Energy Title is now embedded in the overall infrastructure of the Farm Bill. These provisions are a terrific victory for clean energy and sustainable agriculture advocates.

The Farm Bill's new clean energy development provisions in the Energy Title and the Rural Development Title put real money into real programs and move beyond research and analysis. This innovative legislation creates significant new incentives for rural wind power and biomass energy development, and for energy efficiency improvements in the agricultural sector. It transforms the policy recommendations of *Repowering the Midwest* into action in rural communities. It puts into practice ELPC's and our colleagues' longstanding policy views, expressed in *Repowering the Midwest* and other media, that "clean energy cash crops" can provide a new income stream to help support small and medium-sized family farmers and ranchers, enhance rural economic development and create jobs, and improve environmental quality for everyone by avoiding pollution. This is sustainable development in action.

There is \$405 million of mandatory appropriations over six years in the new Energy Title. Half of that amount will fund new clean energy programs, including: direct financial assistance to farmers, ranchers, and rural small businesses for wind power and other renewable energy system purchases and for energy efficiency improvements (\$115 million); appropriations for the Biomass Research and Development Act (\$75 million); a new Federal biobased products purchasing preference program (\$6 million); and a biodiesel fuel education program (\$5 million). The other half will fund the existing Commodity Credit Corporation ("CCC") subsidy program to increase production of ethanol and biodiesel.

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In addition, amendments to the Rural Development Title make wind power, other renewable energy sources, and energy efficiency eligible for hundreds of millions of dollars of more funding. For example, farm- and ranch-based renewable energy projects are now eligible under the Value-Added Agricultural Product Market Development Grants program, which has received mandatory appropriations of \$240 million over six years. Renewable energy projects also are eligible for rural development loans, and they have been identified as a priority in the Farm Bill Conference Committee Managers' Statement.

Some of the other provisions of the Senate-passed Clean Energy Title remain in the Farm Bill as authorizations, without mandatory appropriations. The Conference Committee also amended the Conservation Title to allow biomass harvesting and wind turbine installations on Conservation Reserve Program land, and amended the Research Title to provide new emphasis on farm and ranch energy efficiency research.

The key renewable energy and energy efficiency provisions in the Farm Bill, including the new Title IX, are as follows:

TITLE IX – THE NEW ENERGY TITLE OF THE FARM BILL

Section 9001 – Definitions

- “Biobased product” is determined by the Secretary to be a commercial or industrial product (other than food or feed) that is composed, in whole or in significant part, of biological products or renewable domestic agricultural materials (including plant, animal, and marine materials) or forestry materials.
- “Biomass” is any organic material that is available on a renewable or recurring basis including agricultural crops, trees grown for energy production, wood waste and wood residues, plants (including aquatic plants), residues, fiber, animal wastes and other waste materials, and fats, oils, and greases. The statutory definition standard builds upon language in the Biomass Research and Development Act of 2000, and excludes “paper that is commonly recycled” and “unsegregated solid waste.”
- “Renewable energy” is energy derived from a wind, solar, biomass, or geothermal source, and hydrogen derived from biomass or water using a renewable energy source.
- “Rural small business” has the meaning that the Secretary shall prescribe by regulation.

Section 9002 - Federal Procurement of Biobased Products

- Federal agencies are required to give preference to purchasing items containing the highest percentage of biobased products whenever practicable and available, consistent with maintaining a satisfactory competition level, and when the purchase price exceeds \$10,000.
- Within six months after passage of the Farm Bill, the USDA shall establish guidelines designating items that can be produced with biobased products and providing economic and

environmental information on the products and items. Within one year thereafter, all Federal agencies share develop a procurement program designed to assure that items composed of biobased products will be purchased to the maximum extent practicable, consistent with applicable provisions of Federal procurement laws. This does not apply to the purchase of motor vehicle fuels or electricity.

- Establishes a voluntary program under which the Secretary can authorize producers to label their biobased product as a “U.S.D.A. Certified Biobased Product” subject to criteria issued within a year of the enactment of the Farm Bill.
- This program is funded at \$1,000,000 for each year in 2002-2007, to be made available from the Commodity Credit Corporation, in order to support biobased products testing. Other implementation funding is authorized and subject to appropriations. Total: \$6 million.

Section 9003 - Biorefinery Development Grants

- Support for commercialization of new and emerging technologies, including lignocellulosic biomass, for converting biomass into transportation and other fuels, chemicals, and electricity from renewable resources.
- USDA grants made available, on a competitive basis, to fund up to 30% of the development and construction costs of new biorefinery projects.
- No more than 25% of the grantee’s share of the project may consist of in-kind contributions.
- This program is authorized and funding is subject to appropriations.

Section 9004 - Biodiesel Fuel Education Program

- USDA grants for public education on the benefits of biodiesel fuel use by government and private entities operating vehicle fleets and others. Eligible recipients are nonprofit organizations or colleges and universities that have demonstrated expertise in biodiesel fuel production, use, and distribution. This program is funded at \$1,000,000 for each year in 2003-2007, to be made available from the Commodity Credit Corporation. Total: \$5 million.

Section 9005 - Energy Audit and Renewable Energy Development Program

- USDA grants made available, on a competitive basis, for organizations to assist farmers, ranchers and rural small businesses by conducting and promoting energy efficiency audits and renewable energy assessments linked in part to incentives available under Section 9006 (see below) and other financial assistance programs.
- Selection criteria for the grantees include professional qualifications, the geographic scope of the planned programs, the number of farmers, ranchers, and rural small businesses to be assisted by the program, the potential energy and environmental benefits, and the entity’s business plan for educating its customers on the benefits of energy efficiency and renewable energy development.

- Farmers, ranchers, and rural small businesses must pay at least 25% of the cost of an energy efficiency audit.
- The USDA shall submit a report to Congress on program implementation within four years of enactment of the Farm Bill.
- This program is authorized and funding is subject to appropriations.

Section 9006 - Renewable Energy Systems and Energy Efficiency Improvements

- USDA shall make low-interest loans, loan guarantees, and grants to farmers, ranchers, and rural small businesses to purchase and install renewable energy systems and make energy efficiency improvements. The farmer, rancher, or rural small business seeking a grant must demonstrate need under criteria established by USDA.
- A grant may not exceed 25% of the cost of a project, and a combined grant and loan or guarantee may not exceed 50% of the cost of a project.
- In determining the amount of a grant or loan, USDA shall consider the type of renewable energy system, the quantity of energy likely to be generated, the expected environmental benefits, the extent to which the system is replicable, and the amount of energy savings from energy efficiency improvements and the likely payback period.
- The loan interest rate shall be the interest rate of Treasury securities of comparable maturity.
- The Conference Committee Managers state: "The Managers intend for the Secretary to consider funding energy audits [as] an energy efficiency improvement measure under this section. (See Managers' Statement, page 216).
- This program is funded at \$23,000,000 for each year in 2003-2007. Total: \$115 million.

Section 9007 - Hydrogen and Fuel Cell Technologies

- The USDA and the Department of Energy are directed to enter into a memorandum of understanding to cooperate in the development and promotion of hydrogen and fuel cell technology programs for rural communities and agricultural producers and to disseminate information on potential applications of hydrogen and fuel cell technologies.

Section 9008 - Biomass Research and Development

- Extends the authority of the Biomass Research and Development Act of 2000 through September 30, 2007.
- This program is funded at \$5,000,000 in 2002, and \$14,000,000 for each year in 2003-2007, to be made available from the Commodity Credit Corporation. An additional \$49,000,000 is authorized and subject to appropriations each year in 2002-2007. Total: \$75 million.

Section 9009 - Cooperative Research and Extension Projects (Carbon Sequestration)

- Amends the Agricultural Risk Protection Act of 2000 by authorizing research and development programs for the quantification and measurement of carbon and other greenhouse gases in soil, plants and other agricultural settings.
- Research will focus on carbon losses and gains, the relationship of agricultural practices to carbon sequestration, measuring changes in carbon pools, and the impact of federal conservation programs on carbon sequestration.
- Extension agents and other experts and local organizations may implement projects to monitor the carbon sequestration benefits of conservation practices and the exchange of greenhouse gases from agriculture.
- This program is authorized and funding is subject to appropriations.

Section 9010 - Continuation of Bioenergy Program

- Authorizes continuation of the Commodity Credit Corporation's payment support program for producers of ethanol and biodiesel (collectively, "bioenergy") derived from corn, wheat, and other agricultural commodities, and cellulosic commodities (such as hybrid poplars and switchgrass), and fats, oils, greases and certain animal byproducts.
- Payments are based on yearly increases of bioenergy production: (1) Each producer of less than 65 million gallons of bioenergy shall be reimbursed 1 feedstock unit for every 2.5 feedstock units of eligible commodities used for increased production (relevant commodity prices are used to calculate amount); and (2) producers of more than 65 million gallons of bioenergy shall be reimbursed 1 feedstock unit for every 3.5 feedstock units of eligible commodities used for increased production.
- No one producer shall receive more than 5% of the total funds available in a fiscal year.
- Up to \$150 million of funding from the Commodity Credit Corporation is made available each year from 2003 to 2006. Total Scored Cost: \$204 million.

TITLES II and VI – OTHER CLEAN ENERGY PROGRAMS AND INCENTIVES

Section 2101 - Conservation Reserve Program: Biomass and Wind Turbines on CRP Land

- Biomass and wind turbine installations are allowed on Conservation Reserve Program lands, pursuant to Section 1232(a)(7) of the Food Security Act of 1985, 16 U.S.C. § 3831, et seq.
- Biomass harvesting must be consistent with soil, water quality, and wildlife habitat conservation. The CRP payments shall be reduced by an amount commensurate with the economic value of the biomass activity.

- Wind turbine installation is subject to USDA approval, taking into account the site location, habitat, and the purposes of the CRP. There is no reduction in CRP payments.

Section 6013 - Rural Development Title: Expands Loan Eligibility to Include Renewable Energy Projects

- Extends loans and loan guarantees under the Consolidated Farm and Rural Development Act to renewable energy systems, including wind energy systems and anaerobic digesters used to produce energy. Solar energy systems were already eligible. Amends Section 310B(a)(3) of the Consolidated Farm and Rural Development Act, 7 U.S.C. § 1932(a)(3).
- Each project is eligible for up to \$25 million in loans.

Section 6401 - Rural Development Title: Value-Added Agricultural Product Market Development Grants – Eligibility for Funding Start-Up of Renewable Energy Projects

- Amends Section 231 of the Agricultural Risk Protection Act of 2000, 7 U.S.C. § 1621 note.
- Expands the definition of the term “value-added agricultural product” to include farm- and ranch-based renewable energy.
- Provides for competitive grants to assist producers of value-added agricultural products, including renewable energy systems, to develop feasibility studies, business plans, and marketing strategies. Recipients also can use the grant to provide capital to establish alliances or business ventures. Maximum grant amount is \$500,000 per project.
- Grants can be used for projects that receive financing for construction costs under the Business and Industry Direct and Guaranteed Loan program (see Section 6017).
- This program is funded at \$40,000,000 for each year in 2002-2007, to be made available from the Commodity Credit Corporation. Total: \$240 million.

Section 7207 – Agricultural Research: Energy Efficiency

- Amends the Agricultural Research, Extension, and Education Reform Act of 1998, 7 U.S.C. § 7623, to include improvement of farm energy efficiency as a priority research area for Precision Agriculture and related farm research programs.

ADDITIONAL CLEAN ENERGY DEVELOPMENT PROVISIONS FOR RURAL DEVELOPMENT FINANCING, THE COOPERATIVE EXTENSION SERVICE AND RURAL ELECTRIC COOPERATIVES

Rural Development – Business and Industry Loan Program

The Conference Committee Managers emphasized that renewable energy projects should receive priority for loan financing under the Business and Industry loan program in Section 310B(g) of the Consolidated Farm and Rural Development Act. (See pages 145-146 of the Managers' Statement.) Loan and loan guarantee limits range from \$25-\$40 million per project.

The Managers expect the Secretary, to consider on a priority basis, Business and Industry loan and loan guarantee program applications from eligible marketing cooperatives of agriculture producers for the purpose of constructing peanut storage facilities and for value-added agriculture and renewable energy.

Cooperative Extension Service

Although the Farm Bill does not specifically appropriate funds for technical assistance to farmers and ranchers to develop new renewable energy resources, the Conference Committee Managers' Statement (pages 216 and 226) urged USDA to focus on this issue:

The Managers encourage the Cooperative State Research, Education, and Extension Service to provide education and technical assistance to agricultural producers for the development of renewable energy resources. Such assistance should enable producers to become more energy efficient and provide for the development and marketing of renewable energy resources. In assisting producers, the Cooperative Extension Service may consult with other entities as appropriate.

Rural Electric Cooperatives

Although the Farm Bill does not incorporate the Senate's proposal for financial incentives to encourage rural electric cooperatives to develop renewable energy, the Conference Committee Managers' Statement (page 218) urged USDA to provide renewable energy project loans to rural electric cooperatives:

The Managers encourage the Secretary to use existing authorities to provide loans, loan guarantees and grants to rural electric cooperatives and other electric utilities to promote the development of economically and environmentally sustainable renewable energy projects to serve the needs of rural communities or to promote rural economic development.

CONCLUSION

The new clean energy and energy efficiency provisions in the Energy Title and other related sections of the 2002 Farm Bill are major steps forward in changing the architecture of the overall legislation. They provide new statutory infrastructure, which can be built upon and improved in subsequent years, just as with the conservation programs. Successful implementation of these programs is now essential. Let's work together to achieve the full potential benefits of these new clean energy development programs.