

Approved: Feb. 3, 2000
Date

MINUTES OF THE SENATE UTILITIES COMMITTEE.

The meeting was called to order by Chairperson Sen. Pat Ranson at 1:30 p.m. on January 20, 2000 in Room 531-N of the Capitol.

All members were present except:
Sen. Hensley was excused

Committee staff present:
Lynne Holt, Legislative Research Department
Mary Torrence, Revisors of Statute Office
Jeanne Eudaley, Committee Secretary

Conferees appearing before the committee:
Wayne Kitchen, Vice President, Regulatory Affairs, Western Resources
Les Evans, Sr. Mgr., Generation Strategy, Western Resources

Others attending:
See attached list

Sen. Ranson asked committee members to look over the Minutes of the Meeting for January 13, for approval later. She stressed the importance of accuracy, as the approved Minutes will be available on the Internet. She also announced she will be seeking a consensus from committee members regarding a proposed field trip to St. Marys to view the windmills and on to Jeffery Energy Center for a tour.

Sen. Ranson asked if there were requests for bills for introduction and there were none.

Sen. Ranson introduced a representative from the Kansas Association for Rural Leadership, who is her "shadow" for the day. Several other senators also introduced their "shadows" for today.

Sen. Ranson then introduced Wayne Kitchen, who gave brief remarks regarding renewable energy sources and introduced Les Evans. Mr. Evans' presentation on renewable energy, and more specifically, wind generation, consisted of slides explaining the program (Attachment 1). The turbines are located north of St. Marys and near the Jeffery Energy Center. The project is comprised of two Zond 750 kW wind turbines and was built in the Spring of 1999. He described the technical aspects of the turbines, its performance and projected production. It is capable of producing 3.6 million kWh's annually, providing 400 households with an adequate energy supply. The second page of Mr. Evans' slides shows the actual output in kWhs last July, and the slide showing facts & trivia emphasizes the environmental advantages of wind generation and the fact that the land around the turbines may be used for other purposes, such as farming and grazing.

Mr. Evans walked the committee through the construction process, showing slides and pointing out the size of the turbines. He then listed benefits and barriers as well as future development, which includes the pilot project results and reliability and customer demand and adhering to government mandates. Barriers are the intermittence of wind generation and high capital costs and past perceptions of reliability and noise. Mr. Evans distributed a brochure which explains wind power, how it works, how it is sold and priced. The brochure also contains a customer application to be returned to Westar Wind.

Mr. Evans then answered questions from the committee. Sen. Steffes referred to the name of the company supplying the turbines (Zond). Mr. Evans responded that there are three major suppliers in the U.S. and Zond is the only American company and that Zond is owned by Enron. He also discussed the technology and if they are working on the ability to make wind generation more cost effective. Mr. Evans's reply was that any advance in technology would be in small, incremental steps; that as technology increases, the hope is that the cost will go down. Sen. Lee stated her understanding is that you do not sell more than you can produce, and Mr. Evans agreed that they estimate on an annual basis - 2,000 blocks per month. Mr. Kitchen added that if there is a difference in the estimate/actual cost to the customer, they would do a true up and a refund would be made. Sen. Ranson asked why customers would pay more for this energy, what is the demand for it and the motivation? Mr. Evans replied that more research and development is

CONTINUATION SHEET

MINUTES OF THE SENATE UTILITIES COMMITTEE, Room 531-N Statehouse, at 1:30 p.m.
on January 20, 2000.

needed, and that the capital costs will come down; that they are planning to expand and that there are kWh's available now. She also asked if other companies are allowed to buy power from them. Mr. Evans replied that this project is owned jointly by KPL and UtiliCorp. Sen. Ranson asked Mr. Long if this power is available to its customers, and Mr. Long replied that it was. Sen. Ranson then asked where the Green Power customers live, and Mr. Evans replied they have residential as well as commercial and industrial customers and they would be glad to provide a written answer detailing to the committee where the customers live. They also discussed Renewable power and if there are laws regarding tax incentives or credits. Mr. Kitchen replied that the federal tax incentive credit was renewed this year and that there is also an exemption from the Siting Act requirement. He also stated there is an additional Renewable Energy incentive, which is the personal property tax exemption. Staff asked questions regarding the cogeneration issue.

Sen. Barone stated that the demand for energy is predictable, but the supply (wind generation) is unpredictable, and asked if there is a long-term future for wind generation. Mr. Evans answered there must be a back-up generation supply and that the means to dispatch energy is crucial to serve the demand; that additional investment will be required to serve the needs of the public. Sen. Clark and Mr. Evans discussed solar technology and biomass, which is more expensive but is more predictable. Mr. Evans stated that the Kansas Utilities Research Program is active in experimenting with the various energy sources we have discussed today. Sen. Ranson asked questions regarding potential of the program, and if the federal government has mandated that a certain amount of green power be utilized. Mr. Kitchens stated that some states have mandated the use of specific green power, and that green power is a part of the restructuring debate. Sen. Ranson asked if the program is being advertised and how. Both Mr. Evans and Mr. Long stated the brochure he distributed to the committee is inserted in customers' bills and they also conduct presentations, such as this one. Sen. Morris asked if turbine-generated power could be utilized by the irrigators, and Mr. Evans replied it could be utilized through a power converter and a power grid which could interconnect and supply the power with no problem. Sen. Ranson thanked Western Resources and Mr. Evans for his presentation.

Sen. Ranson referred the committee to the Minutes of the Meeting of January 13. Sen. Clark made a motion the Minutes be approved, and it was seconded by Sen. Barone; the Minutes were approved.

Meeting adjourned at 2:30.

Next meeting will be January 25, 2000.

SENATE UTILITIES COMMITTEE GUEST LIST

DATE: JAN. 20, 2000

NAME	REPRESENTING
<i>Dave Hedden</i>	<i>Western Resource</i>
<i>Les Evans</i>	<i>WESTERN RESOURCES</i>
ED SCHAUB	" "
<i>Wayne Kitchen</i>	<i>Western Resource</i>
<i>Joe Bush</i>	<i>KCKBP4</i>
<i>Michelle Dittman</i>	<i>Admin / DFM</i>
JOE FRETTON	<i>KS, DEPT OF ADMIN</i>
<i>Mark Goodwin</i>	<i>Hein + Weir</i>
<i>Dorothy Gerhardt</i>	<i>DOR</i>
<i>Paul Johnson</i>	<i>PACK</i>
<i>J.C. Long</i>	<i>Util: Corp United</i>
<i>Renaissance</i>	<i>KARL</i>
<i>John C. Botterby</i>	<i>Western Res.</i>
<i>Robert P. [unclear]</i>	<i>KARL</i>
<i>Michael D. [unclear]</i>	<i>KARL</i>
<i>LAUS JOHNSON</i>	<i>PINNACLE TECHNOLOG</i>
<i>Richard [unclear]</i>	<i>Karl</i>
<i>Norie Harris</i>	<i>KARL</i>
<i>Charles Benjamin</i>	<i>KNRC / KS Sierra Club</i>

A-6

Westar Wind

Renewable Energy
For Kansas



Western Resources Electric Utility Overview



- 5,458 MW's Generation Capacity
 - ▶ 9 Fossil Fuel Plants
 - Coal
 - Natural Gas
 - Oil
 - ▶ 1 Nuclear Plant
 - ▶ 2 Wind Turbines
- Serve Over 620,000 Customers
- Produced Over 24 Billion kWh's in 1999

Overview



- Commitment to environmental stewardship
- Alternative ways to meet supply energy
- Customer choice



Objective



- Demonstrate Reliability of Technology
- Demonstrate Demand for "Green Power"



What is "Green Power?"



- Produced by a renewable or "green" energy source
- Types
 - ▶ Wind
 - ▶ Solar
 - ▶ Biomass
 - ▶ Geothermal
 - ▶ Small hydro

Project Background



- 2 Zond 750 kW wind turbines
- Located near St. Marys
- Built Spring 1999

Senate Utilities
1-20-00
Attach. 1

Technical Specifications



- Zond 750 kW wind turbines
 - ▶ 175' towers
 - ▶ 75' long blades
 - ▶ Foundation 30' deep x 14' diameter cylinder
- Cost 2.1 mil \$'s
- Design life 30 years

Operation



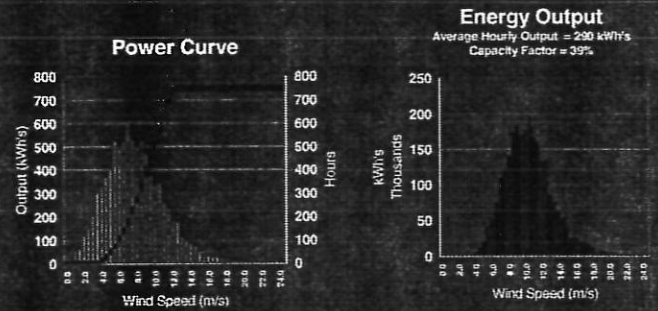
- Autonomous operation
 - ▶ Weather Station
 - Wind speed
 - Wind direction
 - ▶ Fiber-optic communication link
 - Remote monitoring
 - Remote control
- Performance
 - ▶ Cut-in speed - 9mph
 - ▶ Rated capacity - 26mph
 - ▶ Cut-out speed - 65mph

Performance



- High Availability 95% +
- Low to intermediate capacity factor 15% to 40%

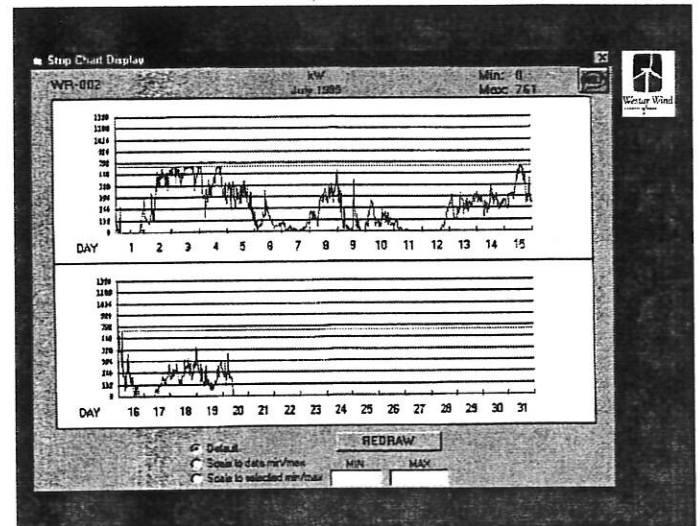
Estimating Wind Resource



Projected Production



- 3.6 million kWh's annually total
- Annual energy requirements 400 households



Facts & Trivia



- Kansas is ranked as state with 3rd best wind potential in U.S.
 - ▶ North Dakota - 1st
 - ▶ Texas - 2nd
- A single 750 kW wind turbine prevents as much carbon dioxide from being emitted each year (1400) tons as could be absorbed by 280 acres of forest, or 106,000 trees *
- Land around turbines may be used for other purposes such as farming or grazing

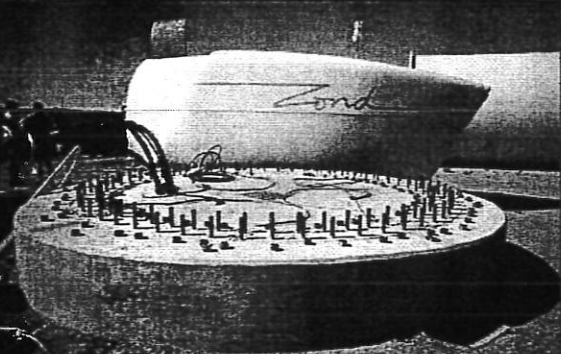
*Source: U.S. Environmental Protection Agency, "Greenhouse Gas Emissions from U.S. Sources in 2004," EPA 310-R-05-001



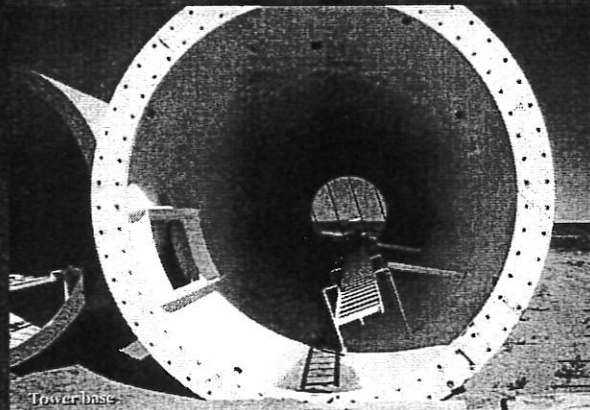
Zond 750 kW machine



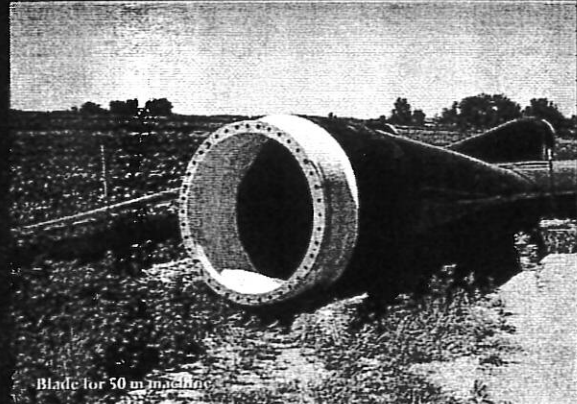
Wind turbine ready for assembly



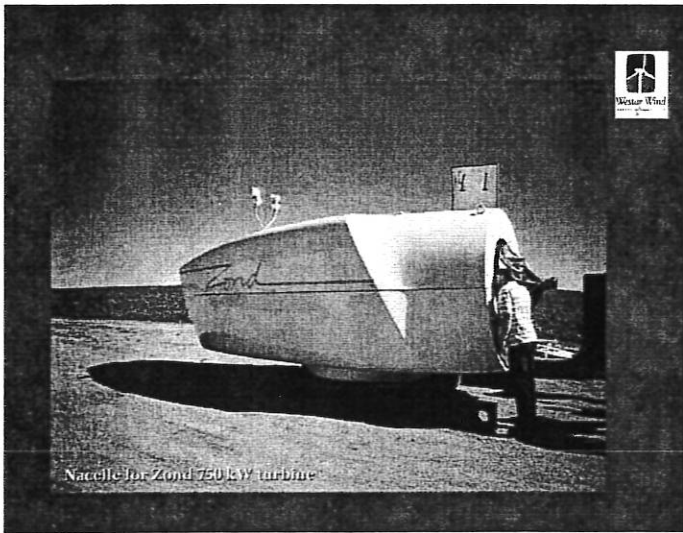
Foundation



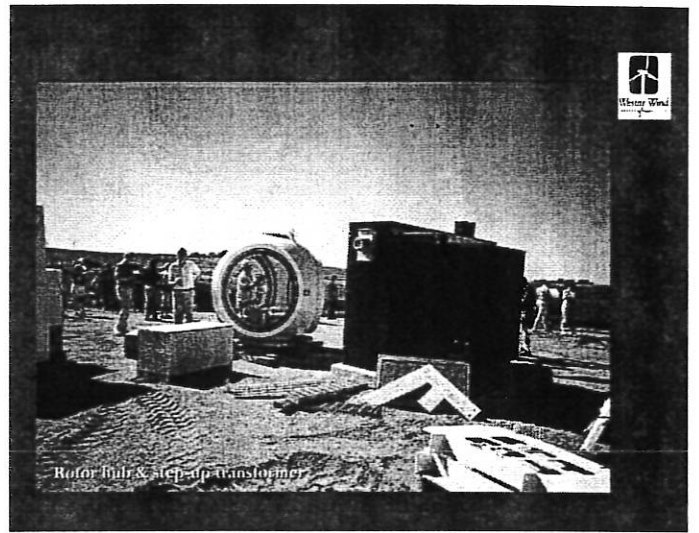
Tower base



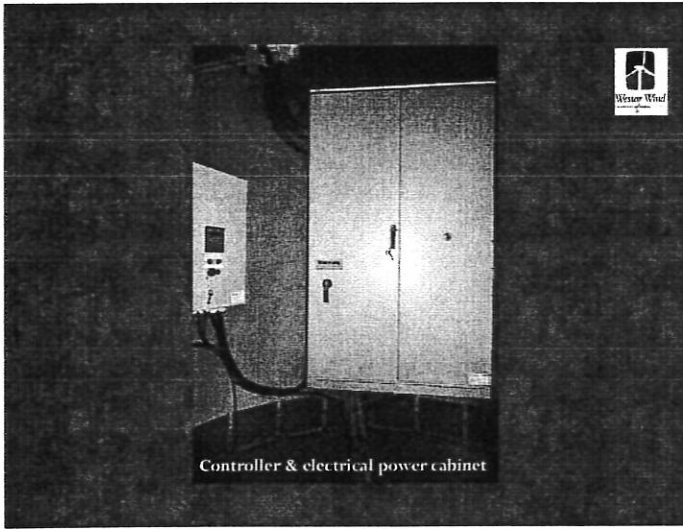
Blade for 50 m machine



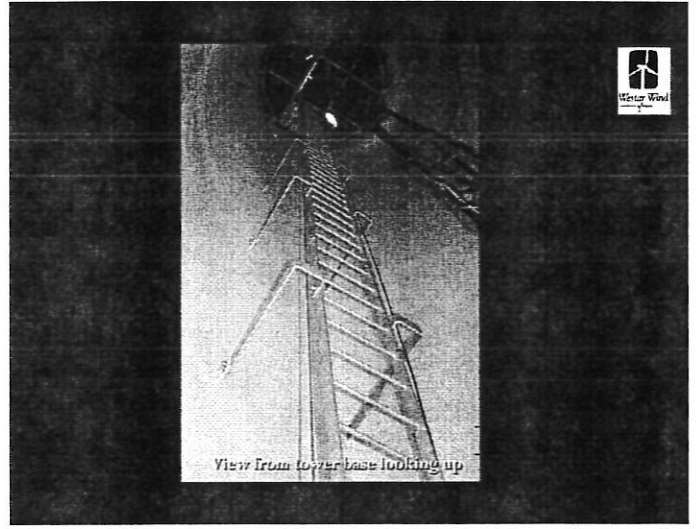
Nacelle for Zond 750 kW turbine



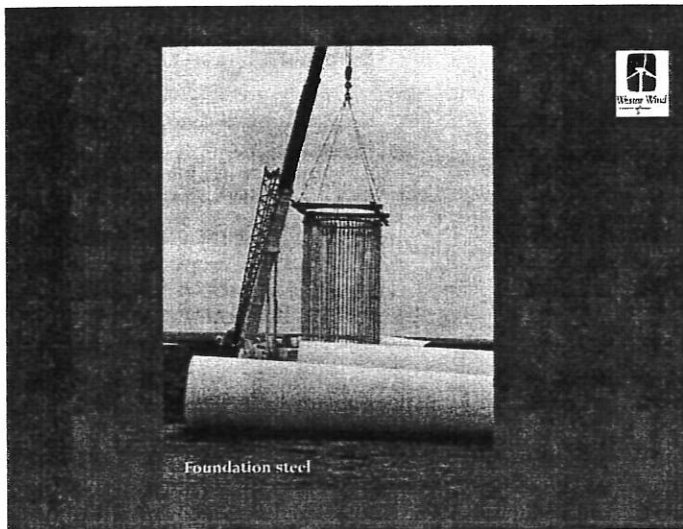
Rotor hub & step-up transformer



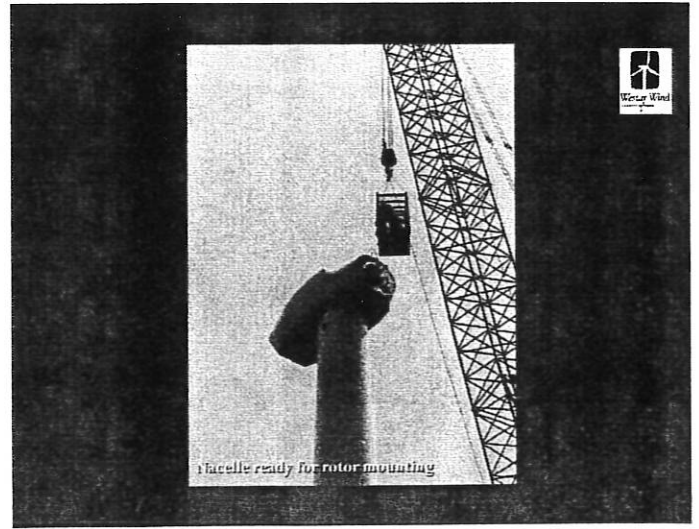
Controller & electrical power cabinet



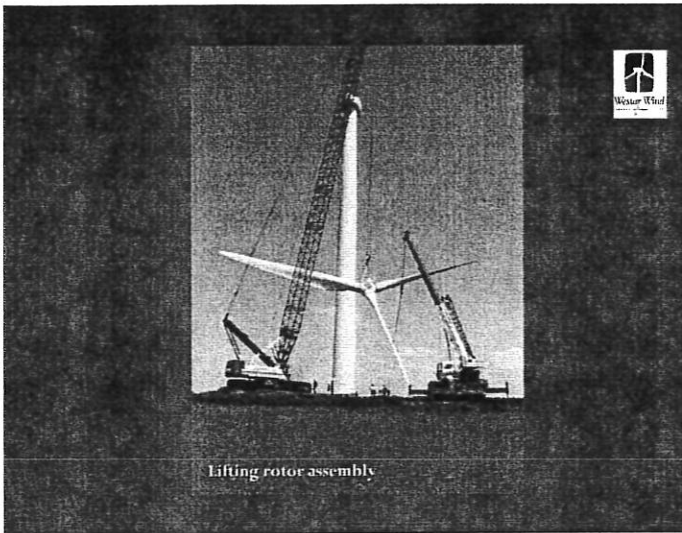
View from lower base looking up



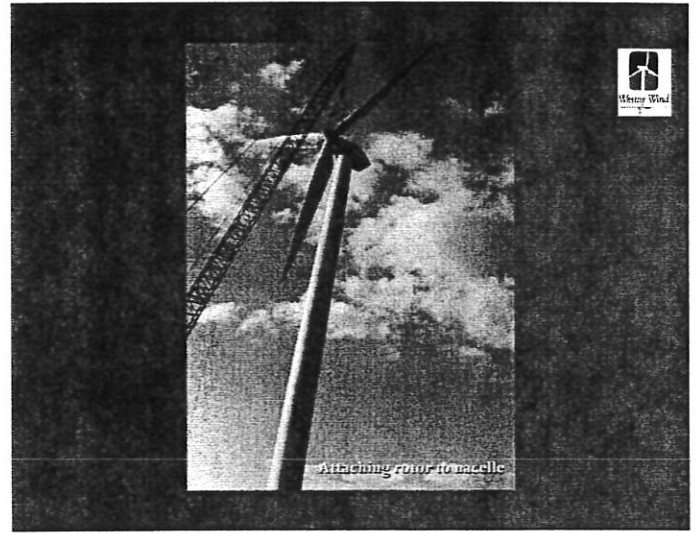
Foundation steel



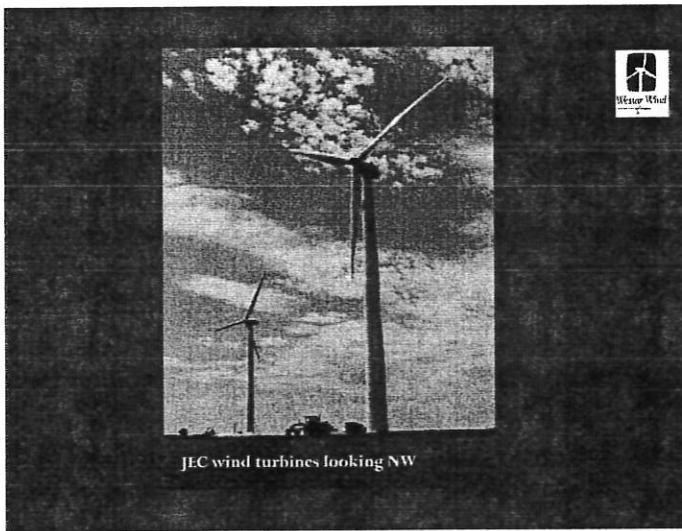
Nacelle ready for rotor mounting




Lifting rotor assembly



Attaching rotor to nacelle




JEC wind turbines looking NW



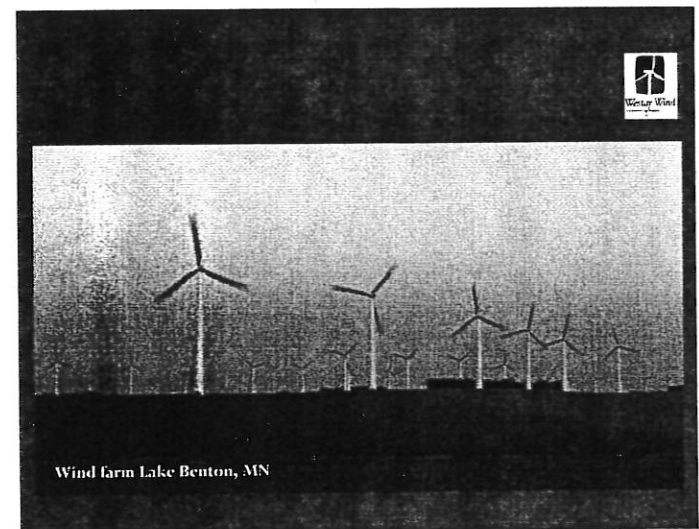
Benefits / Barriers

- Benefits
 - ▶ Environmental
 - No emission
 - No pollution
 - ▶ Stabilize costs
 - Mitigate fuel price risk
 - Provide supply diversity
 - ▶ T&D
 - Defer line extensions
 - Provide voltage support at the end of weak lines
 - ▶ Provide consumer choice for "Green Power"
- Barriers
 - ▶ Intermittency
 - Not dispatchable
 - ▶ High capital costs
 - ▶ Environmental impacts
 - Aesthetics
 - Avian
 - ▶ Past perceptions
 - Reliability
 - Noise



Future Development

- Pilot project results
 - ▶ Reliability
 - ▶ Customer demand
- Economics
- Government mandates

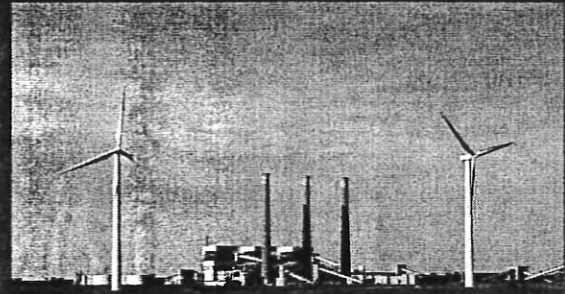


Wind farm Lake Benton, MN

How To Participate



- Sold in blocks of 100 kWh's
- Each block \$5 additional per month
- Can purchase up to minimum monthly energy needs (based on past 12 months usage)
 - ▶ Average household uses 750 kWh's / month
 - ▶ Minimum for 12 month period 300 to 500 kWh's
- Minimum 1 year commitment



Questions / Discussion