Harvest Wind Farm Fact Sheet

Turbine outside Laker Elementary School near Pigeon, Michigan

Laker School District renewable energy installation

- At Laker Elementary School, 3 turbines supply about 346 megawatt hours/year of energy, or about 80% of the annual demand on Laker Elementary School. This 346 megawatt hours is valued at approximately $34,000.

- For 3 months in 2008, these turbines were shut down as a result of disputes with the utility company that serves the town of Pigeon and the surrounding area.

- The turbines were installed in 2006 after the school district received grants of $265,000 to install three large turbines, plus one additional turbine and a solar array on a home the school district has owned since 1960. Brion and Kathy Dickens, featured in the April 22, 2008 issue of the *Detroit Free Press* as "The Greenest Couple in Michigan," wrote the successful grant proposals. Kathy is a school employee and Brion is a general contractor and sustainable energy entrepreneur and educator.

- The schools' turbines were manufactured in 1985, by the Danish company Nortank. All installation labor was donated, including labor provided by Fisher Contracting of Midland,

MI, B's Electric LLC of Bay Port, MI, Murdock Crane service of Caseville, MI and and Brion Dickens' company Woodland Wind, LLC. The blades are similar to the type that were once produced by the Bay City firm of Gougon Brothers.

- The power generated at Harvest Wind Farm is purchased by Wolverine Power Co-op of Cadillac, MI, considered by some to be one of the "greenest" utility company in the Midwest.

- Wind turbines in Michigan
    - 1 turbine installed by Traverse City Power & Light Co. (600 kilowatts)
    - 2 turbines installed at Mackinac Bridge (900 kilowatts each)
    - Laker Elementary School Wind Farm (65 kilowatts each)
    - 32 turbines at Harvest Wind Farm in Pigeon (1.65 megawatts each)
    - 2 turbines in McMaine, MI south of Cadillac (2.4 megawatts each)
    - an installation of 46 turbines in Ubly, south of Bad Axe, will become the largest wind farm in all of Michigan, Ohio and Indiana. This is a project built by Noble Environmental Power and now owned by John Deere Wind.

- Students in the Laker School District are learning about renewable energy, which may prepare them to further education at such institutions as Delta College, Saginaw Valley State University, and St. Clare Community College.

- The Superintendent of Schools for Laker School District lives in a residence on the grounds of the middle school. Half the energy needs of the home are supplied by the adjacent wind turbine and solar array. The solar array supplies 10% of the energy, and the wind turbine 90%. The cost to install the solar array was $20,000; and to install the turbine, $40,000.

Harvest Wind Farm near Pigeon, Michigan

- Harvest Wind Farm is an investment of John Deere Credit, the credit arm of the John Deere Company. They financed the project at a cost of $94,000,000.

- Farmers who agreed to have turbines installed in their fields receive a lease payment that may be close to the national average of about $8,000 per year per turbine. This is more profitable than growing crops on the ¾ acre required for one turbine and its access road.

- The fields where the turbines are located are planted with rotating crops, including sugar beets, dry beans, corn, soybeans, and winter wheat.

- The blades of the Harvest Wind Farm turbines rotate at 14 – 17 RPM. Even at full power, the noise they generate is much less than a refrigerator running at 600 feet away..

- The 32 turbines can supply the energy needs of about 15,000 homes.

- Each one is 265 feet high. With a blade pointing straight up, the turbine reaches 396 feet in height.

- The turbines have sensors that seek the wind, and can rotate 360° to point the rotor into the wind.

- Each one cost almost $3,000,000 to install.

- Economic impact:
    - Huron County collected more than $100,000 in building permits when the turbines were installed.

    - Oliver Township collected about $85,000 in taxes on 27 turbines in the first year
    - The adjacent township collects taxes on 5 turbines
    - Residents can receive the same level of municipal services with a lower property tax rate

- Each turbine is monitored inside its tower, at the local electrical substation, at Wolverine Power Company and, through satellite and fiber optic lines, at the Denmark offices of the manufacturer, Vestas.

- Maintenance crews employed by Vestas make weekly visits, climbing up a ladder inside the tower. At least 2 men work together inside the tower, and a third man is stationed on the ground during these examinations. Each tower is 14 feet in diameter.

- The *nacelle* (a French word meaning "cover") is the size of a bus. It holds the operating machinery and from the ground resembles an outboard motor.

- Each turbine consists of a tower, the nacelle, the blades, and a pad mount transformer. The foundation has a diameter of 56 feet.

Wind energy facts

- Michigan is 14th in the United States in natural wind energy. The Thumb area is ideal for wind energy installations because it has lots of wind, few people, economic need, and is a rural/agricultural setting.

- The leading wind energy producing state is Texas. California is second.

- In the 1800's, Kalamazoo MI was the windmill manufacturing capital of the world.

- Wind parks preserve farmland, unlike housing developments. Only about ¾ acre is required for one turbine. The turbine and access roads required to install and maintain it do not interfere with farming the adjacent land.

- The USA is the largest market for new wind energy installations for companies manufacturing the components of the turbines.