



Department of Energy

Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

August 19, 2010

SUBJECT: Notice of Scoping – DOE EA No. 1815 – 660 kW Single Wind Turbine and Energy Education Facility: *Cuyahoga County Agricultural Society Wind Energy Project*, Berea, Cuyahoga County, Ohio

The U.S. Department of Energy (DOE) is proposing to provide federal funding to the Cuyahoga County Fairgrounds to construct and operate an approximately 660 kW wind turbine in Cuyahoga County, Ohio. The proposed project would construct and operate a wind turbine and an energy education facility located on the Cuyahoga County Fairgrounds within the town of Berea. Details of the proposed wind turbine are provided in the attachment to this Scoping Notice. Pursuant to the requirements of the National Environmental Policy Act (NEPA) the Council on Environmental Quality (CEQ) regulations for implementing the procedural provision of NEPA (40 CFR Parts 1500-1508), and DOE's implementing procedures for compliance with NEPA (10 CFR 1021), DOE is preparing an Environmental Assessment (EA) to:

- Identify any adverse environmental effects that cannot be avoided should this proposed project be implemented.
- Evaluate viable alternatives to the proposed project.
- Describe the relationship between local and short-term uses of the environment and the maintenance and enhancement of long-term productivity.
- Characterize any irreversible and irretrievable commitments of resources that would be involved should this proposed project be implemented.

Potential Environmental Effects or Issues Identified for the Environmental Assessment

The EA will describe and analyze any potential impacts on the environment that would be caused by the project and will identify possible mitigation measures to reduce or eliminate those impacts. At a minimum, DOE will evaluate potential impacts that may result from the proposed project related to:

- Land Use
- Biological Resources
- Cultural Resources
- Noise
- Safety and Occupational Health
- Socioeconomics and Environmental Justice
- Utilities
- Traffic and Transportation
- Aviation Hazards
- Electromagnetic Interferences
- Aesthetics and Shadow Flicker
- Water Resources



Development of a Reasonable Range of Alternatives

DOE is required to consider a reasonable range of alternatives to the proposed action during an environmental review. The definition of alternatives is governed by the “rule of reason”, as described within the CEQ regulations regarding the administration of NEPA. An EA must consider a reasonable range of options that could accomplish the agency’s purpose and need reduce environmental effects. Reasonable alternatives are those that may be feasibly carried out based on environmental, technical, and economic factors.

The No Action Alternative will be addressed. The need for project redesign, or a project alternative, will be determined during the course of environmental review.

Public Scoping

The DOE is sending this letter to interested federal, state and local agencies to provide information on issues to be addressed in the EA. Agencies are invited to indentify the issues within their statutory responsibilities that should be considered in the EA. The general public is also invited to submit comments on the scope of the EA. The general public is also invited to submit comments on the scope of the EA.

This letter and the draft EA, when it is available, will be posted in the DOE Golden Field Office online reading room: http://www.eere.energy.gov/golden/Reading_Room.aspx.

The DOE Golden Field Office welcomes your input throughout our NEPA process, but to ensure that your comments are received in time to be considered in the draft EA, please provide them on or before September 6, 2010 to:

Melissa Rossiter
NEPA Document Manager
Department of Energy
1617 Cole Boulevard
Golden, CO 80401
Melissa.Rossiter@go.doe.gov

We look forward to hearing from you.

Sincerely,



Melissa Rossiter

Attachment

**Cuyahoga County Fairgrounds Wind Turbine and
Energy Education Facility**

The U.S. Department of Energy is proposing to provide up to \$1.4 million to Cuyahoga County Fairgrounds for construction and operation of an approximately 660 kW single wind turbine and energy education facility. The Fairgrounds proposes to design, permit, construct, operate and maintain the approximate 660 kW wind turbine located on the Cuyahoga County Fairgrounds 164 Eastland Road, Berea, Ohio.

Latitude: 41-21-59.50N NAD 83

Longitude: 81-50-21.10W

The DOE funding for this project would be paid for by the American Recovery and Reinvestment Act of 2009 and would include the following components:

- A single 660 kW new turbine on a 60 meter tower
- Associated generator and below ground collector cables
- Underground transmission lines and connection to Cuyahoga County Fairground's internal energy distribution system
- A single building of approximately 2,000 square feet





August 30, 2010

Melissa Rossiter
U.S. Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, CO 80401

RE: Cuyahoga County's proposal to erect 280 foot wind turbine located at 164 Eastland Road, Public comments to U.S. Department of Energy Environmental Assessment

Dear Ms. Rossiter,

Please accept this letter as formal notice that American Tower objects to the proposed wind turbine to be located in close proximity to our telecommunications facility at 164 Eastland Road. In support of our objection, please consider the following information:

- Our telecommunications facility has been operational for 19 years and has 31 years remaining on a 50 year lease with the County.
- American Tower provided expert testimony to the City of Middleburg Heights Planning Commission on March 10, 2010 and to the Middleburg Heights City Council on March 23, 2010 that the proposed location of the wind turbine may cause interference with radio frequency transmissions with our existing customers at the facility. The proposal to locate the turbine was defeated by the Middleburg Heights City Council.
- American Tower provided comment to the City of Berea Planning Commission voicing our objection to the proposed wind turbine. The City of Berea Planning Commission approved the petition of the turbine proponents.
- Current tower customers include: Verizon Wireless, T-Mobile, FiberTower and Clearwire. American Tower and our customers are concerned with interference with the radio frequency transmission of these carriers and that the turbine could cause disruption to the E911 service offered by the carriers and relied upon by the County and City's emergency providers. This life-saving service requires a strong signal to operate properly, thus making wireless infrastructure a critical public safety necessity.

- Please accept notice that there are no interference issues at this time.
- The turbine will negatively affect the future marketability of the telecommunications facility as customers will seek out another site or sites where they would not have to install additional mitigation equipment to overcome the proximity of the turbine. Additional equipment brings additional costs.
- Turbine proponents have stated that there will be no interference to the radio frequency transmission, yet they have failed to provide the testimony of any experts to support their position. They further suggest that mitigation is available if there is interference caused by the wind turbine; however mitigation is not as simple as the turbine proponents have suggested and carries an increase in costs for the initial mitigation equipment and ongoing maintenance. American Tower is concerned with: (i) how the mitigation will be funded; will the County or the U.S. Department of Energy agree to pay for mitigation; (ii) an inability to counter-act the deterrence to future customers who will disqualify the site as part of their network due to the proximity of the turbine; and (iii) the likelihood that our customers will move to another telecommunications facility that does not present any interference issues that require mitigation. Again, we are concerned about the potential damages that are caused by the proposed turbine.
- The County through their attorney, the County prosecutor's office refused to enter into an agreement to mitigate or compensate American Tower for any damages caused by the turbine. They strongly assert that there will be no interference; so why not enter into an agreement.
- The turbine proponent asked American Tower to provide coordinates for where to locate the turbine but turbines are sited based upon wind studies as to where to build for an optimal location. The results of a wind study have been referred to but never provided in any of the materials and I respectfully ask why the study has not been provided.

In conclusion, American Tower supports new technology and applauds the U.S. Department of Energy and the County for its attempt to implement innovative solutions to its energy needs; however, the proposed location in proximity to our leased area makes it impossible for American Tower to support this project due to the negative impact the turbine will have on our existing business. American Tower is actively researching wind turbines and how they may be able to be incorporated into our telecommunication infrastructure and by pursuing green initiatives for our business and workplace whenever possible. We are committed to providing quality infrastructure to our customers especially as the demand for wireless, broadband and E911 use increases.

For the reasons stated herein, American Tower respectfully requests that you do not provide funding or approve the proposed wind turbine at this location as we believe it will have a detrimental effect on our business which has successfully operated at this location for 19 years.

Respectfully submitted,

A handwritten signature in black ink that reads "Bonnie Belair". The signature is written in a cursive, flowing style.

Bonnie Belair
Zoning Attorney
American Tower
10 Presidential Way
Woburn, MA 01801
781 926-4637

Cuyahoga County Fairgrounds Public Involvement

Cuyahoga County has provided opportunities for public involvement since July 4, 2008 in an attempt to educate the public about this project and provide an opportunity for public comment.

Public Engagement

1. City of Berea

- 5/6/10 – Planning Commission public hearing – Project unanimously approved
- 4/22/10 – Architectural Review public hearing – Project unanimously approved

2. City of Middleburg Heights

- 3/23/10 – City Council & Mayor public hearing – Project denied (“no benefit to City”)
- 3/10/10 – Planning Commission public hearing – minutes – Approved by Planning
- 1/13/10 - Planning Commission public hearing - minutes– heard but tabled
- 12/16/09 – Zoning application public hearing – minutes– 230' Variance approved
- 11/11/08 – City Council & Mayor public hearing – minutes– Project approved
- 10/8/08 – Planning Commission public hearing minutes–Approved by Planning
- 9/17/08 – Zoning application public hearing. Minutes– 200' Variance approved

3. Presentations (other than city application hearings)

- Cleveland Building & Construction Trades Council
- Great Lakes Energy Development Task Force

4. Letters of Support

- Building Laborers Local 310
- IBEW Local 38
- Western Reserve Audubon Society
- Polaris Career Center
- Cuyahoga County Board of County commissioners
- Great Lakes Energy Development Task Force
- Baldwin-Wallace College
- Letters from (80) residents of Middleburg Heights to Councilman Matt Castelli – 90% in favor
- News Sun suburban newspaper's online poll: 80% in favor

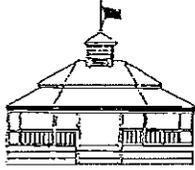
Media Coverage

Berea Newsletter – June 2010 – Planning Commission OKs wind turbine

Cleveland.com – May 10, 2010 – Berea OKs Wind Turbine at fairgrounds
Cleveland Plain Dealer – May 8, 2010 – Berea approves wind turbine for Cuyahoga County Fairgrounds
Sun News – May 7, 2010 - Berea approves wind turbine at Cuyahoga County Fairgrounds
Sun News – April 22, 2010 – Cuyahoga County Fairgrounds moves wind turbine to Berea
Cleveland Plain Dealer – April 21, 2010 – Middleburg Heights rejects Cuyahoga County wind turbine, but Berea might take it
Sun News – March 24, 2010 – Middleburg Heights Council votes down wind turbine at Cuyahoga County fairgrounds
Sun News – March 11, 2010 – Middleburg Heights wind turbine meets resistance
EcoWatch Journal – February 2010
Sun News – January 21, 2010 – County, Middleburg Heights officials in talks over wind turbine plan
Cleveland Plain Dealer – November 30, 2009 – Ohio awards over \$13 million for wind and solar projects
Cleveland Plain Dealer – October 8, 2009 – Cuyahoga County commissioners call fairgrounds wind turbine plan too pricey
Cleveland Plain Dealer – August 18, 2009 – Cuyahoga County commissioners move ahead on wind turbine for county fairgrounds
Cleveland Plain Dealer – August 18, 2009 – Cuyahoga County fairgrounds may get wind turbine by next summer with commissioners' approval to seek proposals
Cleveland Plain Dealer – September 8, 2008
Cleveland Plain Dealer- July 4, 2008

In addition, the following agencies and organizations have been contacted by Cuyahoga County and/or DOE:

- United States Fish and Wildlife Service (USFWS)
- Federal Aviation Administration (FAA)
- United States Department of Commerce – National Telecommunications and Information Administration (NTIA)
- Ohio Historic Preservation Office (OHPO)
- Ohio Department of Natural Resources (ODNR), Division of Wildlife (ODOW)
- Ohio Department of Natural Resources (ODNR), Ohio Department of Transportation Office of Aviation
- Ohio Department of Development Energy Resources Division
- Middleburg Heights Board of Zoning Appeals
- Berea Board of Zoning Appeals
- Berea Historical Society
- First Energy



CITY OF BERE A

"The Grindstone City"

Cyril Kleem
Mayor

11 Berea Commons
Berea, Ohio 44017
440) 826-5800
Fax. (440) 826-4800
Website www.bereaohio.com

August 2, 2010

Mr. Nick Willis, Project Manager
Cuyahoga County
1642 Lakeside Ave.
Cleveland, OH 44114

Re: Wind Turbine Project
Cuyahoga County Fairgrounds

Dear Mr. Willis:

This letter is being written to establish that the Wind Turbine Project at the Cuyahoga County Fairgrounds came before the Berea Municipal Planning Commission on May 6, 2010 for Conditional Use Approval and the Berea Municipal Planning Commission voted unanimously to grant the Conditional Use Approval, please see copies of the minutes of that meeting enclosed herewith.

Should you have any further questions regarding this issue, please do not hesitate to contact me at 440-826-5803.

Very truly yours,

CITY OF BERE A

A handwritten signature in cursive script that reads "Matthew J. Madzy".

Matthew J. Madzy
Building, Engineering, Planning

"City of Champions"



BEREA MUNICIPAL PLANNING COMMISSION
MAY 6, 2010

The Berea Municipal Planning Commission met on May 6, 2010 and was called to order by Mr. Walters. Present: Borowski, Brown, Draves, Fay, Walters, Rump, Sawyer. Absent: None.

This meeting was held in compliance with all legal requirements including Section 121.22 of the Ohio Revised Code and Chapter 109 of the Codified Ordinances of the City of Berea. All applicable notices were sent out prior to this meeting.

Moved by Draves, seconded by Borowski to approve the minutes from the March 18, 2010 meeting. Vote on motion was all ayes; no nays; Abstained: Borowski, Fay. The motion carried.

Moved by Draves, seconded by Rump to approve the minutes from the April 1, 2010 meeting. Vote on motion was all ayes; no nays; Abstained: Fay, Sawyer. The motion carried.

Witnesses were sworn in by Mr. Walters.

Mr. Walters explained that due to the number of items on this evening's agenda, he would like to change the order of the agenda as follows:

1. Kidforce Collectibles (Variance Business I.D. Sign)
2. Berea Family Chiropractic (Variance Business I.D. Signage)
3. Ziegler & Tomlinson/Carnegie Group (Business I.D. Sign)
4. Berea Square Storage (Business I.D. Sign)
5. Christian Women in Action Ministries (Business I.D. Sign)
6. Circle K (Business I.D. Sign) – have been notified by the applicant that they are unable to be here this evening. When this item comes up Mr. Walters said he will ask for a motion to table it.
7. Wing Warehouse (Business I.D. Sign)
8. Patrick Williams (Driveway Expansion)
9. Robert & Holly Porter (Demolition of Residential Home)
10. Anthony McGowan (Appeal Order of Condemnation – 555 Fair Street) – this has been the subject of a request by the applicant that it be tabled to a date certain of June 17th. Mr. Walters announced that if anyone was here to speak on this issue they did not need to wait because it is being tabled.
11. Financial Asset Services, Inc. (Appeal Order of Condemnation)
12. Cuyahoga County Fairgrounds (Conditional Use Wind Turbine)

Mr. Walters also reported to the members of the audience and members of the Commission that around 8:00 there will be a court reporter arriving to take down the proceedings especially related to the Financial Asset Services' appeal and the Cuyahoga County Fairgrounds' application. That discussion will be taken down verbatim by the court reporter as well as recorded for the record here.

Moved by Draves, seconded by Fay to amend the agenda as read above. Vote on motion was all ayes; no nays. The motion carried.

Application #10-05-04

Approval of Variance for Business Identification Sign

Kidforce Collectibles - 50 Front Street, P.P. #364-11-019

Mr. Walters read the Administrative Review. The applicant, Joseph Kiskis and the agent, Rich Denman with Sign-A-Rama, were present this evening. Mr. Denman reported that initially they did go to the H.A.R.B. where they were asked to resubmit colors and styles a little more consistent with the architecture of the downtown area. They came back to H.A.R.B. with three different versions with the only difference being the color combinations. The materials are the same for all three versions. Mr. Denman distributed copies of the color combinations.

Mrs. Draves asked which color combination they decided to go with and Mr. Kiskis told her that he preferred the black and white version versus the green and white. He reported that the H.A.R.B. approved the design and left the color up to the Planning Commission. Mr. Walters read the findings of the H.A.R.B. into the record.

Mr. Denman explained that the sign materials will be a matte/flat finish in whatever color combination they approve this evening. In response to Mr. Fay, he said he was unaware that a 1.5 foot size variance was required and it would not be a problem to reduce the size of the sign so a variance would not be required. Mr. Fay stated that the green and white combination went along with what they were looking for in the downtown area. Mr. Denman pointed out that they were looking to match the green awning. He displayed a green and tan version of the sign.

Moved by Draves, seconded by Fay to approve the proposed sign with the condition that the size of the sign be reduced so a variance will not be required and the sign have a white background with green letters to match the green awning. Vote on motion was ayes: Borowski, Brown, Draves, Fay, Walters, Rump, Sawyer. Nays: None. The motion carried.

Mr. Hurley also pointed out that this property is in a location where it is on a high traffic street and it backs up to the turnpike. He felt this would take down the demand for this vacant land to sell. It was his opinion that the best option for this property would be to put the house back together and restore the utilities/services. Mr. Walters asked Mr. Madzy and Mr. Freshwater if they had any further comments or questions and they both indicated no. Mr. Walters asked if anyone else had any further comments or questions and there was no response.

Moved by Rump, seconded by Fay to uphold the City's demolition order. Vote on motion was ayes: Brown, Draves, Fay, Walters, Rump, Sawyer, Borowski. Nays: None. The motion carried.

Mr. Madzy asked Mr. Walters if he could have one moment to speak to Mr. Freshwater. After brief discussion, Mr. Madzy reported that based upon his conversation with Mr. Freshwater and Mr. Hurley, anytime a property is going to be razed, a demolition permit must be approved by the Planning Commission and notice must be given to the neighbors, however, this is also the same notice that went out to the neighbors for the appeal this evening. They would want the Planning Commission to entertain the idea of giving permission this evening to demo the home. Mr. Freshwater added that otherwise they will not be able to touch the property until they have another hearing on whether they can demolish the property or not.

Moved by Fay, seconded by Rump to approve the issuance of a demolition permit. Vote on motion was ayes: Draves, Fay, Walters, Rump, Sawyer, Borowski, Brown. Nays: None. The motion carried. Mr. Walters announced that the Planning Commission has not only upheld the order of the City to demolish the property but has also approved the issuance of a demolition permit. He thanked Mr. Freshwater and Mr. Hurley for being here this evening.

Mr. Walters announced that there were empty seats in the front of the room for those who were standing in the hallway. They would now move onto the final item this evening.

Application #10-05-05
Approval of Conditional Use
Cuyahoga County Fairgrounds - 164 Eastland Road, P.P. #364-07-007

Mr. Walters read the Administrative Review. He reported that this matter came before the Heritage Architectural Review Board (H.A.R.B.) on April 22, 2010 and they recommended at that time for Planning Commission to approve this application, as submitted.

The agent, Nick Willis, introduced Stan Trupo of 304 Bonds Parkway, Berea. Mr. Trupo indicated that Mr. Willis is the Project Director for this project and he is also representing the County, not just the Fairgrounds. He explained that this project is for an approximately 275 foot high wind turbine which would be the first in this area, not counting the one off of Pearl Road. This is a device that they hope will ease some of the cost to the Fairgrounds by generating enough electricity to cut back on the cost of electricity.

Mr. Trupo urged the Planning Commission Members to think about this as a way to begin changing the attitudes of people around the area about alternate energy sources. It would not cause any real problems of any kind. It is a mechanism in which they hope the people from all over Ohio will begin using turbines as an alternate energy for securing electricity. He introduced Joanne Scudder who started this project and has been the real spearhead and has driven home the need for alternative energy.

Joanne Scudder of 10234 Log Cabin Court, Brecksville thanked the Commission for giving them the opportunity to speak this evening about the wind turbine project and corresponding energy education center. She stated that she knows it has been a long night and it is late but they will try to give all of the information regarding the project. She referred everyone to the booklet that they received which includes letters of support and details of not only the wind turbine but the proposed education center.

Ms. Scudder reported that the mission of their Fair is to educate, demonstrate and exhibit. They feel this project fits extremely well into that mission. As part of the turbine project, there will be an energy education center connected to it. They have developed a partnership with Polaris Career Center who is also here this evening. They have spoken with Dr. David Krueger from Baldwin-Wallace College on a number of occasions to discuss their participation and partnership in this project. They have indicated to them that they would be willing to provide interns to help staff the energy education center.

Ms. Scudder explained that the energy education center will be connected to the turbine and will be utilized by not only the immediate community but also schools, universities and will probably go way beyond the city limits. They know there is no type of facility of its kind in this area tied directly to a turbine. She mentioned the wind turbine located at the Science Center in downtown Cleveland and encouraged everyone to go down there and just stand next to it.

Ms. Scudder said this proposed turbine at the Fairgrounds will be to educate people on alternative ways of energy, broaden their horizons and look at some alternate ways of producing energy. She referred to the oil spill currently going on down in the Gulf coast and hoped that they could start

moving away from this and get into some of the alternative kinds of energy. However, the educational aspect is the major goal of this project. She introduced Nick Willis for a more technical view of the project as well as display some photo simulations.

Mr. Willis stated that he is a Project Manager for the Cuyahoga County Commissioners. He was on the Offshore Turbine Task Force when Ms. Scudder became interested in having a wind turbine at the Fairgrounds. With his contacts and knowledge they put together this proposal a few years ago. He hoped that the education from this will lead to more turbines, more solar cells/solar panels and hopefully will give Cleveland the image of being friendly to renewable energy and friendly to wind turbines.

Mr. Willis said he hopes that European and U.S. manufacturers will see this change in the Cleveland area and expand the market here. He said the American market is growing 40% a year so maybe new plants will come to Cleveland and create manufacturing jobs. The type of jobs Cleveland used to have with the auto plants, refineries and fab/rebuilding shops.

Mr. Willis displayed an aerial photograph of the proposed location for the wind turbine. Mr. Walters asked him to make sure to turn it around so the audience could also view the photograph. Mr. Willis explained that the large pink circle indicated the proposed turbine location inside the harness track area which is in Berea. The small rectangle shows where the energy center/educational building would be located. This building will have readouts of turbine production, wind speed, solar production and a large conference room. He stated that the turbine would be a minimum of 300 feet from any building at the Fairgrounds and more than 1,000 feet from any residential structures in the surrounding neighborhood.

Mr. Willis next displayed a photo simulation of what the turbine will look like looking into the Fairgrounds from the Gate #2 entrance off of Eastland Road. The next photo simulation was a view from Old Oak Boulevard actually looking across the Fairgrounds parking lot (off of Bagley Road) at the turbine. Mr. Willis pointed out that they could see the grandstand in the background to the left of the turbine in the photograph.

Mr. Walters opened the floor first to questions from the Commission members. Mrs. Draves noted that she passed the wind turbine off of 480 the other day. She asked what the exterior finish is on these and how long does it last. Mr. Willis explained that they use a paint similar to Dupont's Imron. It's a very, durable, long-lasting coating.

Mr. Willis reported that the proposed wind turbine will be a used one from Europe because they do not manufacture this size turbine in the United States currently. They will bring the turbine over from Europe and fully

recondition and remanufacture it here in Ohio. In fact, they have specified that all the work be done in Ohio including the tower, refinishing the tower and the support.

In response to Mrs. Draves, Mr. Willis discussed where the money for this project will come from. There is already \$1 million for this project with additional funds coming from the DOE and the County. He explained that the County has said they will make up the balance whatever that may be and they do have the \$1.4 million today. Aaron Godwin of 10299 Longview Avenue, Kirtland, Ohio introduced himself and said he was a consultant for the County on this project. He pointed out that the \$200,000 grant from the State is not a competitive grant process. They just need to meet the State's criteria. Mr. Willis said they were pretty confident they would receive these funds but there was no guarantee.

Mr. Fay pointed out that there are two different start dates mentioned in the material they received. One refers to August and the other one refers to November. Mr. Willis explained that the Department of Energy (DOE) who is initiating the funds have decided that all of the wind projects need to have an environmental assessment first. The original guess for this was August and it could be done in approximately three months. Now they are being a little more realistic and saying probably not until November. So until that is done, the funds are not finalized and available. They cannot really do anything until November. In response to Mr. Walters, Mr. Willis clarified that this environmental impact study is about to begin.

Mr. Sawyer inquired about Polaris Career Center being involved in this project. Doug Miller, Director of Community Outreach at Polaris introduced himself and said he lives at 9173 Stonebriar Lane, North Ridgeville, Ohio. He said Polaris has been around since 1975 and since that time they actually started out with an electronics program. That program over the years has gone through a metamorphosis and they actually are in the middle of one right now.

Mr. Miller stated that five years ago the Polaris program was called electronics and computer technology. They were teaching kids to repair televisions and VCR's which today is a dead-end career opportunity. So they have morphed this program into an electronics and advanced energy program. They are learning about solar fuel cells and wind technology which is a great opportunity for their students. They currently are learning about it in the classroom and the proposed wind turbine will give them real world lab exposure to what wind technology is all about. They will get to see it, feel it, touch it and be a part of the education center. They are about training the future wind technicians, the future solar technicians and electrical engineers of the future. This is a really great opportunity for Polaris and a great opportunity for their students.

Mr. Sawyer stated that there is nothing in the information packet mentioning how the nursing home on Old Oak Boulevard feels about the turbine. Mr. Willis replied that the nursing home has said they really do not want to look at it. The turbine has now been moved 600 feet further away from the nursing home so they will see less of it. Mrs. Draves told them shame on them for making the Berea location their second choice. She asked if all of the letters in their information packet pertain to the original proposed location in Middleburg Heights and if so, did everything still stand for the new Berea location. Mr. Willis told her they had to reapply to the FAA and this is currently pending. It is about a two-month process and approximately one month has lapsed so far. He said he was totally confident the FAA will approve the new location.

Mrs. Draves said if she remembered correctly, the only issue Middleburg Heights seemed to have with the original turbine location was that they basically thought it was unsightly and did not want it in their backyard. In response to Mrs. Draves, Mr. Willis said the nursing home and Quadax said they did not want to look at the turbine and they did not want their employees looking at it.

Mr. Fay indicated that this has got to be one of the most exciting times in Berea's history. He referred to what is going on with the schools, the condemnation of property so new homes can be built and now this opportunity for Berea to be a center for renewable resources. He said he was proud of Polaris for jumping in on this project so quickly and looking at programs that will not only give the City a chance to be seen but also actually teaching our children a future.

Mr. Willis reported that in addition to Polaris, Ms. Scudder had mentioned Dr. Krueger who is with Baldwin-Wallace College who is extremely enthused about this project and wants their students to use the energy center. This project is a perfect match for the Fairgrounds, Polaris and Baldwin-Wallace College. In response to Mr. Sawyer, Mr. Willis indicated that Baldwin-Wallace College actually has a degree in sustainability. Mr. Rump noted that at the Tri-C downtown campus they also have a wind turbine.

Mr. Godwin reported that he is the Co-Chair of the ESA International and just happens to reside here in Ohio. Ohio is only behind California in potential jobs for this industry and Cuyahoga County is number one in the State of Ohio. This industry has been growing in double digits every year. What other industry does this Country have that is growing at this rate and has a guaranteed growth pattern for approximately 50 years.

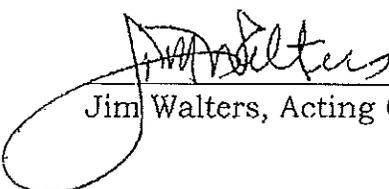
Mr. Godwin referred to a letter from the Division of Fish and Wildlife in the packet of information. They reviewed this site and found no issues. The wind turbine will be a solid tower, not a lattice tower and will not offer perches. In response to Mr. Sawyer, Mr. Godwin reported that the blades will rotate approximately 28 rpm's which is relatively slow. Generally, the larger the machine, the slower it goes. In response to Mr. Walters, Mr. Godwin stated that the wind turbine is not designed to allow a bird to land on it.

Moved by Rump, seconded by Draves to approve the conditional use for a wind turbine, as submitted. Vote on motion was ayes: Fay, Walters, Rump, Sawyer, Borowski, Brown, Draves. Nays: None. The motion carried.

OTHER BUSINESS: None.

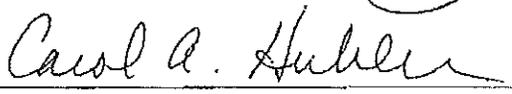
ADJOURNMENT:

There being no further business to come before the Planning Commission, moved by Fay, seconded by Borowski to adjourn. Vote on motion was all ayes; no nays. The meeting was adjourned at 10:30 p.m.



Jim Walters, Acting Chairman

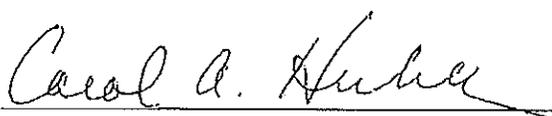
Attest:



Carol A. Hubler, Secretary

CERTIFICATE OF COMPLIANCE

The meeting of the Municipal Planning Commission held this 6th day of May, 2010 has been conducted in compliance with all legal requirements, including C.O. Chapter 109 and Section 121.22 of the Ohio Revised Code.



Carol A. Hubler, Secretary

Notice of Scoping List Fairgrounds

Mark Epstein, Department Head
Resource Protection and Review
[Ohio Historic Preservation Office](#)
1982 Velma Avenue
Columbus, OH 43211-2497

Laura Segna, Project Manager
Resource Protection and Review
[Ohio Historic Preservation Office](#)
1982 Velma Avenue
Columbus, OH 43211-2497

Paul Oyaski, Director
[Cuyahoga Department of Development](#)
112 Hamilton Court
Cleveland, OH 44114

[Cuyahoga County Planning Commission](#)
323 Lakeside Avenue West, Suite 400
Cleveland, OH 44113

[Western Reserve Historical Society](#)
10825 East Blvd.
Cleveland, OH 44106

[Western Reserve Heritage Association](#)
P.O. Box 314
14485 N. Cheshire Street
Burton, OH 44021

Cuyahoga County Commissioners
1219 Ontario Street
Cleveland, Ohio 44113-1611

Cuyahoga County Fairgrounds Board
164 Eastland Road
Berea, Ohio 44017-2066

Cleveland Metroparks
Board of Park Commissioners
4101 Fulton Parkway
Cleveland, Ohio 44144

Megan Seymour
[United States Fish and Wildlife Service](#)
4625 Morse Road, Suite 104
Columbus, OH 43230

Greg Payne
Ohio Energy Resources Division
[Ohio Department of Development](#)
77 South High Street, PO Box 1001
Columbus, OH 43216-1001

Phil Wallis, Vice President

[National Audubon Society](#)
225 Varick Street, 7th floor
New York, NY 10014

Michelle P. Scott, General Counsel
[National Audubon Society](#)
225 Varick Street, 7th floor
New York, NY 10014

Kim Van Fleet, Important Bird Area Coordinator
and Staff Biologist
[National Audubon Society](#)
225 Varick Street, 7th floor
New York, NY 10014

Heather Starck, Center Director
[Grange Insurance Audubon Center](#)
505 W. Whittier St
Columbus, OH 43215

Eric Glitzenstein
[Meyer, Glitzenstein & Crystal](#)
1601 Connecticut Ave NW, Suite 700
Washington, DC 20009

William Eubanks
[Meyer, Glitzenstein & Crystal](#)
1601 Connecticut Ave NW, Suite 700
Washington, DC 20009

Mr. Tom Winston
Chief, Office of Federal Facility Oversight
[Ohio Environmental Protection Agency](#)
401 East 5th Street
Dayton, OH 45402-2911

[Governor's Office](#)
Riffe Center, 30th Floor
77 South High Street
Columbus, OH 43215-6108

Keith Lott, Wind Energy Wildlife Biologist
[Ohio Division of Wildlife](#)
2514 Cleveland Road East
Huron, OH 44839

Dave Scott
[Ohio Division of Wildlife](#)
2514 Cleveland Road East
Huron, OH 44839

Enid Nagel, Chair
Sierra Club Ohio Chapter
131 North High Street #605
Columbus, Ohio 43215

Notice of Scoping List Fairgrounds

Stuart Siegfried
[Ohio Public Utility Commission](#)
 180 East Broad Street
 Columbus, Ohio 43215

Mark Shanahan
[Ohio Air Quality Development Authority](#)
 50 West Broad Street, Suite 1718
 Columbus, OH 43215

Sherrod Brown
 United States Senate (D-OH)
 713 Hart Senate Office Building
 Washington DC 20510

George Voinovich
 United State Senate (R-OH)
 524 Hart Senate Office Building
 Washington DC 20510

Dennis J. Kucinich
 United State Congress
 2445 Rayburn House Bldg
 Washington, DC 20515

Dale Miller
 Ohio Senate
 1 Capitol Square, Ground Floor
 Columbus, OH 43215

Timothy J. DeGeeter
 Ohio House of Representatives, District 15
 77 South High Street, 11th Floor
 Columbus, Ohio 43215-6111

Matt Patten
 Ohio House of Representative, District 18
 77 South High Street, 13th Floor
 Columbus, Ohio 43215-6111

Edward M. Davidson
[National Telecommunications and Information Administration](#)
 Herbert C. Hoover Building (HCHB)
 U.S. Department of Commerce / NTIA
 1401 Constitution Avenue, N.W.
 Washington, D.C. 20230

Mike Blaich
[Federal Aviation Administration](#)
 Air Traffic Airspace Branch, ASW-520
 2601 Meacham Blvd.
 Forth Worth, TX 76137-0520

John Milling

[ODOT Office of Aviation](#)
 2829 W. Dublin-Granville Road
 Columbus, OH 43235

James Huth, Advanced Energy Program
 Manager
[Ohio Department of Development](#)
 77 South High Street, PO Box 1001
 Columbus, OH 43216-1001

Patricia Huddle, Energy Public Policy Liaison
[Ohio Department of Development](#)
 77 South High Street, PO Box 1001
 Columbus, OH 43216-1001

Gregory Zucca, Strategic Program Officer
[Cuyahoga Department of Development](#)
 112 Hamilton Court
 Cleveland, OH 44114

Dr. James Hartman
 Assistant Secretary of Army (Installations &
 Environment)
 Office of Regional Environmental and
 Government Affairs - North
 Attn: SAIE - ESDH
 5179 Hoadley Road
 Aberdeen Proving Ground, MD 21010-5401

City of Berea
 Honorable Cyril M. Kleem
 11 Berea Commons
 Berea, Ohio 44017

City of Middleburg Heights
 Honorable Gary W. Starr
 15700 Bagley Road
 Middleburg Heights, Ohio 44130

Ms. Bonnie Belair, Zoning Attorney
 American Tower Corporation
 10 Presidential Way
 Woburn, MA 01901

Century Oak Care Center
 7250 Old Oak Blvd
 Middleburg Heights, Ohio 44130

Mr. John Leskiw
 Quadax Inc
 7500 Old Oak Blvd
 Middleburg Heights, Ohio 44130

Berea Historical Society
 118 East Bridge Street

Notice of Scoping List Fairgrounds

Berea, Ohio 44017-2128

Richard W. Durst, MFA - President
Baldwin Wallace College
300 Front Street
Berea, Ohio 44017

Robert Timmons, Superintendent
Polaris Career Center
7285 Old Oak Blvd
Middleburg Heights, Ohio 44130

Board of Trustees
The Berea Little Red Schoolhouse
Center for the Fine Arts
323 Bagley Road
Berea, Ohio 44017

Tribes:

Honorable Eugene Bigboy Sr., Chairman
[Bad River Band of the Lake Superior Tribe of Chippewa Indians](#)
P.O. Box 39
Odanah, WI 54861

Honorable John A. Barrett, Jr., Chairman
[Citizen Potawatomi Nation](#)
1601 S Gordon Cooper Dr.
Shawnee, OK 74801-8699

Chief Harold Frank
[Forest County Potawatomi Community](#)
P.O. Box 340
Crandon, WI 54520

Ms. Summer Sky Cohen, THPO
[Keweenaw Bay Indian Community](#)
107 Beartown Road
Baraga, MI 49908

Honorable Frank Ettawageshik
Tribal Chairman and all Council/Government
Operations
[Little Traverse Bay Bands of Odawa Indians](#)
7500 Odawa Circle
Harbor Springs, MI 49740

Honorable John Miller, Chairman
[Pokagon Band of Potawatomi Indians](#)
P.O. Box 180
Dowagiac, MI 49047

Honorable LeRoy Howard, Chief
[Seneca-Cayuga Tribe](#)

R2301 E. Steve Owens Blvd.
P.O. Box 1283
Miami, OK 74355

Honorable David Brien, Tribal Chairman
[Turtle Mountain Band of Chippewa Indians](#)
P.O. Box 900
Highway 5 West
Belcourt, ND 58316

Honorable Jeff Parker, President
[Bay Mills Indian Community](#)
Route #1, Box 313
Brimley, MI 49715

Honorable Kenneth Meshigaud, Chairman
[Hannahville Indian Community](#)
N14911 Hannahville B-1 Road
Wilson, MI 49896

Honorable Louis Taylor, Chairman
[Lac Courte Oreilles Band of Lake Superior Chippewa](#)
1394 West Trepania Road
Hayward, WI 54843

Honorable D. K. Sprague, Chairman
[Match-e-be-nash-she-wish Band of Pottawatomi](#)
P.O. Box 218
Dorr, MI 49323

Honorable Steve Ortiz, Tribal Chair
[Prairie Band of Potawatomi Nation](#)
Government Center
16281 Q Road
Mayetta, KS 66509

Honorable Elmer Emery, Chairman
[St. Croix Chippewa Band of Lake Superior Chippewa](#)
24663 Angeline Avenue
Webster, WI 54893-9246

Honorable Sandra L. Rachal, Chair
[Sokaogon Chippewa Community](#)
ATTN: Cultural Director
3051 Sand Lake Road
Crandon, WI 54520

Sherri Clemons, Tribal Liaison
[Wyandotte Tribe of Oklahoma](#)
P.O. Box 250
Wyandotte, OK 74370

Honorable John Houle, Tribal Chairman

Notice of Scoping List Fairgrounds

[Chippewa-Cree Tribe of the Rocky Boy's
Reservation](#)

RR 1, Box 544
Box Elder, MT 59521

Dr. Brice Obermeyer
[Delaware Tribe of Indians](#)
Dept. of Sociology & Anthropology
Emporia State University
Roosevelt Hall, Rm 121
1200 Commercial, Box 4022
Emporia, KS 66801

Honorable Laura Spurr, Chairperson
[Nottawaseppi Huron Band of the Potawatomi
Indians](#)
2221 1½ Mile Road
Fulton, MI 49052

Honorable Larry Romanelli, Tribal Ogema
[Little River Band of Ottawa Indians](#)
375 River Street
Manistee, MI 49660

Honorable Charles Todd, Chief
[Ottawa Tribe of Oklahoma](#)
P.O. Box 110
Miami, OK 74355

Honorable Rose Gurnoe-Soulier, Chair
[Red Cliff Band of Lake Superior Chippewa](#)
88385 Pike Road Hwy 13
Bayfield, WI 54814

Honorable Barry E. Snyder Sr., President
[Seneca Nation of Indians](#)
P.O. Box 231
Salamanca, NY 14779

Honorable Roger Hill, Chief
[Tonawanda Seneca Nation](#)
7027 Meadville Road
via Basom, NY 14013



NOTICE OF AVAILABILITY

The U.S. Department of Energy (DOE) has prepared a draft Environmental Assessment (EA) to analyze and describe the potential environmental impacts associated with the:

**Cuyahoga County Agricultural Society Wind Energy Project
City of Berea, Ohio
DOE/EA 1815**

DOE's Golden Field Office has prepared a draft EA in accordance with the National Environmental Policy Act (NEPA). Cuyahoga County Agricultural Society is proposing to use Federal funding from DOE under the American Recovery and Reinvestment Act of 2009 to design, permit, and construct a single 660-kilowatt wind turbine at the Cuyahoga County Fairgrounds in the center of the fairgrounds complex on 164 Eastland Road, Berea, Ohio. The draft EA is available for review on the DOE Golden Field Office website:

http://www.eere.energy.gov/golden/Reading_Room.aspx

Public comments on the results of the environmental impacts of implementing the proposed action will be accepted until **December 4, 2010**. Please mail comments to the **DOE Golden Field Office**, c/o Melissa Rossiter, 1617 Cole Boulevard, Golden, CO 80401, or by email to melissa.rossiter@go.doe.gov.



V47-660 kW

with OptiTip® and OptiSlip®



One or two generators

The V47-660 kW is delivered as standard with a single generator, which is highly efficient in the vast majority of wind conditions. However, a two-generator version is also available. This model contains a second, smaller, generator for use in wind speeds as low as 7 m/s. This means a lower sound level where it is most needed, as well as more efficient exploitation of modest wind conditions.

Optimal pitch with OptiTip®

Just like all other Vestas turbines, the V47-660 kW turbine is equipped with microprocessor-controlled OptiTip® pitch regulation, which ensures continuous and optimal adjustment of the angles of the blades in relation to the prevailing wind. The OptiTip® system makes it possible to find the best possible solution to the often contradictory requirements for high output and low sound levels, depending on the location.

OptiSlip®

As mentioned above, the V47-660 kW turbine features the unique generator principle OptiSlip®, which allows both the rotor and the generator to vary their RPM by up to 10% to cope during violent gusts of wind. In addition to minimising the load on various parts of the turbine, the OptiSlip® system also ensures an appreciably better power quality.

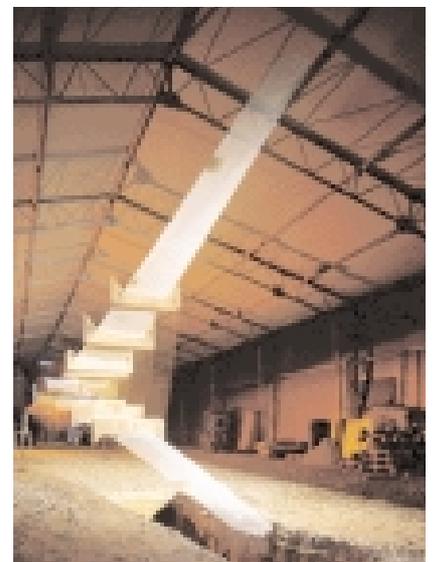


Lightning protection

The V47-660 kW turbine is equipped with Vestas Lightning Protection, which protects the entire turbine from the tips of the blades to the foundations.

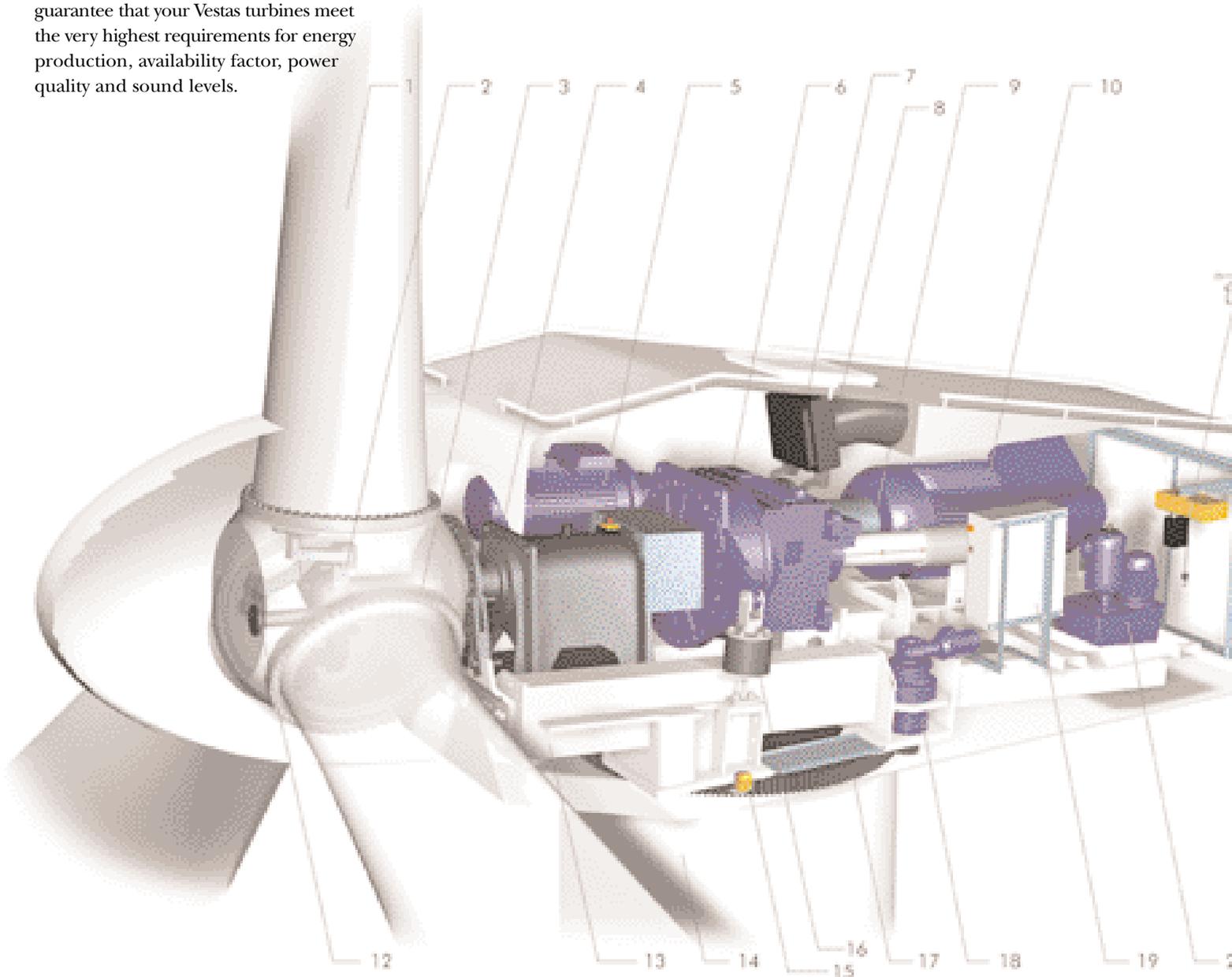
Flexible blades

Vestas always measures and tests all new products down to the smallest detail before releasing them on the market. The flexible blades underwent a 6-month dynamic distortion test under extreme loads – more than they would normally be exposed to in their 20-year service lives. The maximum loads and outward distortion of the blades were then checked in a static test. The blades passed all the tests and now make an appreciable contribution to the efficient production of the V47-660 kW turbine.



Proven Performance

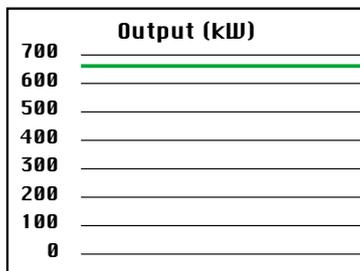
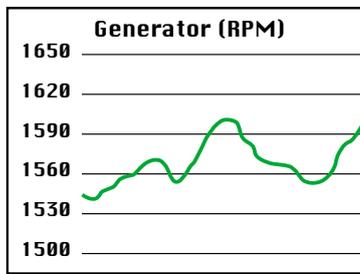
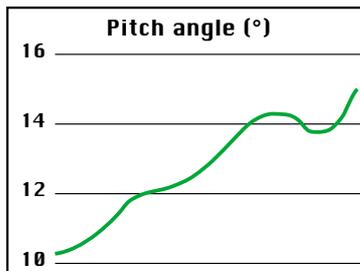
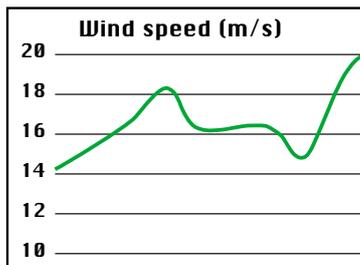
We have spent many months testing and documenting the performance of this Vestas turbine. When we were finally satisfied, we ran one last check by allowing an independent organisation to verify the results. This is standard practice at Vestas – a procedure we call Proven Performance. It is your guarantee that your Vestas turbines meet the very highest requirements for energy production, availability factor, power quality and sound levels.



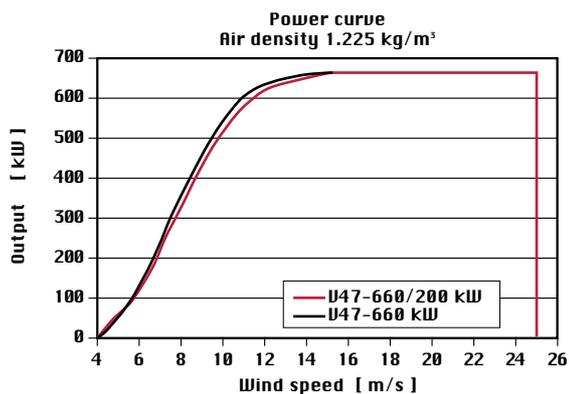
- | | |
|--|-----------------------------|
| 1. Blade | 11. Service crane |
| 2. Blade hub | 12. Pitch cylinder |
| 3. Blade bearing | 13. Machine foundation |
| 4. Main shaft | 14. Tower |
| 5. Secondary generator
(V47-660/200 kW) | 15. Yaw control |
| 6. Gearbox | 16. Gear tie rod |
| 7. Disc brake | 17. Yaw ring |
| 8. Oil cooler | 18. Yaw gears |
| 9. Cardan shaft | 19. VMP top
control unit |
| 10. Primary generator | 20. Hydraulic unit |

ROTOR		
	U47-660 kW	U47-660/200 kW
Diameter:	47 m	47 m
Area swept:	1,735 m ²	1,735 m ²
Revolution speed:	28.5	26/20
Number of blades:	3	3
Power regulation:	Pitch/OptiSlip®	Pitch/OptiSlip®
Air brake:	Feathered	Feathered
TOWER		
Hub height (approx.) :	40-45-50-55 m	40-45-50-55-60-65 m
OPERATIONAL DATA		
Cut-in wind speed:	4 m/s	3.5 m/s
Nominal wind speed (660 kW):	15 m/s	16 m/s
Stop wind speed:	25 m/s	25 m/s
GENERATOR		
Large generator:	Asynchronous with OptiSlip®	Asynchronous with OptiSlip®
Nominal output:	660 kW	660 kW
Operational data:	50 Hz 690 V 1,515-1,650 rpm	50 Hz 690 V 1,515-1,650 rpm
Small generator:		Asynchronous
Nominal output:		200 kW
Operational data:		50 Hz 690 V 1,500-1,516 rpm
GEARBOX		
Type:	Planet /parallel axles	Planet /parallel axles
CONTROL		
Type:	Microprocessor-based control of all turbine functions with the option of remote monitoring. OptiSlip® output regulation and OptiTip® pitch regulation of the blades.	

Actual measurements of a Vestas 660 kW turbine with OptiSlip®



OptiSlip® allows the revolution speeds of both the rotor and the generator to vary by approx. 10%. This minimises both unwanted fluctuations in the grid supply and the loads on the vital parts of the construction.



Turbine Use, Safety Policies and General Background

Security:

- Tower Climbing: The wind turbine utilizes a smooth exterior monopole tower with no climbing surfaces or apparatus. Tower climbing is only achieved through the use of an internal ladder system. This system is only reachable through a locked plate steel door.
- Availability: Only preauthorized personnel will be given access to the internal tower and turbine systems.

Tower Climbing Safety:

- Safety Climb: For maintenance personnel climbing of the tower, an OSHA approved “safety climb” system is included in the tower climbing system. This system is comprised of a ladder, a steel cable for the safety climb device, a full body harness designed and approved for the purpose, a locking safety climb device, safety lanyards with self-locking clips and additional tie-in points throughout the turbine system where a cable system is not available.
- OSHA approved safety equipment such as hardhats will be worn by all maintenance personnel climbing or working on the turbine.
- No individual shall climb the tower without a partner.

Electrical Safety:

- All electrical components and their installations shall meet all Local, State and Federal applicable laws and regulations.
- The turbine system shall meet UL1741 and IEC requirements for Utility Grid Protection in case of Grid power failures or power quality abnormalities.
- All electrical supply/grid interconnect services to and from the turbine shall be in buried conduits.
- The turbine system will have a staff accessible emergency shut-offs.
 - Utility room
 - Tower base
 - Nacelle
 - Remote through “Web” interface.

- The turbine system will have an automated system fault shut-off triggered at a minimum by the following sensors: System temperature, power quality, vibration, over-speed, fire and icing.
 - This system will also automatically send fault codes to preauthorized personnel through a “Web” interface.
- All safety sensors and equipment shall fault to a turbine fault state in case of their own failure.

Fire:

- The turbine shall have fire detection devices at the tower base and within the nacelle that shall be linked to the Site’s existing fire detection/alarm systems (if present).
- The local fire department shall be contacted and a fire/emergency response plan shall be adopted.
- Although formal fire suppression systems are extremely rare for wind turbines, the site shall investigate passive and active fire suppression systems for possible implementation in the turbine system.
- Local fire department approved fire extinguishers shall be located within the tower base and within the nacelle.
- The turbine system will have staff accessible emergency shut-offs.
 - Utility room
 - Tower base
 - Nacelle
 - Remote through “Web” interface.
- The turbine system will have an automated system fault shut-off triggered at a minimum by the following sensors: System temperature, power quality, vibration, over-speed, fire and icing.
 - This system will also automatically send fault codes to preauthorized personnel through a “Web” interface.
- Safety zones similar to any fire related incident will be utilized, if a fire should occur.

Lightening:

- The turbine system is equipped with a full grounding loop meeting or exceeding all Local, State and Federal regulations concerning grounding and lightening protection.
- Surge suppressing technology will be utilized to protect key electronics.
- See fire policies above.

Icing:

- Although icing of wind turbines is very rare and safety issues related to icing even rarer, it can occur, similar to any built structure (roofs, power lines, stadium lights, etc.).
- Although not an absolute brake, blade icing induced airfoil shape spoiling will naturally reduce the efficiency of the blades and thus reduce their rotational speed.
- Although formal icing detection systems are extremely rare for wind turbines, the site shall investigate active icing detection systems for possible implementation in the turbine system.
- The turbine system will have an automated system fault shut-off triggered at a minimum by the following sensors: System temperature, power quality, vibration, over-speed, fire and icing (vibration caused by blade icing induced imbalances will automatically shut down the turbine).
 - This system will also automatically send fault codes to preauthorized personnel through a “Web” interface.
- The turbine’s nacelle will have a cold-weather package including nacelle heaters. These heaters are designed to maintain nacelle temperatures above the dew-point and well above freezing. This system will automatically melt snow and ice accumulation on top of the nacelle.
- The turbine system will have a staff accessible emergency shut-offs.
 - Utility room
 - Tower base
 - Nacelle
 - Remote through “Web” interface.
- All icing related turbine shut-downs will require a direct inspection and an on-site manual restart.
- The site personnel and the system maintenance personnel will shut down the turbine in the event of an icing condition.
- The site shall adopt an ice safety zone around the turbine for implementation during icing events, if they should occur.

High Wind:

- The turbine automatically shuts down in high winds and turns itself out of the wind.
- The turbine system will have an automated system fault shut-off triggered at a minimum by the following sensors: System temperature, power quality, vibration,

over-speed, fire and icing (vibration caused by blade icing induced imbalances will automatically shut down the turbine).

- This system will also automatically send fault codes to preauthorized personnel through a “Web” interface.

Aviation Safety:

- The project has been review by both FAA and ODOT and “No Hazard to Aviation” determinations were issued.
- An FAA approved red obstruction marking light will be located on top of the nacelle.

Shadow Flicker:

- Although all structures cast shadows, shadows from wind turbines that reach occupied structures or areas can be considered a nuisance due to the fact that they move or flicker as the blades rotate in front of the Sun.
- A formal shadow flicker study has been conducted for the site based on the turbine’s rotor diameter and height, the site latitude and longitude, weather records, existing site topography and the existing area obstructions.
- Per international standards, shadow flicker impacting a particular location above 30 hours per year is considered a potential nuisance. While the turbine’s shadow will reach some of the area properties, no residential or business property locations will receive more than 30 hours of shadow per year. Other factors that mitigate the shadows’ impact include:
 - Shadow intensity drops off with distance. Shadow edges soften and shadow bodies become more muted. Shadows beyond ten rotor diameters from the tower base are considered insignificant with shadows within five rotor diameters being the most significant.
 - Shadows move and do not remain in one spot for extended periods of time.
 - The longest extended period shadows occur in the winter when there are fewer sunny days.
 - Many local natural and built environmental elements such as trees will block or significantly diffuse shadows.
- If extended adverse shadows should impact a particular dwelling, the wind turbine site owner will take one or more of the following mitigating measures:
 - Plant evergreen trees to block the shadow.
 - Provide blinds for the dwelling.
 - Turn off the turbine during the shadowing periods that excessively affect the dwelling.

Sound:

- Wind turbines of the size to be installed are inherently quite devices, especially over distance, and are typically very hard to hear over the wind itself and the existing ambient area noise levels.
 - Sound from a single wind turbines typically comes from the following areas:
 - Wind noise off of the blades as they are driven by the wind (swooshing that drops off over distance and typically competes with the area's natural wind noise).
 - Drive-train noise (mechanical sound typically not heard outside the immediate vicinity of the turbine).
 - Yaw system noise (mechanical sound typically not heard outside the immediate vicinity of the turbine and that is only present when the turbine turns into the wind).
 - Electrical noise from the turbine's electrical equipment and transformer (buzz, typically not heard outside the immediate vicinity of the turbine).
- Sound modeling for the proposed wind turbine supports that turbine produced audio levels will not exceed any local code or ordinance at the site's property lines. To be conservative, this modeling was done at an 8 mps/17.9 mph wind speed, well above site averages.
- Sound measurement of existing ambient sound levels for both day and evening periods at multiple locations surrounding the site show existing ambient sound levels above what the wind turbine will produce.

Cuyahoga County Fairgrounds Turbine Equipment Transportation Plan:

Likely delivery route for turbine: Subject to change with equal or greater weight handling roads being selected. In all cases for turbine components, cranes and other materials, oversized or overweight loads and routes will be permitted through the standard processes of the state/s of travel and utilize transport equipment and procedures suitable to meet or exceed all regulatory requirements for the path of travel and the equipment being transported. (Heaviest expected single turbine component load expected is 62,000 lbs with a max width of 13'.)

Turbine Supply , 4126 Saint Clair Avenue, Cleveland, Ohio †

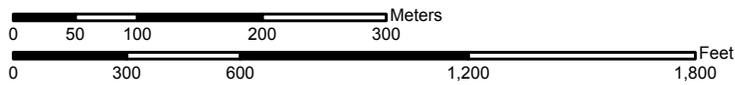
	1. Head southwest on St Clair Ave toward E 41st St About 2 mins	go 0.7 mi total 0.7 mi
	2. Turn right at E 26th St About 1 min	go 0.2 mi total 0.9 mi
	3. Turn right to merge onto I-90 W About 4 mins	go 3.1 mi total 4.1 mi
	4. Continue onto I-71 S About 14 mins	go 12.3 mi total 16.4 mi
	5. Take exit 235 for Bagley Rd	go 0.3 mi total 16.7 mi
	6. Turn right at Bagley Rd About 2 mins	go 0.8 mi total 17.5 mi
	7. Turn left at Bagley Dr Destination will be on the right About 1 min	go 0.4 mi total 17.9 mi
	"CCFG Turbine" Bagley Dr†	

Turbine Installation Site, Cuyahoga County Fairgrounds, Bagley Road, Berea, Ohio

All other materials and equipment will likely be transported from within the State of Ohio and follow a similar route off of Interstate 71 South.



Map Scale: 1:6,260 if printed on A size (8.5" x 11") sheet.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Units

Special Point Features

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot
-  Spoil Area
-  Stony Spot

-  Very Stony Spot
-  Wet Spot
-  Other

Special Line Features

-  Gully
-  Short Steep Slope
-  Other

Political Features

-  Cities

Water Features

-  Oceans
-  Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

MAP INFORMATION

Map Scale: 1:6,260 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 17N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cuyahoga County, Ohio
 Survey Area Data: Version 11, Jan 27, 2010

Date(s) aerial images were photographed: 8/2/2004

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Cuyahoga County, Ohio (OH035)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BgB	Bogart loam, 2 to 6 percent slopes	15.6	11.0%
Ct	Condit silty clay loam	13.4	9.5%
HaA	Haskins loam, 0 to 2 percent slopes	1.4	1.0%
HbA	Haskins-Urban land complex, nearly level	13.3	9.4%
JtA	Jimtown loam, 0 to 3 percent slopes	6.3	4.5%
MgA	Mahoning silt loam, 0 to 2 percent slopes	73.1	51.7%
MgB	Mahoning silt loam, 2 to 6 percent slopes	9.1	6.5%
MmB	Mahoning-Urban land complex, undulating	9.0	6.4%
Totals for Area of Interest		141.4	100.0%



FRED J. ROBINSON & ASSOCIATES, INC.

*Consulting Arborists and
Environmentalists*

(440) 358-1464
7191 Auburn Road Concord Twp., OH. 44077-9559
E-mail: fjtree@roadrunner.com

September 22, 2010

Cuyahoga County Agricultural Society
164 Eastland Road
Berea, OH 44017

Attn: Joanne Scudder, Cuyahoga County Fair Board

RE: Wind Turbine Project; Tree Inspection at Energy Center Site.

Gentlemen:

EXECUTIVE SUMMARY

The proposed Wind Turbine Project at the Cuyahoga County Fairgrounds will have an Energy Center Building and a buried power line that will impact up to seven trees. These trees were inspected on September 20, 2010 by Registered Consulting Arborist Fred J. Robinson. Three trees are recommended to be removed due to their location, condition, expected construction damage, potential safety risk, and/or impact on the proposed solar panels. These trees are the largest Silver Maple and the two adjacent small Red Maples.

A large Shagbark Hickory and a relatively new River Birch are magnificent specimens and should be afforded all the protection possible during construction. Two other Silver Maples can be retained and protected but safe life expectancy is short. One is hollow with an active Honey Bee hive and the other has a recent large scar on the trunk that may decay.

INTRODUCTION

Environmental concerns about removal of a tree for this project were reported to me by Ms. Scudder, especially the large Silver Maple on the south side of the building. At the request of Ms. Scudder and with a copy of the Wind Turbine Project Plot Plan I inspected the trees that may be impacted by construction of the Energy Center Building and the underground power line installations.

On Monday September 20, 2010, Maintenance Supervisor Bob Cartmell showed me the approximate location of the building and advised it was to be 50' E-W and 40' N-S. Because tree damage could occur well beyond the footprint of the building and power line trenching, all seven trees in the vicinity were inspected. I prepared a Tree Inspection spreadsheet to record pertinent information, observations, and action recommendations for each tree.

A typed copy of the Tree Inspection form is attached. The information on this form allows me to provide a shorter narrative in this report.

PURPOSE OF THE REPORT

The purpose of this report is to provide the Cuyahoga County Agriculture Society and/or the Fair Board with sufficient information to make the best judgment regarding the subject trees. It will also provide backup support for decisions and long term planning.

LIMITING FACTORS

Because the site had not been staked out nor were detailed engineering plans provided at the time of my inspection, I could not determine the exact location of expected construction activity or the solar panels in relation to tree location and future shading. The inspection of each tree took place from the ground. Aerial inspection was limited to views up through the canopy and from afar when digital photos were taken for reference.

OBSERVATIONS

Investigation Methods

The seven trees were numbered starting with the largest Silver Maple (#1) at the southwest corner of the site and working east to #4, then north from #1 to #5 and #6, and then east to #7. A black permanent marker was used to discreetly number each tree at about 5.5' up on the north side. The numbers may be hard to see and will fade in a year or so.

A tree location sketch follows. North is to the top. A drive is to the west. The race track and wind turbine are to the south. The photo below is from the northwest with tree numbers and the proposed turbine site in the background.

		Gazebo		
	#6 River Birch			#7 Silver Maple
	#5 Red Maple			
	#1 Silver Maple	#2 Red Maple	#3 Shagbark Hickory	#4 Silver Maple



Cuyahoga County Agricultural Society: Wind Turbine Tree Inspection Report

September 22, 2010

Page 3 of 4

Tools

A 200' tape was used to measure distances. A diameter tape was used to measure trunk diameter. The handle of a "Soil Knife" was used to sound for cavities within each trunk. A thin 16" screwdriver was used to probe the extent of decay. The "Soil Knife" was also used to break off loose bark around scars to expose ants, earwigs, and decay.

Tree Health

The vigor of the trees was based on foliage density, color, and annual twig elongation where possible. Two trees were in excellent condition; the Shagbark Hickory (#3) and the River Birch (#6). The foliage in the Silver and Red Maples looked healthier in the photographs than when looking up. The lower branches were much more stressed than the tops. Their vigor ranged from fair to good (#7) but the latter recently suffered a large scar with sapwood damage.

Structural Problems

The large Silver Maple (#1) is at the age and size when stems and branches may break and cause damage or harm. The SW stem is long and heavy, although it could be lightened by cutting back.

The two red maples (#2 and #5) have potential points of failure at or just above grade. They may actually be hybrids of red and silver maples.

The southeast Silver Maple (#4) has a low NW branch that has a cavity which apparently extends down into the trunk and contains a very active Honey Bee hive. CAUTION! This tree is not yet a high risk for breaking and is partially protected from storm winds by the hickory.

Insect Pests and Diseases

The only insects of concern were the Carpenter Ants on/in Silver Maple #4. However, the ants are creating more space for the Honey Bees.

Construction Impact

Mr. Cartmell advised me the footer for the foundation will cut into the root flare of Silver Maple #1 on the north side. The topsoil will be stripped within the footers. It is probable that all the roots on the north side will be lost. If that is the case, I can not predict whether this tree would die or fall first. It would be very out of balance, even if the SW stem would be cut back. The trench for the buried power line from the wind turbine to the transformer, in its plotted location, could increase the root loss to as much as 75%. The current and potential condition of tree #1 does not justify the cost of a directional bore under the roots.

Red Maple #2 may also suffer extensive root loss. Red Maple #5 may be within the building footprint.

The rest of the trees (#3, #4, #6, and #7) should be protected from construction equipment and activity and worker parking within the critical root zone (CRZ). Trees can tolerate some root loss but a minimal amount must be undisturbed for stability and health. The CRZ is within a radius from the center of the stump depending on trunk diameter and also to some extent; height, crown density and spread, exposure, soil properties, and root depth. Temporary fencing around the outer edge of the CRZ is normally used. A Consulting Arborist or at least a Certified Arborist should be consulted if it is determined that there will be encroachment into the CRZ. Mulching, steel plating, or soil boring may be recommended.

Shading of Solar Panels

The solar panels proposed for the south half of the Energy Center roof could be partially shaded when trees are in full leaf, especially when the sun is low in spring and fall. Trees #1 and #2 would cause shade.

Cuyahoga County Agricultural Society: Wind Turbine Tree Inspection Report

September 22, 2010

Page 4 of 4

The hickory would only shade in the morning when the sun would be low and at a low angle to the panels.

Conclusions

The useful life expectancy of the trees around the Energy Center site has to be considered, along with the benefits and detriments the trees provide. There are sufficient reasons to remove the large Silver Maple and the two adjacent Red Maples; trees #1, #2, and #5. The Shagbark Hickory and the River Birch should be protected as necessary. The other two Silver Maples are OK for now with possible protection. However, their safe condition will decline in future years.

CONSULTING ARBORIST DISCLOSURE STATEMENT

Consulting Arborists are tree specialist who use their education, knowledge, training and experience to examine trees and other woody plants, recommend measures to enhance the beauty and health of trees and other woody plants, and attempt to reduce the risk of living, working, or passing by trees and other woody plants. Clients may choose to accept or disregard the recommendations of the consulting arborist, or seek additional advice. Consulting arborists may not have any information about whether the recommendations are actually carried out, if they were carried out correctly, or when they were carried out. Timing of carrying out recommendations is often critical for success.

Consulting arborists cannot detect every condition that could possibly lead to the structural failure of a tree or other woody plant. Trees and other woody plants are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees, high up in and/or below ground. Consulting arborists cannot guarantee that a tree or other woody plant will be healthy or safe under all circumstances, or for a specified period of time. Likewise, recommended treatments, like any medicine, cannot be guaranteed.

Consulting Arborists rely on complete and accurate information being provided. The person, company, municipality, or organization hiring or contracting with the consulting arborist accepts full responsibility for authorizing the recommended treatment or remedial measures or actions. Trees can be managed, but they cannot be controlled. To live, work, or pass near a tree is to accept some degree of risk. The only way to eliminate all risks is to eliminate all trees, and there are other risks, reduced real values, and discomforts without trees.

I have inspected the subject trees, and to my knowledge and belief, all statements and information in this report are true and correct.

Respectfully submitted,



Fred J. Robinson

Registered Consulting Arborist, # 150 ASCA

Certified Arborist, # OH 0066 A M (Arboriculture and Municipal) ISA

Enclosures: Tree Inspection Form
Credentials

TREE INSPECTION
WIND TURBINE PROJECT, Cuyahoga County Fairgrounds, Berea, OH

#	Species	Size	Critical Root Zone Radius	Location	Vigor	Structural Defects	Insects/Disease	Observations	Action
1	Silver Maple	41.5"	22'	SW tree in Energy Center Site.	Poor Pale leaf color. Sparse foliage.	SW stem is long and heavy with possible breakage seams below crotch in trunk. There are 1 or 2 small cavities in the SW stem. Higher cavity has slight potential to split.	Cottony Maple Scale.*	Eight dead branches over 3" width. Scars around root flare. Decay on N side. Extensive root loss expected in construction of building, grade change, and possible power line trench; thus subject to uprooting or rapid decline. Crown will shade some solar panels.	REMOVE
2	Red Maple (2 stems @DSH)	9.0" @ 32" above grade	10'	48' E of #1.	Fair	Girdled at grade by its roots.	None observed.	Suckering from below the girdle. Will shade some solar panels. May break at grade.	REMOVE
3	Shagbark Hickory	26.0"	18'	96' E of #1 48' E of #2	Exc.	None observed.	None Obs.	Great specimen. Has embedded wires and insulators.	PROTECT roots & low branches during construction with temporary fencing @ 18' radius.
4	Silver Maple	29.0"	18'	134' E of #1. 38' E of #3	Fair	NW branch and trunk are partially hollow.	Carpenter Ants & Cottony Maple Scale.*	Active Honey Bee hive in NW branch and probably in the trunk, as it sounds hollow. Risk of breakage of trunk or NW branch is not high, so would not be high on a Silver Maple removal list.	WARN of bee activity and protect roots if proposed construction activity is within 18'.

NOTES: Size is Diameter at Standard Height (DSH) measured at 4.5' above average grade, unless otherwise noted. The Critical Root Zone (CRZ) data I use is based on the "Trenching Formula" developed by the Dept. of Forestry, Toronto, Ontario. The radius is theoretically measured from mid-stump.

Fred J. Robinson & Assoc., Inc.
Consulting Arborists

7191 Auburn Road
Concord, OH 44077-9559
(440) 358-1464 (440) 364-0320 Cell

Inspected on: September 20, 2010
By: Fred J. Robinson

**TREE INSPECTION
WIND TURBINE PROJECT, Cuyahoga County Fairgrounds, Berea, OH**

#	Species	Size	Critical Root Zone Radius	Location	Vigor	Structural Defects	Insects/Disease	Observations	Action
5	Red Maple	9.3"	10'	38' N of #1.	Fair	More than 50% of trunk is dead @ grade due to an old scar.	Ants were under loose bark.	Could break at grade. Tree is probably within proposed building.	REMOVE
6	River Birch	12.3"	11'	64' N of #1. 18' N of #5	Exc.	None observed.	None damaging. (Earwig)	Girdling roots NW. Basal scars NW and SE, but not decayed and are closing.	PROTECT roots & low branches during construction with temporary fencing @ 12' radius. Do not raise grade within CRZ radius or use bank run gravel as fill.
7	Silver Maple	14.0'	12'	70' E of #6.	Good	None observed.	None damaging. (Earwig)	New large scar on NW side starts at 6" above grade to 26" higher and is 9" wide. This tree should be far from construction. Exposed sapwood may decay before scar closes.	PROTECT if necessary @ 12' radius.
*	Cottony Maple Scale is only a nuisance insect as it drops sticky "honeydew" on to surfaces below on which Sooty Mold Fungus grows. At worst, a few branches may be sucked dry. The scales are naturally controlled by predatory insects after scale populations have peaked every 7 to 12 years.								



FRED J. ROBINSON & ASSOCIATES, INC.

*Consulting Arborists and
Environmentalists*

(440) 358-1464
7191 Auburn Road, Concord, OH. 44077-9559
E-mail: fjtree@roadrunner.com

CREDENTIALS: FRED J. ROBINSON

Fred J. Robinson is actively involved in the field of arboricultural consultation and woody plant appraisal. He started with the F.A. Bartlett Tree Expert Company in Cleveland in 1966. Prior to starting his own consulting business in November, 1988, he was Consulting Arborist and Vice President of Osborne Tree Service, a Division of JTO, Inc. in Mentor. Mr. Robinson taught “Care of Woody Plants” and various other horticultural classes in the Continuing Education Division of Cleveland State University for 16 years. He is also a frequent lecturer for garden clubs, civic organizations, horticultural training sessions, arborist certification review classes, and both introductory and advanced tree appraisal seminars and workshops.

Mr. Robinson has BS degrees from both Syracuse University and the State University of New York College of Environmental Science and Forestry. His major was Forest Entomology and was followed by one year of post graduate study in Forest Entomology. He was employed as an instructor and lab assistant while a student. Since 1966, Mr. Robinson has attended numerous professional seminars and workshops on subjects such as Treatment of Tree Wounds and Compartmentalization of Decay in Trees, Pollution Injury to Trees, Shade Tree Evaluation, Hazardous Tree Assessment, Building Around Trees, Expert Witness/Litigation Consulting, Historic Landscape Maintenance, Technical Report Writing, Plant Pest & Disease Diagnosis, *i-Tree* Inventory System, and Advanced Tree Appraisal.

In 1975, Mr. Robinson was elected into the American Society of Consulting Arborists, which has world wide membership. He is a Registered Consulting Arborist (No. 150). He is also a member of the International Society of Arboriculture and is an Ohio Certified Arborist (No. OH 0066 AM) having additional certification in municipal arboriculture. Extensive continuing education credits are required to retain both ASCA Registration and ISA Certification.

For many years, Mr. Robinson served as an evaluator at the Shade Tree Evaluation Plot at the Ohio Agriculture Research and Development Center in Wooster. He also served on the Garden and Landscape Committee at Stan Hywet Hall and Gardens in Akron, prior to which he had directed the reopening of the historic vistas blocked by fifty years of tree growth and advised on tree preservation and supervised the installation of lightning protection in key trees.

As an expert on trees and other woody plants, Mr. Robinson is retained in much litigation and has given testimony in numerous courts of law in Ohio and Pennsylvania. His expertise has been called upon by property owners, historic sites, tree and/or landscape contractors, insurance companies, attorneys, municipalities, utility companies, engineers, architects, and landscape architects. The Cleveland Botanical Garden calls on Mr. Robinson for tree assessment and advice on tree protection during construction of the Children’s Garden and the more recent building and garden construction and restoration. In 1998, Tishman Speyer Properties retained FJR Assoc. to find & provide care for the Rockefeller Center Christmas Tree.

Mr. Robinson has served as Consulting Arborist to the Village of Gates Mills, the City of Richmond Heights, and Mayfield Village. In Gates Mills he was responsible for the preservation of trees and shrubs on Village property, reviews plans for tree protection and reforestation at construction sites and development in the Protected Hillside Zones. In Richmond Heights he was Administrator of the Tree Planting Program, care of existing trees, and advisor to the City Engineer for tree protection. In Mayfield Village he has consulted about trees along streets and on property purchased by the Village.

In the City of Willoughby Hills, Mr. Robinson is appraising natural and planted vegetation on and near easements for the Euclid Creek Tributary Interceptor and Watershed Sanitary Sewer projects. The City of Cleveland has used Mr. Robinson for inspection of trees to be impacted by sidewalk replacement. The City of Solon has contracted with Fred J. Robinson & Associates for tree preservation on their Aurora East Sanitary and Storm Sewer/Pettibone Road Reconstruction Project. Many other municipalities, or their attorneys, use Mr. Robinson for assistance in tree issues, including assessment, appraisal, and damage, injury, or death due to tree failures.

Credentials: Fred J. Robinson
Page 2 of 2

CT Consultants of Willoughby contracted with Fred J. Robinson & Assoc. in the fall of 2005 for the Pre-Construction Tree Evaluation and Preservation Recommendations along the proposed Norton Parkway across the Newell Creek Preserve in Mentor. In 2006, Pre-Construction Tree Assessment was done for DLZ Ohio Inc. in their engineering for the Forest Hill Park project for the North East Regional Sewer District.

A recent project was consulting with PWP-Landscape Architecture of Berkeley, California on extensive tree planting projects at the Cleveland Clinic Foundation. It included a 289 tree allee at the new entrance, massive screening along the Euclid Corridor Project, and a follow-up tree inspection report in 2009.

Another recent project was consulting with Karlsberger Architects of Columbus, Ohio at TriPoint Medical Center in Concord, Ohio.

Mr. Robinson has served on the Tree Evaluation Committee of the Ohio Chapter of the International Society of Arboriculture since 2001. During that time the Committee has prepared two editions of the "Guide to Appraisal of Trees and Other Plants in Ohio." The Sixth Edition was published by the Ohio Chapter in 2002 and the Seventh Edition in 2007.



Wireless Applications Corp. Report on the Effects upon FCC-licensed Microwave and RF Facilities due to the construction of the Berea, OH Wind Turbine

October 11, 2010

I. Executive Summary

Wireless Applications, Corp. performed an analysis to evaluate the potential effects of the proposed Berea, OH wind turbine located in Cuyahoga County, Ohio on FCC-licensed microwave systems and two-way RF transmitting facilities. This document illustrates the location of the wind turbine with respect to the microwave paths, possible RF obstruction to nearby RF transmitting stations, along with recommendations concerning the wind turbine location. All illustrations, calculations and conclusions contained in this document are subject to field verification. The databases used in creating the attached tables and maps are generally accurate, but irregularities have been known to happen. A field verification survey is suggested as part of the pre-construction surveys.

Frequently, wind turbines located on land parcels near RF transmitting facilities or receivers can cause an impact that affects spectrum users. This study will calculate the impact of placing wind turbines close to FCC-licensed RF facilities.

The proposed wind turbine's tower height will be 60 meters (196.8 ft) with a rotor diameter of 47 meters (154.2 ft). The total tip height will be 83.5 meters (273.9 ft) above ground level. The wind turbine will be located in the Cuyahoga County Fairgrounds in eastern Berea, Cuyahoga County, Ohio (see Figure 1 attached).

Using Wireless Applications Corp's Site Sync online software, a search was conducted to identify existing and proposed microwave paths crossing the wind turbine location. In addition, FCC-registered structures and other two-way RF facilities within 2 miles of the wind turbine location were searched. Site Sync provides a graphical representation of the microwave paths and FCC structures, which were then overlaid on Google Earth base maps. Five FCC-licensed microwave paths and zero pending applications were found as shown in Figures 2 and 3) in the vicinity of the wind turbine location. No FCC-licensed and pending microwave paths were found to impact the location. Also, no land mobile or public safety antenna sites were found to be significantly impact by the wind turbine location.

The following analysis investigates the wind turbine location in detail against all pertinent FCC licensed services for significant unwanted impact. This analysis assumes that all licensed services have been designed and constructed according to FCC requirements and good engineering practice. All data has been taken from FCC databases.

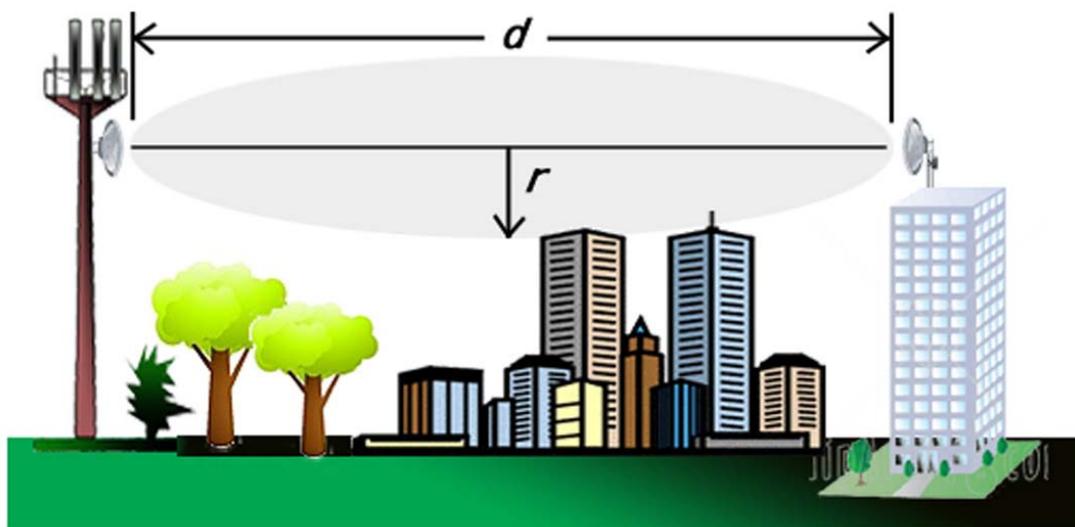
Important Note: Microwave path and fixed station studies are derived from the FCC databases and other third party data, which normally exhibit a high degree of accuracy and reliability. However, database errors do exist that may lead to incomplete results. A field survey is recommended prior to construction in order to confirm the site locations, antenna placements, antenna azimuths and other parameters are in service.

Each of the RF analyses is described separately in the following sections.

II. Microwave links Analysis

A comprehensive analysis was done to determine the likely effect of the new wind turbine location on existing and proposed microwave paths, consisting of a Fresnel x/y axis study. The microwave paths are overlaid on the Google Earth base maps, see Figures 2 and 3, and are also available as overlays for the Google Earth program (kmz files).

Wireless Applications Corp. calculated the Worst Case Fresnel Zones (WCFZ), which is the mid-point of a microwave path where the widest (or worst case) Fresnel zone occurs, for each microwave path. The radius r of the Worst Case Fresnel Zone, in meters, is calculated for each path using the following formula:



$$r_{(\text{in mts})} = 17.32 \times \sqrt{\frac{d_{(\text{in Km})}}{4f_{(\text{in GHz})}}} \quad r_{(\text{in ft})} = 72.05 \times \sqrt{\frac{d_{(\text{in miles})}}{4f_{(\text{in GHz})}}}$$

where d is the microwave path length in kilometers or miles and F_{GHz} is the frequency in gigahertz.

The WCFZ is the main microwave beam that is cylindrical in shape with its axis as the direct line between the microwave end points and whose radius is r as calculated above. This is the zone where the placing of obstructions should be avoided.

As shown in Table 1 below, these are the five FCC-licensed microwave paths that are close to the proposed wind turbine location.

Path ID	Radio Service Code	Site Name 1	Site Name 2	Call Sign Site 1	Call Sign Site 2	Entity Name	Tx Freq (MHz)	Rx Freq (MHz)	WCFZ (m)	WCFZ (ft)	Clearance (m)	Clearance (ft)
1	AS	Location 1	Location 2	WMU969		BALDWIN-WALLACE COLLEGE	945.5		23.7	77.8	736.4	2415.9
2	MG	3124	1325	KBH77	KBH78	FELHC	6585	6705	16.9	55.3	755.2	2477.8
3	MG	0354	1325	KBH78	KQF91	FELHC	6625	6745	15.0	49.3	1142.5	3748.2
4	CF	CLE0805	CLE0806	WQBJ363	WQBJ361	FiberTower Network Services Corp.	17960	19520	3.1	10.1	8.5	27.9
5	CF	CLE0849	CLE0806	WQFD636	WQBJ361	FiberTower Network Services Corp.	23070	21870	2.4	7.9	232.1	761.4

Table 1 – Microwave Links Close to the Wind Turbine Location

The Fresnel zone radius was calculated with respect to the position of the proposed wind turbine along the microwave paths. Table 1 also shows the distance by which the proposed wind turbine cleared the microwave paths.

Figure 2 shows these microwave links overlaid on the Google Earth base map. These microwave links will not impact the proposed wind turbine location. The licensed 18 GHz microwave link with callsigns WQBJ363 and WQBJ361 came close to the WCFZ but the proposed wind turbine location does not obstruct this microwave link.

No pending microwave applications were found within 10 miles that will be impacted by the proposed wind turbine location.

Final placement of the proposed wind turbine should be done in coordination with a land surveyor to verify the coordinates of the end points of the microwave path. Any change in the coordinates of these locations may alter the results of this study.

III. FAA and Department of Defense Issues

An FAA Form 7460-1 is required to be filed for the proposed wind turbine as the first step in the site development process. The FAA obstruction clearance includes public airports and military flight routes analysis. Once the FAA obstruction clearance is received, it must not be allowed to expire. Registering the structure for an Antenna Structure Registration (ASR) number with the FCC will solve this issue.

The Department of Defense wind farm interference report was released to the public on September 27, 2006. Notification should be made to the Department of Defense and the Department of Homeland Security Long Range Radar Joint Program Office "JPO". The JPO previously adopted an interim policy of objecting to any turbines located within line of sight of any air defense or Homeland Security radar. The mitigation measures that have been approved so far are terrain shielding, as well as placing turbines beyond line of sight to military radar.

IV. Other Government RF Facilities

The National Telecommunication Information Agency (NTIA) manages the operation of RF frequencies for federal use. The technical specifications for most government facilities are not available to the public. The NTIA should be notified of the proposed wind turbine project during pre-construction planning to avoid any issues. The NTIA has a review process where the Interdepartmental Radio Advisory Committee (IRAC), consisting of different government agencies' representatives, reviews new wind turbine projects for impact on government frequencies. In almost all cases, no adverse impact is found, and IRAC usually issues a determination within 30 days. All three agencies, FAA, NTIA and JPO, should be notified of the proposed wind turbine project.

V. Other RF (Telecommunications) Facilities

According to the FCC and FAA databases, the closest land mobile station is about 0.17 miles SE from the wind turbine location. Its ASR number is 1019672 and it is owned by Verizon Wireless. Sprintcom Inc is located 0.88 miles East of the wind turbine location with ASR number 1215229 (see Figures 7 and 8). At this time, we found no direct interference issues with these RF transmitting stations. Without field measurement studies, of which Wireless Applications Corp. does not perform, there may be unknown spectral noise generation and indirect interference at the locations not analyzed in this report.

During the pre-construction surveys, it is imperative to check whether or not Verizon Wireless and Sprintcom Inc are in operation at the notified coordinates. The licensee should be notified of the proposed wind turbine as part of the public review process. Two miles is the industry standard for which comments from FCC-licensed facilities for possible RF impact by a wind project are solicited. This is not an FCC requirement, but rather a "good neighbor" policy.

VI. Conclusion

1. The proposed wind turbine located is geo-coded at 41/21/59.50 N and 81-50-21.10 W, in Cuyahoga County, Berea, OH.
2. There are no FCC-licensed or pending microwave paths that are impacted by the proposed wind turbine location. The wind turbine should be placed as shown in attached Figures 4, 5 and 6. With the assistance of a land surveyor, determine the exact locations of the transmit and receive sites of the microwave stations with regard to the proposed wind turbine.
3. There is no evidence of direct interference issues with RF transmitting stations. However, it is recommended that you notify the existing licensees as part of the public review process. They may want to perform field verification of the Verizon Wireless and SprintCom Inc land mobile stations in reference to the proposed wind turbine.
4. It is recommended that an inspection is completed to determine if there are any undocumented non-broadcast transmitters of any type within the wind turbine location parcels or within a half-mile of the property boundaries. There may be other cellular base station locations that are not individually registered to the FCC. There are no telecommunications towers found in the FCC license database search that was conducted. However, checking the FCC structure records for tower registration yield the two telecommunications operators. Unregistered towers should be checked by on-site inspection.
5. The wind turbine project should be submitted to NTIA and JPO to assure that no unlisted RF facilities are impacted by the wind turbine.

Attached Figures:

- Figure 1 - Proposed Wind Turbine Location at Berea, OH
- Figure 2 – FCC-Licensed Microwave Links
- Figure 3 – Pending FCC Microwave Applications
- Figure 4 – Proposed Wind Turbine drawn to scale
- Figure 5 – FCC-Licensed Microwave Links over the Wind Turbine Location
- Figure 6 – FCC-Licensed Microwave Links over the Wind Turbine Location (looking North)
- Figure 7 – FCC-Registered Structures over the Wind Turbine Location
- Figure 8 – Other Structures over the Wind Turbine Location

About Wireless Applications Corp

Wireless Applications, Corp. provides valuable products and services for cellular, PCS, and broadband wireless industries.

Over the last 10 years Wireless Applications has developed our on-line software platform, SiteSync to include a nationwide database of tower/structure data, and other database layers such as census demographics. SiteSync includes tools to aid in wireless design, such as eCoverage for RF propagation modeling, eMwave for microwave analysis and design, and spectrum search and analysis utilities. All of this is delivered in an on-line, web based tool that performs high-end analysis at lightning speeds. That means no software loading, compatibility issues, or internal IT department maintenance for our clients. With the SiteSync Pro Enterprise Microwave suite, designers can use The Network Tool (TNT2) for automated microwave backhaul generation. 10 man-months of engineering can now be accomplished in a week!

Additionally, Wireless Applications also integrates our software tools into client's websites either as a service or developers can write their own calls via our new Telecom API Suite.

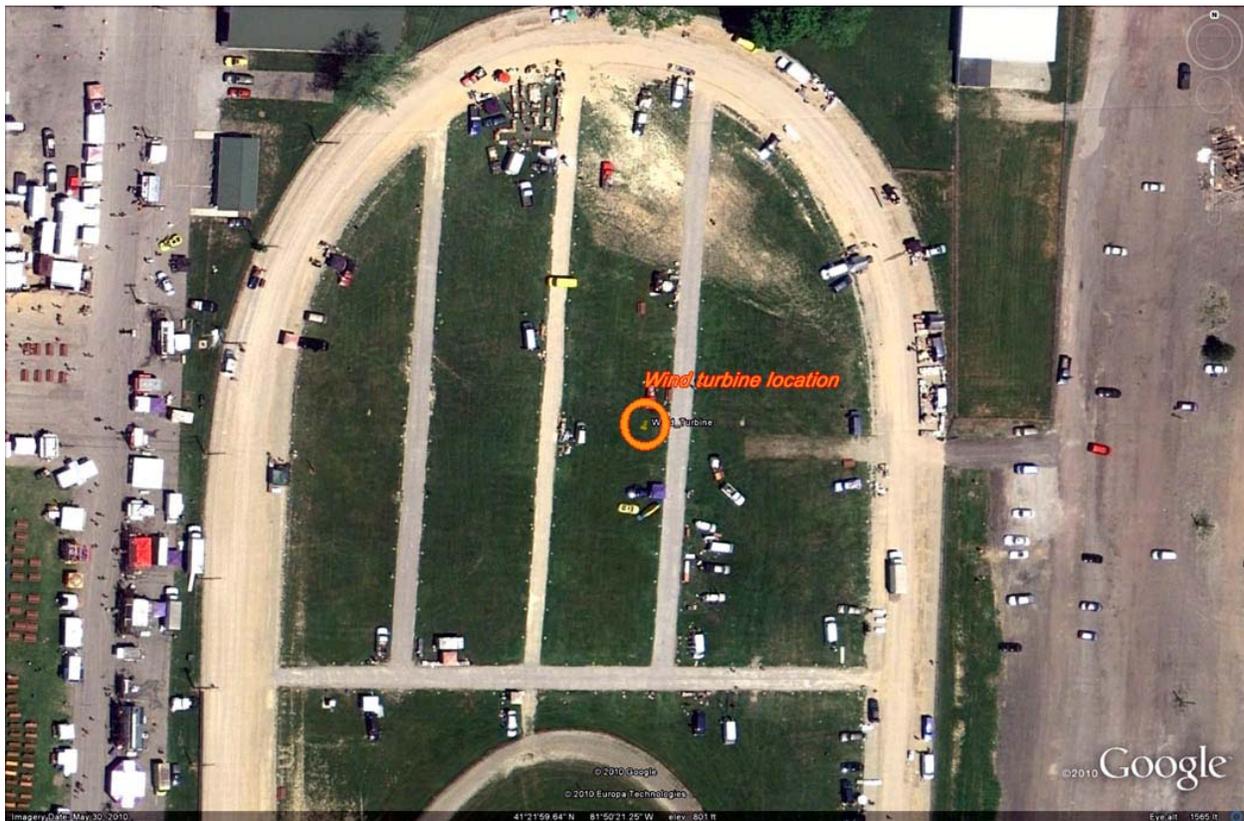
Wireless Applications, Corp. also uses our own tools to be a service provider of FAA/FCC regulatory analysis and filing, GIS services, wireless network analysis, as well as microwave backhaul design. With our Microwave Coordination services, our team uses high-end automation software for interference discrimination calculations and for analyzing the terrain for blockage.

Our regulatory service clients enjoy our high-tech virtual vaults for accessing their opinion letter and other site information. Using the virtual vault, the client can download all of the site analysis we provide as well as upload any documentation such as photos or surveys.

Wireless Applications Corp. Contact:

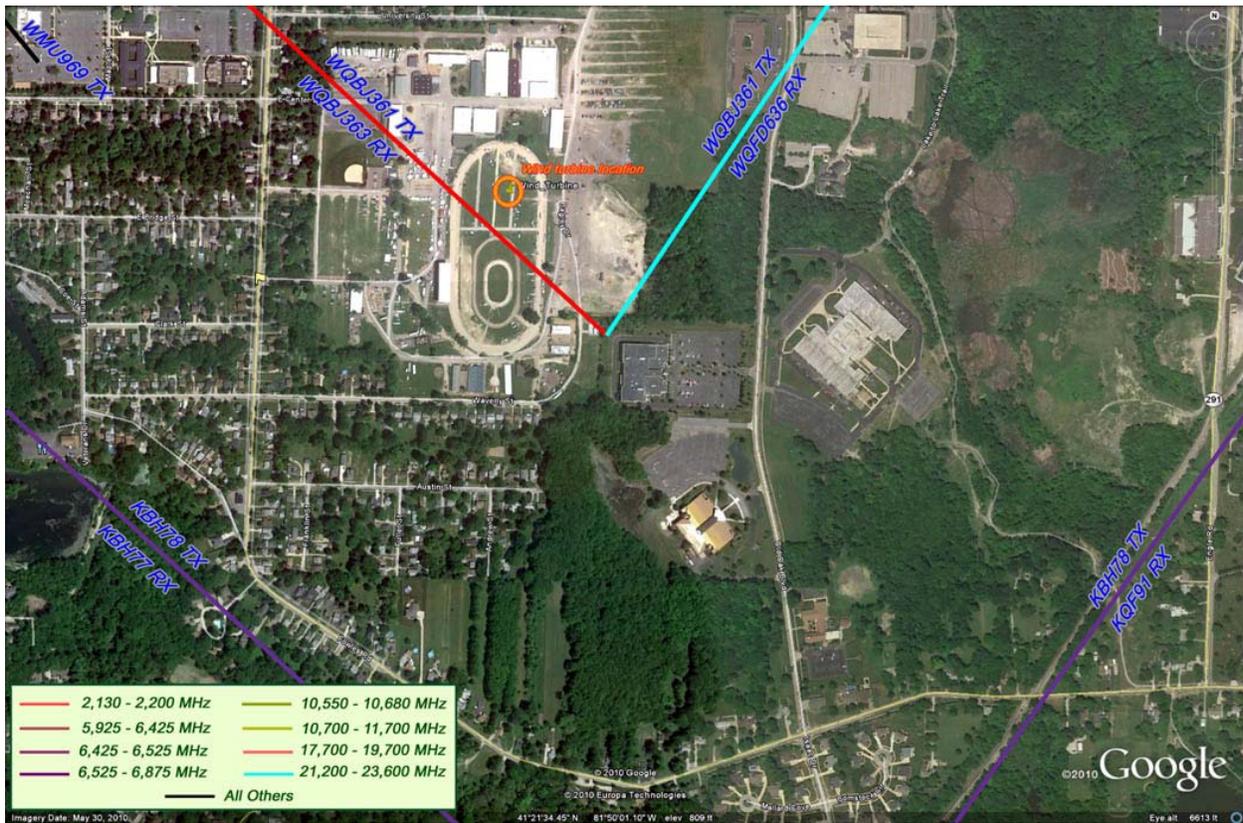
Jesus De Jesus
Senior RF Engineer
(425) 649-1810
jesus.dejesus@wacorp.net

Figure 1 – Proposed Wind Turbine Location at Berea, OH



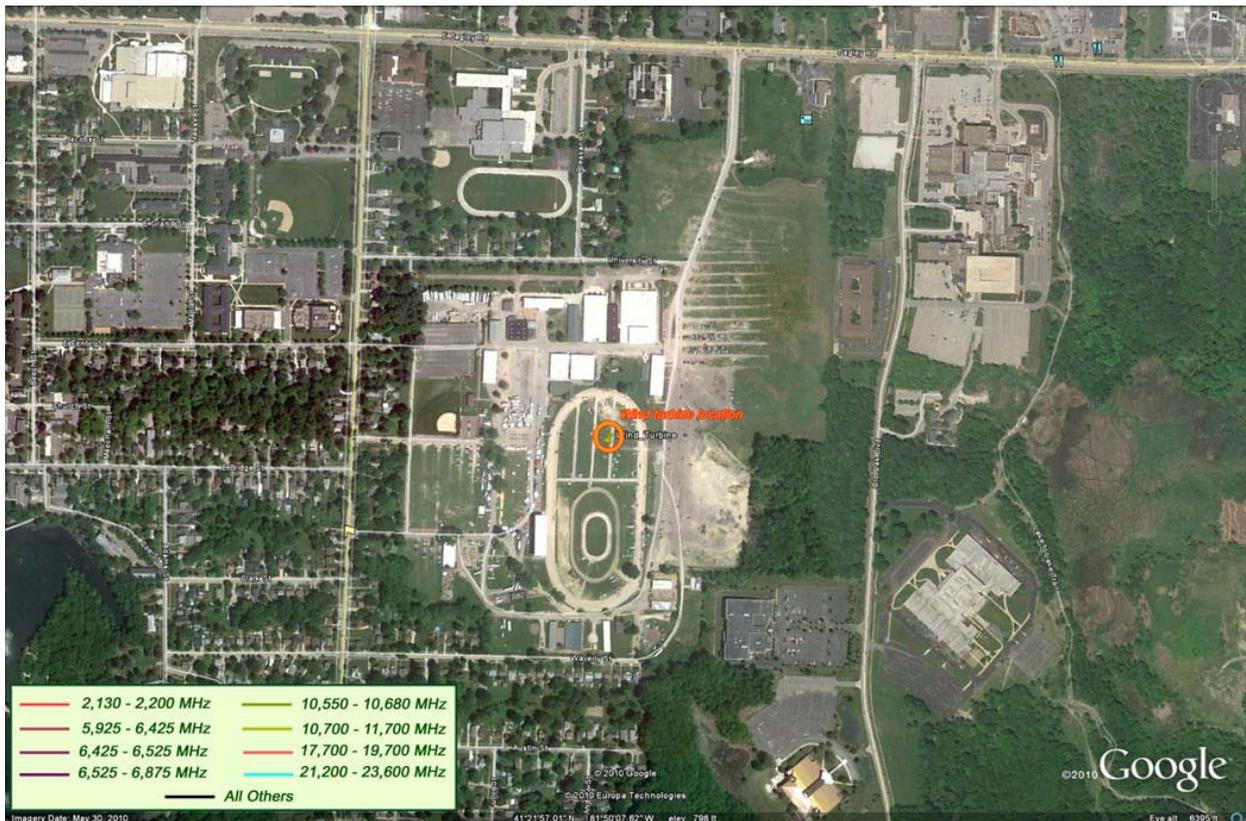
Turbine Location – 41-21-59.50 and 81-50-21.10, in Cuyahoga County, Berea, OH

Figure 2 – FCC-Licensed Microwave Links



There are one existing 900 MHz, 6 GHz, 18 GHz and 23 GHz microwave link close to the wind turbine location.

Figure 3 – Pending FCC Microwave Applications



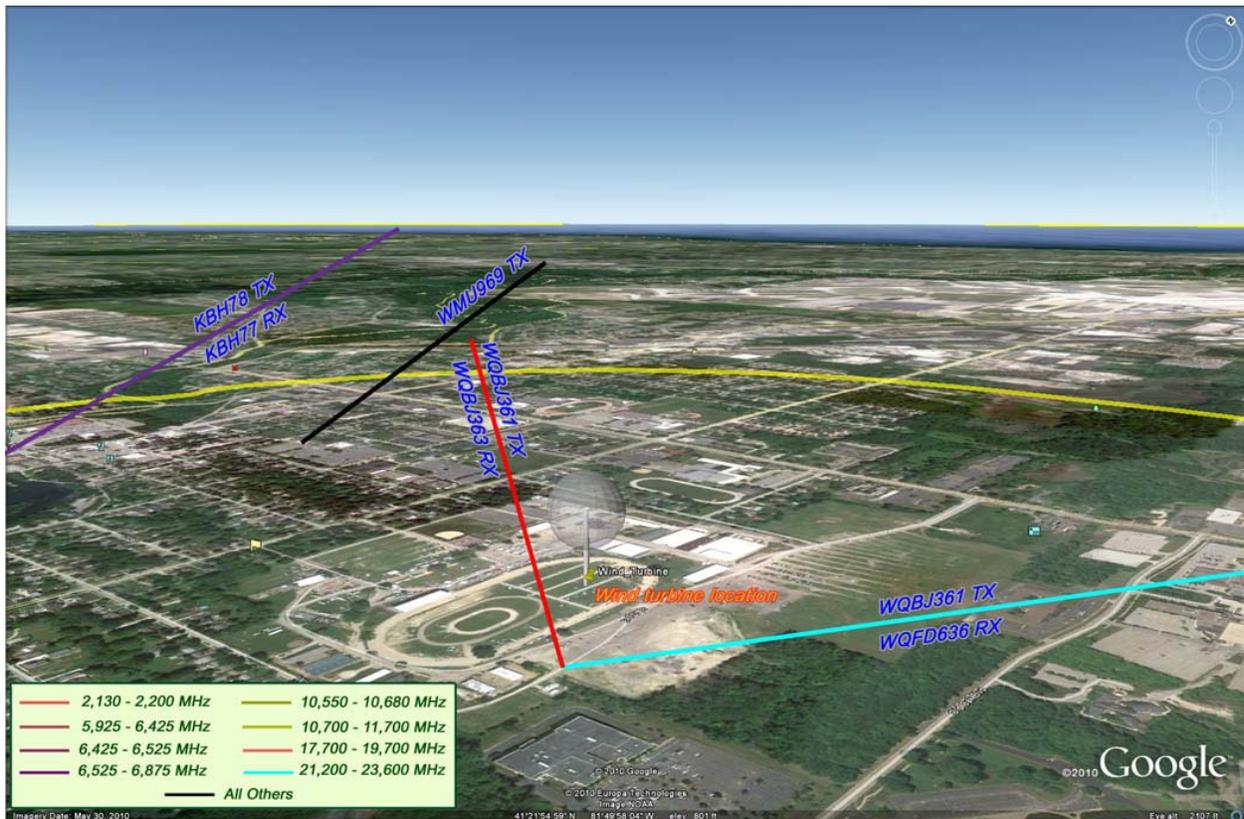
There are no pending microwave applications within 1 mile of the wind turbine location.

Figure 4 – Proposed Wind Turbine drawn to scale



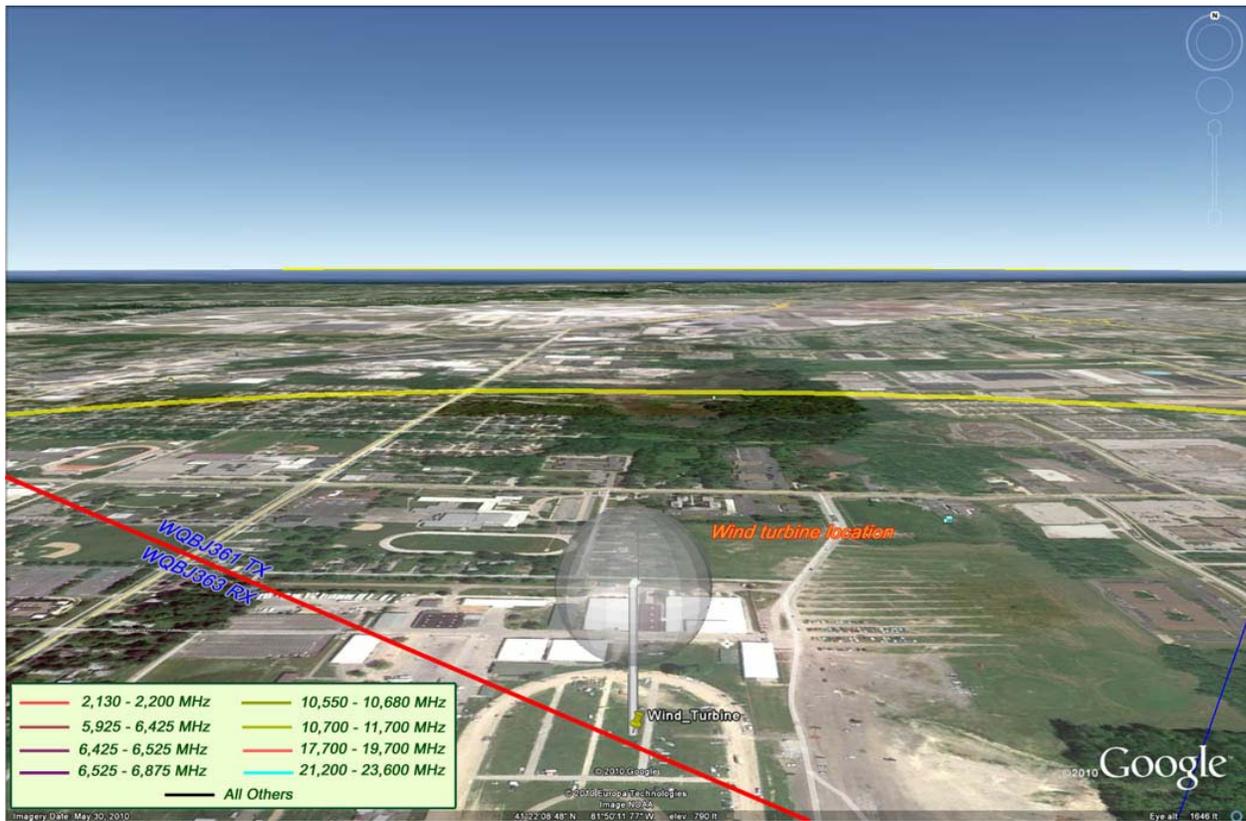
The original location was drawn to scale (turbine tip height = 83.8 m with blade diameter = 47 m) to illustrate the proposed wind turbine location.

Figure 5 – FCC-Licensed Microwave Links over the Wind Turbine Location



The existing microwave links are represented as they pass through close to the wind turbine location.

Figure 6 – FCC-Licensed Microwave Links over the Wind Turbine Location (looking North)



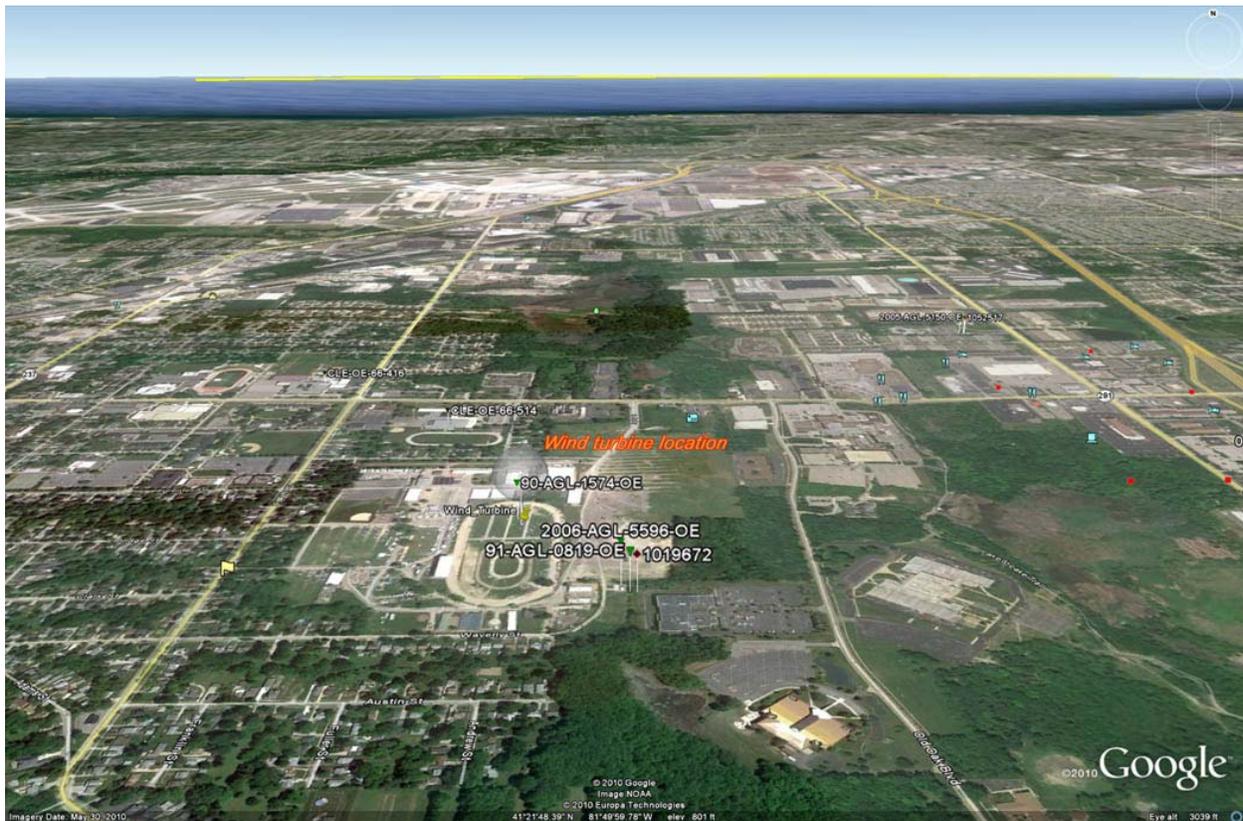
Wind turbine was drawn to scale (turbine tip height = 83.8 m, blade radius = 47 m) to show its impact to the existing and pending microwave links.

Figure 7 – FCC-Registered Structures over the Wind Turbine Location



These are the FCC-registered towers within 1 mile of the wind turbine location.

Figure 8 – Other Structures over the Wind Turbine Location



These are the FCC-registered, FAA-approved and Tower Company-owned structures within 1 mile of the wind turbine location.



Wind Resource Report, Ohio Wind Model Data Based

Prepared For: **Cuyahoga County Fairgrounds**

Contact: **Nick Willis** 1642 Lakeside Avenue, Cleveland, OH 44114
 Site Location: **Cuyahoga County Fairgrounds** 164 Eastland Road, Berea, OH 44017

Wind Data Source: **Ohio Wind Explorer**

Prepared By: **The Renaissance Group** (440) 936-0494 Office (216) 832-1931 Mobile Aaron@ConserveFirst.com

Date: **1/4/2008** 10299 Longview Drive Kirtland, Ohio 44094

NOTE: This report should only be used as a rough estimation tool. Data inputs were taken from the most reliable sources available at the time of report's production. More precise calculations and estimates will require actual data collection on the site through the erection of a metrological tower and adjoining full wind resource assessment study.

Site Geographical Information:				Elevation (Above Sea-Level):	
Latitude:	41° 21' 59.50" N	Longitude:	81° 50' 21.10" W	Meters:	244
Decimal:	41.3665	Decimal:	81.8392	Feet:	801
Map:	4,579,800	Map:	429,800	Lake Erie:	571



Wind Resource Data Geographical Source:				Elevation (Above Sea-Level):	
Latitude:	41° 22' 29.35" N	Longitude:	81° 49' 51.98" W	Meters:	242
Decimal:	41.3750	Decimal:	-81.8310	Feet:	794
Map:	430,500	Map:	4,580,700	Lake Erie:	571

Roughness: 0.9
0.001

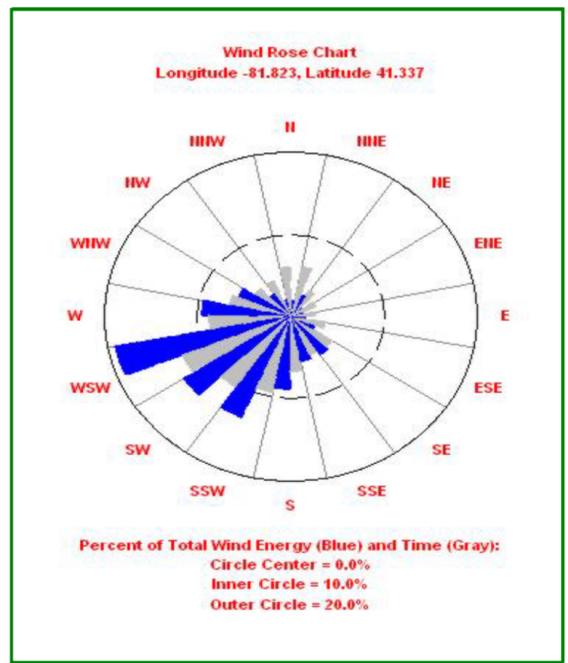
Wind Resource:

Annual Average Wind Speed					Average Wind Power Density		Weibull Parameters		Predicted Wind Shear:			
Height	Speed	Unit	Speed	Unit	Power	Unit	c	k	Heights	Exponent	Heights	Exponent
30 Meter	4.61	m/s	10.31	mph	108	W/m ²	NA	NA				
35 Meter	4.84	m/s	10.82	mph	125	W/m ²	NA	NA				
40 Meter	5.04	m/s	11.28	mph	141	W/m ²	NA	NA				
45 Meter	5.23	m/s	11.71	mph	158	W/m ²	NA	NA				
50 Meter	5.41	m/s	12.10	mph	174	W/m ²	6.17	2.257	30 to 50	0.313	30 to 70	0.305
55 Meter	5.56	m/s	12.44	mph	191	W/m ²	NA	NA				
60 Meter	5.71	m/s	12.77	mph	206	W/m ²	NA	NA				
65 Meter	5.84	m/s	13.07	mph	221	W/m ²	NA	NA				
70 Meter	5.97	m/s	13.35	mph	236	W/m ²	NA	NA	50 to 70	0.293	30 to 100	0.302
75 Meter	6.09	m/s	13.63	mph	251	W/m ²	NA	NA				
80 Meter	6.21	m/s	13.89	mph	266	W/m ²	NA	NA				
85 Meter	6.32	m/s	14.14	mph	280	W/m ²	NA	NA				
90 Meter	6.43	m/s	14.38	mph	295	W/m ²	NA	NA				
95 Meter	6.53	m/s	14.61	mph	309	W/m ²	NA	NA				
100 Meter	6.63	m/s	14.83	mph	325	W/m ²	NA	NA	70 to 100	0.294	50 to 100	0.293

Significant 7%+ Map Area Speed Variation at 70 Meters. *Extrapolated

Directional Wind Data at 50 Meters

Tabular Data Calculation Using Closest Data Point Within 1 KM.						Weibull Parameters	
Direction:	Frequency:	Power:	AVG. Wind Speed:	c	k		
N	5.75 %	1.93 %	3.72 m/s	4.47	2.654		
NNE	6.67 %	2.97 %	4.11 m/s	4.87	2.538		
NE	4.07 %	1.54 %	4.01 m/s	4.56	2.391		
ENE	2.94 %	1.44 %	4.43 m/s	4.94	2.327		
E	2.62 %	1.32 %	4.48 m/s	4.99	2.334		
ESE	3.58 %	2.32 %	4.84 m/s	5.44	2.352		
SE	5.07 %	5.36 %	5.76 m/s	6.48	2.484		
SSE	5.18 %	5.83 %	5.80 m/s	6.52	2.327		
S	6.69 %	8.90 %	6.21 m/s	6.81	2.237		
SSW	9.63 %	13.54 %	6.39 m/s	7.20	2.620		
SW	11.29 %	15.25 %	6.21 m/s	7.02	2.464		
WSW	12.06 %	18.58 %	6.26 m/s	7.34	2.475		
W	8.45 %	9.10 %	5.73 m/s	6.52	2.486		
WNW	6.66 %	6.43 %	5.47 m/s	6.15	2.280		
NW	4.67 %	3.30 %	4.72 m/s	5.47	2.165		
NNW	4.66 %	2.16 %	4.04 m/s	4.79	2.234		



Rough Expected Average Turbine kWh Power Production
Based on Wind Turbine Nameplate kW Ratings and Differing
Tower Heights for The Site
Ohio Wind Model Data Based

Turbine KW	Hub Height (Meters)			
	30	50	70	100
10	6,173	10,909		
20	12,346	21,817		
30	18,519	32,726	46,791	
40	24,692	43,635	62,388	
50	30,865	54,544	77,985	
60	37,038	65,452	93,581	
70	43,211	76,361	109,178	
80	49,384	87,270	124,775	
90	55,557	98,178	140,372	
100	61,730	109,087	155,969	
150	92,595	163,631	233,954	
200	123,459	218,174	311,938	
250	154,324	272,718	389,923	
300	185,189	327,261	467,907	
350	216,054	381,805	545,892	
400	246,919	436,349	623,876	
450	277,784	490,892	701,861	
500	308,649	545,436	779,845	1,030,214
550	339,514	599,979	857,830	1,133,236
600		654,523	935,814	1,236,257
650		709,067	1,013,799	1,339,279
700		763,610	1,091,783	1,442,300
750		818,154	1,169,768	1,545,322
800		872,697	1,247,752	1,648,343
850		927,241	1,325,737	1,751,365
900		981,784	1,403,721	1,854,386
950		1,036,328	1,481,706	1,957,407
1000		1,090,872	1,559,690	2,060,429
1100			1,715,659	2,266,472
1200			1,871,629	2,472,515
1300			2,027,598	2,678,558
1400			2,183,567	2,884,600
1500			2,339,536	3,090,643
1600			2,495,505	3,296,686
1700			2,651,474	3,502,729
1800			2,807,443	3,708,772
1900			2,963,412	3,914,815
2000			3,119,381	4,120,858

Wind Resource Report, Site Wind Characteristics Cuyahoga County Fairgrounds

Turbine Model Used For Estimates:
Meter Description:

Vestas V-47-660
First Energy (110026622644) 686589723

Weibull Performance Calculations:

Yearly Average Wind Speed		Turbine Power Curve For Given Average Wind Speeds (kW)	Site Weather Constants	Wind Probability (f)	Average Net kW @ V	Area Wind Dist.:	Area Power Dist.:
Bin (m/s)	(mph)						
1	2.24	0.00	0.00	3.35%	0.000	75.9%	30.4%
2	4.47	0.00	0.00	7.57%	0.000		
3	6.71	0.00	0.00	11.32%	0.000		
4	8.95	2.90	2.33	13.78%	0.321		
5	11.18	43.80	35.13	14.56%	5.114		
6	13.42	96.70	77.57	13.69%	10.620		
7	15.66	166.00	133.15	11.62%	15.466		
8	17.90	252.00	202.14	8.95%	18.087	23.5%	67.3%
9	20.13	350.00	280.74	6.28%	17.636		
10	22.37	450.00	360.96	4.03%	14.536		
11	24.61	538.00	431.54	2.36%	10.182		
12	26.84	600.00	481.28	1.26%	6.082		
13	29.08	635.00	509.35	0.62%	3.152		
14	31.32	651.00	522.19	0.28%	1.446	0.5%	2.3%
15	33.55	657.00	527.00	0.11%	0.596		
16	35.79	659.00	528.60	0.04%	0.223		
17	38.03	660.00	529.40	0.01%	0.076		
18	40.26	660.00	529.40	0.00%	0.024		
19	42.50	660.00	529.40	0.00%	0.007		
20	44.74	660.00	529.40	0.00%	0.002		
Totals:				99.84%	103.568	99.8%	100.0%

12.77 Site Average Wind Speed (MPH) at 60 Meters

