

# CHAMPAIGN COUNTY ZONING BOARD OF APPEALS NOTICE OF REGULAR MEETING

Date: **July 16, 2009**  
Time: **7:00 P.M.**  
Place: **Lyle Shields Meeting Room  
Brookens Administrative Center  
1776 E. Washington Street  
Urbana, IL 61802**

**Note: NO ENTRANCE TO BUILDING  
FROM WASHINGTON STREET PARKING  
LOT AFTER 4:30 PM.  
Use Northeast parking lot via Lierman Ave.,  
and enter building through Northeast  
door.**

*If you require special accommodations please notify the Department of Planning & Zoning at  
(217) 384-3708*

**EVERYONE MUST SIGN THE ATTENDANCE SHEET – ANYONE GIVING TESTIMONY MUST SIGN THE WITNESS FORM**

## AGENDA

1. Call to Order
2. Roll Call and Declaration of Quorum
3. Correspondence
4. Approval of Minutes (June 11, 2009)
5. Continued Public Hearings

**Case 632-AM-08** Petitioner: **Mike Trautman**

Request: **Amend the Zoning Map to allow for the development of 1 single family Residential lot in the AG-1 Agriculture Zoning District by adding the Rural Residential Overlay (RRO) Zoning District.**

Location: **A 1.66 acre tract that is in the East Half of the Southwest Quarter of the Southwest Quarter of Section 35 of Newcomb Township, and commonly known as the land east of Trautman's Section 35 Subdivision approximately at 420 CR 2425N.**

**Case 634-AT-08 Part B.** Petitioner: **Zoning Administrator**

Request: **Amend the Champaign County Zoning Ordinance as follows:**

1. **Add definitions for "SMALL WIND TURBINE TOWER" and "BIG WIND TURBINE TOWER".**
2. **Amend paragraph 4.3.1E. to add new height regulations that apply to "SMALL WIND TURBINE TOWER" and "BIG WIND TURBINE TOWER".**
3. **In Section 5.2 replace "wind turbine" with "BIG WIND TURBINE TOWER".**
4. **In Section 6.1.3 add new standard conditions for "BIG WIND TURBINE TOWER" that are similar to the standard conditions for WIND FARM.**
5. **Add new subsection 7.7 making "SMALL WIND TURBINE TOWER"**

*CHAMPAIGN COUNTY ZONING BOARD OF APPEALS  
NOTICE OF REGULAR MEETING  
JULY 16, 2009  
PAGE 2*

Case 634-AT-09 Part B. cont:

- an authorized accessory use by-right in all zoning districts and add requirements including but not limited to:**
- a. the turbine must be located more than one and one half miles from the nearest municipal zoning jurisdiction; and**
  - b. minimum required yards that are the same as for other accessory structures in the district provided that the overall height is not more than 100 feet; and**
  - c. an overall height limit of 200 feet provided that the separation from the nearest property line is at least the same as the overall height and authorize private waivers of the separation by adjacent neighbors; and**
  - d. a limit of no more than two turbine towers per lot; and**
  - e. allowable noise limits; and**
  - f. a requirement for engineer certification; and**
  - g. a requirement to notify the electrical power provider if interconnected to the electrical grid; and**
  - h. a requirement for no interference with neighboring TV, radio, or cell phone reception; and**
  - i. a requirement for the removal of inoperable wind turbines.**

6. New Public Hearings

6. Staff Report

8. Other Business

9. Audience Participation with respect to matters other than cases pending before the Board

10. Adjournment

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**\* Administrative Hearing. Cross Examination allowed.**

2 **MINUTES OF REGULAR MEETING**

3 **CHAMPAIGN COUNTY ZONING BOARD OF APPEALS**

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4 1776 E. Washington Street

5 Urbana, IL 61801

7 **DATE:** June 11, 2009

**PLACE:** Lyle Shields Meeting Room

1776 East Washington Street

Urbana, IL 61802

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10 **TIME:** 7:00 p.m.

11 **MEMBERS PRESENT:** Doug Bluhm, Catherine Capel, Thomas Courson, Roger Miller, Melvin  
12 Schroeder, Eric Thorsland, Paul Palmgren

14 **MEMBERS ABSENT :** None

16 **STAFF PRESENT :** John Hall, Leroy Holliday, J.R. Knight

18 **OTHERS PRESENT :** Paul Cole, Teresa Hageman, Jed Gerdes, John Reed, Carl Smith, Phil Geil,  
19 Herb Schildt, Sherry Schildt, Robert Gerdes, Barbara Gerdes, Eric McKeever,  
20 Steve Burdin, Birgit McCall, Dwight Farber, Phyllis Benschneider, John  
21 Sapp

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24 **1. Call to Order**

26 The meeting was called to order at 7:03 p.m.

28 **2. Roll Call and Declaration of Quorum**

30 The roll was called and a quorum declared present.

33 **3. Correspondence**

35 None

37 **4. Approval of Minutes**

39 None

41 **5. Continued Public Hearing**

43 **Case 634-AT-09, Part B. Petitioner: Zoning Administrator Request: Amend the Champaign County**  
44 **Zoning Ordinance as follows: 1. Add definitions for “SMALL WIND TURBINE TOWER” AND**  
45 **“BIG WIND TURBINE TOWER”; 2. Amend paragraph 4.3.1E. to add new height regulations that**

1 apply to “SMALL WIND TURBINE TOWER” and “BIG WIND TURBINE TOWER”; 3. In Section  
2 5.2 replace “wind turbine” with “BIG WIND TURBINE TOWER”; 4. In Section 6.1.3 add new  
3 standard conditions for “BIG WIND TURBINE TOWER” that are similar to the standard conditions  
4 for WIND FARM; 5. Add new subsection 7.7 making “SMALL WIND TURBINE TOWER” an  
5 authorized accessory use by-right in all zoning districts and add requirements including but not  
6 limited to: (a.) the turbine must be located more than one and one half miles from the nearest  
7 municipal zoning jurisdiction; and (b.) minimum required yards that are the same as for other  
8 accessory structures in the district provided that the overall height is not more than 100 feet; and (c.)  
9 an overall height limit of 200 feet provided that the separation from the nearest property line is at  
10 least the same as the overall height and authorize private waivers of the separation by adjacent  
11 neighbors; and (d.) a limit of no more than two turbine towers per lot; and (e.) allowable noise limits;  
12 and (f.) a requirement for engineer certification; and (g.) a requirement to notify the electrical power  
13 provided if interconnected to the electrical grid; and (h.) a requirement for no interference with  
14 neighboring TV, radio, or cell phone reception; and (i.) a requirement for the removal of inoperable  
15 wind turbines.

16  
17 Mr. Hall stated that this is a continuation of a case that had started at the same time as the wind farm  
18 amendment and once the wind farm amendment got underway staff had no time to lend to Part B. He said  
19 that during that time one of the local retailers had requested that staff increase the height in the proposed  
20 amendment and it was not exactly clear how much of an increase in allowable height was actually necessary.  
21 Therefore the Board decided to advertise Part B at 200 feet with the intention of finding some justification to  
22 reduce it down to less than 200 feet. He distributed a Supplemental Memorandum dated June 11, 2009,  
23 which has relevant excerpts from Subsection 6.1.4 of the wind farm amendment.

24  
25 Mr. Hall stated that small wind is what tonight’s hearing is about but remaining in the *Zoning Ordinance* is  
26 the allowance of 1-3 wind turbines in the rural and industrial districts. He said that he has seen reference to  
27 three classes of wind development which are: wind farm class; small wind; and the same size units as the  
28 wind farm units but typically involving only 1 or 2 or some limited number. He said that not many counties  
29 have an allowance for that third class, which he has titled Big Wind Turbine Towers, and he hasn’t seen that

6/11/09

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1 much information about it but he has seen it mentioned. He said that since we are aware that this issue is out  
2 there it would be good to include it in this amendment but in some ways it could be problematic because we  
3 will have turbines that can be expected to generate the same noise as a wind farm although fewer of them.  
4 He said that the Big Wind Turbine Towers will be the same size as those included in a wind farm therefore  
5 the same road issues and visual impacts will exist, just not as extensive. He said that we are talking about  
6 something at a very limited extent that could cause a lot of disturbance and since no one has talked about this  
7 class of wind turbines in Champaign County there may not be a need for it but in order to be comprehensive  
8 we need to at least consider it.

9  
10 Mr. Hall stated that the definitions of Small Wind Turbine Tower and Big Wind Turbine Tower are included  
11 as Attachment A, of the June 5, 2009, Supplemental Memorandum. He said that to a large extent this  
12 amendment is modeled on the model ordinance from the *American Wind Energy Association*, which is  
13 included as an attachment. He said that Attachment B, of the June 5, 2009, Supplemental Memorandum  
14 discusses revision of subparagraph 4.3.1E which indicates that the maximum height of a small wind turbine  
15 tower is based on the separation and that could be done a couple of ways, as discussed later in the  
16 *Ordinance*. He said that Attachment C, of the June 5, 2009, Supplemental Memorandum discusses the  
17 revision of Section 5.2 which replaces Wind Turbine (1-3 wind turbines) with Big Wind Turbine Tower (1-3  
18 wind turbine towers). He said that Attachment D, of the June 5, 2009, Supplemental Memorandum discusses  
19 the revision of Subsection 6.1.3 adding the Big Wind Turbine standards. He said that for the wind farm a  
20 whole new subsection was added but this is intended to be in the table that is in 6.1.3. where all the other  
21 special use permits are located and these will be notes in the *Zoning Ordinance*. He said that notes 1-4 are  
22 self-explanatory although Mr. Knight has identified that staff has managed to mislabel some of the  
23 references to the wind farm amendment. He noted that standard condition 5(b) is incorrect. He said that he  
24 believes that staff could add even more distinctions between a collection of Big Wind Turbine Towers and a  
25 wind farm. He said that it needs to be made absolutely clear that you can't end up with what looks like a  
26 wind farm just by doing a bunch of Big Wind Turbine Towers. He said that standard condition 5(c) adds the  
27 requirements of 6.1.4C. through 6.1.4S with the exception of paragraphs 6.1.4E., L. and Q. He said that  
28 6.1.4E is the standard condition to mitigate damage to farmland and he does not believe that this is  
29 applicable if we are talking about 1-3 wind turbines on the same land that holds the wind turbines. He said

1 that the interruption of tiles would be covered under the County's Stormwater Management Policy. He said  
2 that 6.1.4L regarding the wildlife impacts has been eliminated because if 1-3 wind turbines are proposed the  
3 County would be safe in assuming that there are no wildlife impacts. He said that 6.1.4Q is the complaint  
4 hotline and with 1-3 wind turbines there should not be a need of a complaint hotline and any complaints or  
5 concerns could be handled by the Zoning Office. He said that when staff drafted Part B, it seemed that some  
6 of the standards that are reasonable for wind farms are perhaps not necessary for this class that is being  
7 called Big Wind.

8  
9 Mr. Hall read the added provisions to new Subsection 7.7 included in Attachment E. of the Supplemental  
10 Memorandum dated June 5, 2009. He said that Subsection 7.7.1 indicates that a Small Wind Turbine Tower  
11 shall be allowed as an accessory use by a Zoning Use Permit in all Districts and 7.7.1A.indicates that no  
12 Small Wind Turbine Tower shall be located less than one-and-one half miles from an incorporated  
13 municipality that has a zoning ordinance. He said that 7.7.1B. indicates that a Small Wind Turbine Tower  
14 shall be allowed within any yard in all districts subject to provisions of Section 7.2 and the following: (1)  
15 provided that the height is not more than 100 feet. He said that the amendment that is before the Board will  
16 continue to allow Small Wind Turbines, up to 100 feet in height, as close as whatever the minimum yard is  
17 for accessory structures therefore in the AG districts the setback would be 10 feet and in the residential  
18 districts it would be 5 feet. He said that there are not many residential districts that this would be applicable  
19 in because most of the residential districts are within one-and-one half miles of a municipality, for example,  
20 Pinetree Subdivision which is located southwest of Mahomet is zoned R-1, Single Family Residence,  
21 therefore in that subdivision a Small Wind Turbine could be placed within five feet of the lot line. He said  
22 that 7.7.1B(2) indicates that a Small Wind Turbine that is more than 100 feet tall but less than 200 feet tall  
23 must have a separation distance to the nearest property line that is at least the same dimension as the overall  
24 height. This separation may be reduced upon submission of a private waiver signed by the owner of the  
25 adjacent property and the private waiver must specify both the agreed minimum separation and the  
26 maximum height and the locations of guy cable anchors and must be recorded as part of the chain of title in  
27 the deed to any relevant tract of land prior to authorization of any relevant Zoning Use Permit. A copy of the  
28 recorded private waiver must be provided to the Zoning Administrator at the time of application. Mr. Hall  
29 said that in the CR and AG-1 districts the average minimum lot width is 200 feet and alot of zoning lots are

6/11/09

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ZBA

1 200 feet wide therefore 7.7.1.B(2) would not allow more than 100 feet in height unless the neighbor signed a  
2 waiver. He said that he is uncomfortable with the private waiver provision because one neighbor could put  
3 pressure on the other neighbor in order to get what they want even though the other neighbor does not  
4 approve. He said that the State's Attorney cannot find anything that would not make a private waiver  
5 permissible under state law and if the Board is comfortable with this approach this has been requested from  
6 one of our local retailers. He said that the Board could scale this approach back to some degree to whatever  
7 the Board is comfortable with and he hopes that there are not a lot of neighborhood fights due to this  
8 provision. He requested that the Board think very carefully as to what they are comfortable with before they  
9 move the amendment forward.

10  
11 Mr. Hall stated that 7.7.1.C indicates that no more than two Small Wind Turbine Towers shall be allowed  
12 per lot and 7.7.1.D. indicates that the noise level from the Small Wind Turbine Tower shall not exceed the  
13 regulatory standards set by the Illinois Pollution Control Board. The Small Wind Turbine Tower shall be  
14 considered a Class C land use for the purposes of the Illinois Pollution Control Board regulations. He said  
15 that some counties actually specify that the wind turbines can go up to 60 dba which is actually a violation of  
16 the Pollution Control Board regulations. He said that this may be criticized for that, but the Pollution  
17 Control Board regulations are what they are and he does not believe that the County can authorize a violation  
18 of them but the County could choose not to have any noise level standards in the amendment which would  
19 mean that there could be a violation of the Pollution Control Board regulations but not a violation of our  
20 own regulations. He said that 7.7.1.E. indicates that the Small Wind Turbine Tower shall have an automatic  
21 over speed control to render the system inoperable when winds are blowing in excess of the speeds for which  
22 the system is designed and a manually operable method to render the system inoperable in the event of a  
23 structural or mechanical failure of any part of the system. He said that 7.7.1.F. indicates that orange safety  
24 balls shall be installed on each side of the Small Wind Turbine Tower where guy cables are used for Small  
25 Wind Turbine Towers more than 100 feet in height. He said that 7.7.1.G. indicates that Small Wind Turbine  
26 Towers shall comply with all applicable regulations of the FAA. Evidence of FAA approval shall be  
27 required for any Small Wind Turbine Tower within four miles of an airport. He said that 7.7.1.H. indicates  
28 that no illumination of the Small Wind Turbine Tower shall be allowed unless required by the Federal  
29 Aviation Administration and 7.7.1.I. indicates that the Small Wind Turbine Tower shall be painted white or

1 gray or another non-reflective, unobtrusive color that shall be specified in the Zoning Use Permit application.  
2 He said that 7.7.1.J. indicates that the Zoning Use Permit application for the Small Wind Turbine Tower  
3 shall include the following: 1. A copy of the manufacturer’s standard drawings of the wind turbine structure  
4 and stamped engineering drawings of the tower, base, footings, and/or foundations as provided by the  
5 manufacturer. Wet stamps shall not be required; and 2. Evidence must be given that the utility company has  
6 been informed of the customer’s intent to install an interconnected customer-owned generator. Off-grid  
7 systems shall be exempt from this requirement; and 3. Such evidence and documentation as required to  
8 verify that the Small Wind Turbine Tower meets all other Zoning Ordinance requirements. He said that this  
9 is probably the most detailed by-right application that we will ever get as far as Small Wind Turbine Tower.  
10 He said that 7.7.1.K. indicates that if a wind turbine is inoperable and or not in operation for six consecutive  
11 months the owner shall be notified that they must, within six months of receiving the notice, restore their  
12 system to operating condition. If the owner(s) fail to restore their system to operating condition within the  
13 six-month time frame, then the owner shall be required, at his expense, to remove the wind turbine from the  
14 tower and also remove the tower if it has guy cables, for safety reasons. If the owner fails to remove the  
15 wind turbine within one month the Zoning Administrator shall send a notice that the wind turbine is in  
16 violation of the Zoning Ordinance and subject to a daily fine as provided for in Section 10. He noted that the  
17 fine could be up to \$500 per day and this is a standard requirement in county zoning ordinances although he  
18 is not sure how often it comes into play and as a practical matter proving that the wind turbine has not been  
19 in operation for six consecutive months would be a very difficult thing to do.

20  
21 Mr. Hall stated that to date no Draft Finding of Fact has been prepared for this case to date therefore it is not  
22 ready for final action tonight.

23  
24 Mr. Bluhm asked the Board if there were any questions for Mr. Hall.

25  
26 Ms. Capel asked Mr. Hall how the Board could limit the number of private wind turbines per parcel.

27  
28 Mr. Hall stated that we could limit them in various ways such as indicate that no landowner could own more  
29 than three Big Wind Turbine Towers; however, that may be problematic because the most common Big



1 Wind Turbine Tower may be for school districts and they may want to put up one at each of their facilities  
2 and many school districts have three different school locations. He said that a requirement could be made  
3 that the turbine has to be owned by the landowner and cannot be leased by someone else.

4

5 Mr. Courson stated that most schools are located within one-and-one half miles of a municipality.

6

7 Mr. Hall stated that he is not sure if most schools are located within one-and-one half miles of a  
8 municipality.

9

10 Mr. Bluhm stated that Unit #7 schools probably have a couple of school locations that are outside the one-  
11 and-one half mile. He said that even the school districts that are located within the one-and-one half mile  
12 jurisdiction requirement may be interested in placing the turbine one-and-three quarter's of a mile from the  
13 municipality and run a line to the school.

14

15 Mr. Hall stated that with school districts there is the relationship where many believe that they are exempt  
16 from zoning although they are not. He said that zoning cannot frustrate what school districts desire to do  
17 therefore it is an unusual and not typical relationship because school districts are their own governmental  
18 entity. He said that to a certain extent school districts can be granted a little more freedom than other folks  
19 but they still must comply with the *Zoning Ordinance*.

20

21 Mr. Courson stated that he did some research on-line and he found that it is cheaper to have 10, one-  
22 thousand watt turbines versus 1-ten thousand watt turbine. He asked Mr. Hall if the County should have a  
23 classification for a small wind farm or decrease the number of turbines allowed on line.

24

25 Mr. Thorsland stated that perhaps it could be an on-grid/off-grid designation. He said that if someone is not  
26 intending to sell the generated power to the grid it would be considered totally private. He said that there is a  
27 worry out there that a wind company would make arrangements with a private landowner and they will  
28 basically buy the power from the private landowner to tie into the grid. He said that perhaps some  
29 mechanism should be placed in the amendment to prevent such practice.

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Mr. Courson asked Mr. Hall if roof mounted turbines would be included under this amendment.

Mr. Hall stated that he does not see the need to list it separately. He asked Mr. Courson if the mounting system is supplied by the manufacturer.

Mr. Courson stated that the mounting system is a kit that is purchased.

Mr. Hall asked Mr. Courson if the 100 kilowatt for a small wind turbine conforms to his understanding of small wind.

Mr. Courson stated that a 100 kilowatt wind turbine is a big unit and he believes that, just due to the cost of construction, anything 50 kilowatts and under would be considered small. He said that it could cost approximately \$400,000 to construct a 100 kilowatt turbine. He said that his turbine is a 3 kilowatt turbine and it cost about \$25,000 to construct.

Mr. Bluhm asked the Board if there were any additional questions for Mr. Hall and there were none.

Mr. Bluhm called Mr. Phil Geil to testify.

Mr. Phil Geil, who resides at 2060B CR 125E, Mahomet stated that he has a 10 kilowatt system on a 100 foot tower which means that his total height is approximately 115 feet. He said that the 10 kilowatt system supplies approximately 7,500 kilowatt hours per year which is ¼'s of what the average family uses. He said that he believes that a 10 or 15 kilowatt system would be a reasonable limit for a small wind turbine rather than the 100 kilowatt system. He said that a 100 kilowatt system would be used for commercial purposes and presumably it would produce 10 times the power that he is achieving which is too much power for personal use. He requested that the maximum height be adjusted to accommodate more than 100 feet. He said that the power of the wind turbine increases along with the cube of the height and wind speed and he wishes he had built a 120 feet tower rather than the 100 feet tower. He said that the 120 feet tower with 15

1 feet blades would have taken the height to around 135 feet and the company that he purchased his tower  
2 from can go up to a 140 feet tower. He said that assuming that someone has sufficient land to support such a  
3 tower would justify a reasonable limitation of an increased height although a 200 feet tower would be  
4 excessive for an ordinary private turbine.

5  
6 Mr. Courson asked Mr. Geil if he had any wind data regarding a 100 feet tower versus a 120 feet tower.

7  
8 Mr. Geil stated no. He said that other issues with the height limitation of a 100 feet tower are existing tree  
9 heights, proximity of the trees and the wind turbulence that they produce and personally an additional 20 feet  
10 to his tower would have assisted him with his tower in regards to these issues.

11  
12 Mr. Thorsland asked Mr. Geil if his property is within one-and-one half miles of Mahomet.

13  
14 Mr. Geil stated that he would assume that his property is currently within Mahomet's ETJ.

15  
16 Mr. Thorsland asked Mr. Geil if his property was within Mahomet's ETJ when he constructed his wind  
17 turbine.

18  
19 Mr. Geil stated that he does not believe that his property was within Mahomet's ETJ at the time of  
20 construction. He said that when he inquired at the Zoning Office about the construction of his tower he was  
21 told that because the height of the tower, including the blade, would exceed 100 feet he would need a Special  
22 Use Permit but when he applied for his Zoning Use Permit it was determined that the use was for  
23 agricultural purposes therefore the height requirement did not apply. Mr. Geil asked if the proposed  
24 requirements will apply to a farmer or will he be able to do anything he desires.

25  
26 Mr. Thorsland requested Mr. Hall's assistance.

27  
28 Mr. Hall stated that Mr. Geil built his wind turbine under the current rules which were adopted before the  
29 statutes were changed. He said that Mr. Geil was informed that if the use of his wind turbine was for

1 agricultural purposes and he intended to claim the agricultural exemption then the wind turbine would be  
2 exempt and no fees would be incurred.

3  
4 Mr. Thorsland asked the Board if their intention was to continue the practice of not applying the *Ordinance*  
5 if the use is intended for agricultural purposes.

6  
7 Mr. Hall stated that the County Board has never suggested to not grant the agricultural exemption for this.

8  
9 Mr. Geil stated that anyone who is a farmer and claims the agricultural exemption is not required to follow  
10 the regulations.

11  
12 Mr. Hall stated that if a farmer chooses, not forced by staff, to claim the agricultural exemption, they are not  
13 required to follow the regulations.

14  
15 Mr. Geil asked why a farmer wouldn't claim the agricultural exemption.

16  
17 Mr. Thorsland stated that during a previous conversation with someone they indicated that technology is  
18 always improving therefore perhaps the restriction for a Small Wind Turbine Tower should be 10 kilowatts.

19  
20 Mr. Geil stated that he believes that the Board could increase it somewhat but for personal use someone  
21 would not need too much more than that but for agricultural use they may need more. He said that he uses  
22 3,000 kilowatt hours per month for everything that he has and he also has a solar system. He said that the  
23 solar system produces more than the wind does at half the price but the total together only produces about  
24 half or two-thirds of what a they use.

25  
26 Mr. Thorsland stated that his concern is that if the limit is placed too low and technology changes in five  
27 years a 50 kilowatt could be placed on a 100 foot tower.

28  
29 Mr. Geil stated that he does believe that this will be done because the size of the blade will have to be

6/11/09

**DRAFT SUBJECT TO APPROVAL DRAFT**

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1 increased to achieve the 50 kilowatts to get sufficient power. He said that he would not be opposed to a 25  
2 or 30 kilowatt system for the Small Wind Turbine but a 100 kilowatt Small Wind Turbine Tower would be  
3 something that either the schools, commercial businesses, or larger farm that will use to produce alot of  
4 electricity. He invited the Board to visit his property to view his private wind turbine.

5  
6 Mr. Bluhm asked Mr. Courson if he had any additional questions for Mr. Geil and he indicated that he did  
7 not.

8  
9 Mr. Hall asked Mr. Geil to discuss his thoughts regarding private waivers.

10  
11 Mr. Geil stated that he did not need private waivers from adjacent landowners because he had more than  
12 sufficient land surrounding the turbine although he does not see a problem with such a requirement. He said  
13 that if a 200 foot tower is constructed then three, 100 foot guy wires would be attached they could essentially  
14 be anchored on a lot line. He said that on a 200 foot lot there would be some issues with installing a 200  
15 foot tower anyway because the tower is constructed on the ground and raised with a crane therefore the  
16 property owner will need sufficient area to get the tower up and down. He said that personally his neighbors  
17 appear to enjoy his turbine.

18  
19 Mr. Bluhm asked the Board if there were any additional questions for Mr. Geil and there were none.

20  
21 Mr. Bluhm asked if staff had any additional questions for Mr. Geil and there were none.

22  
23 Mr. Bluhm called Mr. Herb Schildt to testify.

24  
25 Mr. Herb Schildt, who resides 98 CR 2500N, Mahomet distributed, read and submitted the following  
26 prepared statement as a Document of Record: Mr. Schildt stated that as the Board may recall he is the  
27 Chairman of the Newcomb Township Plan Commission. He said that the Plan Commission began its review  
28 of Case 634-AT-08, Part B at their June 8<sup>th</sup> meeting this past Monday and the process is ongoing. He said  
29 that he would like to make it clear that tonight he is not speaking for the township rather he is speaking

1 strictly for himself. He said that he would like to take this opportunity to share some of his concerns related  
2 to Case 634-AT-08, Part B because it covers two different classes of wind turbines and he will address each  
3 separately. He said that he will begin with the small wind turbines.  
4

5 Mr. Schildt stated that to avoid any misunderstanding, he wanted to say at the outset that he finds small,  
6 personal wind turbines interesting, and for years he has thought about experimenting with one therefore  
7 while he does not, in general, have a problem with small wind turbines, he does have a problem with several  
8 of the provisions in the proposed ordinance that pertains to them. He said that the first problem is size. The  
9 proposed ordinance states that a small wind turbine must be 100kw or smaller and the problem is that a 100  
10 kw turbine does not fit his definition of small. He said in the handouts look first at the page from the  
11 Northern Tool and Equipment catalog which is a catalog that many farmers and business owners receive.  
12 The page shows what he believes to be small wind turbines. He said that the smaller one produces 400  
13 watts, weighs 17 pounds and has a rotor diameter of less than 4 feet. The larger turbine produces 2.4kw,  
14 weighs 170 pounds and has a rotor diameter of 12 feet. He asked the Board to notice that towers for this unit  
15 are offered in two lengths: 33 feet and 45 feet. He noted that when he thinks of a small wind turbine these  
16 are types of units that come to mind.  
17

18 He asked the Board to look at the spec sheet from Green Power Electric for a remanufactured Vestas V17-90  
19 wind turbine. He said that the V17-90 produces 90kw of power and has a rotor diameter of about 56 feet and  
20 notice that they show a tower height of about 77 feet. He said that he has seen 132 foot towers mentioned for  
21 this turbine and in either case, the height would be less than 200 feet and the weight of the turbine and rotor  
22 is shown as 14,065 pounds. He said that from the picture it is clear that this is a large, heavy turbine and as a  
23 point of interest hundreds of these were installed in one of the Altamont Pass commercial wind farms in  
24 California in 1985. He said that because the Vestas V17 generates less than 100kw, it satisfies the definition  
25 of a small wind turbine and assuming the other requirements are met it could be installed by right in any  
26 zoning district. He said that the problem is that a turbine of this size with a rotor diameter of 56 feet has the  
27 same issues associated with it as does any large wind farm turbine and these are shadow flicker, ice throw,  
28 blade detachment and so on. He said that it is not difficult to imagine what it would be like to live a few  
29 hundred feet from one of these and a turbine this big should have the same setbacks that a wind farm turbine

1 has from hazardous materials, such as gas storage tanks, pipelines and so on.

2  
3 Mr. Schildt stated that although he used the Vestas V17 as an example, there are several other rather large  
4 wind turbines that would technically meet the small wind turbine definition, notice the wind turbine  
5 specifications on the "Focus on Energy" handout. He said that the handout provides a summary of several  
6 smaller turbines along with their output and rotor diameter. He said that from the table it is clear that once  
7 you exceed a few kilowatts, the size of the turbine begins to grow quite large. Simply put, the 100 kw limit  
8 will include many turbines that would not come close to being what most people would think of as "small."  
9 He said that clearly the ordinance must differentiate between what are truly small wind turbines designed for  
10 individual use, and what are actually fairly large turbines, including remanufactured commercial turbines that  
11 should be subject to much more stringent requirements.

12  
13 Mr. Schildt stated that he could think of two ways to make this distinction and the first is to limit small  
14 turbines to a smaller number of kilowatts, perhaps 10 kw for example. The second is to limit the rotor  
15 diameter to some reasonable dimension such as 12 feet. A second problem that he has with the ordinance as  
16 it relates to small wind turbines is the height and 200 feet is too high. He said that the current proposal  
17 authorizes these small turbines by right in all zoning districts. A 200 feet tower maximum height will have a  
18 significant impact on the surrounding area and neighbors, furthermore, the taller the tower the more  
19 significant the safety issues become. He said that for example, a turbine blade detaching from a 200 feet  
20 tower will, as a general rule, be thrown a lot further than one detaching from a 100 feet tower and  
21 furthermore 200 feet towers can interfere with the aerial spraying of fields. He said that this concern was  
22 expressed during the wind farm hearings as it pertained to test towers which are also limited to 200 feet. He  
23 said that because of these problems small wind turbines should be limited to 100 feet which is the same limit  
24 that the zoning code applies to antenna towers.

25  
26 Mr. Schildt stated that whatever the maximum height the setback from property lines for all small wind  
27 turbine towers must be at least as large as the overall height. He said that currently this requirement applies  
28 only to small wind turbine towers over 100 feet and it is his view that towers of less than 100 feet should not  
29 be exempt from this setback requirement. He said that this setback will reduce the impact of a turbine on a

1 neighbor's property or cause harm to a neighbor. He asked the Board to keep in mind that if a turbine tower  
2 falls over there is something heavy at the top and you don't want a turbine crashing through a neighbor's  
3 roof. He said that a tower failure must be confined to the owner's property and should not put adjacent  
4 landowners at risk.

5  
6 Mr. Schildt stated that he has concerns with the ordinance as it relates to big wind turbines, which are  
7 referred to as BIG WIND TURBINE TOWERS by the ordinance. He said that he has two main concerns  
8 first although a big wind turbine tower is of the same type as that used by a wind farm, the one-mile setback  
9 from the CR district has been removed. He said to be honest, he finds this odd since a big wind turbine can  
10 be as large as and identical to those used in a wind farm. Simply put, if the turbines that are part of a wind  
11 farm can't be located within one mile of CR then why can the same type of turbines be located within one  
12 mile of CR if they are categorized as BIG WIND TURBINE TOWERS. The same issues relating to the  
13 impact on wildlife, the County's parks and forest preserves and the river corridors apply in either case. He  
14 asked why paragraph 6.1.4L, which is the Standard Conditions for Acceptable Wildlife Impacts must be  
15 removed as a standard condition for big wind turbines because it is required for wind farm turbines. He  
16 asked if somehow a bird knows the difference between big wind turbine tower and the same turbine that is  
17 part of a wind farm. He said that he believes the answer is obviously no. He said that the wildlife impacts  
18 might not be as big of an issue if the one-mile setback from CR was reinstated. He said that because he lives  
19 close to the Lake of the Woods he views the geese flying in each year to land on the lake and placing one or  
20 two or three towers near the parks would kill a lot of the birds. He said that if the one-mile setback from CR  
21 is reinstated then perhaps the Standard Conditions for Acceptable Wildlife Impacts wouldn't be as  
22 important but the combination of the two will be devastating on wildlife. He said that since the turbines can  
23 be the same the conditions required to site a big wind turbine tower should be the same as those required to  
24 site a wind farm tower. He said that in his view that this is fundamental. He said that the setback from CR  
25 must be included in the requirements for a big wind turbine tower and the Standard Conditions for  
26 Acceptable Wildlife Impacts must be restored. He said that because the big wind turbine towers are full size  
27 industrial wind turbines they must be prohibited in the Manlove Gas Storage Field for the same reasons that  
28 wind farm towers must be prohibited because they introduce an unacceptable element of risk.



6/11/09

**DRAFT SUBJECT TO APPROVAL DRAFT**

**ZBA**

1 Mr. Schildt stated that on a somewhat technical point, he thinks that it is important that the ordinance clearly  
2 states that the three turbine limit for big wind turbine towers applies to the landowner not the parcel. He said  
3 that although he has suggested some changes to the way that big wind turbine towers are handled by the  
4 proposed ordinance he must say that he questions the inclusion of this category in its entirety. He said that it  
5 seems that large scale commercial wind turbines belong only in a wind farm not sprinkled throughout the  
6 County. He said that he believes that the Board should consider removing this category.

7  
8 Mr. Schildt stated that the ordinance should make it clear that both small and large wind turbine towers must  
9 be located on land that is owned by the owner of the wind turbine tower. He said that as written, the  
10 definitions simply say that they are owned by a private landowner and he does not see a requirement that the  
11 wind turbine towers must be located on land actually owned by that landowner. He said that the ordinance  
12 must make it clear that the owner of the wind turbine tower and the owner of the land on which it is located  
13 must be one and the same.

14  
15 Mr. Bluhm asked the Board if there were any questions for Mr. Schildt.

16  
17 Mr. Thorsland stated that we do not limit the number of trees which can be planted along the property line.  
18 He asked Mr. Schildt what makes this case so special that determines the difference between a wind turbine  
19 and a grain bin falling on the neighbor's property.

20  
21 Mr. Schildt stated that the small wind turbine has a minimal amount of oversight from the County because  
22 once Mr. Hall approves the permit there is very little follow-up that assures that it is constructed correctly  
23 especially when it is a 200 foot tower with the heaviest portion of the structure being at the top. He said that  
24 when you swing a hammer you drive the nail with the head therefore there is a lot of energy at the top of  
25 these towers and that will be dissipated upon your neighbor's land unlike a tree which is wider at the top and  
26 is not the heaviest part of the tree. He emphasized that there is minimal oversight on the small turbines and  
27 not to say that there should be more necessarily but if we limit the height and limit the kilowatts it solves  
28 these kinds of problems. He said that if people desire a Vestas V17 turbine in their backyard then there isn't  
29 anything that would prevent them from placing one there.

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Mr. Thorsland asked Mr. Schildt how much a used Vestas V17 would cost.

Mr. Schildt stated that a used Vestas V17 would cost approximately \$180,000.00.

Mr. Thorsland asked Mr. Schildt to estimate how many used Vestas V17 wind turbines could be anticipated in someone’s backyard.

Mr. Schildt stated that he did not know. He said that there are almost three classes of turbines and it appears that they are being squeezed down into two. He said that there are really small, individual turbines that are suitable for a private landowner and then there are the middle class turbines such as the Vestas V17 and then there are the really big turbines such as on the wind farms. He said that perhaps more stringent rules could be developed so that if someone wanted to place a Vestas V17 on their private property then they could do so with a Special Use Permit that is equivalent to the wind farms. He said that if these things are not limited in some way in the ordinance then in his opinion it is a recipe for disaster and will place neighbors at risk without adequate setbacks.

Mr. Thorsland stated that Mr. Schildt discussed the tower height in his statement. He said that the total height includes the tower height plus the tip of the blade.

Mr. Schildt stated that he believed that he was very careful during his statement and was using the defined term from the ordinance “BIG WIND TURBINE TOWER.” He said that this term is defined to the tip of the rotor but if he did accidentally did not include that proper term at some point he apologized but this was his intent.

Mr. Bluhm noted that the height is to the tip of the blade not the rotor.

Mr. Palmgren stated that perhaps the term “total extent” should be included in the description of the height of the turbine.

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Mr. Bluhm stated the “total extent” would include to the tip of the blade.

Mr. Bluhm asked Mr. Hall if he had any questions for Mr. Schildt.

Mr. Hall asked Mr. Schildt if he had a recommendation for acceptable rotor and blade diameter for what is being called a SMALL WIND TURBINE TOWER.

Mr. Schildt stated that he would use a 10 kilowatt turbine with an overall 12 foot blade diameter. He said that Mr. Geil’s wind turbine is 10 kilowatts and is less than 12 feet and it appears adequate for his purposes.

Mr. Bluhm called Mr. Carl Smith to testify.

Mr. Carl Smith indicated that he was in attendance to present testimony for Case 645-S-09.

Mr. Bluhm called Mr. Eric McKeever to testify.

Mr. Eric McKeever, Wind Specialist/Project Manager for Arends Brothers commended Mr. Schildt for his passion regarding this issue. He said that if there are any questions that the Board may have he would love to address them. He said that if the Board does not desire to drive to Mahomet to view a private wind turbine they are welcome to visit the Arends Brothers 5 kilowatt unit at their Urbana location. He said that there has been concern regarding as to what should be classified as a SMALL WIND TURBINE TOWER. He said that the American Wind Energy Association classifies small wind as 100 kilowatts or less therefore the only thing that he requests is that if Champaign County is going to have their own ordinance term for small wind that perhaps they call it something else. He said that there could be a lot of confusion between the national category for small wind and what the County will call small wind. He said that the American Wind Energy Association classifies big wind as anything over 100 kilowatts. He said that Mr. Schildt indicated that there should be three classifications and this is actually something that the American Wind Energy Association is considering and what they are planning is to keep small wind at 100 kilowatts or less

1 and put in mid-wind which would be 100 kilowatts to either 500 or one megawatt and big wind would be  
2 one megawatt or higher. He said that most of the wind farms are not going to put up a wind turbine smaller  
3 than a 1.65 Vestas and many of them are 2 to 2.5 megawatt units therefore the units are going to get bigger  
4 not smaller.

5  
6 Mr. McKeever stated that Arends Brothers in Urbana has a 5 kilowatt unit and at a 12 mph wind speed it  
7 will put out about 12,000 kilowatt hours which is a little bit better than Mr. Geil's unit in the sense that there  
8 are some other factors that come into play. He said that Mr. Geil is exactly right when he indicated that the  
9 higher the tower the better the wind. He said that at a previous meeting he indicated that increasing the  
10 average annual wind speed by 1 mph you achieve the cubed root efficiency effect as an output. He said that  
11 there is proof that at 30 meters and at 50 meters there is a difference in the average wind for this area or any  
12 other area. He said that if the Board visits the Illinois Wind Energy Association website there is data that  
13 can be reviewed indicating the different recordings of wind speed at different heights. He said that it can be  
14 seen that the wind is greater at an increased height. He said that Mr. Geil had also mentioned that he wished  
15 that he had gone up to 120 feet and one of the general rules of thumb is that the bottom of the tip of the blade  
16 should be 20 feet higher than the closest obstacle. He said that a 105 feet tall tower with 9 feet blades is  
17 right at 96 feet and 20 feet below that is 76 feet therefore most trees that are 60 or 70 feet tall would not be  
18 an obstruction but if there is a grain leg in the area its height could be over 100 feet high. He said that he  
19 was not aware that agriculture is null and void from the entire ordinance therefore a customer who classifies  
20 as agriculture does not have to follow the zoning rules.

21  
22 Mr. Hall stated that, at this time, the classified farmer would be required to follow the setback requirements  
23 from the public road.

24  
25 Mr. McKeever stated that this could cause concern because there are hog confinement farmers, farmers who  
26 have grain bins and rural industrial customers that require more than what the average household would  
27 require in a year. He submitted a brochure and literature to Mr. Hall as a Document of Record regarding the  
28 different heights and kilowatt units available for purchase. He said that Arends Brothers will be offering a  
29 35 and a 50 kilowatt unit available after the first of next year which is perfect for most industrial customers

1 and farmers. He said that anyone who will be using 80,000 kilowatts or more would be interested in the 35  
2 or 50 kilowatt units. He said that Ameren and ComED which are the two largest publically traded  
3 companies in Illinois have classified net metering as 40 kilowatts or less therefore adding restrictions on the  
4 size of the turbine will not allow the turbine owner to maximize their net metering potential. He said that the  
5 people that can really benefit from the net metering are schools and businesses. He said that he has had a  
6 couple of school districts contact him requesting what he can do to help them out because the wind turbine  
7 can provide a school district, municipality or non-for-profit organization within the County's jurisdiction  
8 guaranteed energy costs for the next 20 to 30 years. He said that in budgeting terms a school can take the  
9 money that was allocated for energy costs and use it for another program.

10  
11 Mr. McKeever stated that placing the turbine one-and-three quarter's mile from a municipality is a concern  
12 because the wiring is copper and expensive. He said that the further out the more expensive the project and  
13 there is not a lot of assistance for schools, non-for-profit organizations and municipalities for such projects  
14 therefore increasing the costs will hurt their chances for making the project feasible. He said that currently  
15 his company is installing a 100 kilowatt unit in Ashmore and the reason why they went that big is because  
16 they are still within the small wind category and it allowed them to maximize the amount of output that can  
17 be achieved in that category without being classified in the big wind category. He said that if they had been  
18 classified in the big wind category then they would have had to get a \$5,000 construction permit, prepare a  
19 wind study, a feasibility study for a year, etc. He requested that if the County does reclassify the small wind  
20 category that they also consider that once it is placed in the big wind category the applicant has to do extra  
21 things that cost extra money on a 35 or 50 kilowatt unit, which would cost approximately \$300,000, which  
22 would hurt the return on their investment. He said that he is not asking the County to not be safe or do the  
23 right thing for its citizens although he does hope that the County can make it as safe as possible yet still  
24 make it feasible.

25  
26 Mr. McKeever stated that the 100 kilowatt unit located in Ashmore should be complete within the next  
27 month and it sits at about 37 meters at the hub, which is 121 feet, and the blade length in diameter is 69 feet  
28 which is 34 feet above that therefore being less than 160 feet. He said that Lakeland Community College  
29 falls right in the path of the Coles County Airport and they have a restriction from the FAA of 160 feet. He

1 said that the one thing nice about their turbine is that it will sit right underneath their restriction therefore if  
2 they can satisfy the FAA then they should be able to satisfy others.

3  
4 Mr. McKeever stated that the American Wind Energy Association has indicated that if the parcel is smaller  
5 than an acre then the turbine should not be taller than 80 feet and if it is larger than an acre then there should  
6 be no height restriction. He said that he does not believe that everyone is going to go with the American  
7 Wind Energy Association's statement but the County could pass a ruling which makes the tower fit the lot  
8 and if it does not fit the lot make sure that written approval it obtained from the adjacent landowners. He  
9 said that he does not know many people that he would ask, if he could do it, that would not allow him to do  
10 it. He said that if he knew for a fact that his neighbor would not approve his desire to put up a turbine on his  
11 property then he would not think about pursuing it in the first place.

12  
13 Mr. McKeever stated that the Vestas V17 is a refurbished machine and the one negative thing about it is that  
14 it is designed for the larger wind speeds in California therefore he does not see the chance of having any of  
15 them here due to the fact that they do not do well in a lower wind speed area. He said that he has seen some  
16 of the 40 kilowatt units in East Glenn and each time he drives by one of them he smiles because it has been  
17 broken since January. He said that one of the reasons that the 40 kilowatt unit, which was just constructed in  
18 November, is broken is because it has old technology in the blade design, is on a static tower and the ground  
19 remains soft and the crane cannot come in to finish it. He said that for six months this large 40 kilowatt unit  
20 has sat idle not producing electricity while his turbine spins like crazy.

21  
22 Mr. McKeever stated that there are concerns about the lease options for the wind turbines. He said that what  
23 Arends Brothers is trying to do, for instance with a school that has a 13 cent per kilowatt hour bill, is install  
24 and pay for the wind turbine and charge them one or two cents less than what they are currently paying and  
25 this would occur for the next 20 years. He said that in doing this the school would know exactly what their  
26 rate will be for the next 20 years which will assist with their budgeting process. He said that this only works  
27 from a return on investment issue and it would not work if you were only getting 6 or 8 cents a kilowatt hour  
28 therefore he does not see it happening on the commercial side. He said that some of the co-ops, if they will  
29 allow it, charge anywhere from 12 to 14 cents a kilowatt hour therefore making more sense for them to do

1 the lease option.

2  
3 Mr. McKeever stated that it is true that a turbine is heavier on top but a cell tower that is less than 10 or 20  
4 feet from the roads do not get lighter as they go up. He said that the cell emitters that are at the top of the  
5 towers are just like a hammer as well and these towers are near backyards, fences, roads, houses and schools.

6 He distributed a model ordinance from Ford County for review and indicated that it has a lot of the same  
7 points as Champaign County's but the one thing that they put in there is in regard to the paint scheme and  
8 indicated that the original manufactured color must be maintained. He said that some of the units have logos  
9 on the turbine and he hopes that this will be allowed because asking people to repaint these turbines could be  
10 a problem in itself. He said that the turbine owner would have to obtain a certain type of paint that would  
11 stick to the surface of the turbine, which is costly, and the additional paint to the surface could make the  
12 turbine more inefficient. He said that a negative point, as indicated by the industry, about roof mounted  
13 systems is that they turn any building that they are on top of into a loud speaker and they are not the most  
14 feasible way in producing power. He said that another issue with the roof mounted systems is that they are  
15 not up high enough because height is a big factor for wind energy and if another structure sits within the  
16 same vicinity or path then the owner is just wasting their money.

17  
18 Mr. Bluhm asked the Board if there were any questions for Mr. McKeever.

19  
20 Mr. Miller stated that in the agricultural industry it is not uncommon to lease a grain bin or combine and it is  
21 simply a lease-to-own arrangement. He said that the business that he is involved in provides leasing services  
22 and owns that product until the term is extended. He said that it could be very possible that a leasing  
23 company could have ownership of the equipment but the land is owned by the farm owner.

24  
25 Mr. McKeever stated that many of the leases are called Power Purchase Agreements (PPA) and the entity  
26 owns and does any required maintenance on the turbine but they lease out the turbine or do a PPA which is a  
27 straight kilowatt per hour fee. He said that this option works out well for the schools which may not have  
28 the funding to put in a large turbine but they can necessarily see the benefit of one or two cents per kilowatt  
29 hour when you are talking about hundreds of thousands of kilowatt hours. He said that their location in

1 Ashmore uses about 500,000 kilowatt hours per year and due to the wind conditions they will get about 1/3  
2 of those kilowatt hours paid for by the wind turbine because it will produce about 170,000 kilowatt hours in  
3 a year. He said that if they would go higher with this turbine then it would have better wind but the turbine in  
4 Ashmore is on a fixed tower that is designed for the turbine therefore they are at the mercy of location.

5

6 Mr. Bluhm asked the Board if there were any additional questions for Mr. McKeever.

7

8 Mr. Thorsland asked Mr. McKeever if a 40 kilowatt turbine would classify for net metering.

9

10 Mr. McKeever stated that net metering goes up to 40 kilowatts and after that you can still net meter but you  
11 normally do not want to. He said that after 40 kilowatts you can be a qualifying facility where you basically  
12 consume everything that you produce and anything that is sent back to the grid you receive wholesale price  
13 for.

14

15 Mr. Thorsland stated that if you are a qualifying facility you are basically a power company of your own.

16

17 Mr. McKeever stated yes in a sense but it depends on how the County wants to look at it. He said that Coles  
18 County has determined that as long as the turbine owner is not trying to sell the energy for profit then they  
19 are considered in the residential or small wind category. He said that the reason that they would use the  
20 credit of five cents per kilowatt towards their bill but when you pay 8 to 14 cents per kilowatt the five cent  
21 kilowatt is not that great and so that is why the net metering is nice because whatever your retail rate is that  
22 is what you get coming back in.

23

24 Mr. Thorsland asked Mr. McKeever if that is a nationwide standard.

25

26 Mr. McKeever stated no. He said that it varies by state and in 2008 each state was asked to come up with  
27 their own net metering policy and some states did and some did not. He said that Illinois decided to get  
28 together with their largest utilities, Ameren and ComED and asked them what they wanted the limit to be  
29 and they indicated 40 kilowatts.



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2 Mr. Bluhm asked the Board if there were any additional questions for Mr. McKeever and there were none.

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4 Mr. Bluhm asked if staff had any questions for Mr. McKeever and there were none.

5

6 Mr. Bluhm called Mr. Steve Burdin to testify.

7

8 Mr. Steve Burdin, who resides at 2527N CR 450E, Mahomet stated he attended the Eastern Illini Electric  
9 Co-op meeting today and it sort of illustrates the difference in the net metering policies. He said that Eastern  
10 Illini Electric Co-op has a cap of 10 kilowatts on their net metering program and after that it is a nickel rate  
11 which is fairly low. He read the following prepared statement: He said that he would like to pose some  
12 questions to assist in the development this text amendment to the ordinance. He said that these are not to be  
13 taken as criticism of the current draft, nor does he expect them to be answered tonight but they are to  
14 provoke some thought. He said that he understands that some of the text was prepared by using the  
15 American Wind Energy Association model ordinance as a guideline. He said that this model “small wind”  
16 ordinance purports to be the result of lots of experience and many, many installations. He said that this isn’t  
17 a bad starting point and he certainly does not doubt those claims at all but he would like to say that it is  
18 always ok to ask “why” and “how does this fit our situation.” He said that a few of the questions that came  
19 to his mind go something like this... What is the goal here? What are we trying to regulate, prevent, and/or  
20 protect with this part of the ordinance? What differentiates Part B from Part A?

21

22 Mr. Burdin stated that the definition of Small versus Big turbines make him wonder about things. He asked  
23 what the definition of these terms have to do with the primary purpose of harvested energy. If it’s not  
24 notably different in the two cases isn’t it a common denominator that can be omitted? Mr. Burdin stated that  
25 indeed the current draft only makes a difference in the area of whether the energy is “primarily” used onsite  
26 or not, and does it really matter. He asked if it wouldn’t be noble enough if a landowner wanted a turbine  
27 just to harvest some of this inexhaustible, clean energy source to offset even a small amount of energy from  
28 other sources? He asked if we really care whether the energy is “primarily” consumed onsite or just placed  
29 onto the grid. He said that he does not believe that the utilities make a distinction if someone puts 1 watt-

1 hour or 10kilowatt per month onto the grid; they would still be independent producers.

2  
3 Mr. Burdin stated that while the current draft uses an admittedly large power rating of 100 kilowatts to help  
4 define the difference between small and big, even this seems arbitrary therefore what is this based upon. He  
5 asked if the power really matters. He said that as the terms imply maybe physical size and height are enough  
6 to differentiate small from big and this would indirectly limit power therefore isn't this redundant. He said  
7 that if he could place a turbine on a 100 foot tower this certainly limits the size and power that he can install  
8 by right or otherwise.

9  
10 Mr. Burdin stated that in discussions that he has had with people there are a lot of terms that come up that  
11 seem a little ambiguous such as: private, small, big, residential, farm, personal, etc. He said that there are a  
12 wide range of uses and reasons for installing a wind turbine ranging from a relatively small landowner who  
13 wants to offset some power consumed from the grid to a large landowner who performs energy intensive  
14 tasks such as things for farming such as grain drying. He said that these would justify widely differing  
15 choices in turbines and it seems to him that a landowner on a thousand acres could place a much larger  
16 turbine without disturbing anyone else than someone who owns one acre.

17  
18 Mr. Burdin asked what else differentiates Part B from Part A. He said that if we entertain his musings on this  
19 subject and we discount the purpose of the harvested energy and the power is it then just private ownership.  
20 He said that finally he would like to make a point. If he were to go on eBay and buy a replacement cell  
21 phone battery it would cost about five dollars, and if it turns out it doesn't work very well he is not likely to  
22 be too disappointed. It seems to him; however, that the installation of a wind turbine is much different even  
23 if the landowner does it on a hobby or experimental basis. He said that a wind turbine is an investment of a  
24 lot of money and effort and his feeling is that the person is not likely to make choices that will result in  
25 liability to neighbors or the destruction or poor operation of the turbine. He said that we can count on a good  
26 measure of smarts on the part of the landowners. Mr. Burdin submitted his prepared statement as a  
27 Document of Record.

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29 Mr. Bluhm asked the Board if there were any questions for Mr. Burdin and there were none.

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Mr. Bluhm asked if staff had any questions for Mr. Burdin and there were none.

Mr. Bluhm asked the audience if anyone else in attendance who desired to present testimony regarding this case.

Mr. Bluhm called Ms. Birgit McCall to testify.

Ms. Birgit McCall, who resides at 1085 CR 2200N, Champaign stated that she and her husband have been looking at wind and solar power for several years therefore they are very interested in small or personal wind for their home. She said that for one year she took the wind data that was available from a tower that was constructed approximately 5 miles from her home and analyzed that data against the various windmills that she and her husband were researching based on wind cut and speed to see what kind of usage they would achieve in a year. She said that they have a 2500 square feet home which is all electric and they have a geothermal heat pump, 2 x 6 construction, various efficient windows, etc. She said that based on the data that she has received a 10kW Excel-S, the same model as Mr. Geil's, would provide about half of their energy usage. She said that a 10kw turbine is a little bit small and if she has enough land and desires to go off grid then she should be able to do so and limiting her to a 10kw turbine will not allow her to do so. She said that the averages that the windmill providers put out there are not very accurate when you look at the real world. She said that if the landowner of a square lot with a house in the center desires to construct a 100 foot tower with a Excel-S on the top, giving a total height of 137 feet, and they wanted to place the tower equally away from their house and their property line they would need 8 acres to do so and most people who are not farmers do not have that much land. She said that making the setback too large will restrict a lot of people from getting small wind and if she is going to put \$35,000 in a turbine she is not going to stick it on a 40 foot tower because she might as well throw her money away if she can't go 100 to 120 feet.

Ms. McCall stated that most of the time your neighbor's house is not on the property line and if you are out in the County most people have reasonable yards around their house. She said that if the landowner, who desires the turbine, can get the neighbor to sign off on it or if you are away from a structure then the

1 landowner should be fine. She said that she and her husband are very interested in small wind and they  
2 really hope that this ordinance doesn't unduly restrict what they are allowed to do.

3

4 Mr. Bluhm asked the Board if there were any questions for Ms. McCall.

5

6 Ms. Capel requested that Ms. McCall indicate the number of acres that she owns.

7

8 Ms. McCall stated that she and her husband own five acres.

9

10 Ms. Capel stated that Ms. McCall could construct three-10kw units on her property.

11

12 Ms. McCall stated that this is probably what they would do but at some level getting three, 100 foot units  
13 would be costly.

14

15 Ms. Capel stated that three, 100 foot, 10kw units would also be hard to place on five acres.

16

17 Ms. McCall stated that this is why the allowance of two turbines per property is more desirable because it  
18 may be more cost effective to get two smaller turbines than one larger turbine.

19

20 Mr. Bluhm asked the Board if there were any additional questions for Ms. McCall and there were none.

21

22 Mr. Bluhm asked if staff had any questions for Ms. McCall and there were none.

23

24 Mr. Bluhm stated that this concludes the witness register and asked the audience if anyone else desired to  
25 present testimony regarding the case and there was no one.

26

27 Mr. Bluhm asked Mr. Hall if he required anything from the Board.

28

29 Mr. Hall stated no, unless the Board has some specific direction. He said that staff has many things that they

1 can investigate prior to the next hearing regarding this case.

2

3 Mr. Bluhm requested a continuance date.

4

5 Mr. Hall stated that the case could be continued to the June 25<sup>th</sup> meeting although it does not allow staff  
6 ample time for preparation. He said that he would recommend continuing this case to the July 16<sup>th</sup> meeting.

7

8 **Mr. Thorsland moved, seconded by Ms. Capel to continue Case 634-AT-08, Part B, to the July 16,**  
9 **2009, meeting. The motion carried by voice vote.**

10

11 **6. New Public Hearings**

12

13 **Case 645-S-09 Petitioner: Robert and Barbara Gerdes Request: Authorize the construction and use**  
14 **of a “Restricted Landing Area” as a Special Use in the AG-1, Agriculture Zoning District. Location:**  
15 **An approximately 83 acre tract that is approximately the West Half of the Southwest Quarter of**  
16 **Section 33 of Ayers Township and commonly known as the farm at 52 CR 2700E, Broadlands.**

17

18 Mr. Bluhm informed the audience that this is an Administrative Case and as such the County allows anyone  
19 the opportunity to cross examine any witness. He said that at the proper time he will ask for a show of hands  
20 for those who would like to cross examine and each person will be called upon. He requested that anyone  
21 called to cross examine go to the cross examination microphone to ask any questions. He said that those  
22 who desire to cross examine are not required to sign the witness register but are requested to clearly state  
23 their name before asking any questions. He noted that no new testimony is to be given during the cross  
24 examination. He said that attorneys who have complied with Article 6.5 of the ZBA By-Laws are exempt  
25 from cross examination.

26

27 Mr. Hall distributed a two page handout with a color aerial photo and a black and white copy on the back.  
28 He said that the color aerial photograph illustrates the imaginary surfaces which are the safety elements  
29 related to the proposed RLA. He said that these are requirements of I.D.O.T. and the F.A.A. He said that

1 super-imposed on the color aerial are the wind farm 3500 feet separation that the recent wind farm  
2 amendment requires in regards to an RLA and the black and white copy has indicated the basic non-  
3 RLA/wind farm separations. He said that this is an area where staff anticipates a wind farm although to date  
4 we have not received an application and frankly he has not seen a diagram of parcels in this area that are  
5 interested in a wind farm. He noted that this location is between Broadlands and Allerton and he needs to  
6 verify whether Broadlands and Allerton have their own zoning and if they do this property falls in an area  
7 where the County cannot regulate wind farms. He said that staff knew that the proposed RLA was close to  
8 the Broadlands ETJ and just tonight he was talking to the petitioners and they reminded him that Allerton is  
9 only one-and-one half mile away from the subject property also which makes this a unique location  
10 particularly in light of the recently approved amendment.

11  
12 Mr. Hall stated that also distributed at tonight's meeting were the Restrictions on Use that apply to Restricted  
13 Landing Areas which are the IDOT rules which are also part of the County's *Zoning Ordinance*. He said that  
14 again, staff anticipates a wind farm being proposed in this area but there has been none proposed yet  
15 therefore it remains to be seen how the criteria related to the convenience for public necessity should be  
16 evaluated. He said that this case is not ready for final action tonight.

17  
18 Mr. Bluhm asked the Board if there were any questions for Mr. Hall and there were none.

19  
20 Mr. Bluhm called Mr. Jed Gerdes to testify.

21  
22 Mr. Jed Gerdes, who resides at 1448 CR 2700E, Ogden stated that he and his parents farm together therefore  
23 he is assisting them with this request. He said this is a little hard for him tonight because there are  
24 neighbors, landowners and relatives in the audience tonight. He said that having a runway for a restricted  
25 landing area or grass strip is not entered into lightly because if there is anything a farmer hates to do is mow  
26 grass all of the time. He said that this is not something that they really wanted to do but in light of the  
27 runway strip that they were using, which belonged to Steve Riggins and was just a few miles away and has  
28 been plowed up and planted in crop for agricultural purposes has been lost for the area therefore they need to  
29 re-establish a landing strip so that they can continue the practices that they have been doing. He said that

6/11/09

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1 they are moving a landing strip and not creating a new one and the old landing strip was in the same turbine  
2 zone therefore it is not like there is a net effect where they would be taking out turbines. He said that the big  
3 reason why they need aerial application is because of rye grass and he is one of the only people in Central  
4 Illinois who has been working with it. He said that Mike Plummer from the University of Illinois has been  
5 promoting this because it is one of the best ways that we are going to preserve our Champaign County farm  
6 ground. He said that he purchased a farm a few miles away from his parent's in Vermillion County which  
7 had some rolling ground on it and when he first farmed it he produced 117 bushel corn from it so he decided  
8 that he had to make some changes. He said that with fertilizer and lime applications the yields got a little bit  
9 better but not really great so he decided to plant rye grass. He said that rye grass is similar to what people  
10 would plant in the yard and is an annual variety. He said that around August 1 when the corn and beans are  
11 beginning to turn the seed is flown on and when it receives a good one-inch rain it starts growing and by the  
12 time that he harvests his corn he has a really good stand of rye grass which is a great erosion preventer and  
13 his fields had zero rutting. He said that with this he has also experienced some pretty substantial yield boosts  
14 for some pretty thin Vermillion County ground and his corn fields have averaged around 200 bushels to the  
15 acre and up to 74 bushels for beans. He said that there are not a lot of people who do this because it is a trial  
16 and error sort of thing but he is working with the National Rye Grass Association from Oregon and they  
17 have had some real good success. He said that in comparison to the windmills a lot of the operations till all  
18 of their soil for the most part and no-till some of their beans but it is all about carbon-sequestration and every  
19 time you go till the soil you are releasing carbon into the atmosphere therefore the act of no-tilling the  
20 ground actually gains a start to sequester at the rate of 1300 kilograms per year. He said that if you take a  
21 tillage field to a no-tillage field you could sequester enough carbon that an entire home would use on a coal  
22 fired totally electric operation for every 100 acres. He said that when you add rye grass to that it almost  
23 doubles that because you have a crop growing all year long rather than just when the corn starts to dry out  
24 therefore sequestering a lot of carbon and helping out the environment in the exact same way that the wind  
25 turbines are helping the environment.

26

27 Mr. Gerdes stated that no matter how many wind turbines are going to be put up in Champaign County you  
28 can only go up to 20% for your electricity and the rest has to be from coal because of the voltage fluctuations  
29 and there has to be some sort of steady power supply underneath. He said that there are challenges with rye

1 grass because it is very bulky and spreading it at even a light rate only 70 acres is all an aircraft can hold and  
2 if urea is mixed in with it they can only spread 35 acres per load which makes it hard if the aircraft has a long  
3 way to fly to each field when loaded. He said that spreading the seed has to be done very early in the  
4 morning when the wind is very still therefore spreading is done by 9:00 a.m. He said that he has been  
5 working with this for several years and has had very good luck with this application but there is a lot to learn  
6 although it is one of the few conservation practices that we have going on that has the possibility of  
7 sequestering carbon, protecting our Champaign County soils and also improving yields. He said that it is  
8 hard to believe but by November 1<sup>st</sup> after he pattern tilled the rye grass field he had roots that were over 40  
9 inches deep.

10  
11 Mr. Gerdes stated that they raise good quality seed beans therefore they must spray fungicides and he could  
12 easily save \$5 to \$10 dollars per acre in providing a landing area for the plane and when you multiply that  
13 savings to thousands of acres that is a lot of money therefore providing a financial incentive. He said that  
14 this savings will assist in the cost of setting this ground aside and maintaining it for the landing strip. He  
15 said that he spoke to Dale Rust, Flight Safety Coordinator for IDOT Aeronautics Division and he indicated  
16 that Champaign County has lost a majority of their RLA's in the last 15 years. Mr. Gerdes stated that there  
17 used to be approximately 20 and now there are only 7 left and none of those are within his area of the County  
18 and there are none in northeastern Douglas County or northwestern Edgar or Vermillion County. He said  
19 that there is one somewhere on the Vermillion/Edgar County line but it is several miles from them and not  
20 within their farming area therefore creating a void for their needs. He said that most of the restricted landing  
21 areas that exist are for private use and he was hoping that any area farmers who would like to work with his  
22 pilot will utilize their RLA. He said that we shouldn't pit wind turbines against conservation agriculture  
23 because we are working for the same goal and there has to be a little room for everyone.

24  
25 Mr. Gerdes illustrated on a map the specific location of the restricted landing area in reference to the location  
26 of Broadlands and Allerton and noted that this is a good location for the RLA because the extra-territorial  
27 jurisdiction of both municipalities overlap at this location. He said that it is his understanding that there is a  
28 proposed wind farm for his area but Horizon has not applied for any permits to date. He said that he and his  
29 family are landowners and this is the home base to their operation and this is the where they need their RLA



6/11/09

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**ZBA**

1 and he hopes that they are not penalized for a wind farm that only may happen in the future. He said that Mr.  
2 Dale Rusk indicated that staff could call him with any questions regarding the proposed RLA in regard to  
3 lighting, parking, etc.

4  
5 Mr. Gerdes stated that he hopes everyone realizes that the proposed RLA is not about wind turbines but  
6 about him being able to do the farming practice that they have been doing for quite some time and further  
7 their studies on it and hopefully transport it to all of his ground.

8  
9 Mr. Bluhm asked the Board if there were any questions for Mr. Gerdes and there were none.

10  
11 Mr. Bluhm asked if staff had any questions for Mr. Gerdes.

12  
13 Mr. Hall asked Mr. Gerdes if he could characterize where most of his farming operation is located in relation  
14 to the subject property.

15  
16 Mr. Gerdes stated that he and his partner, Charles Goodall, farm in six different counties and the bulk of his  
17 farming area is in the Broadlands, Allerton and Sidell area and encompasses approximately 2500 acres.

18  
19 Mr. Hall stated that it is fair to say that he does not live where he farms.

20  
21 Mr. Gerdes stated no. He said that he moved into his grandmother's home near Ogden.

22  
23 Mr. Hall asked Mr. Gerdes if his spray applicator would be loading more than just rye grass and urea at this  
24 location.

25  
26 Mr. Gerdes stated that it is possible that his spray applicator would load fungicides and he could install a  
27 loading pad if required. He said according to current regulations his applicator does not need to have a  
28 loading pad as long as he has permanent chemical storage at their main facility.

29

1 Mr. Hall stated that Mr. Gerdes' applicator does not have an ownership interest in the RLA but is just a  
2 service that Mr. Gerdes is providing for his applicator.

3  
4 Mr. Gerdes stated that Mr. Hall was correct. He said that he needs the RLA for the rye grass and input costs  
5 and is available for any other pilot to use as well. He said that he wants to benefit his neighbors as well  
6 because we are all in this together.

7  
8 Mr. Hall asked Mr. Gerdes if he would be interested in placing the RLA more centrally on his land rather  
9 than butting up against the property of the neighbor. He asked Mr. Gerdes if the neighbor to the east of the  
10 subject property was a neighbor.

11  
12 Mr. Gerdes stated that the neighbors on all sides are good friends and relatives. He said that he abuts land  
13 owned by Eagco, Inc. in five different locations with large acreages. He said that Eagco, Inc. is interested in  
14 housing the large windmills on their ground although personally he is not interested therefore issues will  
15 arise where he will have to deal with their existence. He said that currently the proposed windmills from  
16 Horizon are just rumored at this point but within their proposal there will be huge amounts of acreage and  
17 area and his land is just one small portion of that massive area that they want to take into account therefore it  
18 is appears to be a pretty miniscule problem.

19  
20 Mr. Bluhm asked the audience if anyone desired to cross examine Mr. Gerdes.

21  
22 Mr. Carl Smith, who resides at 214 CR 2700E, Allerton asked Mr. Gerdes how many acres of rye grass he  
23 plants currently and does he anticipate expanding that acreage.

24  
25 Mr. Gerdes stated that it is a range between 200 and 400 acres and he is hoping to increase that acreage  
26 substantially over the years.

27  
28 Mr. Dwight Farber, who resides at 131 N. Williamsburg, Bloomington asked Mr. Gerdes if the landing strip  
29 was not approved and was not located in the proposed area where would he load the plane and how would he

1 get his seed applied.

2

3 Mr. Gerdes stated that it would basically limit them to doing nothing more than 100 acres because it takes  
4 too long for the applicator to fly back and forth each time when he has other customers to serve.

5

6 Mr. Bluhm asked the audience if anyone else had any questions for Mr. Gerdes and there were none.

7

8 Mr. Bluhm called Mr. Paul Cole to testify.

9

10 Mr. Paul Cole, Attorney representing Hester L. Miles and Robert and Barbara Miller which are adjacent  
11 landowners to the west of the proposed RLA, stated that the red oval which is indicated on the color aerial  
12 appears to be the zone within which wind turbines are not permitted. He said that he assumes that this zone  
13 is per the County's *Zoning Ordinance* and not federal or IDOT. He said that he assumes from reading the  
14 memorandum that Douglas County does not have a zoning ordinance.

15

16 Mr. Hall stated that Douglas County does not have a zoning ordinance.

17

18 Mr. Cole asked Mr. Hall if the absence of a zoning ordinance means that there would not be any restrictions  
19 on wind turbines which are located south of the Champaign County line.

20

21 Mr. Hall stated that he does not know but he would hope that there would be some restrictions.

22

23 Mr. Cole stated that it may be somebody will place a tower within this oval which cannot be prevented  
24 anyway. He said that the issue here is not whether turbines might be built and compete with the legitimate  
25 interest of a restricted landing area but the real question is what the law is when it comes to determining that  
26 an RLA may be permitted. He said that the section of the *Ordinance*, Section 9.1.11, appearing in staff's  
27 materials indicates that a special use permit shall not be granted unless the public hearing record and written  
28 application demonstrate the five required sub-sections. He said that the first requirement which must be  
29 demonstrated is that the special use is necessary for the public convenience at that location. He said that the

1 following sub-sections described conditions after the special use is determined necessary that it can be done  
2 in a way that is not disruptive to the district. He asked what does it mean necessary for the public  
3 convenience because Item #7.B. of the Preliminary Draft Finding of Fact indicates that the proposed RLA is  
4 intended for private use and Item 9.B.3(c) indicates that RLA's are required to be private use only. He said  
5 that he could imagine some private uses which might somehow be necessary for the public convenience but  
6 asked what would those uses be and why would they need to be within this specific location. He said that he  
7 does not know anything about costs or farming applications but aerial applications can also be done by  
8 helicopter therefore is a landing strip necessary. He asked if there is something special about this location,  
9 assuming that it is necessary, that justifies it. He said that Mr. Gerdes has indicated that there are other  
10 places where he has property and it is assumed that the RLA could be put in that location. He said that it has  
11 not been shown that the RLA is for the public's convenience and the idea of sequestering carbon in grass is a  
12 good green idea that perhaps addresses global warming and may be an issue which is in conflict with the  
13 question of how we develop sufficient alternate, clean sources of power that the public really does need. He  
14 said that this is not a contest between wind farms and an RLA but is a question if there is anything on record  
15 that indicates that this use is necessary at this location to serve the public convenience.

16

17 Mr. Bluhm asked the Board if there were any questions for Mr. Cole.

18

19 Ms. Capel asked Mr. Cole if the landowners whom he represents are interested in having wind turbines  
20 placed on their property.

21

22 Mr. Cole stated that if it were possible to place a wind turbine on their property then they would like to have  
23 that opportunity.

24

25 Mr. Bluhm asked the Board if there were any additional questions for Mr. Cole and there were none.

26

27 Mr. Cole stated that it is one thing to say that we are here to protect the landowner's possible economic  
28 interest and of course that is one of the motivating factors, but that doesn't effect the argument of what does  
29 the law require.

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Mr. Bluhm asked if staff had any questions for Mr. Cole and there were none.

Mr. Bluhm called Ms. Teresa Hageman to testify.

Ms. Teresa Hageman declined to testify at this time.

Mr. Bluhm called Mr. John Richard Reed to testify.

Mr. Bluhm called Mr. John Richard Reed, who resides at 18 Stonegate, Charleston stated that he is co-owner of Reed’s Fly-On Farming and has been based out of the Coles County Memorial Airport for 33 years. He said that he did not plan on making a presentation tonight but with some of the information that he has heard he is going to attempt to make one. He said that it appears that this is coming down to a competition between wind turbines and the RLA which is unfortunate in an agricultural area. He said that when Mr. Gerdes first approached him with his proposed RLA he felt that it was a great idea because they had just lost the use of one. He said that normally he flies out of Mattoon but he can also fly out of Danville and Tuscola but there are no other places in the middle of those hard surface airports that he can use. He said rye grass is a difficult crop to apply and time is of the essence and so being able to load close is imperative. He said that to respond to Mr. Cole’s comment regarding rye grass application with a helicopter, there is not a single helicopter in the State of Illinois that can do that. He said that his business has tripled in the last few years and he plans to use the RLA in the spring for application of fungicides on corn and soybeans. He said that he is very familiar with the Illinois Containment Laws administered by the Illinois Department of Agriculture and in 1998 he has helped write those regulations which took effect in 1990. He said that the real issue is what we are seeing happening all over the state and currently Horizon has shown interest in this area although to date it is only conjecture and speculation. He said that there is not a square inch in the State of Illinois that is not being looked at for a wind turbine by a wind turbine company. He said that as President of the Illinois Agricultural Aviation Association he represents the aerial applicators in Illinois as a liaison to the wind developers and he is working closely with the Wind for Illinois Association which is based in Bloomington. He said that the Wind for Illinois Association represents all of the wind developers in the

1 State of Illinois to develop a best practices protocol to allow aerial application and wind turbines to co-exist  
2 in the best manner possible. He said that he spends 10 to 15 hours a week on the phone and the computer  
3 talking to the various companies such as Horizon, Eco-energy and Norvitas and what they are hoping for is  
4 to come up with something that will allow renewable energy resources without affecting the continued  
5 productivity of some of the best farm ground in the world. He said that discussion regarding the strategic  
6 placement of turbines which would allow the maximum amount of aerial application of the affected acreage  
7 is taking place. He said that there might be a company which wants to build wind turbines in this area but  
8 just because they are researching it does not mean that it is actually going to happen. He said that there are  
9 wind projects that are at a dead stand still in certain parts of Illinois because it is interfering with the  
10 productivity of prime agricultural ground. He said that it is his opinion that there are too many maybes in  
11 this situation in regard to the wind farm and the proposed landing area could be utilized by other landowners  
12 in the area right now. He said that in twenty years there maybe a turbine that cannot be placed in this area  
13 because of the RLA but it should not be brought into the equation at this time because no one can look into a  
14 crystal ball and know the effect.

15  
16 Mr. Reed said that he has known Mr. Dale Rust, Flight Safety Coordinator for IDOT Division of  
17 Aeronautics, for twenty-five years and he asked Mr. Rust if the proposed project meets all of the  
18 qualifications for an RLA in the State of Illinois and did he foresee any problems or issues. He said that Mr.  
19 Rust stated that the proposed project meets all of the qualifications. Mr. Reed stated that over the past ten  
20 years the existing RLAs are disappearing and interesting enough over the past two years there have been  
21 more and more applications for RLAs across the state primarily for the reasons given by Mr. Gerdes. He  
22 said that the potential for Asian Rust moving into the State of Illinois is a very good possibility and the  
23 number of acres that would have to be covered in a short period of time is mind boggling. He said that as  
24 more landing strips are being proposed his association is working with wind farm developers to place wind  
25 turbines as to not to interfere, any more than necessary, with the aerial application of farm ground.

26  
27 Mr. Bluhm asked the Board if there were any questions for Mr. Reed and there were none.

28  
29 Mr. Bluhm asked if staff had any questions for Mr. Reed.

1

2 Mr. Hall asked Mr. Reed if this location would pose any safety concerns in establishing an RLA there if the  
3 County didn't have the 3500 feet separation distance requirement from wind turbines towers relative to the  
4 RLA and the only separation that applied was a typical separation for wind farms.

5

6 Mr. Reed stated yes. He said that generally when you come in to land at a landing area you are parallel to the  
7 runway on one side or the other and you are flying the length at 500 to 800 feet high so that you can make a  
8 turn to face and another one to come in and land. He said that this procedure clears the area to make sure  
9 that there isn't anything in the area, a child on a bicycle, another plane, etc. on the runway and that is the  
10 reason for the expanded area and students are taught to keep at least one-quarter mile away from the runway  
11 that they are getting ready to land upon. He said that some of the items that they are reviewing during  
12 discussion with the wind farm developers in placement of the turbines are at least a 3500 feet circle around  
13 the strips.

14

15 Mr. Bluhm asked the audience if anyone had any questions for Mr. Reed.

16

17 Mr. Paul Cole asked Mr. Reed if the RLA means that there will be air traffic directly over the property of  
18 other owners to the west.

19

20 Mr. Reed stated yes.

21

22 Mr. Cole stated that he is assuming that Mr. Rust was not referring to the *Champaign County Zoning*  
23 *Ordinance* when he indicated that the proposed RLA meets all requirements.

24

25 Mr. Reed stated that Mr. Rust was only speaking in terms of the requirements set by the State of Illinois.

26

27 Mr. Cole stated that those requirements are shown in blue on the aerial photograph.

28

29 Mr. Bluhm asked the audience if there were any additional questions for Mr. Reed and there were none.

1  
2 Mr. Bluhm called Mr. Carl Smith to testify.

3  
4 Mr. Carl Smith, who resides at 214 CR 2700E, Allerton stated that he does have an Allerton address but he  
5 lives in Champaign County. He said that he and his brother are the tenants of the farm that is located  
6 directly on the east side of the proposed landing area and he has a letter from the landowner. He said that  
7 they are also the tenants of the farm ground that is located directly south of that same tenant farm. He said  
8 that the owner of the parcel located in Douglas County was not notified of this case but is the sister of the  
9 tenant farm located in Champaign County which is directly east of the proposed RLA. Mr. Smith read and  
10 submitted the following letter from Carole Smith Horst, who resides at 1314 Aspen Street, Broomfield, CO.:

11  
12 My name is Carole Smith Horst and I received notice on May 22, 2009, at 4 p.m. of a hearing  
13 concerning property next to my property (East Half of the S.W. Quarter of Section 33, Township 17 North,  
14 Range 14 West of the 2<sup>nd</sup> Principal Meridian in Champaign County, Illinois – 80 acres). This letter is for my  
15 nephews/tenant (Carl and Vic Smith) and Horizon Wind Farms to speak on my behalf against the placement  
16 of this landing strip for planes. I have had a signed contract for the Horizon Wind Farms to locate a turbine  
17 on my property for some time. I am in total agreement that renewable, clean wind power is a good solution  
18 for the United States, State of Illinois, and Champaign County’s power needs. I believe the use of power  
19 plants using coal-burning or atomic energy is less desirable answer to the future needs of our country. If this  
20 airstrip is approved, I feel my tenants, myself and heirs should be reimbursed for loss of income from the  
21 wind farm. Our family has been farming in Champaign County for four generations and will be heading into  
22 our fifth. I desire to continue bringing good benefits to Champaign County and Heritage School District  
23 from our success as farmers. I see all of us working in partnership to try to improve quality of life in the  
24 United States.

25  
26 Mr. Smith stated that he, Ms. Horst and her sister own considerable property within the area and have  
27 negotiated and signed contracts with Horizon and have had for several months long before Mr. Gerdes’  
28 landing strip was proposed. He said that in fact that an air strip to service agriculture is a good idea and Mr.  
29 Reed has sprayed thousands of his acres over several years and has done a good job but to the best of Mr.



1 Smith's knowledge Mr. Reed has always serviced them out of his Mattoon location. Mr. Smith said that his  
2 farm near Jamaica is much closer to Danville but Mr. Reed still services him from his location in Mattoon and  
3 has done it very timely therefore in terms of distance there may be a lesser charge but he has never asked him  
4 because it has never been a concern. He said that in terms of seeding the grass he understands and agrees  
5 with Mr. Gerdes that loading the plane could be more costly but he presumes that other air strips are or could  
6 be available and with some of the other property that Gerdes' own it isn't likely that the applicators will tell  
7 them where to put an air strip. He said that he lives directly north of the proposed air strip in the next section  
8 to the north and his wife owns and operates a daycare/pre-school and she runs summer camps and the  
9 spreading of grass seed does not concern him but the application of pesticides and fungicides in an area  
10 where young children are present does. He said that he does not know if there would be much of an attempt  
11 to apply pesticides and fungicides from that location but if it is a possibility then he is concerned. He said  
12 that the setback that is proposed would prohibit both of his landlords from having a wind turbine placed  
13 upon them because of the requirements to be away from the adjacent landowners to the east. He said that he  
14 respects everyone's opinion in desiring this land strip and there may be a concern or need for it but he does  
15 believe that the towns or cities around Champaign, Danville, Mattoon or Paris probably could satisfy that  
16 need as well.

17  
18 Mr. Bluhm asked the Board if there were any questions for Mr. Smith and there were none.

19  
20 Mr. Bluhm asked if staff had any questions for Mr. Smith and there were none.

21  
22 Mr. Bluhm asked the audience if anyone in the audience had questions for Mr. Smith.

23  
24 Mr. Jed Gerdes stated that he understands Ms. Horst's request to be reimbursed for the loss of possible  
25 income by the installation of a wind turbine but on the flip side if the landing strip is not approved we will be  
26 paying more for their herbicides and fungicides and could experience a loss in yields and wind turbines,  
27 according to the University of Illinois, do decrease yields on non-participating fields.

28  
29 Mr. Bluhm informed Mr. Gerdes that he must ask specific question to Mr. Smith in regard to his testimony.

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Mr. Gerdes stated that with all of the factors combined someone will come out on the losing end one way or the other because most of the ground farmed by the Smith's is within the wind turbine area so this is just one field out of all of their acreage. He asked Mr. Smith if his landowner losing their possibility of gaining income from the wind turbine mitigates his losing the thousands of dollars required to have their fungicide sprayed and application of the rye grass. He said that it appears that the loss is pretty equal.

Mr. Smith stated that he appreciates both opinions and there is not a clear cut solution to this matter but his thought is that his landlord had everything in effect with Horizon before the RLA was proposed.

Mr. Gerdes stated that Horizon has not applied for any special permits to date.

Mr. Smith stated that contracts have been signed and money has traded hands.

Mr. Bluhm asked the audience if there were any additional questions for Mr. Smith and there were none.

Mr. Bluhm asked if anyone else in the audience would like to present testimony regarding this case and there was no one.

Mr. Bluhm closed the witness register.

Ms. Capel stated that the Preliminary Memorandum dated June 11, 2009, indicates that Mr. Gerdes owns other property therefore she asked Mr. Gerdes if there was a different property that he owns that would be appropriate for this use.

Mr. Gerdes stated that the other properties are not within the close distance that the subject property is in relationship to the bulk of the ground. He said that he lives near Interstate 74 on his grandmother's farm and he does farm a few acres around his home but when his father retires his sister will inherit a majority of his ground up there and he will end up with less and less acreage in that area and more near the subject property.

1 He asked the Board if they would like to go out and mow and maintain five acres that is fifteen miles from  
2 your house somewhere and deliver the seed therefore it makes better since to have the landing strip in a  
3 location which is closer to the base operation.

4

5 Ms. Capel asked Mr. Gerdes if his partner agreed.

6

7 Mr. Gerdes stated that his partner, Charles Goodall, is located within the wind turbine area near Sidell which  
8 is also next to the farm where he applies the rye grass.

9

10 Ms. Capel stated that an RLA would have less of an impact on his neighbors.

11

12 Mr. Gerdes stated that it is possible but there is a financial obligation in creating an RLA and he hasn't  
13 approached Mr. Goodall about such because it is his operation. He said that when you partner with someone  
14 and assist them in harvesting but he does not control or gain any income from Mr. Goodall's land. Mr.  
15 Gerdes stated that Mr. Goodall's tracts are long and skinny and approximately one-quarter mile wide and so  
16 side to side they have the same effect.

17

18 Mr. Bluhm asked the Board and staff if there were any additional comments concerning this case.

19

20 Mr. Bluhm asked Mr. Hall whether it is a *Zoning Ordinance* requirement that an RLA must be for private  
21 use only or a State of Illinois requirement that is placed on RLAs.

22

23 Mr. Hall stated that the relevant regulations regarding use are in the handout from IDOT and the County just  
24 enforces the IDOT regulations on RLA use. He read the restrictions on use from Section 14. Table A. and  
25 noted that the agricultural operations that have been described appear to be absolutely allowed.

26

27 Mr. Bluhm stated that when the Board is discussing private use they need to refer to Table A.

28

29 Mr. Hall stated yes. He said that staff will want to excerpt relevant testimony from the minutes and Mr.

1 Gerdes provided a lot of testimony at tonight's hearing regarding the characteristics that make this location  
2 good in his mind and that testimony needs to be reflected as accurately as possible in the minutes. He said  
3 that Mr. Reed's testimony was also very helpful and at this point staff's main task will be to provide a set of  
4 minutes for review. He said that he would like Mr. Gerdes to provide a more accurate site plan because there  
5 are some features, more than just the landing area that should be indicated on the site plan if for no other  
6 reason than to make sure that he is aware of these features. He said that the primary surface should be  
7 indicated on the site plan although the runway clear zone does not need to be but there is some work that  
8 needs to be done on the site plan to make it more accurately represent what he is asking the County to  
9 approve.

10

11 Mr. Bluhm asked Mr. Hall if the 4:1 side transition slope relates to obstruction level and not ground level.

12

13 Mr. Hall stated yes.

14

15 Mr. Bluhm stated that his theory is that an elevated runway is needed to keep the water off it and then his  
16 concern is that an elevated runway would change the natural water flow or a berm should be required.

17

18 Mr. Reed stated that the 4:1 side transition is indicating that if there is a tree, building or pole then the  
19 runway has to be 4:1 away from it.

20

21 Mr. Bluhm asked Mr. Reed, in a building sense, that he wants an elevated runway so that the water runs off  
22 and doesn't sit on the runway.

23

24 Mr. Reed asked Mr. Bluhm if he desires the runway to be crowned and water channel water to the side.

25

26 Mr. Bluhm stated no.

27

28 Mr. Reed stated that nothing is ever perfect and flat.

29

6/11/09

**DRAFT SUBJECT TO APPROVAL DRAFT**

**ZBA**

1 Mr. Bluhm stated no, but if three feet of dirt is required to build the runway up a little bit to make a crown so  
2 that the water runs off the Illinois Drainage Law has been violated because the natural flow of the water  
3 cannot be changed between properties.

4  
5 Mr. Gerdes stated that the field is pattern tiled therefore there is no water standing anywhere on the property  
6 and most of the restricted landing areas are not elevated on a grass field.

7  
8 Mr. Bluhm asked Mr. Gerdes if he is planning on using the land as it is.

9  
10 Ms. Capel asked Mr. Hall if the 4:1 transition should be indicated on the revised site plan.

11  
12 Mr. Hall stated that the things that are required by the *Champaign County Zoning Ordinance* to be on the  
13 property should be shown on the site plan.

14  
15 Mr. Bluhm asked the Board if there were any other questions or comments for Mr. Hall or Mr. Gerdes.

16  
17 Mr. Bluhm requested a continuance date.

18  
19 Mr. Hall asked Mr. Knight if staff has received any information from either case shown on the docket for the  
20 July 30, 2009, public hearing.

21  
22 Mr. Knight stated no.

23  
24 Mr. Hall stated that the Board would be free to continue this case to July 30, 2009, which is the first possible  
25 date that would be available.

26  
27 **Mr. Thorsland moved, seconded by Mr. Courson to continue Case 645-S-09, Robert and Barbara**  
28 **Gerdes to the July 30, 2009, public hearing. The motion carried by voice vote.**

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7. Staff Report

None

8. Other Business

None

9. Audience Participation with respect to matters other than cases pending before the Board

None

10. Adjournment

The meeting adjourned at 9:57 p.m.

6. Adjournment

Respectfully submitted

Secretary of Zoning Board of Appeals

# CASE NO. 632-AM-08

SUPPLEMENTAL MEMORANDUM

April 9, 2009

Petitioner: **Mike Trautman**

Champaign  
County  
Department of

**PLANNING &  
ZONING**

**Brookens**

Administrative Center  
1776 E. Washington Street  
Urbana, Illinois 61802

(217) 384-3708  
FAX (217) 328-2426

Site Area: **1.661 acres**

Time Schedule for Development:  
**Immediate**

Prepared by: **J.R. Knight**  
Associate Planner  
**John Hall**  
Zoning Administrator

Request: **Amend the Zoning Map to allow for the development of 1 single family residential lot in the AG-1 Agriculture Zoning District, by adding the Rural Residential Overlay (RRO) Zoning District to the subject property.**

Location: **A 1.66 acre tract that is in the East Half of the Southwest Quarter of the Southwest Quarter of Section 35 of Newcomb Township, and commonly known as the land east of Trautman's Section 35 Subdivision approximately at 420 CR 2425N, Mahomet.**

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## *STATUS*

This case was continued from the April 16, 2009, ZBA meeting. This is the fourth meeting for this case.

Since the last meeting it appears progress with the state dam safety officials has been slow. The petitioner's engineer Dave Atchley indicated to staff that the petitioner wishes to withdraw his request in an email on July 9, 2009 .

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## **ATTACHMENT**

A Email from Dave Atchley dated July 9, 2009

**James R. Knight**

**From:** David Atchley [davea@hdc-eng.com]  
**Sent:** Thursday, July 09, 2009 9:00 AM  
**To:** James R. Knight  
**Cc:** philtccr@aol.com; trautman.mike@gmail.com  
**Subject:** Case 632-AM-08 Mike Trautman

JR

I talked with Mike Trautman and he would like to withdraw the case at this time.  
Please call with any questions

David Atchley, PE, PLS  
HDC Engineering  
201 West Springfield  
Champaign, Illinois 61820  
217-352-6976 ph  
217-356-0570 fx  
davea@hdc-eng.com



# CASE NO. 634-AT-08 Part B

## SUPPLEMENTAL MEMORANDUM

Champaign July 10, 2009

County Department of Planning & Zoning  
Petitioner: **Zoning Administrator**

Prepared by: **John Hall**

**Zoning Administrator**

**J.R. Knight**

**Associate Planner**

Request: **Amend the Champaign County Zoning Ordinance as follows:**

1. **Add definitions for "SMALL WIND TURBINE TOWER" and "BIG WIND TURBINE TOWER".**
2. **Amend paragraph 4.3.1E. to add new height regulations that apply to "SMALL WIND TURBINE TOWER" and "BIG WIND TURBINE TOWER".**
3. **In Section 5.2 replace "wind turbine" with "BIG WIND TURBINE TOWER".**
4. **In Section 6.1.3 add new standard conditions for "BIG WIND TURBINE TOWER" that are similar to the standard conditions for WIND FARM.**
5. **Add new subsection 7.7 making "SMALL WIND TURBINE TOWER" an authorized accessory use by-right in all zoning districts and add requirements including but not limited to:**
  - a. **the turbine must be located more than one and one half miles from the nearest municipal zoning jurisdiction; and**
  - b. **minimum required yards that are the same as for other accessory structures in the district provided that the overall height is not more than 100 feet; and**
  - c. **an overall height limit of 200 feet provided that the separation from the nearest property line is at least the same as the overall height and authorize private waivers of the separation by adjacent neighbors; and**
  - d. **a limit of no more than two turbine towers per lot; and**
  - e. **allowable noise limits; and**
  - f. **a requirement for engineer certification; and**
  - g. **a requirement to notify the electrical power provider if interconnected to the electrical grid; and**
  - h. **a requirement for no interference with neighboring TV, radio, or cell phone reception; and**
  - i. **a requirement for the removal of inoperable wind turbines.**

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### STATUS

This case was continued from the June 11, 2009, meeting. Many changes have been made to the proposed amendment. See attachments A through E.

The review of other Illinois County Zoning Ordinances has been summarized in Attachment F. A guide to small wind electric systems is included as a separate attachment. An illustration from that guide that is relevant to the height limit is included as Attachment G.

Due to time constraints staff is unable to review the changes in this memo. Changes to the revised amendment include standards for non-residential turbines as well as revised standards for residential turbines including a revised height limit, a limit on rotor diameter, and new minimum required separations from adjacent principal structures and buildings (such as dwellings). Copies of all submitted manufacturers data have been included in Attachments H through M to illustrate the effective limits on turbine size.

A Draft Finding of Fact will be available at the meeting.

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**ATTACHMENTS**

- A Revised Changes To Section 3
- B Revised Changes To Subpar. 4.3.1 E
- C Revised Changes To Section 5.2
- D Revised Addition to Subsection 6.1.3
- E Revised New Subsection 7.7
- F Comparison of Small Wind Requirements in Other Illinois County Zoning Ordinances
- G Illustration of Obstruction of the Wind by a Building or Tree excerpted from *Small Wind Electric Systems A U.S. Consumers Guide*.
- H Table of Wind Turbines, Rated Output, and Rotor Diameter from Focus On Energy submitted by Herb Schildt on June 11, 2009
- I Manufacturer's information about the Endurance S-343 wind turbine submitted by Eric McKeever on June 11, 2009
- J Manufacturer's information about the Endurance G-3120 wind turbine submitted by Eric McKeever on June 11, 2009
- K Manufacturer's information about the Endurance E-3120 wind turbine submitted by Eric McKeever on June 11, 2009
- L Manufacturer's information about the remanufactured Vestas V17-90kW wind turbine submitted by Herb Schildt on June 11, 2009
- M Manufacturer's information about the Northwind 100 wind turbine submitted by Eric McKeever on June 11, 2009
- N *Small Wind Electric Systems A U.S. Consumers Guide*. U.S. Department of Energy. (included separately)

**Attachment A. Case 634-AT-08 Part B REVISED Draft Proposed Changes To Section 3**  
**JULY 9, 2009**

**1. Add the following to Section 3.0 Definitions:**

WIND TURBINE TOWER, SMALL: A wind turbine and the supporting tower structure and associated control or conversion electronics that is owned by a private landowner and which produces electrical energy primarily to be used onsite but that also may be sold to a utility and which has a rated capacity of not more than 100 kilowatts (kW).

WIND TURBINE TOWER, BIG: A wind turbine nacelle and rotor and the supporting tower structure and associated control or conversion electronics that is owned (or leased to be owned) by ~~a private~~ the landowner for the purpose of producing electrical energy that may be used onsite or sold to a utility and that has a rated capacity of more than 100 kilowatts (kW) and that is not connected to or part of a system of more than two other BIG WIND TURBINE TOWERS that share a common transformer and or substation.

**Attachment B. Case 634-AT-08 Part B REVISED Draft Proposed Changes To Subpar. 4.3.1 E**  
**JULY 9, 2009**

**1. Revise subparagraph 4.3.1 E. as follows:**

- E. Any tower (including antenna) over 100 feet in HEIGHT shall be subject to the SPECIAL USE requirements in the DISTRICT in which it is located except for the following:
- (1) any tower that meets the requirements of Section 4.3.1 C.; or
  - (2) any TEST WIND TOWER that does not exceed 200 feet in HEIGHT; or
  - (3) any WIND FARM TOWER except as HEIGHT regulations are required as a standard condition in Section 6.1.4. ; or
  - (4) a SMALL WIND TURBINE TOWER that is no more than 200 feet in HEIGHT (measured to the tip of the highest blade) provided that it meets the following:
    - (a) the required YARD and separations from property lines based on HEIGHT in paragraph 7.7.2 B.; and
    - (b) provided that it complies with Footnote 11 in Section 5.3.

**Attachment C. Case 634-AT-08 Part B REVISED Draft Proposed Changes To Section 5.2**  
**JULY 9, 2009**

- 1. In Section 5.2 replace “Wind Turbine (1-3 wind turbines)” with “BIG WIND TURBINE TOWER<sup>X</sup> (1-3 BIG WIND TURBINE TOWERS)**
- 2. Add the following footnote 17 in Section 5.2**
- 17. A BIG WIND TURBINE TOWER is any non-WIND FARM TOWER with a turbine that has a nameplate rating greater than 100 kilowatts (kW).**

**Attachment D. REVISED Draft Proposed Addition to Subsection 6.1.3**  
**JULY 9, 2009**

**1. Add “BIG WIND TURBINE TOWER” to Subsection 6.1.3 and indicate the following standard conditions:**

1. No minimum fencing is required.
2. The Minimum lot size is the same as applicable in the zoning DISTRICT.
3. The Maximum HEIGHT is the same as par. 6.1.4 D. 6.
4. The minimum required YARDS are the following:
  - (a) The front setback is the same as par. 6.1.4 C.5.
  - (b) The SIDE and REAR YARDS are the same as par. 6.1.4 C.6.
5. Add the following explanatory provisions:
  - (a) No BIG WIND TURBINE shall be located in the following areas:
    - (1) Less than one-and-one-half miles from an incorporated municipality that has a zoning ordinance.
    - (2) In any area leased for underground gas storage or under easement for same, unless the lease or easement requires that gas injection wells and other above-ground appurtenances be located in conformance with paragraph 6.1.4 C.9.
    - (3) Less than one mile from the CR Conservation Recreation Zoning District.
  - (b) The special use permit for a BIG WIND TURBINE TOWER shall include all land area within 1,320 feet of a public STREET right of way that is also within 1,000 feet from the base of each BIG WIND TURBINE TOWER except that in the case of BIG WIND TURBINE TOWER in compliance with the minimum STREET separation required by paragraph 6.1.4 C. 5. in which case land on the other side of the public STREET right of way does not have to be included in the SPECIAL USE Permit.
  - (c) The requirements of paragraphs 6.1.4 C. through 6.1.4 S. with the exception of paragraphs 6.1.4 E., L., and Q. shall apply.

1. Add the following new subsection 7.7:

7.7 SMALL WIND TURBINE TOWER

A SMALL WIND TURBINE TOWER shall be allowed as an ACCESSORY USE by Zoning Use Permit in all DISTRICTS as follows:

A. No SMALL WIND TURBINE TOWER shall be located less than one-and-one-half miles from an incorporated municipality that has a zoning ordinance.

~~B. A SMALL WIND TURBINE TOWER (including any guy cables and anchors) shall be allowed within any YARD in all DISTRICTS subject to the provisions of Section 7.2 and the following:~~

~~1. Provided that the HEIGHT is not more than 100 feet.~~

~~2. A SMALL WIND TURBINE TOWER with a HEIGHT that is more than 100 feet but less than {200} feet must have a separation distance to the nearest property line that is at least the same dimension as the overall HEIGHT. This separation may be reduced upon submission of a PRIVATE WAIVER signed by the owner of the adjacent property. The PRIVATE WAIVER must specify both the agreed minimum separation and the maximum HEIGHT and the locations of guy cable anchors and must be recorded as part of the chain of title in the deed to any relevant tract of land prior to authorization of any relevant ZONING USE PERMIT. A copy of the recorded PRIVATE WAIVER must be provided to the Zoning Administrator at the time of application.~~

B. The maximum allowable HEIGHT of a SMALL WIND TURBINE TOWER (measured to the tip of the highest rotor blade) shall be the smaller of the following dimensions:

1. A dimension equal to 90% of the minimum distance from the base of the proposed SMALL WIND TURBINE TOWER to the nearest PRINCIPAL STRUCTURE or PRINCIPAL BUILDING under different ownership; or

2. A dimension that for any SMALL WIND TURBINE TOWER that must be assembled on the ground and tilted vertically into final position, is no greater than the maximum length that can fit within the LOT LINES prior to being tilted into final position, as measured from the actual point of tilt up; or

3. 150 feet for a residential ACCESSORY SMALL WIND TURBINE TOWER; or

4. 200 feet for a non-residential ACCESSORY SMALL WIND TURBINE TOWER.

**Attachment E. Case 634-AT-08 Part B REVISED Draft Proposed New Subsect. 7.7**  
**JULY 9, 2009**

C. The maximum allowable rotor diameter for a SMALL WIND TURBINE TOWER shall be as follows:

1. For a residential ACCESSORY SMALL WIND TURBINE TOWER the maximum allowable rotor diameter shall be as follows:

a. 15 feet on a LOT with less than one acre LOT AREA.

b. 24 feet on LOT with one acre or more of LOT AREA.

*(Note: These heights are the same height limits that apply to residential accessory structures that are found in Footnote 4 of Section 5.3 of the Zoning Ordinance)*

2. For a non-residential ACCESSORY SMALL WIND TURBINE TOWER the maximum allowable rotor diameter shall be as follows:

a. 24 feet; provided however that

b. the maximum rotor diameter is increased in direct proportion to the separation distance to the nearest residential PRINCIPAL STRUCTURE or PRINCIPAL BUILDING under different ownership, up to a maximum of 72 feet at 666 feet of separation.

*(Note: The height limits for non-residential accessory structures are the same as for principal structures and varies by district between 35 feet and 150 feet)*

D. A SMALL WIND TURBINE TOWER (including any guy cables and anchors) shall be allowed within any YARD in all DISTRICTS subject to the following:

1. The provisions of Section 7.2 that establish the minimum YARD requirements for ACCESSORY STRUCTURES; and

2. A required separation distance to the nearest PRINCIPAL STRUCTURE or PRINCIPAL BUILDING under different ownership that is equal to at least a distance of 1.11 times the overall HEIGHT (measured to the tip of the highest rotor blade) of the SMALL WIND TURBINE TOWER.

3. The blades of the SMALL WIND TURBINE TOWER shall not cross the property line.

~~C. No more than two SMALL WIND TURBINE TOWERS shall be allowed per LOT.~~

E. The number of SMALL WIND TURBINE TOWERS that shall be allowed per LOT is as follows:



**Attachment E. Case 634-AT-08 Part B REVISED Draft Proposed New Subsect. 7.7**  
**JULY 9, 2009**

1. Only one SMALL WIND TURBINE TOWER shall be authorized on a lot with less than three acres of LOT AREA.
  2. No more than two SMALL WIND TURBINE TOWERS shall be authorized on a lot with three acres or more LOT AREA provided however that no more than one non-residential ACCESSORY SMALL WIND TURBINE TOWER shall be authorized less than 1,200 feet from the nearest residential PRINCIPAL STRUCTURE or PRINCIPAL BUILDING under different ownership.
  3. One roof-mounted or wall-mounted wind turbine shall be authorized in addition to the above limits. The roof-mounted or wall-mounted wind turbine shall not be more than 15 feet higher than any other portion of the STRUCTURE on which it is mounted. Roof and wall-mounted wind turbines are not required to meet the requirements of paragraphs 7.7 A. through F. but shall meet the requirements of paragraphs 7.7 P. through 7.7 Q.
- F. There shall be a minimum separation distance equal to 1.10 times the total SMALL WIND TURBINE TOWER height (measured to the tip of the highest rotor blade) from the exterior above-ground base of a SMALL WIND TURBINE TOWER to the nearest third party electrical transmission lines, communication towers, railroad right of way, or public street right of way. This separation may be reduced upon submission of a PRIVATE WAIVER signed by the owner of said electrical transmission line or communication tower or the relevant railroad or public street maintenance jurisdiction. The PRIVATE WAIVER must specify the agreed minimum separation.
- DG. The noise level from the SMALL WIND TURBINE TOWER shall not exceed the regulatory standards set by the Illinois Pollution Control Board. The SMALL WIND TURBINE TOWER shall be considered a Class C land use for the purposes of the Illinois Pollution Control Board regulations. This maximum noise level shall apply at the property line regardless of the number of SMALL WIND TURBINE TOWERS.
- EH. The SMALL WIND TURBINE TOWER shall have an automatic over speed control to render the system inoperable when winds are blowing in excess of the speeds for which the system is designed and a manually operable method to render the system inoperable in the event of a structural or mechanical failure of any part of the system.
- FI. On properties that are adjacent to farmland, orange safety balls shall be installed on each side of the SMALL WIND TURBINE TOWER where guy cables are used for SMALL WIND TURBINE TOWERS more than 100 feet in HEIGHT.

**Attachment E. Case 634-AT-08 Part B REVISED Draft Proposed New Subject. 7.7**  
**JULY 9, 2009**

- GJ. SMALL WIND TURBINE TOWERS shall comply with all applicable regulations of the FAA. Evidence of FAA approval shall be required for any SMALL WIND TURBINE TOWER within four miles of an airport.
- HK. No illumination of the SMALL WIND TURBINE TOWER shall be allowed unless required by the Federal Aviation Administration.
- HL. The SMALL WIND TURBINE TOWER shall either be the color supplied by the manufacturer or else painted white or gray or another non-reflective, unobtrusive color that shall be specified in the Zoning Use Permit application.
- M. There shall be a minimum clearance of 15 feet between the ground and the lowest arc of the rotor blades for a SMALL WIND TURBINE TOWER.
- N. Any SMALL WIND TURBINE TOWER in a Residential Zoning District must be protected from unauthorized climbing by devices such as fences at least six feet high with locking portals or anti-climbing devices 12 feet vertically from the base of the SMALL WIND TURBINE TOWER.
- JO. The Zoning Use Permit application for the SMALL WIND TURBINE TOWER shall include the following:
1. A copy of the manufacturers standard drawings of the wind turbine structure and stamped engineering drawings of the tower, base, footings, and/ or foundations as provided by the manufacturer sufficient to prove that the wind turbine tower is safe for the use intended. Wet stamps shall not be required.
  2. Evidence must be given that the utility company has been informed of the customer's intent to install an interconnected customer-owned generator. Off-grid systems shall be exempt from this requirement.
  3. Such evidence and documentation as required to verify that the SMALL WIND TURBINE TOWER meets all other Zoning Ordinance requirements.
- KP. If a wind turbine is inoperable and or not in operation for six consecutive months the owner shall be notified that they must, within six months of receiving the notice, restore their system to operating condition. If the owner(s) fails to restore their system to operating condition within the six-month time frame, then the owner shall be required, at his expense, to remove the wind turbine from the tower and also remove the tower if it has guy cables, for safety reasons. If the owner fails to remove the wind turbine within one month the Zoning Administrator shall send a notice that the wind turbine is in violation of the Zoning Ordinance and subject to a daily fine as provided for in Section 10.

- Q. The SMALL WIND TURBINE TOWER shall not cause any significant electromagnetic interference with any radio, television, microwave communication, or satellite navigation on other properties.
1. Prior to application for a Zoning Use Permit, the owner of the SMALL WIND TURBINE TOWER shall make all reasonable effort to ensure that neither the location of the SMALL WIND TURBINE TOWER nor the physical size of the SMALL WIND TURBINE TOWER shall cause significant electromagnetic interference, including the following:
    - a. The owner shall contact neighbors and neighbor's service providers; and the SMALL WIND TURBINE TOWER manufacturer's representative; and METCAD to determine the likelihood of probable interference.
    - b. The owner shall document any responses regarding the likelihood of probable interference including the manufacturer's recommendations regarding any necessary changes to the proposed location of the SMALL WIND TURBINE TOWER or to any physical dimension of the SMALL WIND TURBINE TOWER in order to eliminate the likelihood of probable interference.
  2. The owner shall provide copies of the documentation regarding the likelihood of probably interference with the Zoning Use Permit Application so that the Zoning Administrator may verify that the location has been adequately evaluated for probable interference.
  3. After installation of the SMALL WIND TURBINE TOWER, the owner of the SMALL WIND TURBINE TOWER shall do the following when notified by the Zoning Administrator that there is evidence that the SMALL WIND TURBINE TOWER may be causing significant electromagnetic interference on neighboring properties:
    - a. The owner shall cooperate with the Zoning Administrator and adjacent landowners to determine if the SMALL WIND TURBINE TOWER is the cause of the identified interference.
    - b. The owner shall provide the services of an authorized manufacturers representative whenever there is reasonable evidence of significant interference.
    - c. The owner shall make any necessary and reasonable changes to the SMALL WIND TURBINE TOWER within 90 days of notice from the Zoning Administrator, including removal or relocation of the SMALL WIND TURBINE TOWER in extreme cases.

**Attachment E. Case 634-AT-08 Part B REVISED Draft Proposed New Subsect. 7.7**  
**JULY 9, 2009**

R. In the event of destruction by any means, wind turbine towers and wind turbines located more than one-and-one-half miles from an incorporated municipality that has a zoning ordinance and that were duly authorized by an approved Zoning Use Permit prior to *{effective date}* shall be allowed to be reconstructed to the original dimensions and in the original location pursuant to a new Zoning Use Permit.



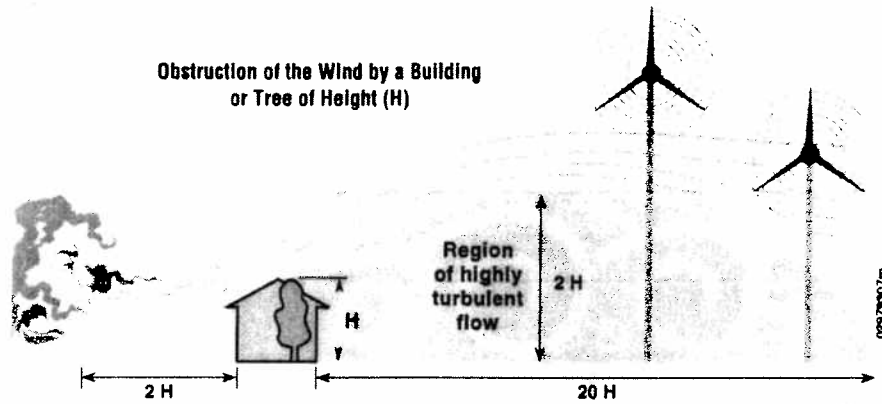
**Comparison of Small Wind Requirements in Other Illinois County Zoning Ordinances**  
Case 634-AT-08 Part B DRAFT July 9, 2009

Standard	Ford County	Macon County	McLean County	Sangamon County	Will County	Woodford County	Champaign County Draft
Type of approval	By right	By right	By right	By right accessory use	By right	By right if all req. are met; SUP otherwise	By right
Max. turbine rating	100kW	50Kw	No specific limit	100kW	100kW	No specific limit	100kW
Height limit*  * to top of highest blade	NONE	100 FT	Based on zoning district & lot area: <ul style="list-style-type: none"> <li>•50FT on .99 AC or less for all districts</li> <li>•65FT on 1AC to 1.99AC for all districts</li> <li>•80FT on 2AC to 4.99 AC for all districts and maximum for R-1 &amp; R-2 Districts</li> <li>•150FT for 5AC or more in AG, C, M1, M2 Districts</li> </ul>	Based on lot area & rating: <ul style="list-style-type: none"> <li>▪ 35FT if less than 10kW (no min. lot area)</li> <li>•80FT for 10kW to 100 kW and 3 AC min lot area</li> </ul>	Based on zoning district & lot area: <ul style="list-style-type: none"> <li>▪ 70FT on 5AC to 19AC for all districts</li> <li>•80FT on 20AC plus for Ag &amp; Residential Districts</li> <li>•120FT on 20AC plus for Commercial &amp; Industrial</li> </ul>	150 FT	Varies based on type: 1. 150FT (max) for residential based on: a. separation from adjacent principal building; and b. erection clearance  2. 200FT(max) for non-residential also based on same factors as residential
Maximum rotor diameter	NONE	30FT	NONE	NONE	NONE	NONE	Varies based on type: Residential, 15FT to 24FT based on lot area Non-residential, 25FT min. but can be increased up to 72FT based on separation to nearest residence

## Comparison of Small Wind Requirements in Other Illinois County Zoning Ordinances

Case 634-AT-08 Part B DRAFT July 9, 2009

Standard	Ford County	Macon County	McLean County	Sangamon County	Will County	Woodford County	Champaign County Draft
Minimum lot area	NONE	NONE	Based on height-see above	Based on height & rating-see above	5 AC	2AC	NONE
Minimum separations	110% height from property lines & utility lines  150% height from adj. res.	110% height from adj. res. property lines & utility lines and 50% height from onsite res.	110% height from property lines & utility lines	110% height from property lines & utility lines	125% height from property line	110% height from property lines  150% height from adj. res. & utility lines	110% height from property lines & utility lines Approx. 110% height from adj. res.
Min. ground clearance	15FT	30FT	15FT	NONE	15FT	15FT	15FT
Limit on number per lot	NONE	NONE	One	One	One	NONE	Varies: •One if less than 3AC  •Two if 3AC or more except that non-residential must be min. 1,200 feet from nearest residence
Engineering certification	NONE	?	Required	Required	Required	Required	Required
FAA compliance	Required	Required	Required	Required	Required	Required	Required
Noise limit	60 decibels at property line	?	60 decibels at property line	Ill. Pollution Control Board	Ill. Pollution Control Board	Ill. Pollution Control Board	Ill. Pollution Control Board
Utility company notice required	NONE	?	Yes	Yes	Yes	Yes	Yes
Required removal	Yes	?	Yes	Yes	Yes	?	Yes
Prohibition on electromagnetic interference	Yes	Yes	Yes	NONE	NONE	Yes	Yes



and if your tower is guyed, you must allow room for the guy wires.

Whether the system is stand-alone or grid-connected, you will also need to take the length of the wire run between the turbine and the load (house, batteries, water pumps, etc.) into consideration. A substantial amount of electricity can be lost as a result of the wire resistance—the longer the wire run, the more electricity is lost. Using more or larger wire will also increase your installation cost. Your wire run losses are greater when you have direct current (DC) instead of alternating current (AC). So, if you have a long wire run, it is advisable to invert DC to AC.

### Can I Connect My System to the Utility Grid?

Small wind energy systems can be connected to the electricity distribution system and are called grid-connected systems. A grid-connected wind turbine can reduce your consumption of utility-supplied electricity for lighting, appliances, and electric heat. If the turbine cannot deliver the amount of energy you need, the utility makes up the difference. When the wind system produces more electricity than the household

requires, the excess is sent or sold to the utility.

Grid-connected systems can be practical if the following conditions exist:

- You live in an area with average annual wind speed of at least 10 mph (4.5 m/s)
- Utility-supplied electricity is expensive in your area (about 10 to 15 cents per kilowatt-hour)
- The utility's requirements for connecting your system to its grid are not prohibitively expensive
- There are good incentives for the sale of excess electricity or for the purchase of wind turbines.

Federal regulations (specifically, the Public Utility Regulatory Policies Act of 1978, or PURPA) require utilities to connect with and purchase power from small wind energy systems. However, you should contact your utility before connecting to their distribution lines to address any power quality and safety concerns. Your utility can provide you with a list of requirements for connecting your system to the grid. The American Wind Energy Association is another good source for information on utility interconnection requirements. The

The farther you place your wind turbine from obstacles such as buildings or trees, the less turbulence you will encounter.





CLEAN ENERGY... JUST PLUG IT IN

Endurance<sup>®</sup>  
wind power

S-343

### S-343 5 kW model

- 1 Fiberglass blades
- 2 Rotor Hub
- 3 Dual fail safe calipers
- 4 16" brake disk
- 5 Main shaft bearings
- 6 Induction generator
- 7 Gearbox
- 8 Tower
- 9 Slipring
- 10 Turntable yaw bearing
- 11 Anemometer
- 12 Fiberglass nacelle cover and nose cone

ENDURANCE WIND TURBINES GREEN ENERGY THAT WORKS

## TURBINE

Configuration	3 blades, horizontal axis, upwind
Rated power @ 11 m/s	5.3 kW
Applications	Direct grid-tied
Rotor speed	166 rpm
Cut-in wind speed	3.0 m/s (6.7 mph)
Cut-out wind speed	24 m/s (54 mph)
Survival wind speed	53 m/s (119 mph)
Design lifetime	30 years *
Overall weight	272 kg (600 lbs)

## ROTOR

Rotor diameter	6.04 m (21 ft)
Swept area	31.9 m <sup>2</sup> (343 ft <sup>2</sup> )
Blade length	3.2 m (10.5 ft)
Blade material	Fiberglass / Epoxy
Power regulation	Stall control (constant speed)

## GENERATOR

Frequency	60 Hz
Voltage	120-240 VAC
Phase	Single phase
Type	Induction generator

## BRAKE & SAFETY SYSTEMS

Main brake system	Rapid fail-safe dual redundant brakes on rotor shaft
Secondary safety system	Redundant back-up brake on rotor shaft
Automatic shut down triggered by :	<ul style="list-style-type: none"> <li>- Over speed</li> <li>- High wind speed</li> <li>- Grid failure</li> <li>- All other fault conditions</li> </ul>

## CONTROLS

PLC based	Includes remote monitoring software
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## WARRANTY

Turbine, controls	5 years
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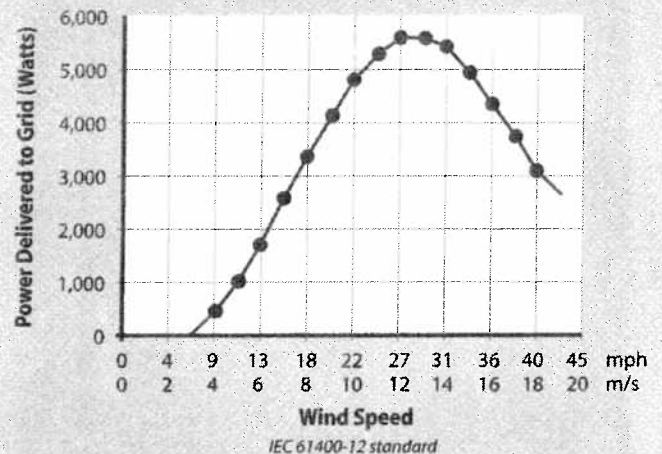
## TOWERS

Types and heights	Tubular guyed 19.2 m (63 ft); 25.6 m (84 ft); 32 m (105 ft) and 36.6 m (120 ft) Standard Monopole 30.5 m (100 ft)
Maintenance Access	All are tiltable towers

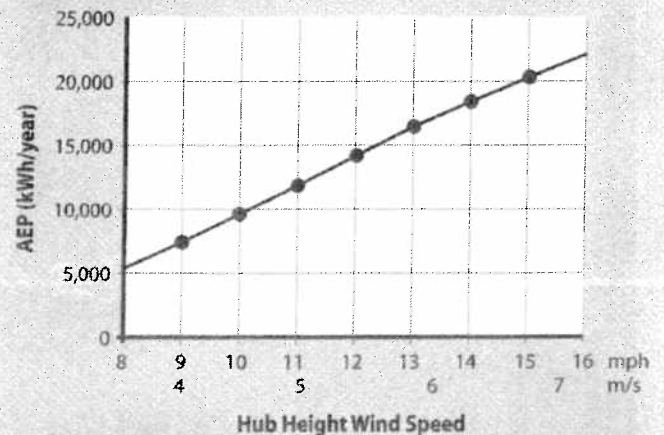
\*Provided service and maintenance schedules are strictly followed



## POWER CURVE



## ANNUAL ENERGY PRODUCTION (AEP)



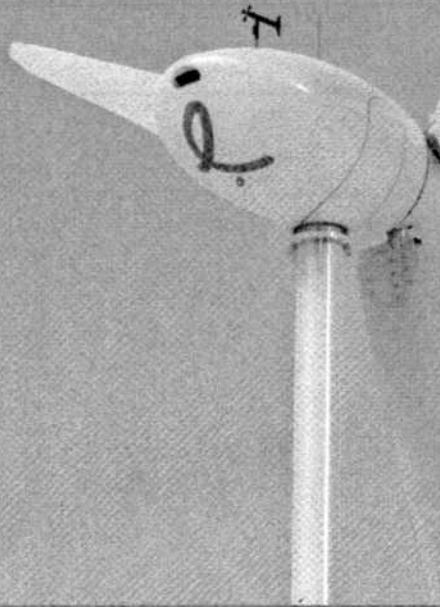
## WIND SPEED CONVERSION TABLE

m/s	4	5	6	7	8	9	10	12	14	25	32	45
km/h	14	18	22	25	29	32	36	43	50	90	125	160
mph	9	11	13	16	18	20	22	27	31	56	80	100

CLEAN ENERGY... JUST PLUG IT IN

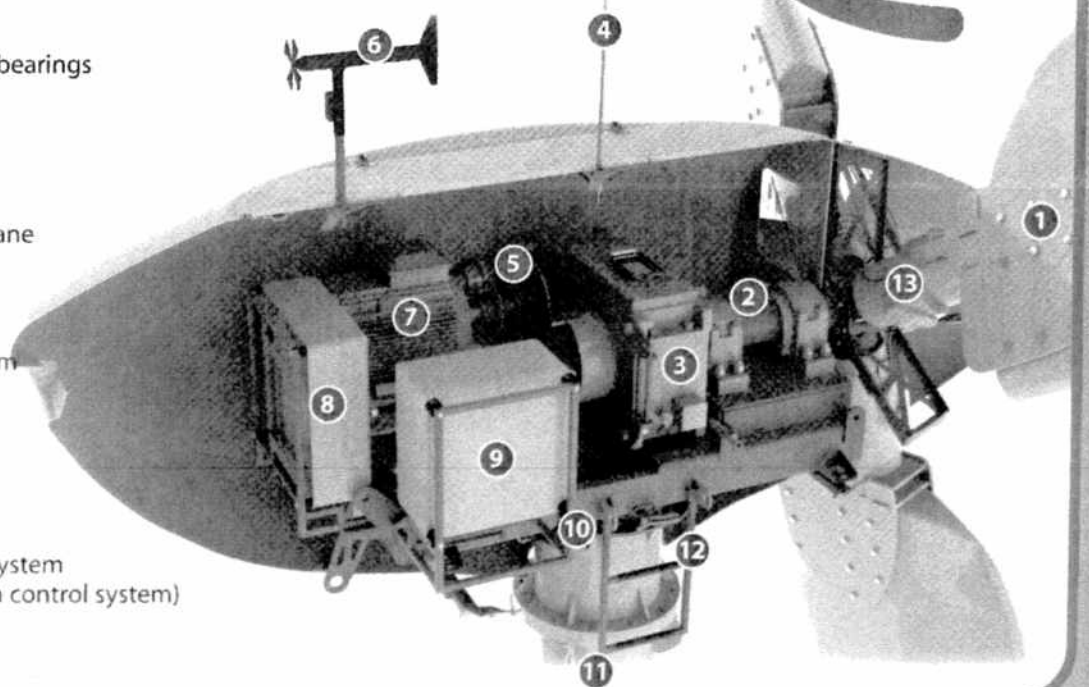
Endurance<sup>®</sup>  
wind power

G-3120



### G-3120 35 kW model

- 1 9 m blade
- 2 Main shaft with two bearings
- 3 Gearbox
- 4 Lightning protection
- 5 Disk brake
- 6 Anemometer wind vane
- 7 Generator
- 8 Control panel
- 9 Braking control system
- 10 Passive yaw control with brake
- 11 Tower
- 12 Access ladder
- 13 Aerodynamic safety system (patent pending pitch control system)



ENDURANCE WIND TURBINES GREEN ENERGY THAT WORKS



## TURBINE

Configuration	3 blades, horizontal axis, downwind
Rated power @ 11 m/s	35 kW
Applications	Direct grid-tied
Rotor speed	36 rpm
Cut-in wind speed	3.5 m/s (7.8 mph)
Cut-out wind speed	25 m/s (56 mph)
Survival wind speed	52 m/s (116 mph)
Design lifetime	30 years *
Overall weight	4,130 kg (9,105 lbs) - single phase turbine 3,850 kg (8,488 lbs) - three phase turbine

## ROTOR

Rotor diameter	19.2 m (63 ft)
Swept area	290 m <sup>2</sup> (3,120 ft <sup>2</sup> )
Blade length	9 m (29.5 ft)
Blade material	Fiberglass / Epoxy
Power regulation	Stall control (constant speed)

## GENERATOR

Frequency	60 Hz
Voltage	240 V - single phase; 480 V - three phase
Phase	Single phase and three phase
Type	Induction generator

## BRAKE & SAFETY SYSTEMS

Main brake system	Rapid fail-safe brake on high speed shaft
Secondary safety system	Pitch control system (for over speed regulation) using passive spring loaded mechanism (patent pending)
Automatic shut down triggered by :	<ul style="list-style-type: none"> <li>- Over speed</li> <li>- High wind speed</li> <li>- Grid failure</li> <li>- All other fault conditions</li> </ul>

## CONTROLS

PLC based	Includes remote monitoring software
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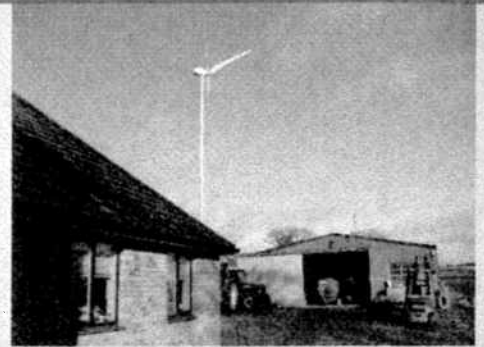
## WARRANTY

Turbine, controls	5 years
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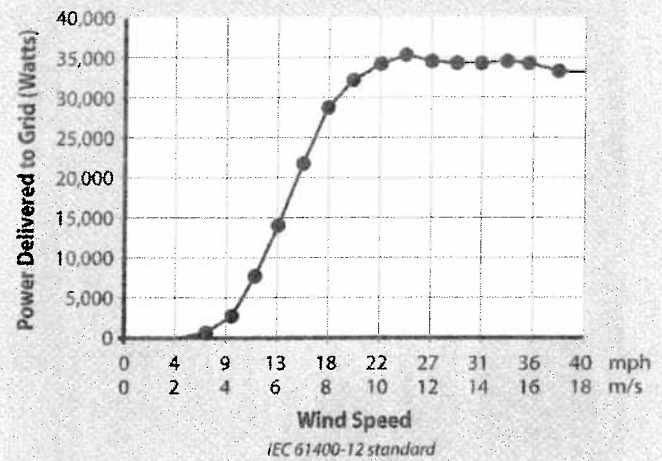
## TOWERS

Types and heights	Standard Monopole 30.5 m (100 ft) Standard Lattice 42.7 m (140 ft) Custom heights available
Maintenance Access	Working space inside the nacelle Top work platform and safety cable climbing system

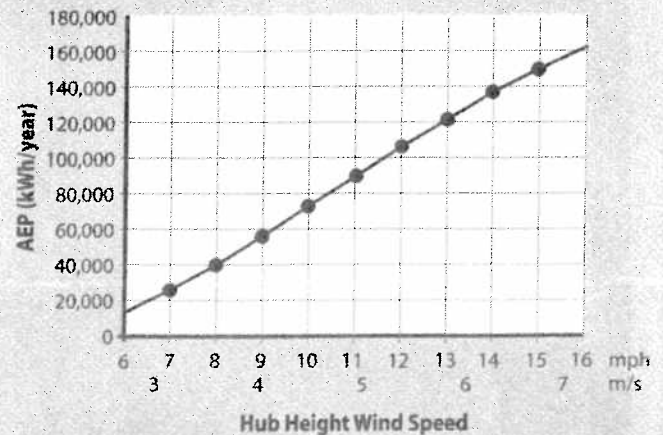
\*Provided service and maintenance schedules are strictly followed



## POWER CURVE



## ANNUAL ENERGY PRODUCTION (AEP)



## WIND SPEED CONVERSION TABLE

m/s	4	5	6	7	8	9	10	12	14	25	32	45
km/h	14	18	22	25	29	32	36	43	50	90	125	160
mph	9	11	13	16	18	20	22	27	31	56	80	100

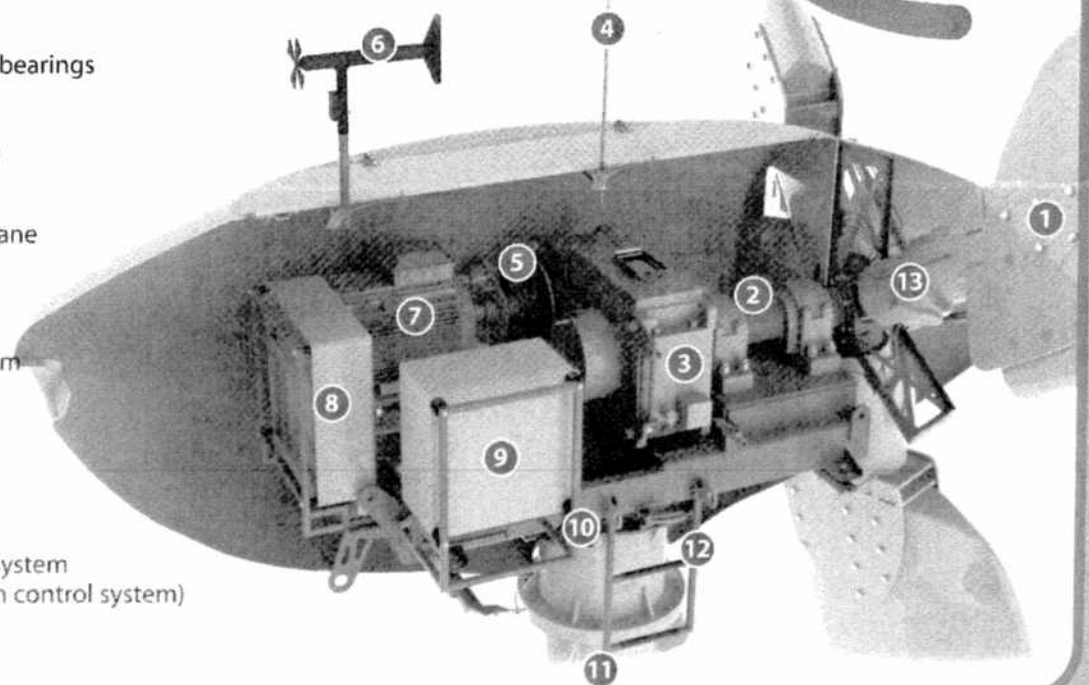
CLEAN ENERGY... JUST PLUG IT IN

Endurance<sup>®</sup>  
wind power

E-3120

### E-3120 50 kW model

- 1 9 m blade
- 2 Main shaft with two bearings
- 3 Gearbox
- 4 Lightning protection
- 5 Disk brake
- 6 Anemometer wind vane
- 7 Generator
- 8 Control panel
- 9 Braking control system
- 10 Passive yaw control with brake
- 11 Tower
- 12 Access ladder
- 13 Aerodynamic safety system (patent pending pitch control system)



ENDURANCE WIND TURBINES GREEN ENERGY THAT WORKS

## TURBINE

Configuration	3 blades, horizontal axis, downwind
Rated power @ 11 m/s	55 kW
Applications	Direct grid-tied
Rotor speed	41 rpm
Cut-in wind speed	3.5 m/s (7.8 mph)
Cut-out wind speed	25 m/s (56 mph)
Survival wind speed	52 m/s (116 mph)
Design lifetime	30 years *
Overall weight	3,990 kg (8,800 lbs)

## ROTOR

Rotor diameter	19.2 m (63 ft)
Swept area	290 m <sup>2</sup> (3120 ft <sup>2</sup> )
Blade length	9 m (29.5 ft)
Blade material	Fiberglass / Epoxy
Power regulation	Stall control (constant speed)

## GENERATOR

Frequency	60 Hz
Voltage	480 V
Phase	Three phase
Type	Induction generator

## BRAKE & SAFETY SYSTEMS

Main brake system	Rapid fail-safe brake on high speed shaft
Secondary safety system	Pitch control system (for over speed regulation) using passive spring loaded mechanism (patent pending)
Automatic shut down triggered by :	<ul style="list-style-type: none"> <li>- Over speed</li> <li>- High wind speed</li> <li>- Grid failure</li> <li>- All other fault conditions</li> </ul>

## CONTROLS

PLC based	Includes remote monitoring software
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## WARRANTY

Turbine, controls	5 years
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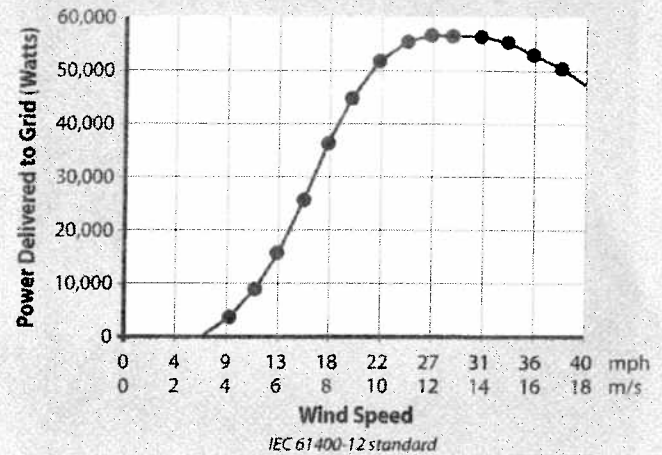
## TOWERS

Types and heights	Standard Monopole 30.5 m (100 ft) Standard Lattice 42.7 m (140 ft) Custom heights available
Maintenance Access	Working space inside the nacelle Top work platform and safety cable climbing system

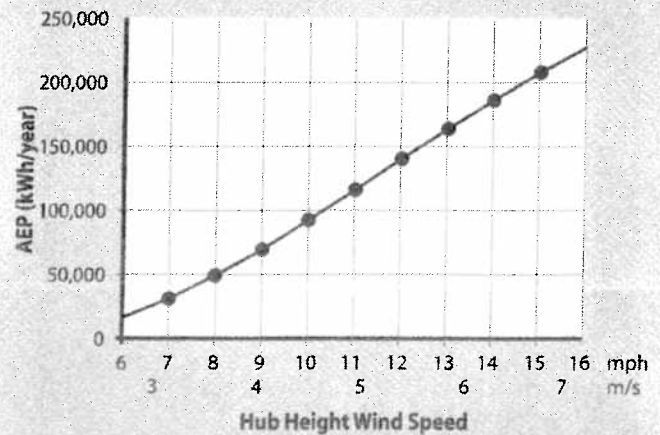
\*Provided service and maintenance schedules are strictly followed



## POWER CURVE



## ANNUAL ENERGY PRODUCTION (AEP)



## WIND SPEED CONVERSION TABLE

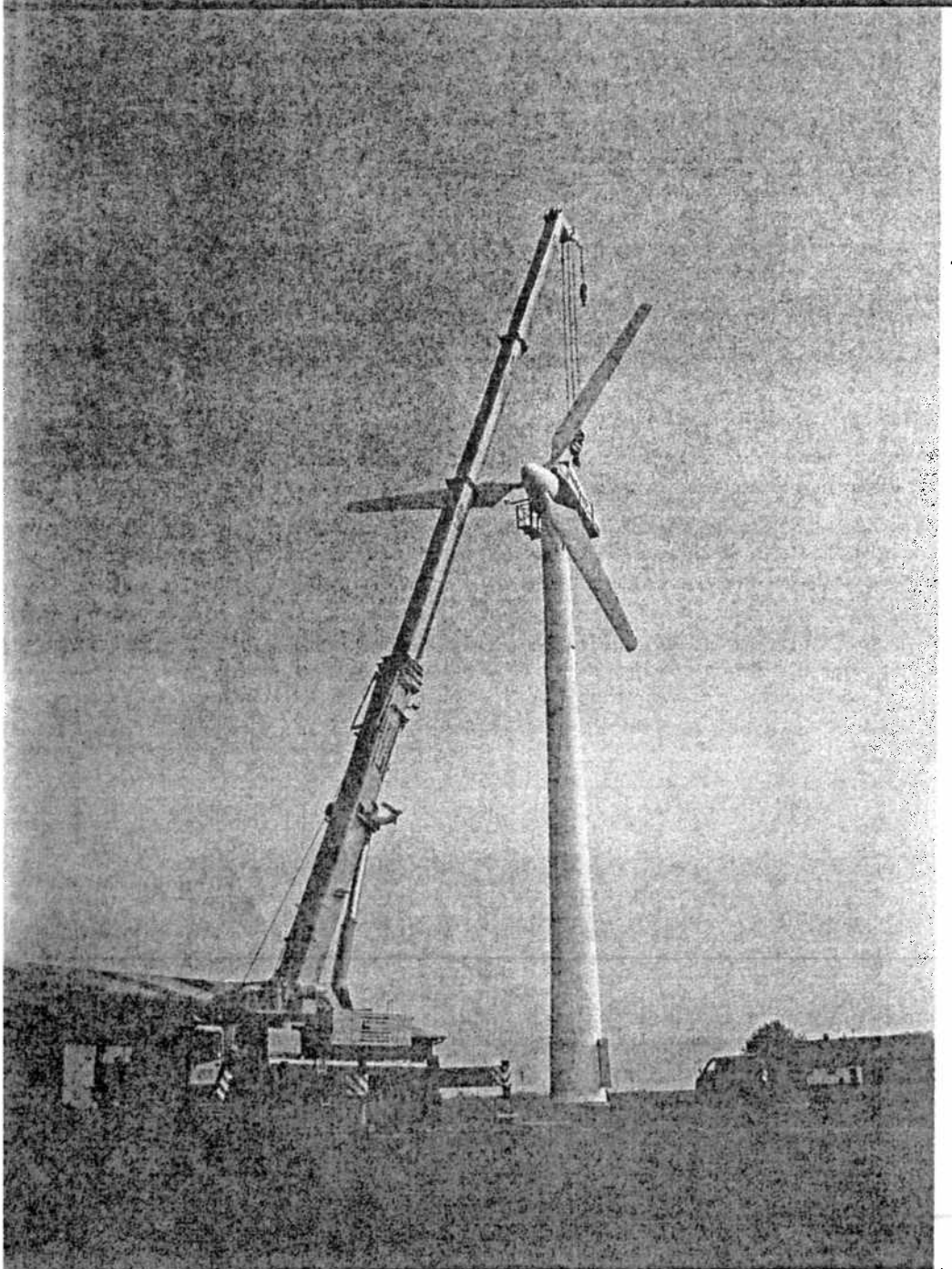
m/s	4	5	6	7	8	9	10	12	14	25	32	45
km/h	14	18	22	25	29	32	36	43	50	90	125	160
mph	9	11	13	16	18	20	22	27	31	56	80	100



# THE VESTAS V17-90kW WIND TURBINE

*Green Power Electric, Inc.*

*Efficient | Reliable*



SPEC SHEET

 greenpowerelectric<sup>INC.</sup>

[www.greenpower-electric.net](http://www.greenpower-electric.net)



## THE WIND TURBINE

The remanufactured V17-90kW is a horizontal-axis wind turbine with a three-bladed, fixed pitch rotor that operates upwind of the tower.

The blades are stall regulated and the rotor itself turns at one of two different low speeds, depending on which generator is in operation at the time.

The speed increasing gearbox is of the parallel shaft type and the twin-generator system consists of one large and one small generator, connected by a V-belt drive transmission element. Both generators are asynchronous (i.e. run at a "constant" r.p.m.) and designed for direct connection to the utility network at 480-500V AC 60 Hz.

The wind turbine is also equipped with an active electric drive yawing system and a control unit that is based on either electro-mechanical relays or microprocessor chips.

The V17-90kW is fitted on the Vestas free standing lattice tower.

## SPECIFICATIONS

### Rotor

Diameter - 17.0 m (55.8 ft.)

### Blades

Number of blades - 3

Material - Reinforced composite materials

### Tower

Type - Lattice tower

Height - 23.4 m (76.77 ft.)

Surface - Galvanized steel

25 year warranty

### Generators

Voltage - 480 V AC

Frequency - 60 Hz

### Yawing System

Type - Active yaw

### Operational Data

Cut-in windspeed - 3.3 m/s (7.4 mph)

Cut-off windspeed - 28 m/s (62 mph)

Survival windspeed - 65 m/s (145 mph)

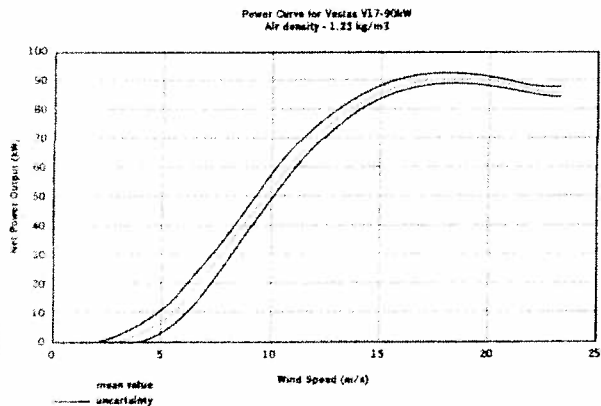
Noise - 44dB (No audible tones from 160 feet)

### Weight

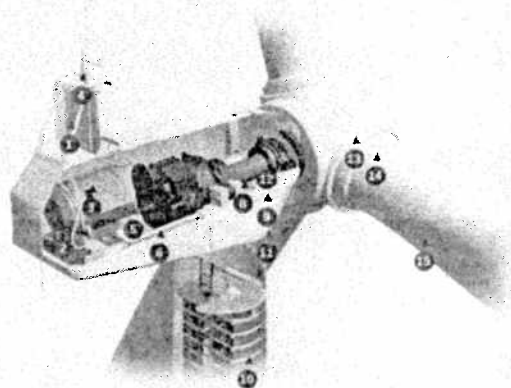
Turbine and rotor - 6380 kg (14,065 lbs.)

Tower weight - 4,250 kg (9,370 lbs.)

Total weight - 10,630 kg (23,435 lbs.)



## TECHNICAL SPECIFICATIONS



- |                        |                       |
|------------------------|-----------------------|
| 1 Cooler               | 9 Yaw gears           |
| 2 Generator            | 10 Tower damper       |
| 3 Nacelle computer     | 11 Machine foundation |
| 4 Anemometer windvanes | 12 Main bearing       |
| 5 Coupling             | 13 Hub computer       |
| 6 Mechanical brake     | 14 Pitch system       |
| 7 Gearbox              | 15 Blade              |
| 8 Main shaft           |                       |

To request more information about a wind system contact:

Green Power Electric, Inc.  
2300 Fifth Avenue  
Vero Beach, FL 32960  
phone 866.517.1540  
fax 772.365.5713

 greenpowerelectric<sup>inc.</sup>



## OUR Design

*The Northwind 100 is a technological masterpiece with its innovative gearless design and best in class reliability. What this means for your application is more energy and less maintenance.*

➤ Originally developed with a NASA grant and designed for remote and isolated sites, the Northwind 100 put reliability at a premium. Regular and costly maintenance was not an option for applications located at the South Pole or in the Indian Ocean — let alone your farm, school or business.

*Make the most of your wind. All turbines capture wind, but Northwind 100 captures it better!*

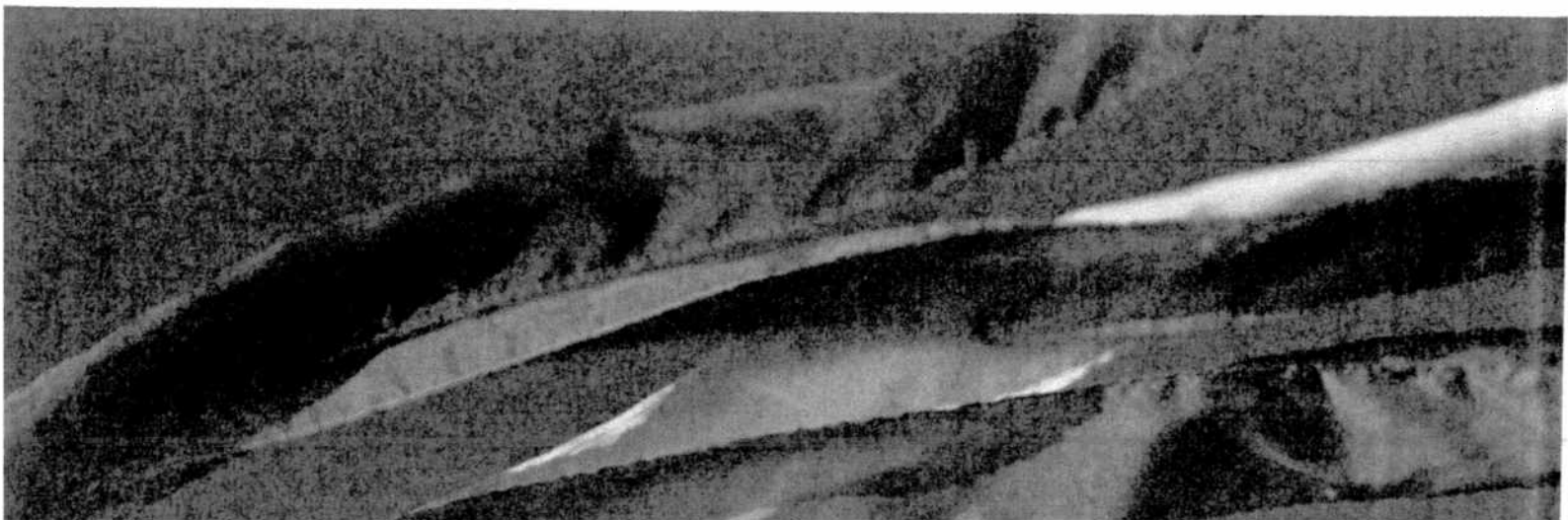
➤ We **optimized performance** of the Northwind 100 for low wind speeds, so you don't have to live in a wind tunnel to benefit from wind power.

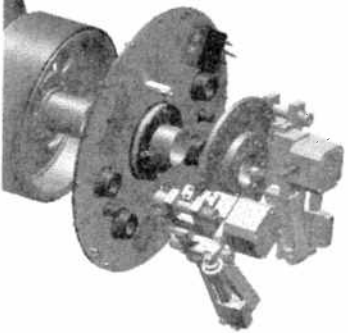
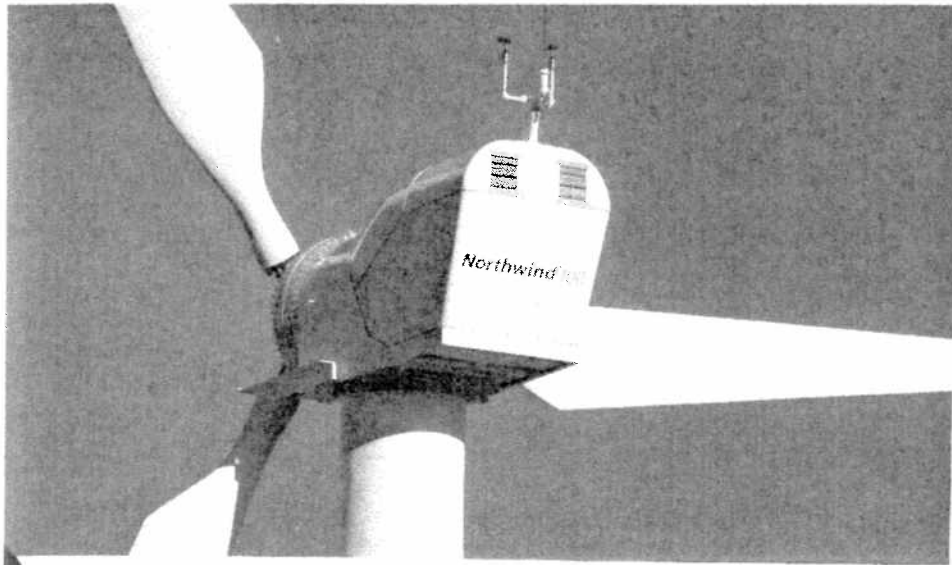
Our turbines begin making power at wind speeds as low as 3 meters per second (6 mph) and can provide clear economic benefits in all kinds of wind regimes.

➤ An engineering advancement in simplicity and precision, **our gearless direct drive technology** maximizes energy capture and outperforms conventional gearbox designs.

➤ Our **advanced blades** are fiberglass reinforced and designed in-house for maximum performance.

➤ All our turbines come standard with **SmartView**. This easy to use monitoring system provides web-based access to your Northwind 100 — so you can track power production and performance from anywhere in the world.





## YOUR Solution

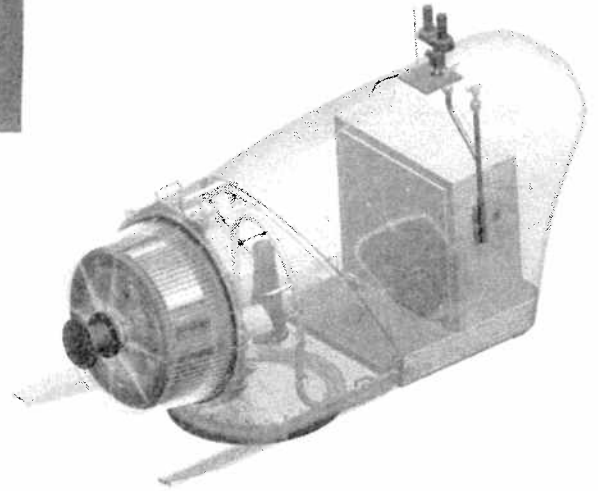
*The Northwind 100 is the ideal choice for community applications that favor a low height profile, easy utility connect, low noise and cost effectiveness.*

➤ **THE NORTHWIND 100 MAKES ECONOMIC SENSE.**

Even at modest speeds, the Northwind 100 can produce enough electricity to represent significant savings in utility costs. Given its 20-year design life, you can be sure that the Northwind 100 will provide long-term benefits and more than pay for itself over time.

➤ **THE RIGHT AMOUNT OF POWER**  
For many municipalities, schools, and small industrial sites, one 100 kW turbine — or a cluster of two or three — meets all their energy needs.

➤ **TURN IT ON AND GO BACK TO WORK.**  
Our turbine is designed for ultimate reliability, so you don't have to be in the utility business or hire a team of full-time professionals to reap all the benefits of wind power.



➤ **THE NORTHWIND 100 IS A "READY-FOR-UTILITY INTERCONNECT" CERTIFIED PRODUCT.**

With an easy grid connect and no complicated approvals or expensive interconnection requirements, it makes for an ideal choice.

➤ **LOW HEIGHT PROFILE**  
Sitting on a standard 37-meter tower, the Northwind 100 fits neatly into most landscapes.

➤ **LOW NOISE**  
Apparent noise levels are measured at 50 dB, which echo the sounds of normal conversations or soft music.

With SmartView, you always know that your solution is working for you.

